Annual Progress Report (APR)

2019 Air Quality Annual Progress Report (APR) for
Aberdeen City Council

In fulfilment of Part IV of the
Environment Act 1995

Local Air Quality Management

June 2019

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Executive Summary: Air Quality in Our Area

Air Quality in Aberdeen City

The Annual Progress Report has been undertaken to fulfil Aberdeen City Council's duty to annually review and assess air quality. The report provides the latest monitoring results and discusses the implications for air quality management in Aberdeen.

The main pollutants of concern in Aberdeen City are nitrogen dioxide (NO_2) and particulate matter (PM_{10}), related to road traffic emissions.

In 2018 the annual mean NO_2 level continued to exceed the national air quality objective across the City Centre Air Quality Management Area (AQMA). Pockets of exceedances were recorded within the Anderson Drive/Haudagain Roundabout/Auchmill Road AQMA. There were no exceedances recorded at monitoring locations in the the Wellington Road AQMA. Across the city NO_2 levels are very similar to those in 2017.

There were no exceedances of the NO_2 objectives outside of AQMA. Levels of NO_2 recorded at Skene Square continue to be at the objective level threshold indicating potential exceedances of the annual mean objective in an area outwith an existing AQMA. Major transportation infrastructure measures with an anticipated commencement date of 2020/21 will be implemented around Berryden Road and the Skene Square area to improve travel connectivity, reduce congestion and impact on air quality at this location.

There were no exceedances of the NO_2 one hour objective at any of the monitoring locations. The city centre AQMA order was amended in October 2018 to remove the NO_2 hourly mean.

There were no exceedances of the $PM_{2.5}$ annual mean objective.

There were no exceedances of the annual or 24 hour mean PM_{10} objectives. The Anderson Drive AQMA order was amended in October 2018 to remove the 24 hour mean objective.

The Aberdeen Western Periferal Route was fully opened in February 2019. City wide traffic counts are planned for spring of 2019 to identify the impact on key city routes.

The air quality model update was completed in 2018 enabling the source apportionment of emissions to vehicle types and scenario testing of potential LEZ interventions. While all vehicle types contributed to emissions, buses were identified as the greatest source across the majority of the City Centre. The model will be updated in 2019 to include the traffic count data and used to support a detailed feasibility study of LEZ options.

Actions to Improve Air Quality

Aberdeen City Council has been making progress in a number of areas.

Low Emission Zone

- A project group, comprising representatives of various Aberdeen City Council (ACC) teams, and partners Aberdeenshire Council, Nestrans, NHS Grampian, Transport Scotland and SEPA (the Scottish Environment Protection Agency), has been established to guide the process of identifying and testing options for a Low Emission Zone (LEZ) in Aberdeen. The group are currently developing a range of scenarios for testing before a proposal is put to committee.
- Stakeholder engagement has commenced, with SEPA presenting their preliminary air quality modelling findings to the North East Bus Alliance in February. Officers worked with Transport Scotland to deliver further local stakeholder briefings in May.

Active Travel

- Strategic and local walking and cycle networks continue to grow. The Aberdeen Active Travel Action Plan was adopted in January 2017, setting out a series of policies and actions that the Council will abide by and work towards in order to make Aberdeen a more walking and cycling friendly city. The plan also identifies the active travel network priorities to be pursued over the next 4 to 5 years. It is planned to refresh the Active Travel Action Plan during 2019 and 2020 with a finalised plan due to be completed by Summer 2020.

- Delivery of the Aberdeen City Centre Masterplan continues, with the Broad Street part-pedestrianisation and public realm improvement scheme now complete.
- More cycle lockers have been provided at Dyce Railway Station
- An Origin and Destination study, to better understand where journeys of up to 10km which start or finish in Aberdeen City are taking place, is being undertaken and is due to be concluded in July 2019
- An Options Appraisal to examine the potential for a bike hire scheme in Aberdeen is being undertaken with a final report being reported to Aberdeen City Council in May 2019. Officers will then report to Council in September 2019 with a recommendation of how to proceed.
- In terms of promotional and awareness-raising activities to support infrastructure improvements:

➢ An I Bike officer contributes to work to deliver targeted and intensive cycling training and promotion to schools in the Bridge of Don Academy and Oldmachar Academy Associated Schools Groups (ASG) clusters. In 2018, the area was extended to take in the Northfield Academy ASG cluster.

➢ Events have taken place throughout the year, often tying in with national and European campaigns such as Bike Week, European Mobility Week and the Sustrans Workplace Challenge.

➢ The Cycle Tour Series professional road racing event in the city centre in May 2018 also raised the profile of cycling. Officers from the Council were present offering information about sustainable transport to members of the public and offering a bike tagging service. The event will also run in May 2019 with the same presence from officers.

➢ A road closure and subsequent awareness raising event took place at Westpark Primary School to promote sustainable transport and encourage children to travel to school more sustainably. This took place in September 2018. A Big Cycle event at Middleton Park primary school was also supported

➢ Bike roadshow events were delivered to schools and workplaces throughout Bikeweek, European Mobility Week and Climate Week

- A marketing campaign to promote the Aberdeen City and Aberdeenshire sustainable transport brand, Getabout, was undertaken involving radio and TV advertising, bus back advertising and a roadshow event in Bon Accord Shopping Centre. A Getabout mascot costume, to encourage further engagement from the public, was also part funded.
- Seven different walking trail leaflets for the City have been created and launched
- The Aberdeen Cycle map has been updated and circulated to sites including various NHS sites, the tourist information, museums, parks, universities, libraries, the College, schools, the railway station and Business Improvement District. Aberdeenshire Council have also taken copies.
- The Bridge of Don cycle map has been reprinted
- A digital information screen, displaying real-time bus information to staff and visitors in the Council headquarters, has been installed
- The Living Streets Travel Tracker, which allows children to record their journey to school and get points depending on how sustainably they travelled, is operating in some city primary schools.
- Road Safety Magic Shows were delivered to 10 Aberdeen Primary Schools
- Travel Planning budget support was given to Aberdeen and Robert Gordon Universities and Cults, Middleton Park, and Westpark schools
- Bike doctor sessions have been held in the city centre and a local park
- Previous work with the Aberdeen Business Improvement District and West End Traders to close a street in the West End of the City Centre in order to trial a market has proved so successful that these markets are now being held monthly.

Public Transport

- Aberdeen City Council has continued to expand the supported bus network in order to address gaps in the commercial network.
- Efforts have also been ongoing to promote the Grasshopper multi-operator bus ticket and to make it more attractive to users. The ticket can now be stored on a smartcard, making it Scotland's first means of smart multi-operator travel.

Both main bus operators in the City now also offer contactless payment using a debit or credit card.

- Efforts have been ongoing to promote park and ride sites
- Work to deliver the Aberdeen to Inverness rail improvement project and to deliver a Revolution in Rail has continued with new and improved rail services. This project is being delivered in phases, with dualling between Aberdeen and Dyce completed in summer 2018, additional hourly services now operating between Montrose and Aberdeen calling at all stations, dualling between Dyce and Inverurie being undertaken summer 2019 and timetable enhancements due December 2019. The new station at Kintore is scheduled for completion in May 2020 and the full local rail service between Inverurie and Montrose will be operational from then.
- A Bus Alliance, comprising representatives from NESTRANS, Aberdeen City Council, Aberdeenshire Council along with operators First and Stagecoach has now been set up and comprises a board and executive group.

Clean Vehicles

- The Aberdeen Car Club has continued to expand, with more electric and hydrogen vehicles added to the fleet. It now has 17 electric vehicles, 6 hydrogen fuel cell vehicles and 9 petrol hybrid vehicles as part of its fleet of 45 vehicles.

The electric vehicle charging network has continued to expand, with more charging points located at various locations throughout the City. These include two new rapid triple chargers in Gallowgate (1) and Kingswells Park and Ride (1) alongside the existing rapid and fast chargers at these locations and a new double fast charger at Tanfield Walk. This brings the total number of charge points, which the Council has organised the installation of, up to 106 with 68 of those publicly available and 16 to support electric car club vehicles.

Freight

Eco Stars

The Eco Stars fleet recognition scheme aims to help bus, freight and van fleet operators reduce emissions and running costs. The Aberdeen City and Aberdeenshire

scheme has grown in membership since its launch in 2016. In 2018 there were 83 participating organisations and approximatly 4856 vehicles.

Locking in the Benefits of the Aberdeen Western Peripheral Route (AWPR)

- The Aberdeen Western Peripheral Route (AWPR) is now fully operational with the final section opening in February 2019.
- The Roads Hierarchy Study, undertaken by consultants AECOM, is now finalised and is to be reported to Elected Members in June 2019. This proposes a revised hierarchy in terms of road reclassifications, with signage changes and junction improvements to reinforce the revised hierarchy and improvements for priority and secondary corridors to achieve a more efficient movement of people and goods, with an emphasis on walking, cycling and public transport.
- A draft Sustainable Urban Mobility Plan (SUMP) has been developed and is being reported at the same time as the Roads Hierarchy, with a recommendation that officers go out for public and stakeholder consultation, with a final SUMP going back to committee in November 2019.
- A Strategic Car Parking Review has been undertaken by consultants. Given its links to both the Roads Hierarchy Study and SUMP, it is being reported alongside these in June 2019 in order to better demonstrate the interrelationship between road usage and parking.
- For the Wellington Road multi-modal corridor study, Option development and modelling is taking place between spring and autumn 2019, with option appraisal following thereafter. This will be supported by public and stakeholder engagement at key stages of the process.
- Design work is taking place for Anderson Drive/ Langstracht/ Westburn Road junction to make it more walking and cycling friendly. It is envisaged that designs will be shown to the public by the end of summer 2019.

Local Priorities and Challenges

The main priorities for Aberdeen City Council in the coming year are as follows:

- Undertake studies to better understand how the AWPR has affected traffic levels across Aberdeen City
- Have an adopted Roads Hierarchy and SUMP
- Continue to work with Transport Scotland and other partners to develop a Low Emission Zone for Aberdeen.
- Commence work on refreshing the Active Travel Action Plan for Aberdeen
- Continue to work with partners through the Civitas Portis European project and Smarter Choices Smarter Places programmes and under the Getabout brand to bring about behaviour change and mode shift
- Continue to work with partners to encourage a greater shift towards low carbon and shared vehicles

How to Get Involved

Further information on the Local Transport Strategy, Action Plan and Active Travel Action Plan is available at the following web sites:

https://www.aberdeencity.gov.uk/services/roads-transport-and-parking/local-transport-strategy

City Centre Masterplan:

https://www.aberdeencity.gov.uk/services/strategy-performance-and-statistics/city-centre-masterplan

Further information on the schemes Aberdeen City Council has been delivering on Air Quality Action Plan and Local Transport Strategy actions over previous years can be found on best practice pages on the Energy Saving Trust and Paths for All websites:

Car Club

https://www.energysavingtrust.org.uk/sites/default/files/Aberdeen%20City%20Council.pdf

ITWMC Day

https://www.pathsforall.org.uk/mediaLibrary/other/english/73319.pdf

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1. Local Air Quality Management

This report provides an overview of air quality in Aberdeen City during 2018. 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 Progress Report (APR) summarises the work being undertaken by Aberdeen City Council to improve air quality and any progress that has been made.

Table 1.1 – Summary of Air Quality Objectives in Scotland

Pollutant	Air Quality Objective		Date to be achieved by
	Concentration	Measured as	
Nitrogen dioxide (NO_2)	200 µg/m^3 not to be exceeded more than 18 times a year	1-hour mean	31.12.2005
	40 µg/m^3	Annual mean	31.12.2005
Particulate Matter (PM_{10})	50 µg/m^3, not to be exceeded more than 7 times a year	24-hour mean	31.12.2010
	18 µg/m^3	Annual mean	31.12.2010
Particulate Matter ($PM_{2.5}$)	10 µg/m^3	Annual mean	31.12.2020
Sulphur dioxide (SO_2)	350 µg/m^3, not to be exceeded more than 24 times a year	1-hour mean	31.12.2004
	125 µg/m^3, not to be exceeded more than 3 times a year	24-hour mean	31.12.2004
	266 µg/m^3, not to be exceeded more than 35 times a year	15-minute mean	31.12.2005
Benzene	3.25 µg/m^3	Running annual mean	31.12.2010
1,3 Butadiene	2.25 µg/m^3	Running annual mean	31.12.2003
Carbon Monoxide	10.0 mg/m^3	Running 8-Hour mean	31.12.2003
Lead	0.25 µg/m^3	Annual Mean	31.12.2008

2. Actions to Improve Air Quality

2.1 Air Quality Management Areas

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

A summary of AQMAs declared by Aberdeen City Council can be found in Table 2.1. Further information related to declared or revoked AQMAs, including maps of AQMA boundaries are available online at https://uk-air.defra.gov.uk/aqma/maps.

Table 2.1 – Declared Air Quality Management Areas

AQMA Name	Pollutants and Air Quality Objectives	City / Town	Description	Action Plan
City Centre	• NO_2 annual mean • PM_{10} annual mean & 24 hour mean	Aberdeen	Declared 2001, extended in 2003. PM_{10} included in 2005 & 2011. Amended 2018. An area encompassing a number of properties Union St, King St, Market St, Holburn St and Victoria Road.	Air Quality Action Plan 2011
Anderson Drive	• NO_2 annual mean • PM_{10} annual mean	Aberdeen	Declared in 2008, amended 2011 and 2018. Pockets of exceedances at residential properties along Anderson Drive and Auchmill Road.	Air Quality Action Plan 2011
Wellington Road	• NO_2 annual mean • PM_{10} annual mean & 24 hour mean	Aberdeen	Declared 2008. Residential properties along Wellington Road (Queen Elizabeth II Bridge to Balnagask Rd)	Air Quality Action Plan 2011

2.2 Progress and Impact of Measures to address Air Quality in Aberdeen City

Aberdeen City Council has taken forward a number of measures during the current reporting year of 2018 in pursuit of improving local air quality. Details of all measures completed, in progress or planned are set out in Table 2.2. More detail on these measures can be found in the air quality Action Plan relating to each AQMA. Key completed measures are:

Action 1: Modal Shift and Influencing Travel Choice

- Increase bus use:
    - Continued expansion and development of the Grasshopper multi-operator ticket and new contactless pay on buses
    - Continued promotion of park and ride facilities
    - A Bus Alliance, comprising representatives from NESTRANS, Aberdeen City Council, Aberdeenshire Council along with operators First and Stagecoach has now been set up and comprises a board and executive group.
    - A digital information screen, displaying real-time bus information to staff and visitors in the Council headquarters, has been installed
- Improve Cycling and Walking Provision:
    - Continued expansion of the pedestrian, cycle and Core Path network including the opening of Broad Street as a shared space;
    - Updating of both the Aberdeen and Bridge of Don cycle maps
    - An additional 35 cycle lockers have been implemented at Dyce Railway Station
    - Seven different walking trail leaflets for the City have been created and launched
    - A walking bus for Cults Primary was supported
    - An Origin and Destination study, to better understand where journeys of up to 10km which start or finish in Aberdeen City are taking place, is being undertaken and is due to be concluded in June 2019

  - An Options Appraisal to examine the potential for a bike hire scheme in Aberdeen is being undertaken with a final report being reported to Aberdeen City Council in May 2019. Officers will then report to Council in September 2019 with a recommendation of how to proceed.

- Travel Plans:
  - Through Civitas Portis, a project to work with businesses in the North Dee area of Aberdeen has been extended into the South Dee (Altens and Tullos) area
  - Travel Planning budget support was given to Aberdeen and Robert Gordon Universities and Cults, Middleton Park, and Westpark schools
- Improve public awareness of air quality issues:
  - A project group, comprising representatives of various Aberdeen City Council (ACC) teams, and partners Aberdeenshire Council, Nestrans, NHS Grampian, Transport Scotland and SEPA (the Scottish Environment Protection Agency), has been established to guide the process of identifying and testing options for a Low Emission Zone (LEZ) in Aberdeen. The group are currently developing a range of scenarios for testing before a proposal is put to committee.
  - Stakeholder engagement has commenced regarding an LEZ, with SEPA presenting their preliminary air quality modelling findings to the North East Bus Alliance in February. Officers worked with Transport Scotland to deliver further local stakeholder briefings in May.
  - An I Bike officer contributes to work to deliver targeted and intensive cycling training and promotion to schools in the Bridge of Don Academy and Oldmachar Academy Associated Schools Groups (ASG) clusters. In 2018, the area was extended to take in the Northfield Academy ASG cluster too;
  - Events have taken place throughout the year, often tying in with national and european campaigns such as Bike Week, European Mobility Week and the Sustrans Workplace Challenge.

- The Cycle Tour Series professional road racing event in the city centre in May 2018 also raised the profile of cycling. Officers from the Council were present offering information about sustainable transport to members of the public and offering a bike tagging service. The event will also run in May 2019 with the same presence from officers.

- A road closure and subsequent awareness raising event took place at Westpark Primary School to promote sustainable transport and encourage children to travel to school more sustainably. This took place in September 2018. A Big Cycle event at Middleton Park primary school was also supported

- Bike roadshow events were delivered to schools and workplaces throughout Bikeweek, European Mobility Week and Climate Week

- A marketing campaign to promote the Aberdeen City and Aberdeenshire sustainable transport brand, Getabout, was undertaken involving radio and TV advertising, bus back advertising and a roadshow event in Bon Accord Shopping Centre. A Getabout mascot costume, to encourage further engagement from the public, was also part funded

- The Living Streets Travel Tracker, which allows children to record their journey to school and get points depending on how sustainably they travelled, is operating in some city primary schools.

- Bike doctor sessions have been held in the city centre and a local park

- Previous work with the Aberdeen Business Improvement District and West End Traders to close a street in the West End of the City Centre in order to trial a market has proved so successful that these markets are now being held monthly.

- Car Clubs/Pool Car Schemes;
    - The Aberdeen Car Club has continued to expand, with more electric and hydrogen vehicles added to the fleet. It now has 17 electric vehicles, 6 hydrogen fuel cell vehicles and 9 petrol hybrid vehicles as part of its fleet of 45 vehicles.
- Crossrail
    - This project is being delivered in phases, with dualling between Aberdeen and Dyce completed in summer 2018, additional hourly services now operating between Montrose and Aberdeen calling at all stations, dualling between Dyce and Inverurie being undertaken summer 2019 and timetable enhancements due December 2019. The new station at Kintore is scheduled for completion in May 2020 and the full local rail service between Inverurie and Montrose will be operational from then. Nestrans and Aberdeenshire Council will contribute nearly £6million, and have been successful in an application to the Scottish Stations Fund for 60% of the estimated cost of the re-opening of Kintore Station.
    - The Minister for Transport and Islands announced a Revolution in Rail, a programme of rail capacity, frequency and journey time improvements to be introduced in 2018/19. Key benefits for the North East of Scotland will be: an hourly 'local' service across the City between Inverurie and Montrose, stopping at all stations; additional services to the above to create a half hourly service between Aberdeen and Inverurie (facilitated by completion of the dualling of the Aberdeen to Inverurie section of the Aberdeen-Inverness line) and additional early morning and late evening services to Elgin, Keith, Huntly and Insch from Aberdeen; and an hourly limited stop high speed train service to both Edinburgh and Glasgow, with many trains from Edinburgh and Glasgow extending through to Inverness.

- Public Transport Subsidies
    - Aberdeen City Council has expanded the supported bus network with evening and weekend services in certain areas of the City which are not served by the commercial bus network.
- Car Parking Review
    - A Strategic Car Parking Review has been undertaken by consultants. Given its links to both the Roads Hierarchy Study and Sustainable Urban Mobility Plan (SUMP), it is being reported alongside these in June in order to better demonstrate the interrelationship between road usage and parking.

Action 2: Lower Emissions and Cleaner Vehicles

- Green Vehicle procurement & Fuel/ Charging Infrastructure
    - The electric vehicle charging network has continued to expand, with more charging points located at various locations throughout the City. These include two new rapid triple chargers in Gallowgate (1) and Kingswells Park and Ride (1) alongside the existing rapid and fast chargers at these locations and a new double fast charger at Tanfield Walk. This brings the total number of charge points, which the Council has organised the installation of, up to 106 with 68 of those publicly available and 16 to support electric car club vehicles.
    - As part of the Main Issues Report for the next iteration of the Aberdeen Local Development Plan, members of the public were asked to give their views on the 12 Main Issues identified, one of which is Electric Vehicle Charging Infrastructure (Main Issue number 5). The feedback will then be used to inform the Council's future approach to provision of electric vehicle charge points.
    - The Hydrogen Refuelling Station at Kittybrewster has been upgraded to 700 bar allowing it to refuel cars as well as buses. The current hydrogen fleet in the city is expected to be added to during summer 2019 taking it to 58 hydrogen vehicles in the City driven by a number of

different organisations. Two hydrogen cars are now available to members of the public via Co-wheels and another 15 hydrogen buses are shortly to be ordered.

Action 3: Road Infrastructure

- Pedestrianisation
    - The Broad Street part-pedestrianisation and public realm improvement scheme is now complete.
    - For the Schoolhill Public Realm Enhancement, Stage 1 site works will commence in June. External funding opportunities will be investigated for delivery of Stage 2 works.
- Road
    - The Aberdeen Western Peripheral Route (AWPR) is now fully operational
    - The Roads Hierarchy report, undertaken by consultants AECOM, is now finalised and is to be reported to Elected Members in June. This proposes a revised hierarchy in terms of road reclassifications, with signage changes and junction improvements to reinforce the revised hierarchy and improvements for priority and secondary corridors to achieve a more efficient movement of people and goods, with an emphasis on walking, cycling and public transport.
    - A draft Sustainable Urban Mobility Plan (SUMP) has been developed and is being reported at the same time as the Roads Hierarchy, with a recommendation that officers go out for public and stakeholder consultation, with a final SUMP going back to committee in November 2019.
    - For the Wellington Road multi-modal corridor study, Option development and modelling is taking place between spring and autumn 2019, with option appraisal following thereafter. This will be supported by public and stakeholder engagement at key stages of the process.

- Consultants PBA have been appointed to undertake a STAG Part 2 Appraisal for the External Transportation Links to Aberdeen South Harbour Study. An inception meeting took place in April and the appraisal is expected to be completed by the end of October 2020.
- A report was taken to the Committee in May 2019 concerning the permission for motorcycles to use bus lanes. The committee approved the recommendations to note the outcome of the review of other schemes within the UK and take no further action with regards to the petition to allow motorcycles to use bus lanes.
- A contractor has been appointed to design junction improvements for the Anderson Drive/ Langstracht/ Westburn Road (A92/A944) junction and to identify any additional land requirements. It is envisaged that designs will be shown to the public by the end of summer 2019.
- Road Safety Magic Shows were delivered to 10 Aberdeen Primary Schools
- Design work is taking place for Anderson Drive/ Langstracht/ Westburn junction to make it more walking and cycling friendly. A meeting between the consultant, the Council's Intelligent Transport Systems unit and ACC's Roads Projects Team is being organised in order to further discuss the design and any additional land requirements that may be necessary. It is envisaged that designs will be shown to the public by the end of summer 2019.

Action 4: Traffic Management

- Intelligent Transport System (ITS)
    - There have been 9 new Variable Messaging Signs (VMS) installed on routes on approach to the AWPR which are under Council control.

- Freight and Commercial Vehicle Access
    - Aberdeen City Council has received money from EU Civitas PORTIS project which is looking at sustainable transport opportunities in port cities, including considering access to the Harbour. Activities under this work package include: revisiting freight distribution opportunities for Aberdeen, looking at SMART transport systems for freight and reviewing all freight routes.

Action 5: Planning and Policies

- Produce Supplementary Planning Guidance
    - SG on Transport and Accessibility and Air Quality developed alongside Aberdeen Local Development Plan 2017
- Integration of policies of AQAP with Local Transport Strategy (LTS) and Regional Transport Strategy (RTS)
    - LTS has specific air quality objectives with specific actions contained within the Local Transport Strategy Costed Action and Delivery Plan
    - Active Travel Action Plan has been integrated with the Health and Transport Action Plan. A refresh of this document will commence in 2019.
- Road Hierarchy
    - Covered in Action 3
- Car Parking Policies:
    - Covered in Action 1
- National Lobbying
    - The Low Emission Zone (LEZ) is covered in Action 1
    - The Transport Bill (covering Low Emission Zones, Bus Services, Ticketing Arrangements, Pavement Parking and double Parking, and Road Works) is currently progressing through the Scottish Parliament, through the Rural Economy and Connectivity Committee. It completed Stage 1 in April 2019. Officers from ACC's Traffic Management Team are

currently on the Working Group to develop the Guidance Document for the footway parking and double-parking elements of the Bill

- Work to update the National Transport Strategy for Scotland by Transport Scotland is currently underway.

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

- The Strategic Car Parking Review and the Sustainable Urban Mobility Plan both rely on the Roads Hierarchy Study. All three are now being dealt with together and Committee approval to continue to develop all three is now being sought in June 2019,
- The implementation of a Controlled Parking Zone in the North Dee area has been delayed due to a the Strategic Car Parking Review and a masterplan being developed for the North Dee area.
- The Origin and Destination study has been held up due to delays in the National Records for Scotland releasing the required data.
- Issues with accessing suitable contacts for businesses in the North Dee area for the Civitas Portis travel planning project.
- Reporting of the Strategic Car Parking Review and SUMP projects have now been delayed in order to better reflect and align with the Roads Hierarchy Study.

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

- Walking and cycling infrastructure – further measures to improve walking and cycling networks
- Improve public awareness – continued participation in European Mobility Week and Bike Week and other events and to continue to work with partners to develop Getabout brand
- Car Clubs/ Car Sharing – further expansion of the Car Club
- Green Vehicle procurement & Fuel/ Charging Infrastructure –additional electric vehicle charging points

- An Origin and Destination study, to better understand where journeys of up to 10km which start or finish in Aberdeen City
- An Options Appraisal to examine the potential for a bike hire scheme in Aberdeen
- ITS – continued expansion of Bluetooth journey time monitoring alongside ANPR and Variable Messaging Systems (VMS) across the City

Table 2.2 – Progress on Measures to Improve Air Quality

No.	Measure	Category	Focus	Lead Authority	Planning Phase	Implementation Phase	Key Performance Indicator	Target Pollution Reduction in the AQMA	Progress to Date	Estimated Completion Date	Comments
1 MODAL SHIFT AND INFLUENCING TRAVEL CHOICE											
1.1a	Increase bus use	Alternatives to private vehicle use	Delivery of standards and targets agreed by Bus Quality Partnership	North East of Scotland Bus Alliance	2010	Ongoing	10.8% employed adults not working from home, resident in Aberdeen City, bus to work (2015)	Not quantifiable	A Bus Alliance, comprising representatives from NESTRANS, Aberdeen City Council, Aberdeenshire Council along with operators First and Stagecoach has now been set up and comprises a board and executive group. This supercedes the Local Authority and Bus Operators Forum (LABOF)	Ongoing	
1.1b			Increase corridors covered by BPIP (currently voluntary)	North East of Scotland Bus Alliance	2010	Ongoing	10.8% employed adults not working from home, resident in Aberdeen City, bus to work (2015)	Not quantifiable	CIVITAS funding secured for looking at A96 corridor	Ongoing	
1.1c			Integrated Ticketing	North East of Scotland Bus Alliance / Transport Scotland	No defined start date	Unknown		Not quantifiable	Transport Scotland taking forward for Scotland. Multi-operator Grasshopper ticket for North East Scotland continues to be promoted with and contactless pay option now available on buses	Unknown	Transport App, to be developed through CIVITAS PORTIS, will also link to buses

No.	Measure	Category	Focus	Lead Authority	Planning Phase	Implementation Phase	Key Performance Indicator	Target Pollution Reduction in the AQMA	Progress to Date	Estimated Completion Date	Comments
1.2a	Improve Cycling & Walking Provision	Alternatives to private vehicle use	Core Paths Plan	ACC	2015-16	2019	Scottish Household Survey; LTS Annual Monitoring Report	Not quantifi-able	Core Paths Plan revisions identified by ACC. Various routes continue to be upgraded and installed. This includes Broad St, part of CP21, which is now open as a shared space (peds, cyclists and buses only)	Ongoing	Small scale review of the Core Paths Plan to take place beyond 2019/20.
1.2b			Cycling Strategy/ Active Travel Action Plan	ACC	2015-16	2016	Scottish Household Survey; LTS Annual Monitoring Report, Cityvoice	Not quantifi-able	Active Travel Action Plan adopted January 2017	Work ongoing.	Refresh of Active Travel Action Plan to begin in 2019/20

No.	Measure	Category	Focus	Lead Authority	Planning Phase	Implementation Phase	Key Performance Indicator	Target Pollution Reduction in the AQMA	Progress to Date	Estimated Completion Date	Comments
1.3a	Travel Plans	Promoting travel alternatives	Existing Organisations	ACC & Nestrans	2015-16	2016 onwards	No. organisation adopting TPs; No. employees covered by TPs, progress of travel plans in study area (North Dee)	Not quantifi-able	Travel planning work being undertaken in the North Dee and South Dee areas of Aberdeen as part of Civitas Portis EU funded project	2017	Civitas work to run until August 2020. Looking to undertake work in Dyce area too.
1.3b			New Developments	ACC	2014-16	2016 onwards		Not quantifi-able	Technical Advice Note (TAN) for Travel Planning drafted.Guidance for new developments contained in Transport and Accessibility Supplementary Guidance	2019	Supplement-ary Guidance adopted in 2017
1.3c			Council	ACC	Ongoing	2003 onwards	51.4% of Council staff use sustainable modes to travel to work (CTP Survey 2016)	Not quantifi-able	This rose to 51.7% in the 2018 staff travel survey (undertaken in November/ December 2018)	Ongoing	Next survey to be undertaken in 2020

No.	Measure	Category	Focus	Lead Authority	Planning Phase	Implementation Phase	Key Performance Indicator	Target Pollution Reduction in the AQMA	Progress to Date	Estimated Completion Date	Comments
1.4a	Improve public aware-ness of air quality issues	Public information	Use of Variable Messaging System (VMS)	ACC & Transport Scotland	Ongoing	Ongoing	N/A	Not quantifi-able	There have been 9 new Variable Messaging Signs (VMS) installed on routes on approach to the AWPR which are under Council control.	Ongoing	Discussions still ongoing about Council linking to VMS on AWPR
1.4b			ACC Website Improvements	ACC	2011	Ongoing	N/A	Not quantifi-able			
1.4c			'Airtext' Alert Service	ACC			No. of service users	Not quantifi-able			

No.	Measure	Category	Focus	Lead Authority	Planning Phase	Implementation Phase	Key Performance Indicator	Target Pollution Reduction in the AQMA	Progress to Date	Estimated Completion Date	Comments
1.4d			Undertake air quality and sustainable travel events with Getabout Partnership	Get About	Ongoing	Ongoing	Events taking place	Not quantifi-able	Events have taken place throughout the year, often tying in with national and european campaigns such as Bike Week, European Mobility Week and the Sustrans Workplace Challenge. The Cycle Tour Series professional road racing event in the city centre in May 2018 also raised the profile of cycling. Officers from the Council were present offering information about sustainable transport to members of the public and offering a bike tagging service. The event will also run in May 2019 with the same presence from officers.	Ongoing	Linked to Smarter Choices, Smarter Places Programme Have also bid for SCSP funding in 2019/20 financial year

No.	Measure	Category	Focus	Lead Authority	Planning Phase	Implementation Phase	Key Performance Indicator	Target Pollution Reduction in the AQMA	Progress to Date	Estimated Completion Date	Comments
1.4d Cont.									A road closure and subsequent awareness raising event took place at Westpark Primary School to promote sustainable transport and encourage children to travel to school more sustainably. This took place in September 2018. A Big Cycle event at Middleton Park primary school was also supported Bike roadshow events were delivered to schools and workplaces throughout Bikeweek, European Mobility Week and Climate Week		

No.	Measure	Category	Focus	Lead Authority	Planning Phase	Implementation Phase	Key Performance Indicator	Target Pollution Reduction in the AQMA	Progress to Date	Estimated Completion Date	Comments
1.4e			Information Marketing Initiatives (Walk to School)Events	ACC/Get about	Ongoing	Ongoing			An I Bike officer contributes to work to deliver targeted and intensive cycling training and promotion to schools in the Bridge of Don Academy and Oldmachar Academy Associated Schools Groups (ASG) clusters. In 2018, the area was extended to take in the Northfield Academy ASG cluster too; A marketing campaign to promote the Aberdeen City and Aberdeenshire sustainable transport brand, Getabout, was undertaken involving radio and TV advertising, bus back advertising and a roadshow event in Bon Accord Shopping Centre. A Getabout mascot costume, to encourage further engagement from the public, was also part funded		Linked to Smarter Choices, Smarter Places (SCSP) Programme. Have also bid for SCSP funding in 2019/20 financial year

No.	Measure	Category	Focus	Lead Authority	Planning Phase	Implementation Phase	Key Performance Indicator	Target Pollution Reduction in the AQMA	Progress to Date	Estimated Completion Date	Comments
1.4e Cont.									The Living Streets Travel Tracker, which allows children to record their journey to school and get points depending on how sustainably they travelled, is operating in some city primary schools. Bike doctor sessions have been held in the city centre and a local park Updating of both the Aberdeen and Bridge of Don cycle maps Seven different walking trail leaflets for the City have been created and launched A walking bus for Cults Primary was supported		

No.	Measure	Category	Focus	Lead Authority	Planning Phase	Implementation Phase	Key Performance Indicator	Target Pollution Reduction in the AQMA	Progress to Date	Estimated Completion Date	Comments
1.5a	Car Clubs / Car Pool Schemes	Alternatives to private vehicle use	General Public	ACC	2011	Ongoing	1,800 members of the Aberdeen Car Club (April 2018	Estimate 0 – 1 µg/m3	The Aberdeen Car Club has continued to expand, with more electric and hydrogen vehicles added to the fleet. It now has 17 electric vehicles, 6 hydrogen fuel cell vehicles and 9 petrol hybrid vehicles as part of its fleet of 45 vehicles. 2011 members as of end March 2019	Ongoing	New locations at Craiginches, Cornhill and Garthdee funded through Developer Contributions and 2 new publicly-accessible hydrogen vehicles at Gallowgate and East Craibstone Street
1.5b			Corporate	ACC	2011	Ongoing	33 vehicles available to members of the public (April 2018)	Estimate 0 – 1 µg/m3	12 vehicles available for the Council to utilise, (9 on fully exclusive use and 3 shared with public) on exclusive use and another three fully exclusive by RGU University	Ongoing	Trials on-going with hydrogen vehicles and electric van with hydrogen range extender

No.	Measure	Category	Focus	Lead Authority	Planning Phase	Implementation Phase	Key Performance Indicator	Target Pollution Reduction in the AQMA	Progress to Date	Estimated Completion Date	Comments
1.6a	Rail Improve-ments	Alternatives to private vehicle use	Local rail improvements	Transport Scotland/ Nestrans	Ongoing	2018-19	8 railway stations in the North East in 2017. Current modal share 0.6% (2011 Census data as no results from SHS)	Estimate 0 – 1 µg/m3	Scottish Government has announced programme of improvements to be introduced in 2018/19. Kintore Station funding package being consolidated. A to I track re-doubling is underway. Inverurie Station car park extended in 2017, improving the rail park and ride offering to Aberdeen. More cycle lockers (35) have been implemented Dyce Railway Station	>2019	
1.6b			Infrastructure improvements	Transport Scotland/ Nestrans	Ongoing	2019	Studies and infrastructure delivered	Not quantifiable	Investigation works underway to determine programme for Aberdeen to Inverness rail improvements	2019 – Phase 1	
1.7	Rail Freight	Freight and delivery management	Modal Shift from road to rail	Nestrans	Ongoing	Ongoing	166,000 tonnes of goods to or from the region carried by rail freight (2013)	Not quantifiable	New rail freight strategy for Scotland launched in 2016	Ongoing	

No.	Measure	Category	Focus	Lead Authority	Planning Phase	Implementation Phase	Key Performance Indicator	Target Pollution Reduction in the AQMA	Progress to Date	Estimated Completion Date	Comments
2 LOWER EMISSIONS AND CLEANER VEHICLES											
2.1a	Green Vehicle procurement & Fuel/ Charging Infrastructure	Transport planning and infras-tructure	Council Fleet	ACC	Ongoing	Ongoing	100% Euro IV or better in Council's fleet (April 2017)	Not quantifiable	EVs continue to form part of the Council fleet. Purchase of hydrogen buses (2014) and opening of hydrogen refuelling stations (2015 and 2017). Working with Co-wheels, who provide managed pool car to the Council, to continue to green the fleet. The Hydrogen Refuelling Station at Kittybrewster has been upgraded to 700 bar allowing it to refuel cars as well as buses	Ongoing	Continued investment in both hydrogen and ev infrastructu re by the Council. Taking part in European project to introduce hydrogen vehicles to Council fleet.
2.1b			QBP	LABOF	2012	2014	First Bus have 60% Euro IV buses or better Stagecoach have 85% Euro IV buses or better	Not quantifiable	Purchase of hydrogen buses run by First and Stagecoach	Initial tranche completed	Another 15 hydrogen buses are due to be ordered.

2.1c			Installa-tion of electric vehicle charging points	ACC	Ongoing	Ongoing	Installaitons organised by the Council. – 62 public charge points, 16 for car club only and 22 for Council fleet/ visitors only	Not quantifiable	The electric vehicle charging network has continued to expand, with more charging points located at various locations throughout the City. These include two new rapid triple chargers in Gallowgate (1) and Kingswells Park and Ride (1) alongside the existing rapid and fast chargers at these locations and a new double fast charger at Tanfield Walk - EV charge point standards for new development parking now in Local Development Plan (2017) Transport and Accessibility Supplementary Guidance As part of the Main Issues Report for the next iteration of the Aberdeen Local Development Plan, members of the public were asked to give their views on the 12 Main Issues identified, one of which is Electric Vehicle Charging Infrastructure (Main Issue number 5). The feedback will then be used to inform the Council's future approach to provision of electric vehicle charge points	Ongoing	Under-taken through the SGs/ Transport Scotland and Energy Saving Trust Grants

No.	Measure	Category	Focus	Lead Authority	Planning Phase	Implementation Phase	Key Performance Indicator	Target Pollution Reduction in the AQMA	Progress to Date	Estimated Completion Date	Comments
2 LOWER EMISSIONS AND CLEANER VEHICLES											
2.2a	Emissions Testing & Idling Enforcement	Public informa-tion	Roadside Emission Testing	ACC	Ongoing	Ongoing	No. of tests / fails	Not quantifiable	No tests undertaken in 2016/17		
2.2b			Idling Vehicles	ACC			No. cautions	Not quantifiable	Radio adverts and school patrols being undertaken in 2017		
2.3a	Taxis	Vehicle fleet efficiency	Non-idling signs	ACC	Ongoing	On hold	Spatial coverage of signs	Not quantifiable	Idling signage not currently being pursued	Ongoing	
2.3b			Licensing : vehicle inspect-ions, emiss-ions restrict-ions	ACC			Fleet emissions profile improvement	Not quantifiable			

No.	Measure	Category	Focus	Lead Authority	Planning Phase	Implementation Phase	Key Performance Indicator	Target Pollution Reduction in the AQMA	Progress to Date	Estimated Completion Date	Comments
2 LOWER EMISSIONS AND CLEANER VEHICLES											
2.4	Low Emission Zone	Environ-mental Permits	Low Emission Zone	Transport Scotland, ACC & Nestrans	2011	Not yet identified	Not yet identified	TBC through CAFS implemen-tation	A project group, comprising representatives of various Aberdeen City Council (ACC) teams, and partners Aberdeenshire Council, Nestrans, NHS Grampian, Transport Scotland and SEPA,was established to guide the process of identifying and testing options for a Low Emission Zone (LEZ). The group are currently developing a range of scenarios for testing before a proposal is put to committee. Stakeholder engagement commenced on LEZ, with SEPA presenting their preliminary air quality modelling findings to the North East Bus Alliance in February. Officers worked with Transport Scotland to deliver further local stakeholder briefings in May.	Ongoing	Potential actions being explored/ taken forward by steering group. Linked to City Centre Masterplan

No.	Measure	Category	Focus	Lead Authority	Planning Phase	Implementation Phase	Key Performance Indicator	Target Pollution Reduction in the AQMA	Progress to Date	Estimated Completion Date	Comments
3 ROAD INFRASTRUCTURE											
3.1	Pedestrian-isation	Transport planning and infrastructure	Union Street and Broad Street	ACC	2008	2016	N/A	TBC	City Centre Masterplan approved. Part-pedestrianis-ation of Broad Street now under construction now complete. For the Schoolhill Public Realm Enhancement, Stage 1 site works will commence in June. External funding opportunities will be investigated for delivery of Stage 2 works	2017	Part of overall City Centre master-plan propos-als. Union Street now proposed as bus priority rather than pedest-rianised

No.	Measure	Category	Focus	Lead Authority	Planning Phase	Implementation Phase	Key Performance Indicator	Target Pollution Reduction in the AQMA	Progress to Date	Estimated Completion Date	Comments
3 ROAD INFRASTRUCTURE											
3.2a	Road Building / Junction Alterations	Transport planning and infrastructure	Aberdeen Western Peripheral Route	AWPR Managing Agent	2008	2015-2017	Monitoring data from permanent traffic counters on Anderson Drive, Market Street and Wellington Road	0 – 1 µg/m3 for PM10 and NO2 (Market St and Anderson Dr)	Now open. Final section opened in Feb 2019	Complete	**Trunk Road**
3.2b			Haudagain Improvements	Transport Scotland	Implem-entation to comm-ence upon comple-tion of AWPR	2018	Delivery of scheme	TBC undergoing assessment	Demolition underway in Middlefield	2019	Haud-again upgrade will commen ce on comple-tion of the AWPR.

No.	Measure	Category	Focus	Lead Authority	Planning Phase	Implementation Phase	Key Performance Indicator	Target Pollution Reduction in the AQMA	Progress to Date	Estimated Completion Date	Comments
4 TRAFFIC MANAGEMENT											
4.1	Intelligent Transport System (ITS)	Traffic management	To reduce city centre congestion	ACC	Ongoing	Ongoing	Predicted traffic flow impacts; air quality modelling; Monitoring data when operational; LTS monitoring data	Not quantifiable	Bluetooth monitoring installed on A96 corridor linking the Park & Choose to the city centre. There have been 9 new Variable Messaging Signs (VMS) installed on routes on approach to the AWPR which are under Council control.	On going	Linked to Civitas Portis proposal

No.	Measure	Category	Focus	Lead Authority	Planning Phase	Implementation Phase	Key Performance Indicator	Target Pollution Reduction in the AQMA	Progress to Date	Estimated Completion Date	Comments
4 TRAFFIC MANAGEMENT											
4.2	High Occupancy Vehicle (HOV) Lane	Traffic management	Stonehaven Road	ACC	2011	Subject to implem-entation of AWPR and A90 south P&C		Not quantifiable	Feasibility study complete	Subject to implement ation of AWPR and A90 south P and R	Linked to Wellington Road improve-ment. Option develop-ment and modelling is taking place between spring and autumn 2019, with option appraisal following thereafter. This will be supported by public and stake-holder engage-ment at key stages of the process

4.3a	Freight and Commer-cial Vehicle Access	Freight and delivery management	HGV Priority Measures	ACC	Ongoing	Unknown	N/A	Not quantifiable	Roads Hierarchy report, completed by consultants AECOM, to be reported to Elected Members in June. Proposed revised hierarchy of road reclassifi-cations, with signage changes and junction improve-ments to reinforce the revised hierarchy and improve-ments for priority and secondary corridors to achieve a more efficient movement of people and goods, with emphasis on walking, cycling and public transport.	Further detailed work required then implement ation subject to funding availability	Linked to AWPR signage strategy

No.	Measure	Category	Focus	Lead Authority	Planning Phase	Implementation Phase	Key Performance Indicator	Target Pollution Reduction in the AQMA	Progress to Date	Estimated Completion Date	Comments
4 TRAFFIC MANAGEMENT											
4.3b			Commercial Delivery Strategy (routing, timing, idling control)	ACC	2015	Further detailed work required	Actions contained within SUMP and Roads Hierarchy Study relating to this issue	Not quantifiable	As per 4.3a above	2017	Linked to AWPR Locking in the Benefits and City Centre Masterplan / Sustain-able Urban Mobility Plan proposals and Strategic Car Parking Review
4.3c			Freight Consolida-tion Centre	ACC	Ongoing	Unknown	Delivery of study	Not quantifiable	Freight improvement feasibility funding contained within Civitas Portis application.	To be determined	

No.	Measure	Category	Focus	Lead Authority	Planning Phase	Implementation Phase	Key Performance Indicator	Target Pollution Reduction in the AQMA	Progress to Date	Estimated Completion Date	Comments
5 PLANNING AND POLICIES											
5.1a	Produce Supple-mentary Planning Guidance	Policy guidance and develop-ment control	Improve Development Control	ACC	Ongoing	Ongoing	Database of permitted developm ent	Not quantifiable	New SGs produced for Air Quality and Noise. Transport and Accessibility SG updated and contains policy relating to sustainable and low carbon transport. Now adopted as part of Aberdeen Local Development Plan (2017)	2017	New developments now 'master-planned' and consider layout of the develop-ment for ped/ cycle/ public transport movements first.
5.1b			Section 75 monetary contributions	ACC	Ongoing	Ongoing	Database of contributi ons and what they have funded.	Not quantifiable	Contributions sought for sustainable transport improvements: core paths, car club, public transport infrastructure and pedestrian safety improvements such as pedestrian crossings, etc.	Ongoing	4 new car club cars have already been delivered using Developer Contributions
5.1c			Construction Code of Practice	ACC			Database of developm ents signing CCoP	Not quantifiable			

No.	Measure	Category	Focus	Lead Authority	Planning Phase	Implementation Phase	Key Performance Indicator	Target Pollution Reduction in the AQMA	Progress to Date	Estimated Completion Date	Comments
5 PLANNING AND POLICIES											
5.2	Integration of AQAP with LTS and RTS	Policy guidance and develop-ment control		ACC and Nestrans	2013-15	2016-21	N/A	Not quantifiable	Air quality and noise embedded within the LTS with specific objectives and actions to improve	2021	LTS adopted in January 2016
5.3	Integration of AQAP with Health and Transport Action Plan (HTAP)	Policy guidance and develop-ment control	Highlight Health Impacts	ACC / NHS	Ongoing	On-going	N/A	Not quantifiable	HTAP agreed and Steering Group/Board being refreshed	On-going	Aberdeen Active Travel Action Plan has been integrated with the Health and Transport Action Plan. A refresh of this document will commence in 2019.

No.	Measure	Category	Focus	Lead Authority	Planning Phase	Implementation Phase	Key Performance Indicator	Target Pollution Reduction in the AQMA	Progress to Date	Estimated Completion Date	Comments
5 PLANNING AND POLICIES											
5.4	Road Hierarchy	Transport planning and infrastruc-ture	Reclassific-ation of Union St / Denburn (requires TRO)	ACC	2015-16	2019 and beyond	N/A	Not quantifiable	Roads Hierarchy report, completed by consultants AECOM, to be reported to Elected Members in June. Proposed revised hierarchy of road reclassifi-cations, with signage changes and junction improve-ments to reinforce the revised hierarchy and improve-ments for priority and secondary corridors to achieve a more efficient movement of people and goods, with emphasis on walking, cycling and public transport.	2030	Linked to AWPR Locking in the Benefits and City Centre Masterplan/ Sustain-able Urban Mobility Plan proposals and Strategic Car Parking Review

No.	Measure	Category	Focus	Lead Authority	Planning Phase	Implementation Phase	Key Performance Indicator	Target Pollution Reduction in the AQMA	Progress to Date	Estimated Completion Date	Comments
5 PLANNING AND POLICIES											
5.5a	Car Parking Policies	Policy guidance and develop-ment control	Low Emission Vehicle Parking Incentives	ACC	Ongoing	On hold	no. of low emissions permits as proportio n of total	Not quantifiable	Considered as part of a package of measures as part of the Low Emission Strategy for the City and in Strategic Car Parking Review.	Unknown	Given its links to both the Roads Hierarchy Study and Sustain-able Urban Mobility Plan (SUMP), the SCPR is being reported alongside these in June 2019 in order to better demonst-rate the interrela-tionship between road usage and parking
5.5b			Limit car parking for new developments	ACC	2013	Ongoing	N/A	Not quantifiable	Revised parking standards included in Local Development Plan 2017 and associated Transport and Accessibility Supplementary Guidance (now adopted).	Ongoing	City Centre Masterplan proposes zero parking for new office develop-ments

No.	Measure	Category	Focus	Lead Authority	Planning Phase	Implementation Phase	Key Performance Indicator	Target Pollution Reduction in the AQMA	Progress to Date	Estimated Completion Date	Comments
5 PLANNING AND POLICIES											
5.5c			Development of Local and Regional Car Parking Policies	ACC & Nestrans	Ongoing	Ongoing	N/A	Not quantifiable	Regional Car parking Strategy adopted 2012. Revised parking standards included in Aberdeen Local Development Plan 2017 and Transport and Accessibility Supplementary Guidance. Strategic car Parking review near completion	Ongoing	Given its links to both the Roads Hierarchy Study and Sustainable Urban Mobility Plan (SUMP), the SCPR is being reported alongside these in June 2019 in order to better demonstrate the interrelationship between road usage and parking

No.	Measure	Category	Focus	Lead Authority	Planning Phase	Implementation Phase	Key Performance Indicator	Target Pollution Reduction in the AQMA	Progress to Date	Estimated Completion Date	Comments
5 PLANNING AND POLICIES											
5.6a	National Lobbying	Transport planning and infrastruc-ture	Incentives/ funding/tax breaks for Low Emission Initiatives	ACC	2011	Ongoing	N/A	Not quantifiable	EVs continue to have some sort of subsidisation by the Government. Grants for home and workplace charging facilities available through Home Energy Scotland. Council continue to offer EV charging service for free until March 2019 at least (although users still expected to pay parking charges where they apply).	Ongoing	As part of the Main Issues Report for the next iteration of the Aberdeen Local Development Plan, members of the public were asked to give their views on the 12 Main Issues identified, one of which is Electric Vehicle Charging Infrastructure (Main Issue number 5). The feedback will then be used to inform the Council's future approach to planning for electric vehicles
5.6b			Shipping Emissions Reductions	ACC	2011	Ongoing	N/A	Not quantifiable	No work being undertaken currently	Ongoing	
5.6c			HGV/Bus Scrappage schemes	ACC	2011	Ongoing	N/A	Not quantifiable	No work being undertaken currently	Ongoing	

No.	Measure	Category	Focus	Lead Authority	Planning Phase	Implementation Phase	Key Performance Indicator	Target Pollution Reduction in the AQMA	Progress to Date	Estimated Completion Date	Comments
6 NON-TRANSPORT MEASURES											
6.1	Control Biomass Installations	Policy guidance and development control	Enforce new developments to only install 'cleanest' biomass boilers	ACC	2012	Ongoing	Database of appliances installed	Not quantifiable	Air Quality Supplementary Guidance written in 2012. Guidance has been updated as part of new ALDP 2016 but not yet adopted.	2016/ on-going	
6.2	Industry Permitting	Environmental permits		ACC and SEPA			N/A	Not quantifiable			
6.3	Tree Planting	Promoting low emission plants	Pro-active planting of tree species with a positive air quality impact and avoid planting varieties that may have detrimental air quality impact	ACC			N/A	Not quantifiable	Policies contained within ALDP Supplementary Guidance (2016) robust policy to achieve this as part of development		
6.4	Shipping	Freight and delivery management	Consider actions available at Aberdeen Harbour	ACC & Aberdeen Harbour			Pollutant monitoring	Not quantifiable	Work being undertaken as part of Civitas Portis project with Aberdeen Harbour		

2.3 Cleaner Air for Scotland

Cleaner Air for Scotland – The Road to a Healthier Future (CAFS) is a national cross-government strategy that sets out how the Scottish Government and its partner organisations propose to reduce air pollution further to protect human health and fulfil Scotland's legal responsibilities as soon as possible. A series of actions across a range of policy areas are outlined, a summary of which is available at http://www.gov.scot/Publications/2015/11/5671/17.

Officers represent the Council on the CAFS Leadership and Governance Groups and the National Low Emissions Framework and National Modelling Framework working groups, supporting the development of actions to assist the delivery of CAFS and the introduction of Low Emission Zones (LEZs).

The Council's 2017 Manifesto instructed the Chief Executive to prepare a business case around the feasibility of a Low Emission Zone throughout the city. This instruction is consistent with the Scottish Government's Programme for Governance 2017-18 which made a commitment to introduce a Low Emission Zones in one city by 2018 and the other 3 main cities, including Aberdeen by 2020. Several air quality reports and bulletins were presented to Full Council and relevant Committees in 2016, 2017 and 2018 to inform elected members of developments both locally and nationally and the implications for the Council.

A major traffic count was carried out across the city over a 2 week period in March 2017 to enable the update of the Aberdeen air quality model developed by SEPA. Meetings took place during 2017 and 2018 to update and further develop the model, including the encorporation of emissions from Aberdeen Harbour. The model development was completed in July 2018 and the model subsequently used to source apportion pollution concentrations to vehicle classifications. While all vehicle types contributed to emissions, buses contributed the greatest proportion across the majority of the City Centre AQMA. Scenario testing of the impact of possible interventions was also undertaken.

Modelling output will be used in 2019 to further support the development of LEZ options. The southern section of the Aberdeen Western Peripheral Route (Craibstone – Stonehaven) opened in December 2018 and the northern section (Craibstone – Parkhill) in February 2019. The AWPR will significantly change traffic flows across the

AQMAs. Although model scenario testing used predicted post-AWPR traffic flows, further traffic counts are proposed in 2019 to assess the new flows and further support Aberdeen's LEZ feasibility study.

Section 2.2 and Table 2 summarise actions being progressed as part of the AQAP. The City Centre Masterplan, adopted in June 2015, sets out the Council's long term vision to regenerate the City Centre and create a more energetic, enthusiastic and fascinating place to live, work and visit. A key 'Place Making' vision is to reduce city centre car journeys by 40% creating a more attractive environment to live, walk and cycle. The masterplan aims to provide a more sustainable transport network and compliments aims of the LEZ feasibility study.

2.3.1 Transport – Avoiding travel – T1

All local authorities should ensure that they have a corporate travel plan (perhaps within a carbon management plan) which is consistent with any local air quality action plan. Aberdeen City Council's 2001 corporate travel plan, updated in 2006, is due to be refreshed. However, staff have access to pages on the Council Intranet which provide information about travel choices to work. As part of its corporate travel plan, the council undertakes a biannual staff travel survey to identify how staff usually travel to work. The most recent survey was November 2018 when 824 responses were received and the next survey is due to take place in 2020. The data will be used to inform any future travel plan.

2.3.2 Climate Change – Effective co-ordination of climate change and air quality policies to deliver co-benefits – CC2

Scottish Government expects any Scottish local authority which has or is currently developing a Sustainable Energy Action Plan (SEAP) to ensure that air quality considerations are covered. Aberdeen City Council has developed its own SEAP, Powering Aberdeen: Aberdeen's Sustainable Energy Action Plan. The plan was approved at Full Council on 6 October 2016. Details are available at:

Aberdeen's Sustainable Energy Action Plan

2.3.3 Projects in Aberdeen City

Portis Civitas EU project

A consortium of partners, including Aberdeen City Council and NESTRANS, was awarded a £23.2m EU grant for a north east transport project that aims to improve travel in the area. The funding is over 4 years and will be used to examine transport solutions with a connection to port operations, supporting sustainable urban mobility through changes in behaviour and attitude. Various work streams are being progressed including actions to 'lock in' the benefits of the AWPR, improve cross – city connectivity, walking and cycling initiatives and Travel Planning Quarterly meetings take place to manage the project and ensure work streams are progressing.

3. Air Quality Monitoring Data and Comparison with Air Quality Objectives

3.1 Summary of Monitoring Undertaken

3.1.1 Automatic Monitoring Sites

This section sets out what monitoring has taken place and how local concentrations of the main air pollutants compare with the objectives.

Aberdeen City Council undertook automatic (continuous) monitoring at 6 sites during 2018. Table A.1 in Appendix A shows the details of the sites. National monitoring results are available at www.scottishairquality.scot.

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

Further details on how the monitors are calibrated and how the data has been adjusted are included in Appendix C.

The Union Street and Market Street continuous monitoring sites are on busy city centre roads and are representative of population exposure for NO_2, PM_{10} and $PM_{2.5}$. Union Street is the city's main shopping street with shops on the ground level and commercial premises and flats on the 1st, 2nd and 3rd floors. Almost all of the city's bus routes pass along at least part of Union Street and the inside lane of both sides of the road are designated bus lanes.

Market Street is adjacent to Aberdeen Harbour and has a high proportion of HGV's travelling between the north-east of Scotland, the Harbour and locations to the south of Aberdeen. The street is used by pedestrians travelling to the city centre from residential properties to the south of the river Dee, visiting the Union Square retail park and people working around the Harbour area. There are a small number of 1st, 2nd and 3rd floor flats. Emissions from Aberdeen Harbour also contribute to the pollution on Market Street.

The Anderson Drive site is 4m from the kerb and is not representative of population exposure as residential properties are set back 10-20m from the kerb. Similarly the site at Wellington Road is around 3-4m closer to the kerb than residential properties in the area. The nearest properties are 10m from the King Street site, however the location is typical of flatted properties close to the kerb at other locations on King Street.

Errol Place is representative of typical residential properties close to the city centre but not adjacent to a major road and provides urban back ground data.

The automatic monitoring sites at Union Street, Market Street, Wellington Road and Anderson Drive are located within AQMAs.

The King Street site is not located within an AQMA but is relatively close to the City Centre in an area of high traffic flow.

3.1.2 Non-Automatic Monitoring Sites

Aberdeen City Council undertook non- automatic (passive) monitoring of NO_2 at 70 sites during 2018. Table A.2 in Appendix A shows the details of the sites.

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

Diffusion tubes on Market Street, Union Street and the majority of those on Holburn Street and King Street within the city centre are at building façade and are representative of population exposure. Some of the tubes out with the city centre are at roadside locations with the façade of the nearest relevant property 5-20m back from the roadside. Procedures within LAQM.TG 16 have been used to estimate the concentration at the nearest receptor where appropriate.

3.2 Individual pollutants

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

3.2.1 Nitrogen Dioxide (NO_2)

Table A.3 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.

Table C.2 in Appendix C details the annualisation of diffusion tubes that did not have a data capture greater than 75%.

Table C.3 in Appendix C details diffusion tube concentrations at the nearest receptors using calculations to façade.

For diffusion tubes, the full 2018 dataset of monthly mean values is provided in Appendix B.

All automatic monitoring site data in 2018 is comparable to 2017 levels. Concentrations at all automatic sites were below the annual mean air quality objective of 40 µg/m^3. This is the first time this has occurred in the last 5 years.

Diffusion tubes located along Union Street suggest exceedances of the objective throughout this area of the city centre AQMA continue. Levels recorded in these locations are also comparable to levels recorded in 2017. No monitoring occurred at DT13 due to ongoing buidling works at this location preventing access. Monitoring recommenced in January 2019 and will reported in next year's update.

Although the automatic site at Market Street which is located within the city centre AQMA, recorded a level below the annual mean objective, diffusion tubes DT9 and DT10 located in the Market Street area recorded levels above the objective, suggesting excedances of the annual mean continues at more congested or enclosed areas. This is evident at a new tube location, DT82, at Virgina Street. However, the diffusion tube DT16, located at Trinity Quay, continued to record an annual mean level below the objective.

The King Street continuous monitor is outside of the city centre AQMA and measured concentrations continue to be well below the annual mean objective. Diffusion tubes within the AQMA on King Street and East North Street continue to exceed the objective.

Within the Wellington Road AQMA the annual mean levels recorded at the Wellington Road automatic site and the 2 diffusion tube locations (DT7, DT36) continued to be below the annual mean objective. Diffusion tube DT37 located on Wellington Road just outside of the AQMA is also well below the objective. Two additional monitoring locations (DT84 and DT85) commenced in 2018 at the Wellington Road Altens round about. These were installed to assess roadside levels where children are likley to be crossing the road to attend the new Lochside Academy which opened in 2018. Data

is currently limited at these two sites, however the levels recorded suggest the annual average is likley to be well below the annual mean objective.

The only exceedance of the annual mean objective in the Anderson Drive AQMA was recorded at the Haudagain round about diffusion tube (DT39), suggesting continued localised exceedances at this busy junction. The impact of the opening of the Aberdeen Western Periferal Route and Haudagain improvement works, on this area, are discussed in Section 4.1.

Nitrogen dioxide levels at monitoring locations outside the AQMAs remain well below the annual mean objective except for Skene Square where diffusion tube data suggest levels continue to be just below/on the threshold of the annual mean objective (DT37, DT73 and DT74).

Monitoring continues at these sites. Major infrastructure works proposed in the Skene Street/Berryden area are discussed in section 4.1.

The closure of Broad Street to all traffic in March 2017 to enable pedestrianisation infrastructure works had the potential to significantly increase traffic volume and congestion on parts the Union Street and the surrounding area, particularly between Union Street and West North Street as all buses using Broad Street diverted to this route. Broad Street reopened to buses in August 2018 with cars, taxis and LGVs continuing to use alternative routes. Diffusion tube concentrations at sites DT27 (21 King St), DT12 (40 Union St) and DT21 (43/45 Union St) were similar to, or slightly lower than the concentrations in the period 2012-2016 indicating there has been no significant impact on NO_2 levels from the traffic redistrubution at these locations.

Table A.4 in Appendix A compares the ratified continuous monitored NO_2 hourly mean concentrations for the past 5 years with the air quality objective of 200µg/m^3, not to be exceeded more than 18 times per year.

There were no exceedances of the hourly mean objective at any automatic or diffusion tube sites in 2018. The hourly mean has not been exceeded at any automatic sites in the last 5 years. Due to compliance with the objective for a number of years in the city centre, the city centre AQMA order was amended in October 2018 to remove the NO_2 hourly mean.

3.2.2 Particulate Matter (PM_{10})

Table A.5 in Appendix A compares the ratified and adjusted monitored PM_{10} annual mean concentrations for the past 5 years with the air quality objective of 18µg/m^3.

Table A.6 in Appendix A compares the ratified continuous monitored PM_{10} daily mean concentrations for the past 5 years with the air quality objective of 50µg/m^3, not to be exceeded more than 7 times per year.

There were no exceedances of the annual mean or 24 hour mean objective at any of the continuous monitoring sites in 2018. The 24 hour mean objective has been met at all monitoring sites for the last 3 years.

Due to compliance with the 24 hour mean objective in the Anderson Drive AQMA for a number of years the AQMA order for this area was amended in October 2018 to remove the 24 hour mean.

3.2.3 Particulate Matter ($PM_{2.5}$)

Table A.7 in Appendix A compares the ratified and adjusted monitored $PM_{2.5}$ annual mean concentrations for the past 5 years with the air quality objective of 10µg/m^3.

There are 5 continuous monitoring sites measuring $PM_{2.5}$ levels in Aberdeen City.

No exceedances of the annual mean were recorded at any of the continuous monitoring sites.

3.2.4 Sulphur Dioxide (SO_2)

No monitoring of sulphur dioxide was carried out in 2018 as previous assessments did not predict a likelihood of exceedance of the objectives and there has been no significant change in local emissions.

3.2.5 Carbon Monoxide, Lead and 1,3-Butadiene

No monitoring of Carbon Monoxide, Lead and 1,3-Butadiene was carried out in 2018 as previous assessments did not predict a likelihood of exceedances of the objectives and there has been no significant change in local emissions.

4. New Local Developments

4.1 Road Traffic Sources

4.1.1 Aberdeen Western Peripheral Route (AWPR)

The AWPR fully opened to traffic in 2019. The Craibstone to Stonehaven and Charleston sections of the AWPR opened at the end of 2018 and the Craibstone to Parkhill seciton in February 2019. The detrunking of the existing A90 Anderson Drive and the phasing in of “locking in the benefits” commenced upon the AWPR opening.

City wide traffic counts are planned for spring of 2019 to identify the impact on key city routes, including locations within and adjoining the three AQMAs. The traffic counts will enable the update of the air quality modelling and support post AWPR opening air quality scenario testing.

4.1.2 Berryden Road Improvements

A preliminary layout for the upgrade of the Berryden Road corridor has been approved by the Council. The scheme is subject to a Compulsory Purchase Order (CPO) to acquire the land necessary to deliver the project. The timescale for this process is a matter for Scottish Ministers and it anticipate it could take 1-2 years to resolve. Construction is expected to take 2 years and will not begin until the CPO has been completed.

The improvements include the duelling of Berryden Road and provide a more direct link between the City Centre and the Third Don Crossing.

It is anticipated that the proposed junction improvements will reduce congestion in this area and improve air quality, however these benefits may be offset by an increase in traffic flow. An air quality assessment undertaken in 2017 perdicted the scheme would not lead to exceedances of the air quality objectives outside the existing AQMAs. However, it is likely the assessment will be updated in 2019/20 to take account of the most recent montoring data and proposed traffic counts.

4.1.3 A90/A96 Haudagain Improvements

Construction works are due to commence in the summer of 2019. The improvements will create a new slip road around the Haudagain roundabout and improve traffic flow and air quality. The DMRB Environmental Statement details that there are no predicted exceedances of the annual mean NO_2 or PM_{10} levels with the scheme in place in 2018 and concludes that there will be no significant impact on local air quality as a result of the proposed scheme.

4.1.4 Wellington Road Improvements

A broad range of options to improve traffic management and flow on Wellington Road, including the section within the AQMA were reviewed during 2017. Council approval was subsequently granted to proceed to a Stage 1 STAG assessment (Strategic Transport Analysis Guide) the outcome of which was reported to the Council in 2018. The Stage 1 STAG report generated 8 options for progression to a Stage 2 assessment which will be undertaken during 2019. Should the Council subsequently approve improvement measures, it is likely to be several years before major infrastructure works are implemented. Options include road widening within the Wellington Road AQMA adjacent to the former HM Craiginches prison site which has recently been developed for residential accommodation. While road widening is likely to improve traffic flow, the works may bring the road closer to residential properties. An air quality assessment will be carried out as part of the options appraisal process.

4.1.5 Roads Hierarchy Review

The Aberdeen City Council Regional transport network has undergone a period of transformational change in recent years, with the opening of the Diamond Bridge, Dyce Drive link road, Craibstone Park and Ride and the AWPR. Further infrastructure measures including the Berryden Corridor and Haudagain upgrade will be implemented over the next few years. As a result of these measures, the Council and local partners commmenced a roads hierarchy review in 2018. The review aims to support the effective and efficient distribution and management of traffic around the City and facilitate the delivery of the transport elements of the City Centre Masterplan. Key principles include the direction of all through and peripheral traffic from the City Centre to the AWPR and hence support air quality improvement in the City Centre. Conclusions and recommendations from the review will be reported to Council in 2019.

4.2 Other Transport Sources

Other transport sources include:

- Airports.
- Locations where diesel or steam trains are regularly stationary for periods of 15 minutes or more, with potential for relevant exposure within 15m.
- Locations with a large number of movements of diesel locomotives, and potential long-term relevant exposure within 30m.
- Ports for shipping.

There were no new other transport sources in Aberdeen City in 2018.

4.3 Industrial Sources

Industrial sources include:

- **Industrial installations:** new or proposed installations for which an air quality assessment has been carried out.
- **Industrial installations:** existing installations where emissions have increased substantially or new relevant exposure has been introduced.
- **Industrial installations:** new or significantly changed installations with no previous air quality assessment.
- Major fuel storage depots storing petrol.
- Petrol stations.
- Poultry farms.

The Scottish Environmental Protection Agency have advised there is no regulated process that has increased its emissions to air by more than 30% in 2018. The following is a list of changes to PPC permits in Aberdeen City in 2017:

Site	Permit	Description
Muller-Wiseman (West Tullos)	Part A	Site licence surrendered

There are no new, existing or significantly changed industrial sources in Aberdeen City in 2018.

4.4 Commercial and Domestic Sources

Commercial and domestic sources include:

- Biomass combustion plant – individual installations.
- Areas where the combined impact of several biomass combustion sources may be relevant.
- Areas where domestic solid fuel burning may be relevant.
- Combined Heat and Power (CHP) plant.

There are no new commercial and domestic sources in Aberdeen City in 2018.

4.5 New Developments with Fugitive or Uncontrolled Sources

This section relates potential fugitive or uncontrolled particulate matter from the following new sources:

New Source in 2018	Detail
Landfill sites	No new sources in 2018
Quarries	No new sources in 2018
Unmade haulage roads on industrial sites	No new sources in 2018
Other potential sources of fugitive particulate matter emissions.	No new sources in 2018

5. Planning Applications

This section details any major planning applications under consideration that might affect air quality.

5.1 Broadford Works, Marbley Street

Approval was granted in September 2016 for a major mixed use development on a brownfield site close to the city centre and the Berryden corridor.

The proposed development comprises 890 residential units (apartments for rent and student accommodation), cafes and bars, a nursery and office, retail and leisure facilities and 400 car parking spaces.

The development has the potential to increase congestion and adversely affect air quality both in the vicinity of the proposed residential properties and the wider area. An air quality assessment was carried out a number of years ago as part of a previous planning application. This assessment did not predict a significant adverse impact or risk of exceedance of the air quality objectives, however the 2016 application was approved subject to a further air quality assessment. The condition also requires mitigation measures should there be a significant adverse impact on air quality. There is currently no further progress, to date, with this development.

6. Conclusions and Proposed Actions

6.1 Conclusions from New Monitoring Data

The NO_2 annual mean levels recorded across the city are comparable to the levels recorded in 2017. Data from all continuous automatic monitoring sites was below the NO_2 annual mean objective of 40mg/m^3. However diffusion tubes in the city centre and Anderson Drive AQMAs (Haudagain roundabout area) suggest there are pockets of areas that continue to exceed the annual mean objective. There continued to be no exceedances of the annual mean objective at monitroing points in the Wellington Road AQMA.

The King Street (roadside) and Errol Place (background) continuous monitor locations are outside of the city centre AQMA and recorded levels continue to be well below the annual mean objective.

Diffusion tubes (DT73 and DT77), outside of an AQMA at Skene Square, continue to show NO_2 levels just below/on the threshold of the annual mean objective. Monitoring will continue at this location.

There were no exceedances of the NO_2 one hour mean objective at any of the automatic sites. Diffusion tube data also recorded no sites with an annual mean >60ugm^{-3} suggesting exceedances of the 1 hour objective were unlikely across the city.

The annual mean and 24 hour PM_{10} objectives were met at all monitoring locations and the concentrations at measurment locations across the city are comparable to 2017.

No exceedances of the $PM_{2.5}$ annual mean were recorded at the 5 continuous monitoring sites.

The 3 AQMAs in the City remain valid for NO_2 and PM_{10} annual means.

New monitoring data has not identified a need for any other changes to the existing AQMAs, and no other LAQM Tasks have been identified.

6.2 Conclusions relating to New Local Developments

The were no new local developments approved in 2018 that have the potential to impact significantly on air quality.

An air quality assessment of the Broadford Works development will require to be undertaken should the development progress.

6.3 Proposed Actions

- Continue monitoring (non automatic) near sensitive receptors along the route of the proposed Berryden Corridor improvement project.

- Continue to progress LEZ feasibility study in accordance with national technical guidance and direction from the Cleaner Air for Scotland Governance Group.

- Additional traffic counts in spring 2019 on strategic routes following the opening of the AWPR and Broad Street

- Continued implementation of the Actions within the Air Quality Action Plan 2011

- Submit the next air quality progress report.

Appendix A: Monitoring Results

Table A.1 – Details of Automatic Monitoring Sites

Site ID	Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA?	Monitoring Technique	Distance to Relevant Exposure (m) (1)	Distance to kerb of nearest road (m) (2)	Inlet Height (m)
CM1	Errol Place	Urban Background	X394397	Y807392	PM_{10}, $PM_{2.5}$, O_3, NO_2 (NO, NO_x)	N	TEOM FDMS Chemiluminescence	N/A	N/A	3
CM2	Union Street	Roadside	X393656	Y805967	PM_{10}, $PM_{2.5}$ NO_2 (NO, NO_x)	Y	Dichotomous Monitor FDMS Chemiluminescence	2	2m	2.5
CM3	Market Street	Roadside	X394560	Y805677	PM_{10}, $PM_{2.5}$ NO_2 (NO, NO_x)	Y	Fidas 200 Chemiluminescence	0	2m	1.5
CM4	Anderson Drive	Roadside	X392506	Y804186	PM_{10}, NO_2 (NO, NO_x)	Y	TEOM Chemiluminescence	10	6m	1.5
CM5	Wellington Road	Roadside	X394395	Y804779	PM_{10}, $PM_{2.5}$ NO_2 (NO, NO_x)	Y	Fidas 200 Chemiluminescence	5	4m	1.5
CM6	King Street	Roadside	X394333	Y808770	PM_{10}, $PM_{2.5}$, NO_2 (NO, NO_x)	N	BAM, Fidas 200 Chemiluminescence	10	3m	1.5

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

(2) N/A if not applicable.

Figure A.1a City Centre Automatic Monitoring Sites 2018

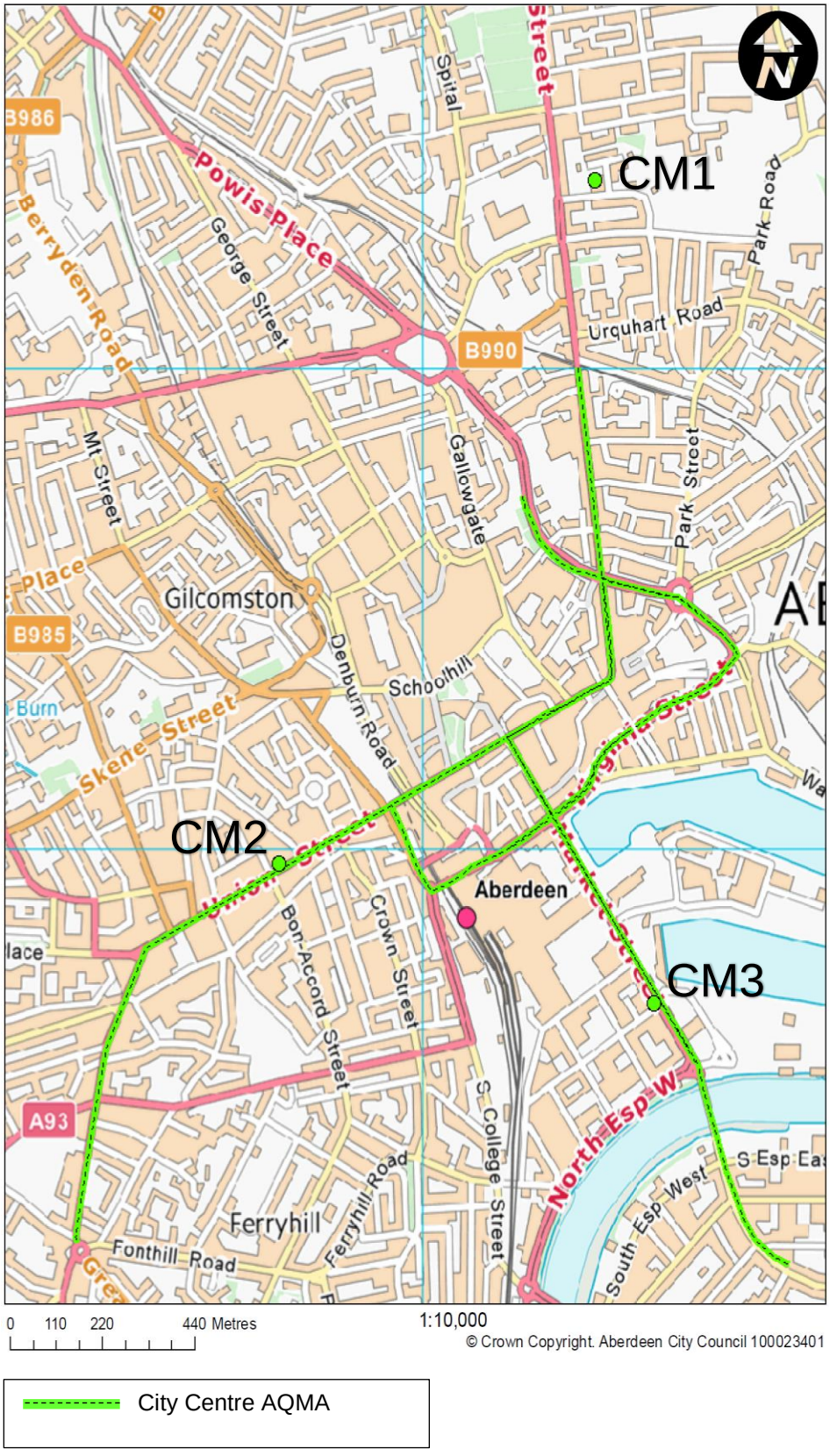

Figure A.1b Wellington Road Automatic Monitoring Site 2018

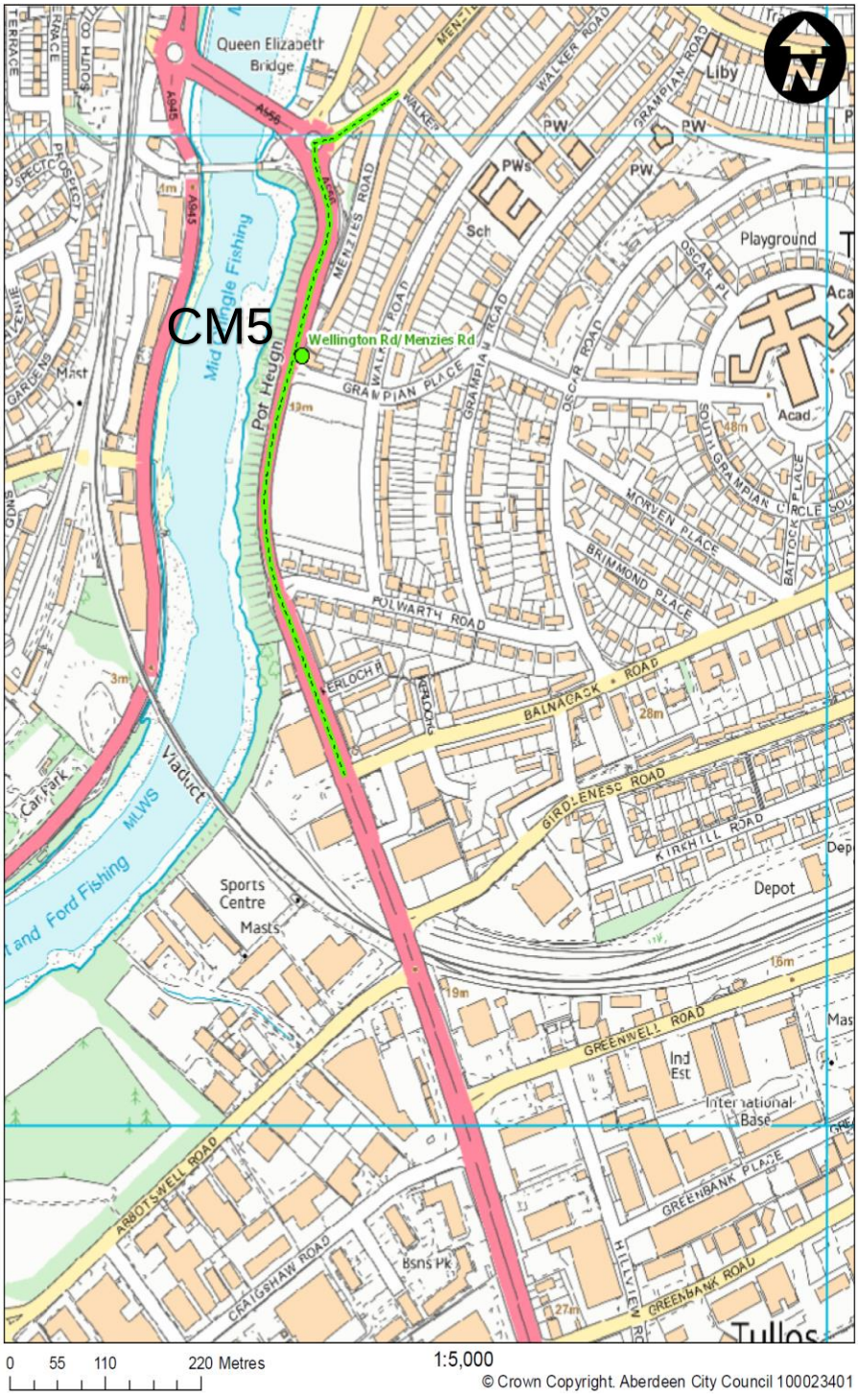

Figure A.1c Anderson Drive Automatic Monitoring Site 2018

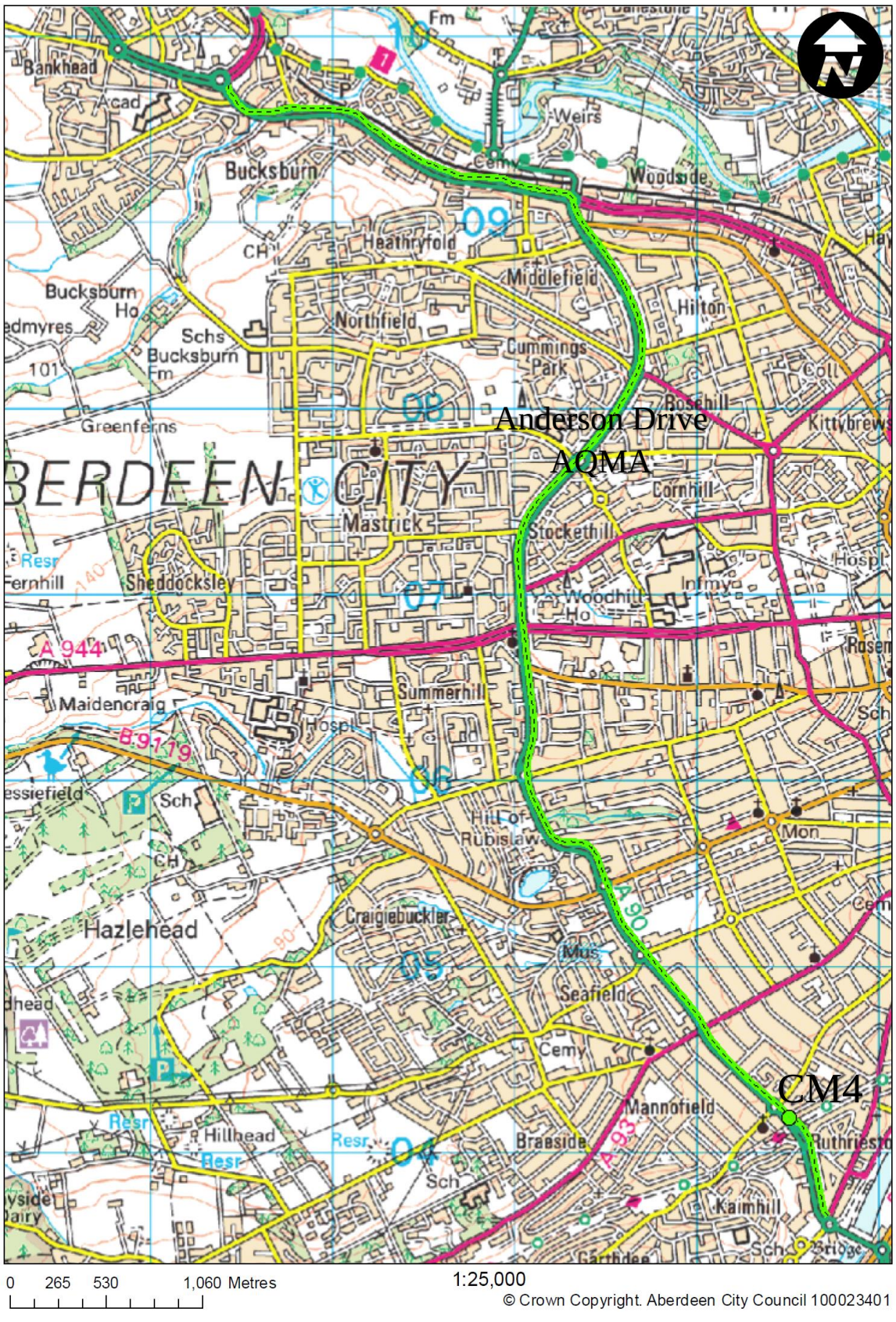

Figure A.1d King Street Automatic Monitoring Site 2018

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?
DT2	885 Gt Northern Rd	Roadside	391149	809164	NO_2	Y	11	3	N
DT3	549 N Anderson Dr	Roadside	391387	808941	NO_2	Y	17	3	N
DT4	38 Ellon Rd	Roadside	394652	809714	NO_2	N	7	3	N
DT5	520 King St	Roadside	394236	808066	NO_2	N	9	0.1	N
DT6	86 Victoria Rd, Torry	Roadside	394764	805197	NO_2	N	0	3	N
DT7	Wellignton Rd//Kerloch Pl	Roadside	394411	804407	NO_2	Y	0	3	N
DT8	107 Anderson Dr	Roadside	392337	804340	NO_2	Y	14	3	N
DT9	39 Market St	Roadside	394264	806146	NO_2	Y	0	3	N
DT10	184/192 Market St	Roadside	394530	805708	NO_2	Y	0	3	N
DT11	105 King St	Roadside	394406	806637	NO_2	Y	0	3	N

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?
DT12	40 Union St	Roadside	394283	806286	NO_2	Y	0	3	N
DT13	Music Hall, Union St	Roadside	393777	806030	NO_2	Y	0	6	N
DT14	Dyce Prim, Gordon Ter	Urban background	389046	812794	NO_2	N	(N/A)	N/A	N
DT15	Northfield swimming pool	Urban background	390801	808132	NO_2	N	(N/A)	N/A	N
DT16	1 Trinity Quay	Roadside	394336	806097	NO_2	Y	0	5	N
DT17	43/45 Union St	Roadside	394273	806255	NO_2	Y	0	3	N
DT18	14 Holburn St	Roadside	393305	805734	NO_2	Y	0	3	N
DT19	468 Union St	Roadside	393386	805826	NO_2	Y	0	3	N
DT20	212 King St	Roadside	394400	806842	NO_2	N	0	4	N
DT21	26 King St	Roadside	394449	806453	NO_2	Y	0	4	N
DT22	104 King St	Roadside	394425	806634	NO_2	Y	0	4	N

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?
DT24	40 Auchmill Rd	Roadside	389930	809603	NO_2	N	0	3	N
DT25	21 Holburn St	Roadside	393332	805748	NO_2	Y	0	3	N
DT26	147 Holburn St	Roadside	393214	805367	NO_2	N	0	3	N
DT27	80 Holburn St	Roadside	393233	805565	NO_2	Y	0	3	N
DT28	61 Holburn St	Roadside	393275	805624	NO_2	Y	5	3	N
DT29	469 Union St	Roadside	393400	805811	NO_2	Y	0	3	N
DT30	335 Union St	Roadside	393619	805919	NO_2	Y	0	5	N
DT33	16 East North St	Roadside	394505	806531	NO_2	Y	0	4	N
DT34	404 King Street	Roadside	394317	807527	NO2	N	0	9	N
DT36	115 Menzies Rd/Wellington Rd	Roadside	394403	804799	NO2	Y	14	4	N
DT37	137 Wellington Road	Roadside	394697	803735	NO2	N	17	14	N

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?
DT39	819 Gt Northern Rd	Roadside	391293	809136	NO2	Y	0	3	N
DT40	852 Fullerton Ct (facade)	Facade	391353	809158	NO2	Y	0	7	N
DT41	852 Fullerton Ct (roadside)	Roadside	391352	809151	NO2	Y	7	0.1	N
DT45	111 S Anderson Dr	Facade	392311	804349	NO2	Y	0	13	N
DT46	West North Street	Roadside	394277	806671	NO2	Y	0	4	N
DT47	Powis Terrace	Roadside	393368	807511	NO2	N	5	0.1	N
DT48	139 Gt. Northern Road	Roadside	393088	808232	NO2	N	10	0.1	N
DT49	142 Gt. Northern Road	Roadside	392969	808460	NO_2	N	11	3	N
DT50	St. Machar Dr/Dunbar St.	Roadside	394015	808483	NO_2	N	6	0.1	N
DT54	36 - 38 School Road	Roadside	394358	808434	NO_2	N	14	2	N
DT55	Ellon Rd/Balgownie Crescent	Roadside	394629	809740	NO_2	N	9	2	N

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?
DT56	59 Fairview Drive	Urban Background	392239	810163	NO_2	N	N/A	N/A	N
DT57	Park Place/Constitution St	Roadside	394628	806692	NO_2	N	16	0.1	N
DT58	47 Tillydrone Av	Roadside	393584	808729	NO_2	N	8	4	N
DT59	735 Gt.Western Rd	Facade	391525	809080	NO_2	N	0	8	N
DT60	Anderson Drive/Beech Rd	Roadside	391287	807683	NO_2	Y	N/A	0.1	N
DT62	35 Chestnut Row	Urban Background	392903	807302	NO_2	N	N/A	N/A	N
DT63	93 Berryden Road	Roadside	393034	807392	NO_2	N	11	2	N
DT64	102 Picktillum Place	Urban Background	393025	807828	NO_2	N	N/A	N/A	N
DT65	90 Tillydrone Av	Roadside	393331	809073	NO_2	N	8	3	N
DT66	10 Meadow Place	Roadside	393120	809284	NO_2	N	3	3	N
DT67	37 Inverurie Rd	Roadside	389756	809583	NO_2	N	6	3	N

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?
DT69	Tullos Circle Torry Academy	Urban Background	394933	804762	NO_2	N	N/A	N/A	N
DT70	Kirkhill Place Tullos Primary	Urban Background	395476	804452	NO_2	N	N/A	N/A	N
DT71	Tullos Hill	Urban Background	39543	803410	NO_2	N	N/A	N/A	N
DT72	North Loirston Souter Head Road Cove Allotements	Urban Background	394988	801940	NO_2	N	N/A	N/A	N
DT73	61 Skene Square	Facade	393458	806768	NO_2	N	0	6	N
DT74	5 Caroline Place	Roadside	393350	806922	NO_2	N	5	3	N
DT75	Pentland Close	Urban Background	395964	805132	NO_2	N	N/A	N/A	N
DT76	275 Holburn Street	Facade	393161	805070	NO_2	N	0	6	N
DT77	27 Skene Square	Roadside	393524	806701	NO_2	N	0	5	N
DT78	42 Leslie Road	Roadside	393025	808297	NO_2	N	0	6	N

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?
DT79	67 Leslie Road	Roadside	393029	808327	NO_2	N	3	6	N
DT80	27 Rosemount Place	Roadside	393410	806674	NO_2	N	0	4	N
DT81	131 Rosemount Place	Roadside	393044	806537	NO_2	N	0	2	N
DT82	7 Virgina Street	Roadside	394466	806248	NO_2	Y	0	8	N
DT83	Wellington Road Altens Round about (North)	Roadside	394574	802078	NO_2	N	0	3	N
DT84	Wellington Road Altens Round about (South)	Roadside	394489	801970	NO_2	N	0	3	N
DT85	Tullos Place	Background	395216	804724	NO_2	N	N/A	N/A	N
CL1	Errol Place	Background	394397	807392	NO_2	N	N/A	N/A	Y
CL2	Union Street	Roadside	393656	805967	NO_2	Y	2	2	Y
CL3	Market Street	Roadside	394560	805677	NO_2	Y	0	2	Y

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?
CL4	Anderson Drive	Roadside	392506	804186	NO_2	Y	10	6	Y
CL5	Wellington Road	Roadside	394395	804779	NO_2	Y	5	4	Y
CL6	King Street	Roadside	394333	808770	NO_2	N	10	3	Y

(1) 0 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.

Figure A.2a NO_2 Diffusion Tube Locations

Figure A.2b NO_2 Diffusion Tube Locations

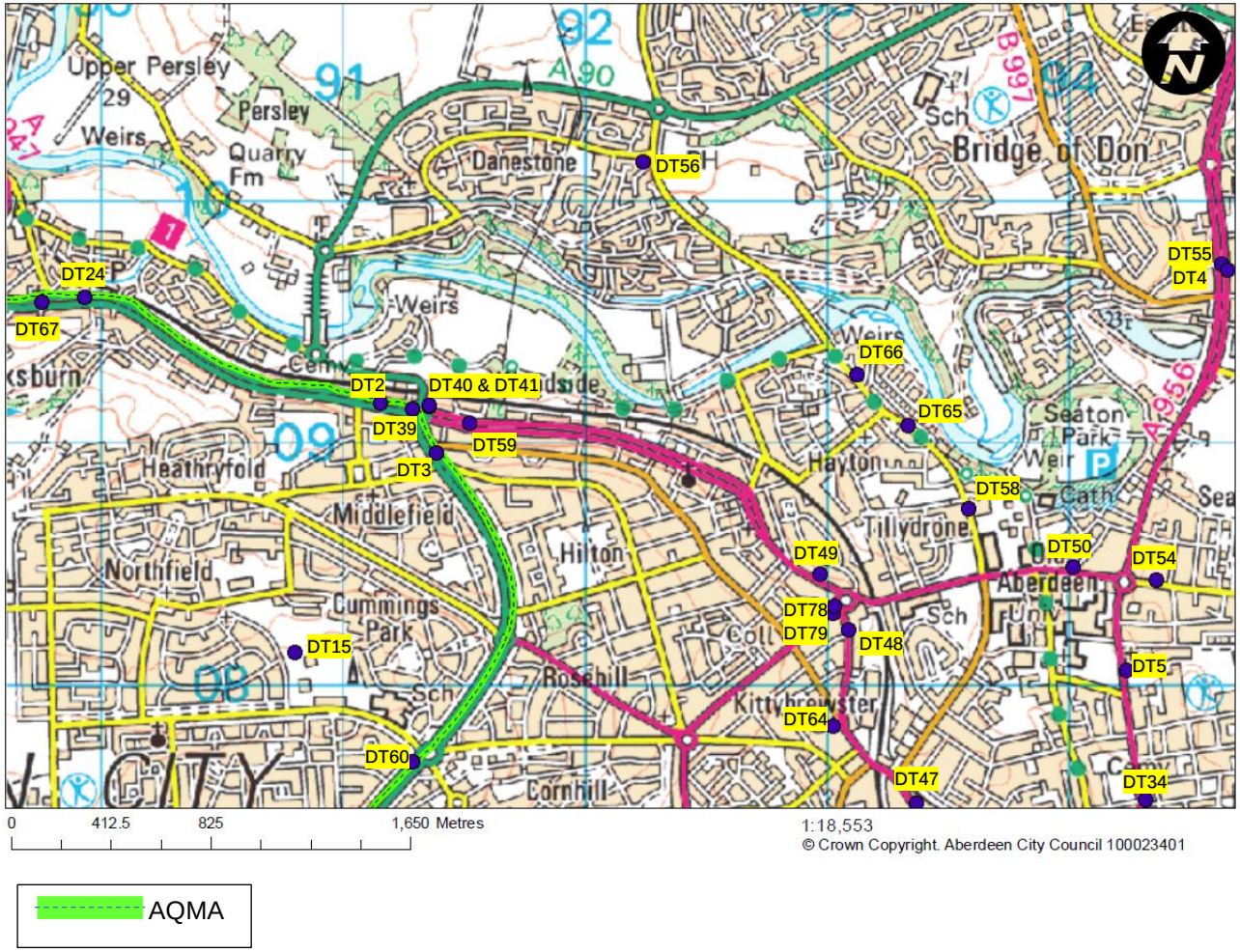

Figure A.2c NO_2 Diffusion Tube Locations

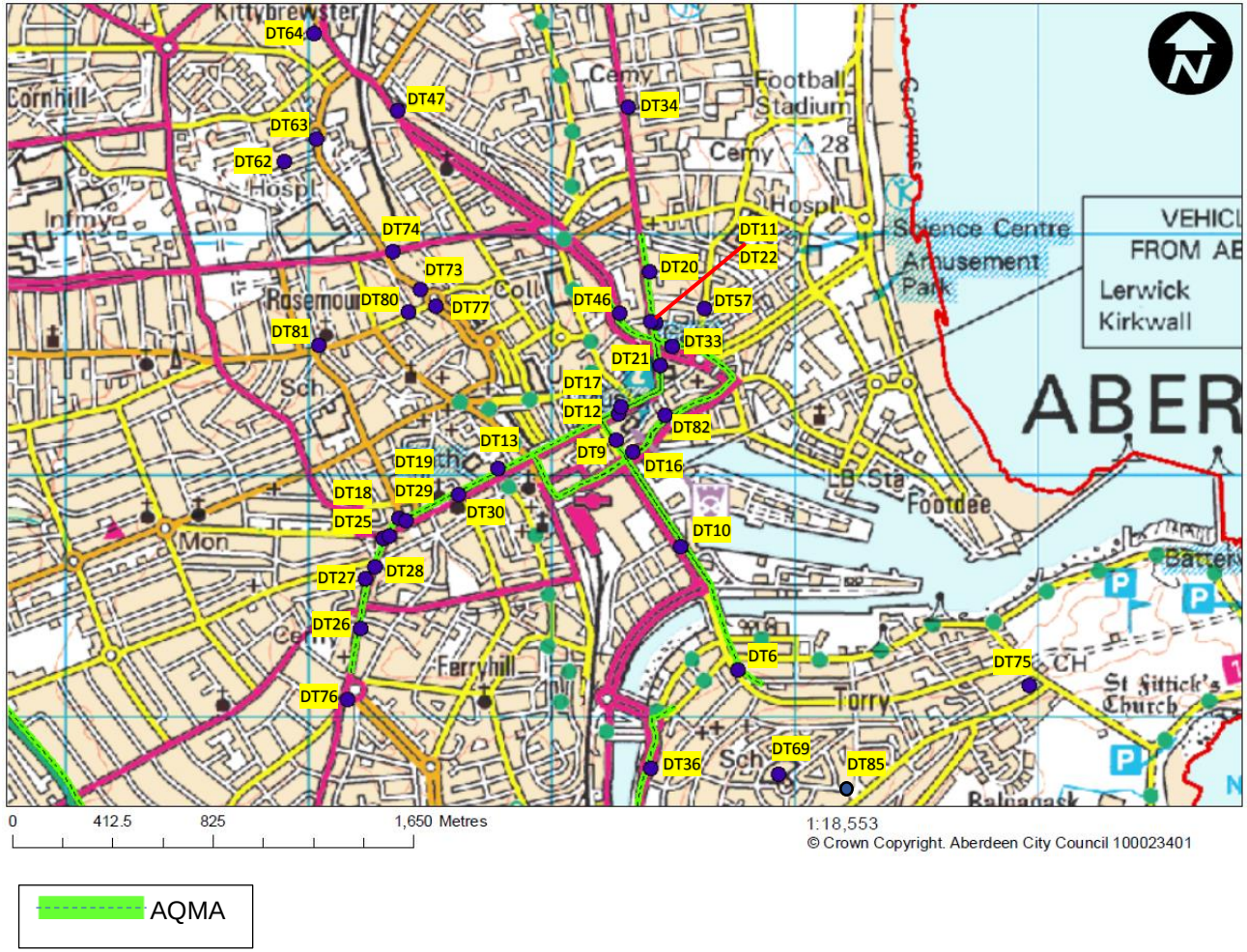

Figure A.2d NO_2 Diffusion Tube Locations

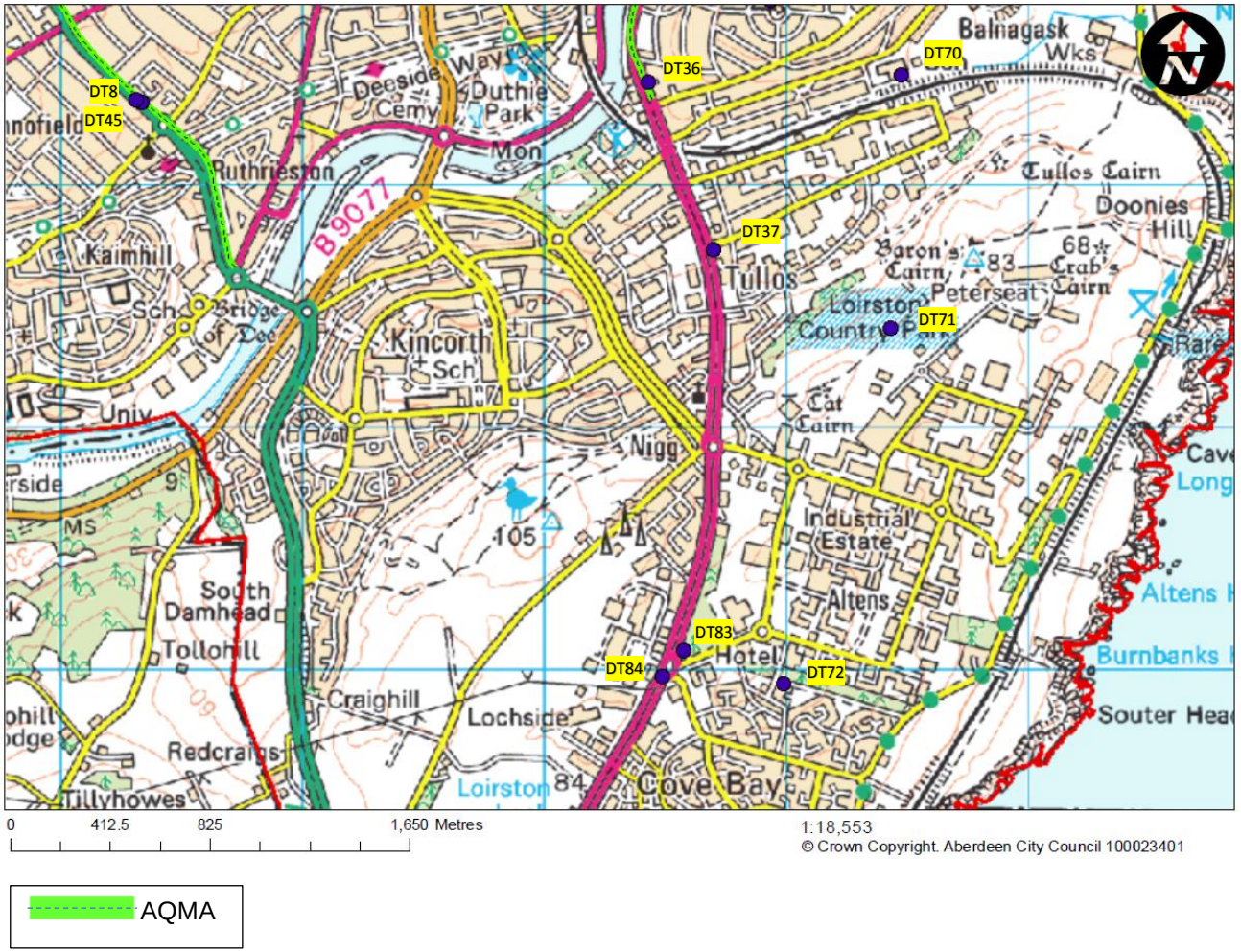

Table A.3 – Annual Mean NO_2 Monitoring Results

Site ID	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2018 (%) (2)	NO_2 Annual Mean Concentration ($\mu g/m^3$) (3)				
					2014	2015	2016	2017	2018
CM1	Background	Automatic		99	21	23	21	22	20
CM2	Roadside	Automatic		99	**47**	**46**	**43**	**40**	38
CM3	Roadside	Automatic		99	40	36	35	31	33
CM4	Roadside	Automatic		94	26(4)	22	21	19	17
CM5	Roadside	Automatic		99	**48**(4)	40	**46**	39	39
CM6	Roadside	Automatic		87	27	28	28	23	22
DT2(5)	Roadside	Diffusion Tube		92	38.2	34.4	32.8	30.6	28
DT3(5)	Roadside	Diffusion Tube		67	26.7	24.8	24.3	22.8	23
DT4(5)	Roadside	Diffusion Tube		100	29.6	35.5	30.7	28.4	25
DT5(5)	Roadside	Diffusion Tube		75	24.9	25.3	20	21.9	27

Site ID	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) [1]	Valid Data Capture 2018 (%) [2]	NO_2 Annual Mean Concentration ($\mu g/m^3$) [3]				
					2014	2015	2016	2017	2018
DT6	Roadside	Diffusion Tube		100	35	31.3	32.5	27.8	28
DT7	Roadside	Diffusion Tube		100	**45.6**[4]	37.5	37.4	33.2	32
DT8[5]	Roadside	Diffusion Tube		100	33.1	33.5	37.4	34.5	34
DT9	Roadside	Diffusion Tube		100	**57.5**	**50.9**	**50.2**	**47.9**	46
DT10	Roadside	Diffusion Tube		100	**53.9**	**56.1**	**54.1**	**47.6**	47
DT11	Roadside	Diffusion Tube		100	**55.3**	**54.4**	**51.1**	**48.1**	48
DT12	Roadside	Diffusion Tube		92	**51.3**	**49.8**	**48.9**	**45.9**	44
DT13	Roadside	Diffusion Tube		0	**40.5**	**41.0**	**40.9**	N/A	N/A
DT14	Urban background	Diffusion Tube		100	10.5	10.0	9.6	10.1	10
DT15	Urban background	Diffusion Tube		83	16.5	13.4	12.1	13.0	11
DT16	Roadside	Diffusion Tube		75	**48.6**	**45.4**	**43.8**	37.4	37

Site ID	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) [1]	Valid Data Capture 2018 (%) [2]	NO_2 Annual Mean Concentration ($\mu g/m^3$) [3]				
					2014	2015	2016	2017	2018
DT17	Roadside	Diffusion Tube		100	**55**	**51.8**	**46.7**	**42.8**	**44**
DT18	Roadside	Diffusion Tube		100	**47.5**	**50.2**	**48.5**	**41.6**	39
DT19	Roadside	Diffusion Tube		83	**51.4**	**53.3**	**45.4**	**40.9**	**40**
DT20	Roadside	Diffusion Tube		92	33.3	34.9	32.1	30.8	30
DT21	Roadside	Diffusion Tube		100	33.3	34.9	**44.1**	**41.6**	34
DT22	Roadside	Diffusion Tube		100	**45.2**	**44.1**	39.3	36.2	36
DT24	Roadside	Diffusion Tube		100	39.8[4]	28.8	31.6	28.0	24
DT25	Roadside	Diffusion Tube		100	**40.5**	**50.3**	**42.8**	37.1	37
DT26	Roadside	Diffusion Tube		100	31.7	28.7	26.6	23.8	24
DT27	Roadside	Diffusion Tube		83	28.4	28.3	28.7	24.6	25
DT28[5]	Roadside	Diffusion Tube		100	**40.1**	36.4	34.9	30.6	31

Site ID	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2018 (%) (2)	NO_2 Annual Mean Concentration ($\mu g/m^3$) (3)				
					2014	2015	2016	2017	2018
DT29	Roadside	Diffusion Tube		100	**57.9**	**58.2**	**48.8**	**42.7**	**45**
DT30	Roadside	Diffusion Tube		100	**53.4**	**50.9**	**46.5**	**41.9**	**41**
DT33	Roadside	Diffusion Tube		100	**44.5**	**46.4**	**43.1**	**40.4**	**40**
DT34	Roadside	Diffusion Tube		92	31.2	29.2	28.7	27.6	26
DT36(5)	Roadside	Diffusion Tube		100	**41**	37.8	35.5	31.6	32
DT37(5)	Roadside	Diffusion Tube		100	26.9	28.8	28.2	23.7	22
DT39	Roadside	Diffusion Tube		92	**63.8**	**54.2**	**47.4**	**45.4**	**43**
DT40	Facade	Diffusion Tube		100	36.6	39.0 (3)	n/a	31.0	30
DT41(5)	Roadside	Diffusion Tube		100	26.4	29.5	26	25.5	23
DT45	Facade	Diffusion Tube		100	**42.4**	**41.7**	30.6	25.2	24
DT46	Roadside	Diffusion Tube		83	30.4	30.1	26	25.5	26

Site ID	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) [1]	Valid Data Capture 2018 (%) [2]	NO_2 Annual Mean Concentration ($\mu g/m^3$) [3]				
					2014	2015	2016	2017	2018
DT47[5]	Roadside	Diffusion Tube		100	33.2	32.9	28.5	29.0	28
DT48[5]	Roadside	Diffusion Tube		100	23.2	23.2	18.9	20.0	19
DT49[5]	Roadside	Diffusion Tube		92	29.1	28.7	28.4	26.0	25
DT50[5]	Roadside	Diffusion Tube		100	22.8	22.7	18.3	19.8	19
DT54[5]	Roadside	Diffusion Tube		83	21.9	21.9	18.3	19.9	18
DT55[5]	Roadside	Diffusion Tube		100	28.1	26.9	22.9	20.9	20
DT56	Urban Background	Diffusion Tube		100	13.7	12.0	12.5	13.1	13
DT57[5]	Roadside	Diffusion Tube		92	30.3	30.7	29.9	23.9	22
DT58[5]	Roadside	Diffusion Tube		92	n/a	26[3]	20.8	22.3	23
DT59	Facade	Diffusion Tube		100	n/a	n/a	24.2	21.4	20
DT60	Roadside	Diffusion Tube		100	n/a	n/a	32.9	32.4	31

Site ID	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) [1]	Valid Data Capture 2018 (%) [2]	NO_2 Annual Mean Concentration ($\mu g/m^3$) [3]				
					2014	2015	2016	2017	2018
DT62	Urban Background	Diffusion Tube		100	n/a	14.5 [3]	14.4	14.0	12
DT63[5]	Roadside	Diffusion Tube		100	n/a	26 [3]	23	22.0	20
DT64	Urban Background	Diffusion Tube		100	n/a	16.9 [3]	16.9	17.2	17
DT65[5]	Roadside	Diffusion Tube		100	n/a	n/a	16.5[3]	18.5	17
DT66[5]	Roadside	Diffusion Tube		100	n/a	n/a	19[3]	21.6	19
DT67[5]	Roadside	Diffusion Tube		100	n/a	n/a	28.5[3]	32.2	31
DT69	Urban Background	Diffusion Tube		58	n/a	n/a	n/a	14.3	13
DT70	Urban Background	Diffusion Tube		100	n/a	n/a	n/a	14.7	14
DT71	Urban Background	Diffusion Tube		100	n/a	n/a	n/a	10.6	10
DT72	Urban Background	Diffusion Tube		100	n/a	n/a	n/a	7.8	8
DT73	Facade	Diffusion Tube		100	n/a	n/a	n/a	39.7	**40**

Site ID	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2018 (%) (2)	NO_2 Annual Mean Concentration ($\mu g/m^3$) (3)				
					2014	2015	2016	2017	2018
DT74(5)	Roadside	Diffusion Tube		100	n/a	n/a	n/a	32.6	32
DT75	Urban Background	Diffusion Tube		100	n/a	n/a	n/a	19.1	16
DT76	Facade	Diffusion Tube		83	n/a	n/a	n/a	19.3	27
DT77	Façade	Diffusion Tube		92	n/a	n/a	n/a	n/a	37
DT78	Roadside	Diffusion Tube		92	n/a	n/a	n/a	n/a	21
DT79	Roadside	Diffusion Tube		92	n/a	n/a	n/a	n/a	20
DT80	Façade	Diffusion Tube		92	n/a	n/a	n/a	n/a	24
DT81	Façade	Diffusion Tube		92	n/a	n/a	n/a	n/a	30
DT82	Façade	Diffusion Tube		75	n/a	n/a	n/a	n/a	**44**
DT83	Roadside	Diffusion Tube		58	n/a	n/a	n/a	n/a	27
DT84	Roadside	Diffusion Tube		58	n/a	n/a	n/a	n/a	18

Site ID	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2018 (%) (2)	NO_2 Annual Mean Concentration ($\mu g/m^3$) (3)				
					2014	2015	2016	2017	2018
DT85	Urban Background	Diffusion Tube		25	n/a	n/a	n/a	n/a	13

Notes: Exceedances of the NO_2 annual mean objective of 40µg/m3 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 LAQM.TG(16) if valid data capture for the full calendar year is less than 75%. See Appendix C for details.

(4) Although collection is almost 75% data has not been annualised in accordance with LAQM.TG(09) since the periods of data collection were sporadic over the 12 month period. Measured mean concentration is of data collected and therefore is a best estimate.

(5) Concentrations at nearest relevant receptor have been estimated using the "NO2 fall-off with distance calculator" described in LAQM.TG.16 and are discussed in section Appendix C.

Figure A.1: Trend in NO_2 Annual Mean Concentration (µg/m^3) Continuous Monitoring Sites 2014 – 2018

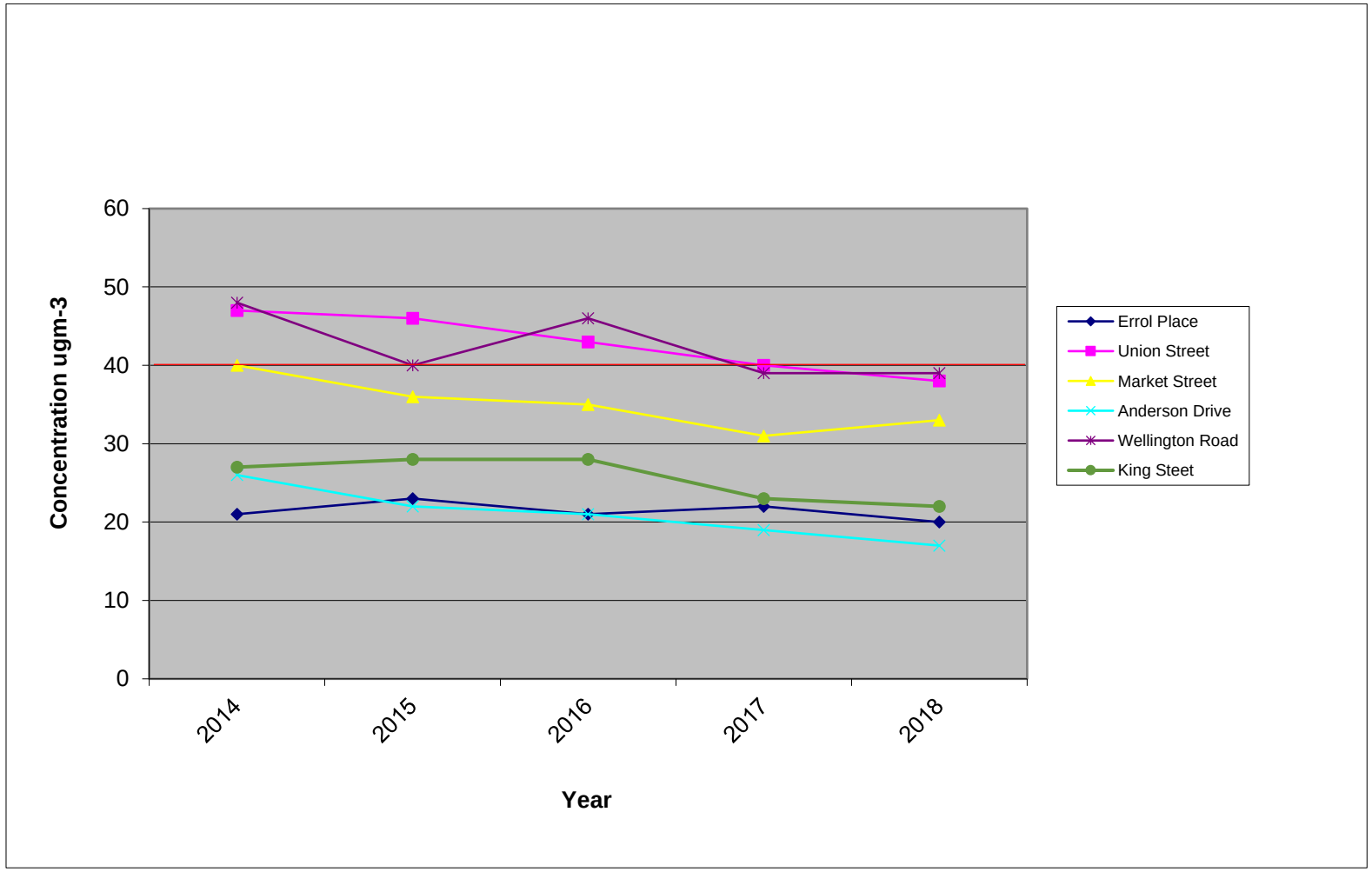

Table A.4 – 1-Hour Mean NO_2 Monitoring Results

Site ID	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2017 (%) (2)	NO_2 1-Hour Means > 200µg/m^3 (3)				
					2014	2015	2016	2017	2018
CM1	Background	Automatic		99	0	1	0	4	1
CM2	Roadside	Automatic		99	0	3	0	0	0
CM3	Roadside	Automatic		99	0	0	1	0	0
CM4	Roadside	Automatic		94	0(111)	0(109)	0	0	0
CM5	Roadside	Automatic		99	0(163)	0	2	0	0
CM6	Roadside	Automatic		87	0	0	0	0	0

Notes: Exceedances of the NO_2 1-hour mean objective (200µg/m^3 not to be exceeded more than 18 times/year) are shown in **bold.**

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

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

(3) If the period of valid data is less than 85%, the 99.8th percentile of 1-hour means is provided in brackets.

Table A.5 – Annual Mean PM_{10} Monitoring Results

Site ID	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2017 (%) (2)	PM_{10} Annual Mean Concentration (µg/m^3) (3)				
				2014	2015	2016	2017	2018
CM1	Background		97	15	12	12	11	14
CM2	Roadside		85	18	17	13	13	15
CM3	Roadside		75	**26**	**19**	12	11	17
CM4	Roadside		96	15	13	12	12	14
CM5	Roadside		99	**21**	**20**	16	13	17
CM6	Roadside		68	**19**	17	16	12(4)	14

Notes: Exceedances of the PM_{10} annual mean objective of 18µg/m^3 are shown in **bold.**

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

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

(3) All means have been "annualised" as per LAQM.TG(16), valid data capture for the full calendar year is less than 75%. See Appendix C for details.

(4) PM10 instruments: BAM from 1/1/17 to 22/6/17. Fidas from 22/6/17.

Figure A.2: Trend in PM_{10} Annual Mean Concentration (µg/m^3) Continuous Monitoring Sites 2014 - 2018

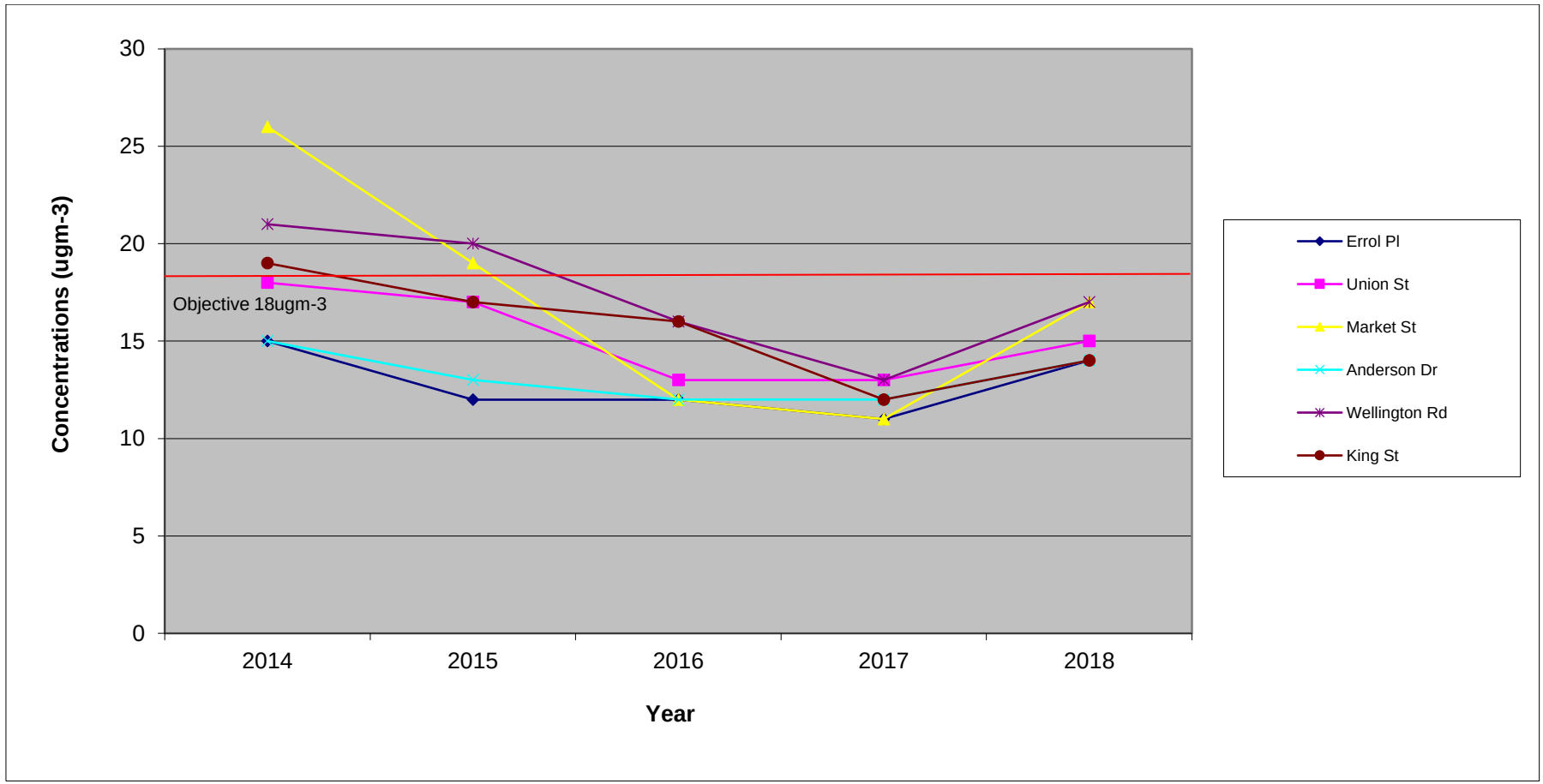

Table A.6 – 24-Hour Mean PM_{10} Monitoring Results

Site ID	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2017 (%) (2)	PM_{10} 24-Hour Means > 50µg/m^3 (3)				
				2014	2015	2016	2017	2018
CM1	Background		97	0	4	0	0	1
CM2	Roadside		85	0 (32)(4)	4(49)	0 (26)	0	0
CM3	Roadside		75	**22**	**12**	1	0	5
CM4	Roadside		96	0	2	0	0	0
CM5	Roadside		99	2	**16**	2(5)	0	3
CM6	Roadside		68	5	**8**	1	0(6)	5 (48)

Notes: Exceedances of the PM_{10} 24-hour mean objective (50µg/m^3 not to be exceeded more than 7 times/year) are shown in **bold.**

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

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

(3) If the period of valid data is less than 85%, the 98.1st percentile of 24-hour means is provided in brackets.

(4) PM10 instruments: TEOM from 1 January 2014 to 10 April 2014. FDMS from 11 April 2014.

(5) PM10 instruments: TEOM from 1 January 2015 to 19 September 2016. Fidas from 20 September 2016.

(6) PM10 instruments: BAM from 1/1/17 to 22/6/17. Fidas from 22/6/17.

Table A.7 – Annual Mean $PM_{2.5}$ Monitoring Results

Site ID	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2017 (%) (2)	$PM_{2.5}$ Annual Mean Concentration (µg/m^3) (3)				
				2014	2015	2016	2017	2018
CM1	Background		98	10	8	5	6	7
CM2	Roadside		85	n/a	**11**	7	7	8
CM3	Roadside		75	n/a	**11**	6	6	8
CM5	Roadside		99	n/a	n/a	n/a	6	8
CM6	Roadside		68	n/a	n/a	n/a	6	7

Notes: Exceedances of the PM_{10} annual mean objective of 10µg/m^3 are shown in **bold.**

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

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

(3) All means have been "annualised" as per LAQM.TG(16), valid data capture for the full calendar year is less than 75%. See Appendix C for details.

Appendix B: Full Monthly Diffusion Tube Results for 2018

Table B.1 – NO_2 Monthly Diffusion Tube Results for 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 (1)
DT02	47	55	58	50	60	50	49	36	25		39	33	46	37
DT03	31	39	45	48	47	35	41	29					39	31
DT04	50	51	30	32	33	19	29	33	31	37	38	46	36	29
DT05	26	48	28	31	33	26				40	35	39	34	27
DT06	41	41	33	34	42	34	33	31	27	34	33	35	35	28
DT07	48	45	40	47	48	36	40	29	30	40	41	39	40	32
DT08	71	70	66	81	65	49	61	49	38	57	66	52	60	48
DT09	69	57	70	63	63	51	58	49	35	60	67	52	58	46
DT10	68	61	62	60	59	51	57	57	54	62	55	52	58	47
DT11	72	74	51	56	62	44	59	52	51	75	68	55	60	48
DT12	70	64	46	58	57	45		50	50	58	53	54	55	44
DT13														
DT14	21	18	9	10	10	7	8	8	8	13	15	20	12	10
DT15	21	19	14	15			12	8	5	12	21	16	14	11
DT16	57	49				48	50	42	38	44	48	45	47	37
DT17	64	59	58	60	66	54	57	49	41	50	54	50	55	44
DT18	61	57	54	48	51	39	36	43	45	58	49	48	49	39
DT19	66	55	57	54	49	42	44	44	45			49	51	40
DT20	49	48	32	33	37	27		32	28	37	40	43	37	30
DT21	50	49	39	47	49	39	45	37	29	40	47	42	43	34
DT22	50	46	43	49	50	43	47	38	30	42	53	45	45	36
DT24	37	35	31	32	31	27	23	25	30	32	28	26	30	24
DT25	48	61	51	57	50	38	49	42	33	39	52	38	47	37
DT26	37	36	37	36	35	27	28	26	18	24	31	28	30	24
DT27	36	33	40	35	33	27	28	25		31		28	32	25

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 (1)
DT28	47	45	46	45	46	37	39	33	25	36	45	38	40	32
DT29	61	65	58	62	56	53	55	49	44	54	58	61	56	45
DT30	60	56	57	53	58	45	49	46	42	44	48	50	51	41
DT33	59	61	43	54	52	41	47	45	42	51	52	51	50	40
DT34	45	41	28	30	30		29	28	26	34	33	39	33	26
DT36	61	52	53	62	66	51	56	51	37	50	53	45	53	42
DT37	37	36	23	27	27	21	23	27	26	33	25	33	28	23
DT39	62	64	51	55	58	47		51	54	50	48	51	54	43
DT40	50	48	33	34	48	28	29	30	37	38	36	42	38	30
DT41	63	69	45	48	30	41	41	49	53	54	51	53	50	40
DT45	36	35	34	37	36	29	29	18	16	28	32	29	30	24
DT46	38	36	31	35	30		32	24		29	39	37	33	26
DT47	63	60	55	50	54	43	49	45	40	50	56	49	51	41
DT48	49	39	38	33	33	30	31	31	28	35	41	38	36	28
DT49	54	50	38	41	37	31	35	30	25	41		46	39	31
DT50	43	36	28	30	27	18	22	23	21	31	32	33	29	23
DT54		35	25	26		18	18	19	21	27	27	34	25	20
DT55	39	36	24	34	36	28	31	28	24	32	33	30	31	25
DT56	23	17	13	14	15	11	13	29	10	16	19	18	17	13
DT57	45	46	27	33	35	26	6	31	15	35	<5	72	34	27
DT58	46	43	24	26	24	20	24	26		32	37	46	32	25
DT59	24	31	25	25	23	21	22	21	21	27	31	31	25	20
DT60	24	49	40	50	42	38	40	44	28	35	45	30	39	31
DT62	11	22	18	19	15	12	13	11	9	15	20	23	16	12
DT63	25	36	29	31	29	23	27	24	19	30	35	36	29	23
DT64	19	25	39	23	19	14	17	14	12	19	24	26	21	17
DT65	35	30	18	22	22	16	18	16	25	25	27	35	24	19
DT66	42	36	23	23	22	18	20	20	20	29	30	34	26	21
DT67	52	57	53	46	54	50	43	43	37	42	51	41	47	38

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 (1)
DT69	16	22	18	18	22	14	16						18	13
DT70	27	22	16	17	19	11	14	14	13	17	16	24	18	14
DT71	19	16	8	11	16	9	10	10	8	14	14	15	13	10
DT72	15	14	7	11	10	6	7	7	6	10	11	12	10	8
DT73	61	58	51	54	54	47	46	44	42	42	54	49	50	40
DT74	46	47	40	50	46	40	43	35	30	40	49	40	42	34
DT75	29	32	17	16	19	14	15	15	20	24	16	26	20	16
DT76	42	37	42	42	36	29	31	26	21	30			34	27
DT77		58	53	45	42	33	40	37	42	57	52	45	46	37
DT78		34	28	29	29	24	24	20	15	22	33	32	26	21
DT79		32	26	31	28	21	24	19	16	23	28	32	25	20
DT80		28	33	27	24	19	24	18	18	39	44	50	29	24
DT81		48	43	35	38	29	35	32	27	36	43	42	37	30
DT82				58	63	49	53	53	47	55	59	55	55	44
DT83						21	21	27	29	37	25	35	28	27
DT84						22	22	17	12	18	23	20	19	18
DT85										18	18	21	19	13

(1) See Appendix C for details on bias adjustment

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

QA/QC of Diffusion Tube Monitoring

Diffusion tube monitoring is carried out in accordance with the procedures contained in the guidance 'Diffusion Tubes for Ambient NO_2 Monitoring: Practical Guidance for Laboratories and Users' and LAQM.TG 16. All tubes, other than those co-located at the continuous analysers are attached to lampposts/downpipes at a height of approximately 2 meters above ground level and exposed for 4 to 5 weeks in line with the Defra calendar of exposure periods. Co-located tubes are located in triplicate close to the analyser air intake. All exposure times are recorded. Unexposed field samples are submitted to the laboratory with each batch of exposed tubes.

Aberdeen Scientific Services Laboratory is UKAS accredited for the analysis of diffusion tubes.

UKAS carried out an annual assessment of the laboratory in February 2019 to ensure laboratory guidance is being implemented. No problems were identified.

The laboratory participates in the Laboratory of the Government Chemist (LGC) AIR scheme and all results during 2018 were satisfactory (z-score < ±2).

The laboratory also participates monthly in the nitrogen dioxide "inter comparison" exercise, managed by the National Physical Laboratory. All results during 2018 were satisfactory and the annual summary (produced by AEA Energy & Environment) indicates that the results were classified as "Good" throughout 2018 with a "Bias Correction Factor A" of 0.94.

Factor from Local Co-location Studies

Aberdeen City Council operates a co-location study at all automatic sites across the city. All results are submitted to the national bias adjustment factors (NBAFS). The national diffusion tube bias adjustment factor spreadsheet version 3/19 advises to use 0.81 for Aberdeen City. Although the Aberdeen Scientific Services Laboratory undertakes the analysis of diffusion tubes from neighbouring authorities, Aberdeen City Council is the only authority with continuous monitoring stations that can be used to calculate bias adjustment factors. Accordingly, a locally derived bias factor based on the co-located tubes at the Aberdeen continuous monitoring stations was used to adjust diffusion tube measurements at the other locations across the city. This process was considered appropriate due to the lack of other co-located studies using the laboratory for tube analysis, the remote location of Aberdeen from other conurbations and the good QA/QC performance of the laboratory.

Triplicate diffusion tubes are located adjacent to continuous monitor air analyser inlets. Tubes are exposed in 4 week periods throughout the year. Diffusion tubes are provided by Gradko International and analysed by Aberdeen City Council's Public Analyst. The preparation technique is 20% tri-ethanolamine in water.

In accordance with LAQM TG 16 the Local bias factor adjustment tool, downloaded from the DEFRA Local Air Quality Management website, is used to calculate bias adjustment factors and the precision and accuracy of the triplicate co-located tubes. Table C1 summarises the bias adjustment factors. Only data with good precision has been used (coefficient of variation smaller than 20%).

Errol Place is an urban background site while the others sites are roadside.

Table C.1: Bias Factor Calculations

Type	DT Mean (ugm^{-3})	CM Mean (ugm^{-3})	Bias Factor A	Bias B (%)	CM Data Capture for periods used (%)	Number Monitoring Periods
Errol Place	26	20	0.79	26	99	13
Union Street	47	39	0.84	19	99	13
Wellington Rd	45	40	0.88	13	100	13
King Street	27	22	0.8	24	99	11
Market Street	41	30	0.75	33	99	12
Anderson Dr	24	18	0.73	37	98	13

Diffusion Tube Bias Adjustment Factors

LAQM TG 16 advises the value of a local co-location study (and the subsequent bias adjustment) will be improved if the concentrations being measured are similar to those in the wider survey. Therefore separate bias adjustment has been derived for roadside and background.

In accordance with LAQM TG 16 Bias B values of road side continuous monitoring locations were averaged for the road side locations and the inverse derived to obtain a bias adjustment factor of **0.80**.

A separate adjustment factor is derived for background sites using the Bias A, from Errol Place. LAQM TG 16 advises the value of a local co-location study (and the subsequent bias adjustment) will be improved if the concentrations being measured are similar to those in the wider survey. Therefore separate bias adjustment has been derived for roadside and background.

A separate adjustment factor is derived for background sites using the Bias A, from Errol Place, of **0.79**.

QA/QC of Automatic Monitoring

All equipment is subject to the QA/QC procedure recommended in LAQM.TG 16. Equipment is serviced at 6 monthly intervals. The contract includes call outs to site for repairs and the routine replacement of consumables.

The Errol Place, Union Street and Wellington Road sites are part of the UK's Automatic Urban Network. All sites are part of the Scottish Government data reporting process and subject to independent audit by Ricardo AEA (RAEA) at 6 monthly intervals. Data validation and ratification is also performed by RAEA.

The analysers perform daily automatic calibrations which are used to assess the routine performance of the analysers and any long term response drift. Manual calibrations are performed by trained Council officers every two weeks using a calibration mixture traceable to national standards. These calibrations act as a check on the operation of the analysers and enable determination of the instrument response factors used to calculate the concentration of NO_2.

Data is checked daily (Monday-Friday). Should a problem be identified either by Council officers or by RAEA the site is visited immediately and, if necessary, a further manual calibration is performed. Data considered suspect is deleted. Records are kept of instrument breakdowns, services and audits and any local activities or weather that may influence readings.

Data Annualisation

Annualisation of data was carried out where there was insufficient data capture in 2018 for five diffusion tube locations and $PM_{2.5}$ and PM_{10} data at King Street. Annualisation was carried out in accordance with LAQM TG (16). Table C.2 details annualisation of diffusion tube data and C.3 for the $PM_{2.5}$ and PM_{10} data at King Street.

For all sites the required period mean was derived using the continuous monitoring site, Errol Place (urban background). There are no other continuous background monitoring sites within a 50 mile radius of Aberdeen City. Valid data capture for Errol Place was also above 85% for the annual mean concentrations to be annualised.

Table C.2: Annualising diffusion tube data 2018

Site ID	Type	Data	Data Capture 2015 (%)	Measured Mean DT Raw data (M)	Period of data	Errol Pl Annual Mean (Am)	Errol Pl Period Mean (Pm)	Ratio Am/Pm (Ra)	Estimate of annual mean at monitoring site (M x Ra)
DT3	Roadside	NO_2 Annual Mean	67	39.4	4/1/18 to 3/9/18	20	20.4	0.998	39
DT69	Urban Background	NO_2 Annual Mean	58	18.0	4/1/18 to 31/7/18	20	21.4	0.949	17
DT83	Roadside	NO_2 Annual Mean	58	27.9	5/6/18 to 9/1/19	20	16.9	1.206	34
DT84	Roadside	NO_2 Annual Mean	58	19.1	5/6/18 to 9/1/19	20	16.9	1.206	23
DT85	Urban Background	NO_2 Annual Mean	25	19.0	3/10/18 to 9/1/19	20	23.0	0.884	17

Table C.3: Annualising King Street PM_{10} and $PM_{2.5}$ automatic data 2018

Site ID	Type	Data	Data Capture 2015 (%)	Measured Mean King St Raw data (M)	Period of data	Errol Pl Annual Mean (Am)	Errol Pl Period Mean (Pm)	Ratio Am/Pm (Ra)	Estimate of annual mean at monitoring site (M x Ra)
CM6	Roadside	$PM_{2.5}$ Annual Mean	68	7	1/1/18 To 6/9/18	6.87	7.09	0.969	7
CM6	Roadside	PM_{10} Annual Mean	68	15	1/1/18 To 6/9/18	14.28	14.94	0.956	14

NO_2 fall-off with distance

Where it is not possible to monitor at locations representative of exposure the NO_2 concentration at the nearest relevant location for exposure has been calculated using the NO_2 fall-off with distance calculator available on the Defra website.

Background NO_2 concentration data is obtained from the Scottish Air Quality Database website. Erroll Place automatic site annual mean (urban background concentration) was used for diffusion tube. This was due to the background concentration of 29.70ugm^{-3} on the SAQD website being greater than the levels measured by the monitoring location.

SAQD background data is derived from the emission inventory and for this location NO_x concentrations are heavily influenced by shipping, resulting in the elevated NO_2 concentrations. Erroll Place is with 1km of the diffusion tube location and is therefore considered a more accurate value to use.

Table: C.3 Diffusion Tube concentrations showing calculations to façade (2018)

Site ID	Bias Measured Concentration	Background Concentration	Distance to kerb	Distance façade	Façade Concentration
	Cy	Cb	Dy	Dz	Cz
DT2	36.5	11.8	3	11	28.2
DT3	31.2	13.4	3	17	23.2
DT4	28.6	11.7	3	7	24.9
DT5	46.5	15.4	0.1	9	27.2
DT8	48.3	13.5	3	14	34.4
DT28	32.1	20.5	3	5	30.6
DT36	42.5	17.4	1	8	32.0
DT37	22.5	16.6	10	13	21.9
DT41	39.8	11.8	0.1	7	23.4
DT47	40.9	16.6	0.1	5	27.8
DT48	28.4	14	0.1	10	19.3
DT49	31.1	14.3	3	11	25.5
DT50	22.9	15.9	0.1	6	19.0
DT54	20.0	15.4	2	14	17.9
DT55	25.0	11.7	2	9	20.3
DT57	27.0	20	0.1	16	22
DT58	25.3	14	4	8	23.1
DT63	22.9	16.6	2	11	20.4
DT65	19.3	10.4	3	8	17.0
DT66	21.1	10.4	3	6	19.2
DT67	37.9	11.1	3	8	31.1
DT74	33.7	20.7	3	5	32.0

Dy -distance to kerb at which concentrations were measured
Dz -distance to kerb at which concentrations are to be predicted

PM Monitoring Adjustment

All TEOM data between 2009 to 2018 Anderson Drive and Wellington Road was corrected to gravitational equivalent by AEA using the Volatile Correction Model (VCM). Data from the BAM at King Street were also corrected by RAEA Technology (RAEA) using a gravitational factor of 0.83333.

FDMS and FIDAS PM10 do not require adjustment. FIDAS PM2.5 is adjusted using a factor of 0.943.

Glossary of Terms

Abbreviation	Description
AQAP	Air Quality Action Plan - A detailed description of measures, outcomes, achievement dates and implementation methods, showing how the LA 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
APR	Air quality Annual Progress Report
ANPR	Automatic Number Plate Recognition
AURN	Automatic Urban and Rural Network (UK air quality monitoring network)
AWPR	Aberdeen Western Peripheral Route
CAFS	Clean Air for Scotland
CPO	Compulsory Purchase Order
Defra	Department for Environment, Food and Rural Affairs
DMRB	Design Manual for Roads and Bridges – Air quality screening tool produced by Highways England
FDMS	Filter Dynamics Measurement System
LAQM	Local Air Quality Management
LEZ	Low Emission Zone
NO_2	Nitrogen Dioxide
NO_x	Nitrogen Oxides
PM_{10}	Airborne particulate matter with an aerodynamic diameter of 10µm (micrometres or microns) or less
$PM_{2.5}$	Airborne particulate matter with an aerodynamic diameter of 2.5µm (micrometres or microns) or less
QA/QC	Quality Assurance and Quality Control

Abbreviation	Description
SAQD	Scottish Air Quality Database
STAG	Strategic Transport Analysis Guide
SO_2	Sulphur Dioxide

References

1 Environment Act 1995.

2 The Air Quality (Scotland) Regulations 2000.

3 The Air Quality (Scotland)(Amendment) Regulations 2001.

4 Local Air Quality Management Technical Guidance LAQM, TG(16), DEFRA, April 2016

5 Local Air Quality Management Policy Guidance, (PG)(S)(16), DEFRA, March 2016

6 Aberdeen City Council Action Plan, March 2011

7 2017 Air Quality Annual Progress Report (APR) for Aberdeen City Council