

Annual Progress Report (APR)



2021 Air Quality Annual Progress Report (APR) for Perth & Kinross Council

In fulfilment of Part IV of the Environment Act 1995

Local Air Quality Management

July 2021

Perth & Kinross Council

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Executive Summary: Air Quality in Our Area 2020

Air Quality in Perth and Kinross

The air quality within Perth and Kinross is generally good; however, there are a few known hotspots within Perth city centre and Crieff. The main pollutants of concern are Nitrogen Dioxide (NO₂) and Particulate Matter (PM₁₀) from vehicle emissions, which cannot escape due to the canyoning effect of high buildings within the effected streets.

PKC has declared two air quality management areas (AQMA), one covering the whole of Perth City (2006) and another encompassing the high street corridor running through Crieff (2014).

Last year (2019) was the first year since Perth & Kinross Council (PKC) began monitoring that no exceedances of NO₂ were identified within Perth and Kinross. Once again in 2020, there were no exceedances recorded during the reporting year. No new sources of emissions have been identified.

The recorded levels of PM₁₀ have decreased at the Atholl Street (Perth), Crieff and Muirton (Perth) real time monitors (RTM). PM₁₀ was not recorded at the Perth High Street RTM, as due to size constraints of existing RTM cabinet High St. the upgrade from TEOM to FIDAS analyser could not be carried out until site relocation to Bridgend. PKC also monitors for PM_{2.5} at all RTMs; no exceedances of objective levels were observed in 2020. Therefore, at present there is no evidence to indicate that the AQMA orders in either Perth or Crieff require to be amended to include PM_{2.5}.

However, it is recognised that the results from 2020 were heavily impacted by reduced vehicle movements due to the Covid-19 pandemic, and that the reductions in pollutants observed may not be sustained in the following years as things return to more normal conditions.

A review of the existing Perth Air Quality Action Plan (AQAP) is currently underway and is now due to be completed in 2021/22. The Crieff AQAP was approved in mid-2019 and implementation of the agreed measures will be progressed through consultation with the local community and internal and external stakeholders. Progress in both these areas of work has been delayed by the Covid-19 situation.

Crieff 's AQMA has the A85 trunk road running through it which Transport Scotland (TS) has adopted and BEAR Scotland maintains, therefore PKC work closely with TS and BEAR Scotland in addressing the air quality issues at this location. PKC also works in close partnership with TACTRAN (Tayside and Central Scotland Transport Partnership) and SEPA.

Actions to Improve Air Quality

PKC has taken forward several measures during the current reporting year of 2020:

- A community engagement event in Crieff was carried out in February 2020 to gather public opinion on which Crieff AQAP improvement measures should be prioritised and how they should be carried out. The public were asked to prioritise AQAP measures as well as highlight any other key traffic issues in Crieff, assisted by a drive-through video of problem areas in the High Street. Due to reduced resource during the Covid-19 pandemic, PKC was unable to begin implementing projects and measures from the Crieff AQAP utilising the information gathered from this engagement event.
- A PKC employee travel survey was carried out in July 2019 to provide baseline data for the Corporate Travel Plan. The results were then collated in a staff travel report alongside proposed improvement measures and was presented to Senior Management in early 2021 with recommendations for the focus of the Corporate Travel plan. Following positive feedback, The

Corporate Travel Plan is to be integrated within the wider Council Remobilisation strategy following the Covid-19 pandemic.

- The relocation of the Real Time monitor at High Street Perth to Bridgend, Perth was completed in early 2021. NO_x, PM₁₀ and PM_{2.5} concentrations at High Street had been below Scottish Objectives for a number of years, and as a result it was deemed more beneficial to move this monitor to Bridgend where there may be possible exceedances of the air quality objectives.



Relocated RTM in place at Bridgend Perth

- Air Quality and Planning Supplementary Guidance was adopted in March 2020 as statutory guidance in line with the Local Development Plan 2: https://www.pkc.gov.uk/media/45770/Adopted-SG-2020/pdf/Air_Quality_and_Planning_SG_2020_adopted.pdf?m=637195203309200000

The launch event for the LDP2 and AQ and Planning Supplementary Guidance was postponed due to Covid-19 pandemic.

- Air quality consultants Sweco were commissioned by PKC in 2020 to carry out the review of the Perth AQAP. This work would include creating an updated Perth air quality model using a recent traffic model from Systra, carrying out a full source apportionment exercise, drafting a new list of AQ improvement measures to be included in the updated Perth AQAP and assisting in both steering group and public consultation on the updated consultation. At the time of writing this report, AQ modelling work is due to be completed in a few weeks, to be followed by steering group consultation in September on necessary improvement measures highlighted by modelling and source apportionment data. Sweco were also commissioned in 2020 to create an air quality model for Crieff utilising the ADMS Roads software, which was completed in late 2020. This model will allow for a do-nothing scenario to be modelled coupled with other scenarios prior to the implementation of specific measures moving forward.
- PKC ECO Stars Scheme commenced in April 2019 and recruited 86 members from the Perth and Kinross area, all of whom have depots within the area. A further 90 new members were recruited in the second year of PKCs ECO Stars Scheme, across a range of industries. A launch event was planned for March 2020 for further promotion but was postponed due to the Covid-19 pandemic. As of 2020, Taxi companies are now being recruited to PKC's ECO Stars. Promotion is being supported by our Licencing team
- PKC has continued to work with Sustrans to employ an IBike Officer to provide sessions at schools throughout Perth and Kinross. In 2020 these sessions included bike maintenance, scooter & cycle skills, adult and family

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cycle confidence sessions and Dr.Bike Checks across nine schools to encourage pupils and their parents to take up sustainable and active travel. During the lockdown periods of 2020, the IBike officer supported schools by providing lesson plans for pupils to do from home themed around active travel to encourage walking/cycling/scooting.

After the October holidays the “Leg it to Lapland” idea was born where schools across Scotland were invited to take part and travel the 2400 miles from central Scotland to Lapland. PKC had 7 schools taking part clocking up an impressive 17, 841 miles between approx. 900 pupils through a combination of active school journeys and extra exercise both during the day and at home



PKC IBike Officer supervising a school cycle session in Errol

- Considerable investment has been made in the provision of attractive and secure cycle parking in Perth city centre over recent years, with the aim being to provide facilities for existing users as well as attract new cyclists to use active travel for their day to day as well as for recreational cycling.
- Five new electric vehicle charge points were installed within Perth & Kinross in 2020, including two in Crieff (Leadenflower Car Park and Broich Road Recycling Centre). An additional EV charger was installed at James Square in Crieff in early 2021, resulting in all main car parks in proximity to the Crieff AQMA now having EV chargers (Leadenflower, James Square and King St). PKC works in partnership with Transport Scotland, the Office for Low Emission Vehicles, and the Energy Saving Trust.
- A report proposing anti-idling enforcement in Perth & Kinross has been drafted and will be considered by PKC Senior Management's in the near future to establish how this measure can be taken forward. It is intended that PKC parking attendants will carry out anti-idling enforcement on an intelligence-led basis

Local Priorities and Challenges

As Perth is a major strategic hub in the Scottish transport network and has major road connections to all of Scotland's cities combined with major new proposed developments, PKC are conscious of the potential for increased traffic congestion and subsequent air quality issues and these need to be addressed. Addressing these issues will support the long-term growth of Perth as set out in the Local Development Plan (LDP) and the Perth City Plan (2015 -2035)

<https://www.pkc.gov.uk/smartgrowth>.

Therefore, a package of measures has been developed as the Perth Transport Futures Project <http://www.pkc.gov.uk/transportfutures> which is focussed on the need for road infrastructure to address key congestion points in the existing road network and to provide linkages to growth areas as set out in LDP.

The measures are to be delivered over several years and are split into four phases:

- Phase 1 A9/A85 Junction Improvement and Link Road to Bertha Park
- Phase 2 Cross Tay Link Road (CTLR) – Connecting the A9 to A93 and A94
- Phase 3 Bertha Park North Link to A9 (Linking phase 1 and 2 and will be taken forward by the developer)
- Phase 4 Associated Perth city centre improvements (such as traffic management measures, new Park and Choose sites and measures to develop the cycling, walking and public transport provision in and around Perth to improve the opportunity for and encourage sustainable modes of travel i.e., the Placemaking Programme, Perth City Plan and the Perth Cycle Network Masterplan)

Phase 1 A9/A85 Junction Improvement and link road to Betha Park was completed on 1 May 2019 and is now operational.

Phase 2 Cross Tay Link Road planning permission was granted in October 2020. Contract for the CTLR was awarded 23rd June 2021. Advance works are due to start late summer 2021.

Phase 4 Mill Street public realm improvement development to create a 'Cultural Quarter' which includes a new streetscape and new plaza area to improve access links to Perth Concert Hall, Theatre, Museum and Art Gallery for pedestrians has been completed. Further city centre improvements are to be undertaken such as walking and cycling infrastructure on major routes into city.

PKC aspires that Perth will be one of Europe's great small cities and to achieve this it has been identified that investment is required in public transport, walking and cycling networks. PKC recently developed an Active Travel Strategy which promotes walking and cycling across Perth & Kinross: [Active Travel Strategy for Perth and Kinross](#).

How to Get Involved

For further information on air quality within Perth and Kinross visit the PKC air quality website at: <https://www.pkc.gov.uk/airquality>

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1 Local Air Quality Management

This report provides an overview of air quality in PKC during 2020. 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 undertaken by PKC 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 Concentration	Air Quality Objective Measured as	Date to be Achieved by
Nitrogen dioxide (NO ₂)	200 µg/m ³ not to be exceeded more than 18 times a year	1-hour mean	31.12.2005
Nitrogen dioxide (NO ₂)	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
Particulate Matter (PM ₁₀)	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
Sulphur dioxide (SO ₂)	125 µg/m ³ , not to be exceeded more than 3 times a year	24-hour mean	31.12.2004
Sulphur dioxide (SO ₂)	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

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 PKC can be found in Table 2.1. Maps of AQMA boundaries are shown in Figure 2.1 and 2.2 below.

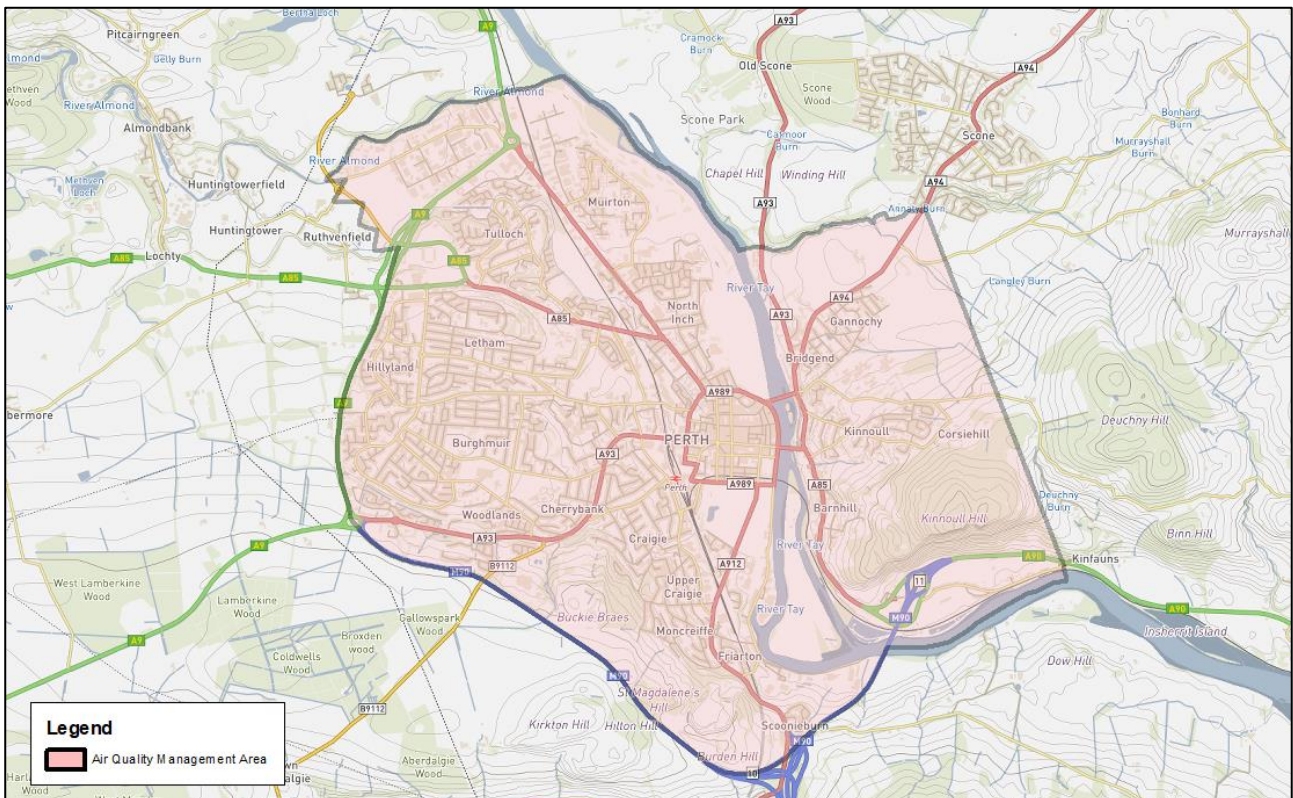


Figure 2.1: Perth AQMA Boundary

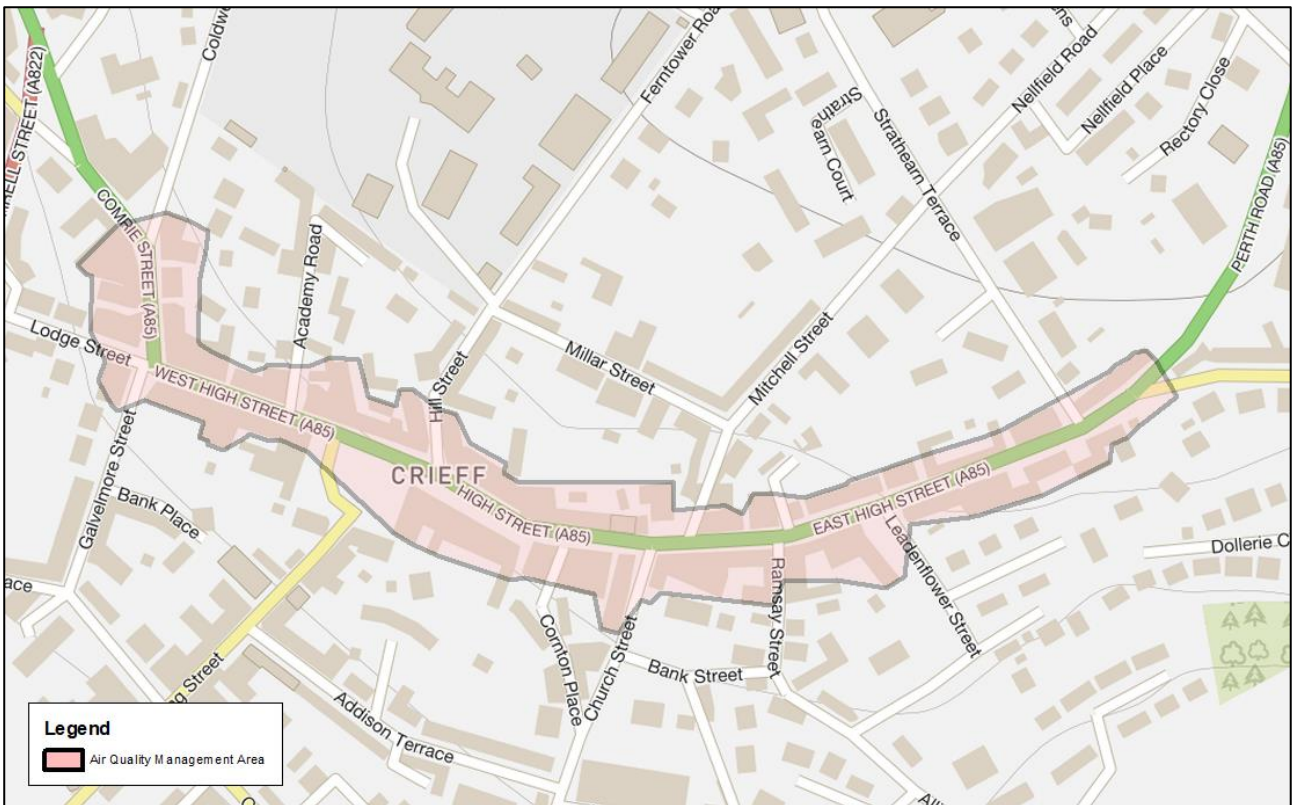


Figure 2.2: Crieff AQMA Boundary

Table 2.1 - Declared Air Quality Management Areas

AQMA Name	Pollutants and Air Quality Objectives	City / Town	Description	Action Plan
Perth AQMA	<ul style="list-style-type: none"> • NO₂ annual mean • PM₁₀ 24-hour mean 	Perth	The whole area of Perth City was designated an AQMA in 2006.	Perth and Kinross AQAP 2009 http://www.pkc.gov.uk/media/35448/2009-Air-Quality-Action-Plan/pdf/Perth_and_Kinross_Air_Quality
Crieff AQMA	<ul style="list-style-type: none"> • NO₂ annual mean • PM₁₀ 24-hour mean 	Crieff	Follows the A85 from the Y-Junction of Dollerie Terrace/Perth Road westwards to the Y-Junction of Comrie St/Coldwells Rd. The AQMA takes in the whole of the buildings along East High St/High St/West High St and Comrie St (to Coldwells Road).	Crieff AQAP https://www.pkc.gov.uk/media/44879/2019-Crieff-Air-Quality-Action-Plan/pdf/(2)_2019_Perth_and_Kinross_Council_Crieff_Air_Quality_Action_Plan.pdf?m=637080263860030000

2.2 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 on [the Scottish Government's website](#). Progress by PKC against relevant actions within this strategy is demonstrated below. Further responsibility for local authorities set out in the recently published CAFS 2 – Towards a Better Place for Everyone will be undertaken in due course

2.2.1 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 AQAP'. PKC is still undertaking the development of the Corporate Travel Plan, with the intention that it be integrated within a wider remobilisation plan for the Council following the changes to travel caused by the Covid-19 pandemic. PKC has developed an [Active Travel Strategy](#) which promotes walking and cycling across Perth & Kinross: Active Travel Strategy for Perth and Kinross.

Further to this work, a Perth Cycle Network Masterplan was developed to investigate future potential active travel corridors to provide commuters, residents and visitors with improved accessibility and alternative green routes into the city. This will help reduce the impact of traffic and pollution, as well as improving the overall economic and environmental health of the region.

This work led to PKC, submitting a bid for Sustrans Community Links PLUS competition and successfully being awarded funding to take forward the Dunkeld Road Corridor active travel route, which will involve the reallocation of vehicular road space for active travel to encourage the shift from car to more sustainable modes.

2.2.2 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 to ensure that air quality considerations are covered. Air pollution in Perth and Kinross often originates from the same activities that

contribute to climate change and in turn PKC will continue to utilise the [Cleaner Air for Scotland Strategy \(CAFS\)](#) to tackle both issues. CAFS aims to slow down the effects of climate change by reducing greenhouse gas emissions while utilising the co-benefits this can have on reducing air pollution.

PKC have an agreed set of [sustainable development principles and aspirations](#) that are considered throughout our organisational operations, service delivery and decision-making. These cross-cutting and interconnected principles are organised across 11 main themes, and collectively reflect the five themed objectives of the [Community Plan](#).

PKC are at the forefront of and have signed Scotland's Climate change declaration and are participating in a carbon management programme, run by the Carbon Trust. PKC also has the second highest installed capacity for renewable energy in Scotland and in the UK

In June 2019 PKC agreed a Motion committing the Council to lead by example in accelerating the transformational change required to address the Climate Emergency, declared by the UK and Scottish Governments. The draft Climate Change Interim Report and Action Plan approved in December 2019 sets out an initial route map to meeting the ambitions of the Council Motion, as well as highlighting the targets, challenges, and the action the Council is already taking to address climate change. The report provides a basis to develop our engagement with partners and communities – giving an opportunity for the Council, partners and all citizens to play a part in designing and delivering a low carbon and climate resilient Perth and Kinross. The following details the next steps following the passing of the interim report:

i) Consultation:

Initially, a public consultation was to take place between February 2020 and April 2020 but due to recent circumstances related to the Covid-19 pandemic, this period was delayed and took place from October 2020 to January 2021 instead. In addition to this, despite planning to host workshops, public events and exhibitions, the public consultation was launched online over five phases and a number of online sessions in order to comply with the pandemic guidelines. Some of the online sessions were hosted and organised by the Council solely, while others were hosted by our local Climate Cafés. During these sessions, the conversation was led by Climate Café attendees and PKC officers had a supportive role to answer questions and introduce the engagement survey.

ii) Climate Change Commission:

The creation of a Perth & Kinross Climate Commission is a key action in PKC's Interim Action Plan, and it remains key in designing the finalised Action Plan.

iii) Engagement & Awareness Raising:

Developing new ways to work with communities and businesses to further identify measures towards creating a low carbon economy.

iv) Staff Awareness Raising

A climate change-based staff online module has been created and is now in a trial process for a number of PKC staff before it is finalised and made available for all PKC staff.

v) Online Based Web Resource:

The creation of a dedicated community website as a one-stop-shop for all matters related to climate change in Perth and Kinross is under development.

The finalisation of the Climate Action Plan is under development and is expected to be finalised in Autumn 2021.

2.3 Progress and Impacts of Measures to address Air Quality in Perth & Kinross

PKC has taken forward a number of measures during the current reporting year of 2020 in pursuit of improving local air quality. Details of all measures completed, in progress or planned are set out in Table 2.2 and Table 2.3. More detail on these measures can be found in the air quality Action Plan relating to each AQMA.

Key completed measures are:

- Relocation of Perth High Street RTM to Bridgend in Perth
- The creation of a Crieff air quality model by our consultants Sweco utilising the ADMS Roads software. This model will allow for a do-nothing scenario to be

modelled coupled with other scenarios prior to the implementation of specific measures moving forward.

- The increasing of our NO₂ monitoring network at West High Street Crieff.

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

- PKC Corporate Travel Plan – Covid-19 resulted in the majority of staff working from home full time. As it was unknown how long this reduction in staff travel would last, the Corporate Travel Plan could not be progressed during the pandemic
- Review of Perth's AQAP – Due to an issue relating to AADT factors for the traffic model, the creation of a new Perth air quality model and subsequent source apportionment was delayed, however work is now progressing

PKC expects the following measures to be completed over the course of the next reporting year:

- Review of Perth's AQAP to be completed
- The PKC Corporate Travel Plan will be integrated into a wider remobilisation strategy following the changes to staff travel during the pandemic
- Following the Crieff community engagement event held in February 2020, it is expected that some of the measures found within the Crieff AQAP are taken forward in the year 2021/2022 in some capacity. These measures (such as incentivising parking out with the AQMA, exploring traffic control mechanisms, redirecting traffic from problem areas and reviewing pedestrian crossings) were all discussed in great detail at the event and so it has become clearer to PKC and other stakeholders what measures may be seen as a priority to the general public.
- Continuation of the ECO Stars Scheme for both heavy duty vehicles and taxi operators to achieve air quality improvements within Perth city and Crieff. Due to reduced funding this year outcomes may also be reduced
- Submission of anti-idling enforcement powers for senior management consideration

- EV Chargers Perth – PKC’s Transport Planning team will carry-out the installation of 5 EV charge points at Riverside Car Park and 5 EV charge points at Victoria Street Car Park Perth in 2021. These charge points will be available to both commuters and residents who do not have access to private parking, a garage or a driveway to install a home charge point for overnight use. The project will therefore further support the shift from petrol and diesel vehicles to EVs within Perth.
- Clean Air Day – Due to delays in procuring event assistance for Clean Air Day 2021, PKC intends to carry out an alternative education and awareness raising campaign in September for WHO’s International Day of Clean Air for Blue Skies. This will include activities being delivered at schools in Perth & Kinross and a social media campaign
- Zephyr Monitoring Study – AQ consultants Sweco will carry out a monitoring study on PKC’s behalf utilising two Zephyr monitors in Crieff and Perth to determine canyon NO₂ and PM concentrations where it is not possible to place a Real Time Monitor. In addition, the additional PM data in Crieff will be used to further evidence whether revocation of the Crieff AQMA is required

Table 2.2 – Progress on Measures to Improve Air Quality - Perth AQAP

Measure No.	Measure	Category	Focus	Lead Authority	Planning Phase	Implementation Phase	Key Performance Indicator	Target Pollution Reduction in AQMA	Progress to Date	Estimated Completion Date	Comments
1.	Cross Tay Link Road (CTLR)	Transport Planning and Infrastructure	New crossing of the Tay linking the A9 to the A94 north of Scone, including package of associated bus priority, cycle and pedestrian measures 'locking in the benefits' to Perth city center.	PKC Transport Planning Planning & Development TACTRAN Transport Scotland	2009-ongoing to circa 2024			PKC Regional Modelling Predicted a (-) 16.70% reduction in NO ₂ at Atholl Street hotspot	Phase 1 A85/A9 has now been completed and is open to connect with Bertha Park AQ and Noise assessment as part of EIA 18/01661/SCOP have been undertaken by consultants and peer reviewed Planning Application submitted 19/01837/FLM Contract for the CTLR was awarded on 23 June 2021. Advanced works are due to start late summer 2021	2024/2025	
2.	Integrate AQ into Regional Transport Strategy (RTS)	Policy guidance and development control	Ensure that this AQAP is integrated into the delivery of the RTS.	PKC TACTRAN	2009/10	2009/10 and as RTS is delivered	We will report annually on our meetings with TACTRAN and provide a discussion as to how the AQAP is influencing delivery of the RTS.	Medium - High	AQ considerations are influencing RTS delivery, in the past 6 years PKC and TACTRAN continue to work in conjunction to ensure AQ is considered in the RTS and projects such as freight consolidation, park and ride, lift share, walking and cycling initiatives. Regional Transport Strategy is currently under review, to be adopted late 2022. The new RTS would cover 2023-2033	Ongoing	

3.	Integrate AQ into Local Transport Strategy (LTS)	Policy and guidance development control	Ensure that the AQAP is integrated into the delivery of the LTS.	PKC	LTS published in 2010 on going implementation of the schemes	Ongoing	We will comment on any specific air quality provisions contained in the LTS.	Medium - High	<p>An Active Travel Strategy for Perth and Kinross was approved by committee in 2018</p> <p>Shaping Perth's Transport Future 2011 and the wider regional document published</p> <p>Transport Strategy for Perth Shaping Perth's Transport Future.</p> <p>The LTS preferred strategy is one of an integrated approach and air quality is one of the Strategy objectives:</p> <p>http://www.pkc.gov.uk/article/17627/Transport-planning-Policy-and-strategy</p> <p>To work towards meeting national air quality standards and prevent further breach and exceedances and to reduce transport emissions.</p>	EH continue to attend meetings with PKC's transport planning team for projects such as Perth City Centre Traffic, Shaping Perth's Transport Future and Perth Public Transport Interchange Study.	Transport Colleagues have acknowledged that the LTS needs to be reviewed in line with CAFS.
4.	Park & Ride	Transport Planning and Infrastructure	<p>Operate existing Park & Ride (PR) Schemes.</p> <p>Perth PR (Broxden)</p> <p>Scone PR</p> <p>Kinross PR</p> <p>Walnut Grove PR Planning Permission 15/01808/FLM approved.</p>	PKC	2009 - ongoing	Ongoing	<p>Annual usage statistics</p> <p>A calculator of avoided NO_x /PM₁₀ will be provided</p>	Medium	<p>An Electric Hub has been developed at the Broxden PR with the installation of</p> <p>3'Rapid' DC/AC chargers</p> <p>3'Fast' AC chargers servicing 12 EV parking bays.</p> <p>European Funding is being sought and planning permission in principle submitted for a hydrogen</p>	Ongoing	

			Maintain high levels of usage. We will carry out intermittent surveys to assess vehicles using the sites.						refuelling station South east of Broxden P&R 18/00482/IPL and a solar array for an electricity supply to support electric vehicle charging points to meet much of the energy requirements of the proposed Broxden Low Carbon Transport HUB		
5.	Bus Quality Improvements	Transport planning and infrastructure	Bus Strategy 7 Quality Bus Partnerships	TACTRAN PKC	2009-2040	More specific timescales are available in TACTRAN's RTS Delivery plan/capital and revenue programmes	Shift to alternative modes - this will be monitored by TACTRAN as part of the evaluation process of their RTS Delivery Plan.	Medium	Continued improvements involving PKC, TACTRAN and bus operators and improvements on bus shelter facilities and interchanges. Continued review of timetables which are amended to reflect demand and fares revised: passengers now benefit by being able to use Stagecoach network tickets (Dayrider and Megarider).	Ongoing	
6.	Freight Improvements	Freight and delivery management	Establish a TACTRAN – wide Freight Quality Partnership (FQP), in liaison with freight interests and Councils drawing upon established guidance, to help deliver cost effective packages of freight related interventions across the region	TACTRAN PKC	Ongoing to 2024	Ongoing to 2024 More specific timescales are available in TACTRAN's RTS delivery plan/capital and revenue programme	PKC will seek regular updates from TACTRAN on progress and report on these annually.	High	A TACTRAN –wide freight quality partnership has been formed including members from PKC, Scottish Enterprise and the private freight sector. PKC and Dundee's EH managers are members of the Freight Quality Partnership. AQ is integrated into the Freight Quality partnership. A freight consolidation center has been proposed as part of the Perth West Development	EH continue to attend meetings to ensure AQ is integrated into the FQP.	

7.	Travel Planning	Promoting travel alternatives	PKC Corporate Travel Plan (CTP); including encouraging Flexible working, car/lift sharing/ alternative modes, salary sacrifice bicycle scheme, pool car usage, home working.	PKC	Initiated year two of this AQAP	On going	Activity data will be collected by survey to support the working of the PKC Corporate Travel Plan (CTP). A base survey of staff travel habits will also be carried out. We will estimate vehicle km avoided in the AQMA and report emissions of NO _x and PM ₁₀ .	Medium	Base-line staff travel survey carried out in 2019. Staff travel report went to Senior Management in 2021 with recommendations of focus for the Corporate Travel plan. Travel Plan is to be integrated within a wider Council Remobilisation strategy following the Covid-19 pandemic.	2021/22	Ongoing Covid-19 pandemic may alter ways of working moving forward. PKC at present promotes a car hire salary sacrifice scheme (Tusker) to staff which only provides LEV or ULEVs. In addition, a Walk to Work Week and lift share are promoted via staff intranet.
		Promoting travel alternatives		TACTRAN (through the sustainable Travel Liaison Group) PKC.	2009	2009 then ongoing	Activity data will be sought from the main employers as to the journeys avoided from their GTPs. If this is provided, it will allow for estimates of vehicle km avoided in the AQMA and report reduction in emissions of NO _x and PM ₁₀ .	Medium	TACTRAN has been represented on SSE's Travel Plan Steering group and provided advice and promotional material. Perth College has also been given information and support of use of lift share. Aviva, PRI and Murray Royal Hospitals have been given advice and guidance in travel planning process and PRI provided with grants for travel planning measures, promotion of travel plan implementation software, TACTRAN travel knowhow to support businesses developing and implementing travel plans.	Ongoing	
		Promoting travel alternatives	We will continue to support schools developing Green Travel Plans (GTP) through our school co-ordinator and collect activity data to	PKC	2009 then ongoing	Ongoing	Survey data will be requested from PKC schools as to the journeys avoided from	Medium	SG grant funding allows for the continued support for green travel plans.	Ongoing	Hands up survey 2019 determined that the percentage of primary pupils

			assess their use through our school co-ordinators.				their GTPs. We will estimate vehicle kilometers avoided in the AQMA and report reduction in emissions of NO _x and PM ₁₀ .		The road network team promotes Cycling, walking (WoW) initiatives		regularly cycling to school and pupils scooted or skated to school has increased by 4.1%
		Promoting travel alternatives	Regional/PKC car and Lift Share schemes - there is both a wider scheme, and one specific to PKC employees. We will improve use of PKC scheme through our own GTP.	TACTRAN PKC	2009 then ongoing	Ongoing	Activity data will be collected annually from both schemes and we will estimate vehicle km avoided in the AQMA and report reduction in emission of NO _x and PM ₁₀ .	Small-Medium	Continued promotion of Lift share including PKC and PRI, SSE and Aviva with stalls within workplaces. Participation in national Lift share week and leaflet promotion through employers.	Ongoing	
		Promoting travel alternatives	Green Travel Plans for new development. We will continue to seek travel plans from large development under existing planning arrangements	PKC	2009 then ongoing	Ongoing	Number of GTPs and estimation of specified in reporting year.	Low	This is a continual process through planning and is requested by Transport Planning Team who are internal consultees for planning.	Ongoing	GTP are requested through the planning process
8.	Traffic Management	Traffic Management	Keep "City Traffic Management Review" under continual review our traffic and environmental teams will liaise regularly to discuss the effects of component measures of City Centre Traffic Management Review (CCTMR) on Air Quality.	PKC	Ongoing as required	Ongoing	We will report annually on any changes to the CCTMR and how we anticipate this effecting air quality.	Medium	A Stratos UTM Common Database has been installed and a main link has been secured.	Ongoing	We will continue to review managing traffic within AQMA

9.	Planning and Air Quality	Policy Guidance and Development Control	Consider air quality as an issue for the Local Development Plan.	PKC	2014	2019-24	It is not possible to assign a quantitative indicator. We will report on the delivery of the Local Development Plan (LDP), and provide evidence that air quality considerations have been formalized within the LDP.	Medium	The Perth & Kinross Local Development Plan (2019) [46Mb] was adopted on 29 November 2019 and covers the whole Perth and Kinross area (apart from those areas covered by the National Parks). AQ is considered within the new plan for the whole region, not just AQMAs.	2019-24	
		Policy guidance and development control	Complete the supplementary planning guidance (SPG) on Air Quality This will include results of regional air quality modelling currently being undertaken by Ricardo E&E.	PKC	2014	2020 Statutory	It is not possible to assign a qualitative indicator. We will report progress on the development of the plan	Small	PKC have produced a new statutory AQ SPG, which was adopted in March 2020 and is linked with the new revised LDP (2019)	Completed	The AQ SPG document will be reviewed in line with the LDP
		Policy guidance and development control	Consider air quality in planning decisions and formalise decision making process/interaction with Environmental Health. This can relate not only to new transportation sources, but also new biomass installations or industrial sources	PKC	Ongoing	Ongoing as required	It is not possible to assign a qualitative indicator. We will report on cases where air quality was a consideration in the reporting period, and any outcomes of any decisions made	Low	Environmental Health will continue to check the weekly planning list and comment on applications which may adversely impact on local air quality. The AEA/EPUK screening tools are used to assess applications.	Ongoing	
10.	Procurement and Air Quality	Vehicle fleet efficiency	Air Quality will be formally considered in tendering processes for new PKC vehicles. PKC currently specify stringent Euro Standards than necessary. A fleet survey	PKC	Fleet Survey in year 1 of AQAP, then ongoing as tender	Ongoing	If vehicles are replaced like for like, the number will be reported annually, with Euro standards and that of the	Small – Medium	PKC continue to replace Euro Standard vehicles with newer Euro 6 vehicles or electric vehicles where appropriate. All new Fleet	Ongoing	Future funding from Switched on Fleet will be put towards EV chargers rather than vehicles to establish

			will be necessary in the short term to establish the baseline for improvements		arises as part of the standards specification		vehicle replaced. This will feed into an emissions calculation and the saving in NO _x and PM ₁₀ will be reported annually. If additional vehicles are bought, Euro Standards will be reported and an estimation of impact of specifying a more stringent standard will be reported.		vehicles in 2020 were either Euro 6 or EV. Currently PKC has a total of 26 EVs in its fleet. In 2020, 3 vehicles were replaced with EVs and 8 EVs were leased with funding from Switched on Fleet PKC continue to expand electric charging point network to accommodate a more electric fleet. Currently PKC Fleet have a total of 12 EV chargers installed, 3 of which were installed in 2020 and 3 in 2021. A Fleet EV Strategy is near completion which will cover all council Depots (Friarton, Crieff, Kinross, Blairgowrie and Pitlochry)		necessary infrastructure. Three new EV chargers are planned for installation in 2021, with proposals for chargers at 4 of the 6 Community Campuses also awaiting approval
11.	Eco-driver training	Vehicle fleet efficiency	PKC will seek to expand the existing provision of eco driver training utilizing the former training team to develop and add an eco-training course into existing modular training syllabus. The eco-driving module will become part of our regular driver Certificate of Professional Competence (CPC) training package which will be delivered on an ongoing basis.	PKC	Expand programme by 2011 then ongoing	2011-Ongoing	PKC intend to assess drivers after they have completed the training. The outcomes of these assessments (i.e. the fuel saving per driver) will allow simple calculations of avoided emissions of NO _x and PM ₁₀	Small	The eco-module also forms part of future training for all council drivers as part of the driver assessment programme, PKC have a Qualified LGV driving instructor to deliver LGV Training to staff.	Ongoing	PKC continue to deliver CPC Programme

	Set up vehicle group MPG indicators	Vehicle fleet efficiency	MPG Key Performance Indicators (KPIs).	PKC	2016/17	2017/19	MPG KPIs	Small	Cleansing database and fuel information cultural change to ensure accurate mileages and machine hours are accurately recorded at each fueling event.	Completed	
	Better utilisation of the small vehicle fleet by installing telematics	Vehicle fleet efficiency	Small Vehicle Fleet	PKC	2016/17	2017/19	Less grey fleet mileage with better use of Council pool vehicles.	Small	All Council fleet vehicles are now installed with tracking systems. These telematics systems will allow PKC to analyse the usage and identify improved utilisation of pool and operational vehicle fleet.	Completed	
12.	Provision of Travel Information	Public Information	Develop, promote and maintain a comprehensive Travel Information System, covering all modes and users and make this information available in on-line formats. Delivered through TACTRAN's regional Travel Information Strategy.	TACTRAN PKC	Study and develop strategy by 2011 specific measures on going to circa 2018	2018	We will liaise with TACTRAN and report annually on the findings of the feasibility work. As initiatives are implemented, we will report progress on these individually	Medium	Traveline Scotland in partnership with PKC continues to develop the website and apps to provide and enhance public transport information Scotland-wide. https://www.tactran.gov.uk/index.php	Ongoing	
13.	Signage	Public Information	Investigate the potential of variable message signage linked to pollution monitoring system	PKC	Feasibility work by 2011	2016/17	We will report annually the findings of any feasibility work that is carried out and develop the measure further based on the findings.	low	PKC in 2018 installed a RTI within our Perth City Centre offices public reception area giving bus timetable information In 2020/21, RTI Screens were installed at 7 bus shelters throughout Perth City as part of ongoing infrastructure improvements These screens were also utilized during the pandemic to share public health messages and warnings	No further feasibility studies have been carried out	

14	Alternative Modes	Promoting Travel Alternatives	Work closely with TACTRAN to aid delivery of the Walking and Cycling Strategy for the region to ensure walking and cycling are part of an integrated transport system	TACTRAN PKC	Initial Study - 20019/10 Ongoing liaison /review	Ongoing liaison/review	We will liaise with TACTRAN annually and report progress with individual measures implemented under the Strategy.	Medium	SG funding was attained this year again to match fund the IBike Officer. Various activities such as adult cycle confidence and bike maintenance sessions were delivered before lockdown/where restrictions allowed. During lockdown, active travel lesson plans were provided to schools for homebased work. In addition to the IBike Officer's work, Bikeability sessions were provided at various schools 'Perth/Crieff on the Go' delivers cycle/walking route maps and bus timetables to residents and travel planning through school initiatives.	Ongoing	
15.	Better access to public transport (note: access to service, not person access to individual buses)	Transport Planning and Infrastructure	Work with planning colleagues to assess provision of public transport at new and existing developments	PKC	2009- Ongoing	Ongoing	We will report on findings of reviews and any improvements made to the existing public transport network and new developments that have given public transport facilities.	Small	Continue to assess transport schemes through planning for new and existing developments	Ongoing	

16.	Idling Emission Reduction	Promoting Low Emission Transport	Enforce Vehicle Idling Regulations	PKC	2019/2020	2020	Number of vehicles subject to enforcement	Small	A senior management report has been produced and is due to go to Senior Management in the near future. It is intended that PKC parking attendants will carry out anti-idling enforcement on an intelligence-led basis	2021	
17.	Roadside Emission Testing	Roadside Emission Testing	Authorised Personnel to carry out roadside testing.	PKC and Police	Feasibility Study involving surrounding Local authorities by end 2010.	No Progress	Number of vehicles subject to enforcement	Small	No progress	No progress	
18.	LAQM Marketing	Public Information	Enhance existing provisions of publicity materials and ensure they reach their target audience. Organise publicity initiatives in schools, large employers and public sector.	PKC		Commence 2009 - Ongoing	Publication of materials, events held	Small-Medium	Continue with PKC's Social Marketing Campaign ' <i>Perth & Crieff on the Go</i> ' Promotional work within schools and businesses, funding permitting. Continue to promote 'Clean Air Day' carrying out events with schools promoting active and sustainable travel.		
19.	LAQM Monitoring and Reporting	Statutory Duties LAQM	Statutory Duties LAQM	PKC	Ongoing	Ongoing	Monitoring data will be provided in the annual progress report as will the progression of measures within AQAP.	Small	PKC continue to review Monitoring network.	Ongoing	High St. RTM relocated to Bridgend to assess potential exceedances of NO ₂

Table 2.3 - Progress on Measures to Improve Air Quality – Crieff AQAP

Measure No.	Measure	Category	Focus	Lead Authority	Planning Phase	Implementation Phase	Key Performance Indicator	Target Pollution Reduction in AQMA	Progress to Date	Estimated Completion Date	Comments
A.1	Liaise with the Scottish Government regarding the consideration of national measures to reduce background concentrations of PM	Policy guidance and development control.	Maintain contact with the Scottish Government regarding the adoption of national air quality measures.	PKC Scottish Government	Ongoing	Ongoing	It is not possible to assign a quantitative indicator.	Medium	No progress	Ongoing	
A.2	Improving Links with Local Transport Policies	Policy guidance and development control	Improve links with local transport policies	PKC TACTRAN Transport Scotland Transport Travel Associations	2020/2021	Ongoing	We will comment on any specific air quality provisions contained in transport policies.	Small	No progress	Ongoing	

A.3	Improve Links with Regional Transport Strategy	Policy guidance and development control	Measures to ensure that AQ and climate change are considered with regards to Transport Planning for Crieff at a regional strategy level.	PKC TACTRAN Transport Scotland	Ongoing	Ongoing	We will report annually on our meetings with TACTRAN and provide a discussion as to how the AQAP is influencing delivery of the RTS.	Small	AQ considerations are influencing RTS delivery, in the past 6 years PKC and TACTRAN continue to work in conjunction to ensure AQ is considered in the RTS and projects such as freight consolidation, park and ride, lift share, walking and cycling initiatives. Regional Transport Strategy is currently under review, to be adopted late 2022. The new RTS would cover 2023-2033	Ongoing	
A.4	Ensure Integration of Air Quality with Other Council Strategies and Policies	Policy guidance and development control	Encourage opportunities for improving local air quality and minimising negative impacts from existing and future PKC strategies and policies.	PKC	Ongoing	Ongoing	It is not possible to assign a quantitative indicator. We will report on the delivery of the Local Development Plan (LD), and provide evidence that air quality considerations have been formalized within the LDP.	Small	PKC Local Development Plan: https://www.pkc.gov.uk/article/15042/Local-Development-Plan-2019- The current LDP has been reviewed and AQ is considered within the new plan for the whole region, not just AQMAs. The review will be in line with CAFs. The reviewed LPD was completed and adopted in 2019. Air Quality is a major consideration in the PKC interim Climate Change Action Plan.	Ongoing	Supplementary air quality planning guidance was approved in 2020 and sets out how air quality will be considered when determining planning applications and detail the circumstances in which an air quality assessment may be required.

A.5	Local Development Plan – Assess Merit of further development in Crieff	Policy guidance and development control	Maintain and update air quality considerations with planning and development control. Ensure the AQ impacts from significant development proposal avoid Crieff's AQMA.	PKC	2019/2020	Ongoing	It is not possible to assign a quantitative indicator. We will report on the delivery of the Local Development Plan (LD), and provide evidence that air quality considerations have been formalized within the LDP.	Small	PKC Local Development Plan: https://www.pkc.gov.uk/article/15042/Local-Development-Plan-2019- The current LDP has been reviewed and AQ is considered within the new plan for the whole region, not just AQMAs. The review will be in line with CAFs. The reviewed LPD was completed and adopted in 2019.	2019-2024	Supplementary air quality planning guidance was approved in 2020 and sets out how air quality will be considered when determining planning applications and detail the circumstances in which an air quality assessment may be required.
B.1	Redirect local road traffic movements away from A85	Traffic management	Undertake a feasibility study to examine alteration of traffic flows and movements off and onto the trunk road in relation to local roads around the AQMA.	PKC Transport Scotland	2020/2021	2020/2021	NO ₂ & PM levels.	Medium	No progress	No progress	This subject was raised at the 2020 Crieff public engagement event.
B.2	Incentivise parking out with AQMA e.g., reduce/remove on street parking, increased signage)	Transport planning and infrastructure	Encourage parking of polluting vehicles away from the AQMA through (e.g.) parking charges, restrictions, signage and length of stay and incentivise parking through electric vehicles, car clubs etc.	PKC Transport Scotland	2020/2021	2020/2021	NO ₂ & PM levels. Parking space occupancy on A85.	Medium	No progress	No progress	This subject was raised at the 2020 Crieff public engagement event.

C.1	Possible provision of SMART parking in Crieff	Transport planning and infrastructure	Ensure that parking behaviour does not negatively impact on local air quality by ensuring people travelling by car are able to find a parking space quickly and easily thereby reducing parking pressures and congestion.	PKC Transport Scotland	2020/2021	2020/2021	NO ₂ & PM levels. Parking space occupancy on A85.	Small	No progress	No progress	This subject was raised at the 2020 Crieff public engagement event.
C.2	Urban Traffic Control Systems congestion management	Traffic management	Improve efficiency of transit through the AQMA to reduce local emissions. Review measures to minimise congestion within the existing AQMA.	PKC EH Transport Scotland BEAR Scotland	2020/2021	2020/2021	% drop in NO ₂ and PM emissions following implementation.	Medium	The topic was discussed during a 2020 community engagement event and discussions with Transport Scotland are ongoing. Due to limited resource during the Covid-19 pandemic no further progress has been made	2021/2022	
C.3	Anti-Idling Enforcement	Policy guidance and development control	Investigate potential for undertaking enforcement action with respect to idling vehicles.	PKC	2019/2020	2020	Number of vehicles subject to enforcement	Small	A SMT report has been produced and is due to go to Senior Management in the near future. It is intended that PKC parking attendants will carry out anti-idling enforcement on an intelligence-led basis	2021/2022	
C.4	Undertake a review of the current locations of pedestrian crossings	Transport planning and infrastructure	Review the current pedestrian crossing locations/timings in and around the A85.	PKC Transport Scotland BEAR Scotland	2020/2021	2020/2021	It is not possible to assign a quantitative indicator.	Small	The topic was discussed during a 2020 community engagement event and discussions with Transport Scotland are ongoing. Due to limited resource during the Covid-19 pandemic no further progress has been made.	2021/2022	
C.5	Limit or prioritise traffic turning right onto High Street	Traffic management	Review of existing junction arrangements and impact of possible changes to seek improved traffic flow.	PKC Transport Scotland	2020/2021	2020/2021	% drop in NO ₂ and PM emissions following implementation.	Medium	The topic was discussed during a 2020 community engagement event and discussions with Transport Scotland are ongoing. Due to limited resource during the Covid-19 pandemic no further progress has been made	2021/2022	

D.1	Encourage private and public operators to pursue cleaner vehicles	Vehicle fleet efficiency	Encourage a reduction in emissions of NO ₂ and PM ₁₀ from companies operating vehicles in Crieff.	PKC	2020/2021	2020/2021	Number of new businesses signing up to the ECO Stars scheme. It is not possible to assign other quantitative indicators.	Small	PKC ECO Stars works with operators in the area to improve fleet efficiency, supporting their move to more efficient vehicles. Two EV chargers were installed in 2020/21 within Crieff: one in Leadenflower Car Park and one in James Square Car Park. A third charger was installed at Broich Road recycling centre for council use only.	Ongoing	
D.2	Maintenance of the Local/Voluntary Bus Quality Partnership	Promoting travel alternatives	Encourage good operational practices, including driving standards, which support the environmental agenda; whilst still providing high quality bus provision.	PKC TACTRAN	Ongoing	Ongoing	Shift to alternative modes - this will be monitored by TACTRAN as part of the evaluation process of their RTS Delivery Plan.	Small	No progress	Ongoing	
D.3	School Travel Plans	Promoting travel alternatives	Encourage uptake of school travel plans to promote active travel.	PKC	2020/2021 then ongoing thereafter.	2020/2021 then ongoing thereafter.	Survey data will be requested from PKC schools as to the journeys avoided from their TPs. We will estimate vehicle kilometres avoided in the AQMA and report reduction in emissions of NO _x and PM ₁₀ .	Small	The road network team promotes Cycling, walking (WoW) initiatives through and iBike officer and cycle/scooter storage facilities.	2021/2022	Hands up survey 2018 determined that the percentage of Perth primary pupils regularly cycling to school is 6.6% and 6.5% pupils scooted or skated to school.

D.4	Public transport improvements	Promoting travel alternatives	Look at opportunities to provide additional public transport options, directly linking residential areas with key traffic generators. Identification of funding sources will be key both for revenue and capital developments.	PKC TACTRAN	2020 onwards	Ongoing	Public transport usage numbers. Shift to alternative modes - this will be monitored by TACTRAN as part of the evaluation process of their RTS Delivery Plan.	Small	Bus shelter improvement in 3 locations on the Crieff – Comrie route. In 2020/21 Real time information monitors were installed in two locations within Methven, and a power supply was installed at a bus shelter in Comrie in preparation for an RTP1.	Ongoing	
D.5	Restrict access for polluting vehicles within AQMA	Traffic management	Appraise the Crieff AQMA in line with the future NLEF and put in place scheme as recommended. Assess the possible provision of access restrictions for vehicles loading/unloading.	PKC Transport Scotland BEAR Scotland	2019/2020	N/A	% decrease in emissions.	Medium	Crieff AQMA has not been identified as a location for the introduction of a LEZ following screening assessment in 2020.	N/A	Crieff AQMA may still require a LEZ in the future.
D.6	Implement ECO Stars scheme for HGV and bus operators	Vehicle fleet efficiency	Promote awareness among commercial vehicle operators of improved fleet environmental performance.	PKC TRL	2018/2019 then ongoing thereafter	Ongoing	Number of new businesses signing up to the scheme. Continuous monitoring of their star rating and progress. Progress reports from ECO Stars.	Small	90 new members were recruited in the second year of PKCs ECO Stars Scheme, across a range of industries. A launch event was planned for March 2020 for further promotion but was postponed due to the Covid-19 pandemic. As of 2020, Taxi companies are now being recruited to PKC's ECO Stars. Promotion is being supported by our Licencing team	Ongoing	

E.1	Promotion of lift sharing and development of car clubs	Alternatives to private vehicle use	Continued and further promotion of this scheme.	PKC TACTRAN	2020/2021 then ongoing thereafter.	Ongoing	Activity data will be collected annually from both schemes and we will estimate vehicle km avoided in the AQMA and report reduction in emission of NO _x and PM10.	Small	Continued promotion of Lift share including PKC and PRI, SSE and Aviva with stalls within workplaces.	Ongoing	
E.2	Travel plans for large institutions and businesses	Promoting travel alternatives	To encourage and assist large organisations to develop and implement travel plans. Work with local businesses to encourage the development/implementation of travel plans.	PKC TACTRAN	2020/2021 and then ongoing thereafter.	2020 – ongoing thereafter	Activity data will be sought from the main employers as to the journeys avoided from their TPs. If this is provided, it will allow for estimates of vehicle km avoided in the AQMA and report reduction in emissions of NO _x and PM ₁₀ .	Small	No progress	Ongoing	
E.3	Create and implement PKC Corporate Travel Plan	Promoting travel alternatives	PKC Corporate Travel Plan encompasses staff travelling to and from PKC workplaces and fleet operators for PKC.	PKC SUSTRANS TACTRAN Cycling Scotland Paths for All (SCSP)	2018 - 2020	2021/2022	Activity data will be collected by survey to support the working of the PKC Corporate Travel Plan (CTP). A base survey of staff travel habits was carried out in 2019. We will estimate vehicle km avoided in the AQMA and report emissions of NO _x and PM ₁₀ .	Small	Base-line staff travel survey carried out in 2019. Staff travel report went to Senior Management in 2021 with recommendations of focus for the Corporate Travel plan. Travel Plan is to be integrated within a wider Council Remobilisation strategy following the Covid-19 pandemic.	2021/2022	Ongoing Covid-19 pandemic may alter ways of working moving forward. PKC at present promotes a car hire salary sacrifice scheme (Tusker) to staff which only provides LEV or ULEVs. A Walk to Work Week and lift share are promoted via staff intranet.

E.4	Promotion of active travel	Promoting travel alternatives	To encourage a shift away from the use of private motor vehicles for travelling to more sustainable forms of transport or reducing the need for travel.	PKC Community Council Business Sectors TACTRAN	2020	Ongoing	It is not possible to assign a quantitative indicator.	Small	SG funding was attained this year again to match fund the IBike Officer. Various activities such as adult cycle confidence and bike maintenance sessions were delivered before lockdown/where restrictions allowed. During lockdown, active travel lesson plans were provided to schools for homebased work. In addition to the IBike Officer's work, Bikeability sessions were provided at various schools 'Perth/Crieff on the Go' delivers cycle/walking route maps and bus timetables to residents and travel planning through school initiatives.	Ongoing	
E.5	Awareness raising and education, presentations at local schools/community meetings	Public information	Continue to encourage, promote and increase awareness of active and sustainable transport options through working with partner organisations and the community.	PKC Community Council	Ongoing	Ongoing	It is not possible to assign a quantitative indicator.	Small	A community event focussed on air quality and road safety was held in February 2020. This event contained map-based workshops and the information gathered will be utilised when taking projects forward. Around 50 residents attended the event. Clean Air Day 2020 activities were carried out at two schools in Perth and one in Crieff.	Ongoing	Clean Air Day 2020 was restricted to school activities carried out by class teachers due to Covid-19. Three schools participated through education packs provided by Ricardo E&E and through a poem competition which, the winner from which was published in the Perthshire Advertiser

E.6	Cycling and walking routes to be routed to link in with the campus for sport.	Promoting travel alternatives	Undertake an audit on walking & cycling infrastructure for Crieff. Create a walking and cycling infrastructure plan.	PKC Sustrans Crieff Community Groups Community Council	2021/2022	2021/2022	It is not possible to assign a quantitative indicator.	Small	No progress	2021/2022	
E.7	Provision of PKC "Champions" for transportation methods	Promoting travel alternatives	Engage with local groups to promote active travel within Crieff.	PKC Local Community Groups Community Council	2020/2021	2020/2021	It is not possible to assign a quantitative indicator.	Small	No progress	2021/2022 – ongoing thereafter	
F.1	Biomass installations and other developments likely to cause pollution – review developments which may cause pollution	Policy guidance and development control	Consider all air quality in planning decisions for new biomass installations and other types of development likely to cause pollution by carrying out initial screening process to determine if an air quality assessment is required.	PKC	Ongoing	Ongoing as required	It is not possible to assign a qualitative indicator. We will report on cases where air quality was a consideration in the reporting period, and any outcomes of any decisions made	Small	Environmental Health will continue to check the weekly planning list and comment on applications which may adversely impact on local air quality. The AEA/EPUK screening tools are used to assess applications.	Ongoing	

G.1	Increase AQ monitoring network	Policy guidance and development control	Continue to evaluate and review monitoring network. Establish PM _{2.5} monitoring within AQMA. Review Real Time Monitors location.	PKC	2019/2020	2019/2020	Results of NO ₂ tube analysis. Greater amount and reliability of results.	Zero	New NO ₂ tubes have been installed within Crieff to increase reliability of results.	Ongoing	A monitoring study will be carried out in Crieff in 2021/22 using Zephyr monitors within the street canyon to assess whether the RTM is in the optimal location. This study will also provide further PM monitoring data
G.2	Regional AQ modelling study	Policy guidance and development control	To establish a Crieff regional dispersion model for NO ₂ PM ₁₀ & PM _{2.5} .	PKC AQ Consultants	2021/2022	2021/2022	It is not possible to assign a quantitative indicator.	Zero	Crieff baseline dispersion model was completed in 2020 by Sweco UK Ltd	Completed	
G.3	Cycling and walking routes to be incorporated into transport model	Public information	Incorporate walking and cycling routes into the transport model. Assess feasibility of routes and consult with the community. Progress a modal shift towards walking and cycling.	PKC	2020/2021	2021/2022	It is not possible to assign a quantitative indicator.	Small	No progress	2021/2022	

G.4	Transport assessments for developments to be required as part of planning process	Policy guidance and development control	The consideration of additional criteria requiring new development proposals to support the provision of infrastructure such as charging points for electric vehicles.	PKC	2020/2021 then Ongoing	Ongoing	Number of Travel Plans and estimation of specified in reporting year.	Small	This is a continual process through planning and is requested by Transport Planning Team who are internal consultees for planning.	ongoing	Travel plans are requested through the planning process. Supplementary air quality planning guidance was approved in 2020 and sets out how air quality will be considered when determining planning applications and detail the circumstances in which an air quality assessment may be required.
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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.

Perth and Kinross Council undertook automatic (continuous) monitoring at 4 sites during 2020. Table A.1 in Appendix A shows the details of the sites. National monitoring results are available at <http://www.scottishairquality.co.uk/latest/summary?view=la>

Maps showing the location of the monitoring sites are provided at the above link. Further details on how the monitors are calibrated and how the data has been adjusted are included in Appendix C.

3.1.2 Non-Automatic Monitoring Sites

Perth and Kinross Council undertook non- automatic (passive) monitoring of NO₂ at 79 sites during 2020. Table A.2 in Appendix A shows the details of the sites.

Maps showing the location of the monitoring sites are available at [Latest pollution map - Air Quality in Scotland \(scottishairquality.scot\)](#). Further details on Quality Assurance/Quality Control (QA/QC) and bias adjustment for the diffusion tubes are included in Appendix C.

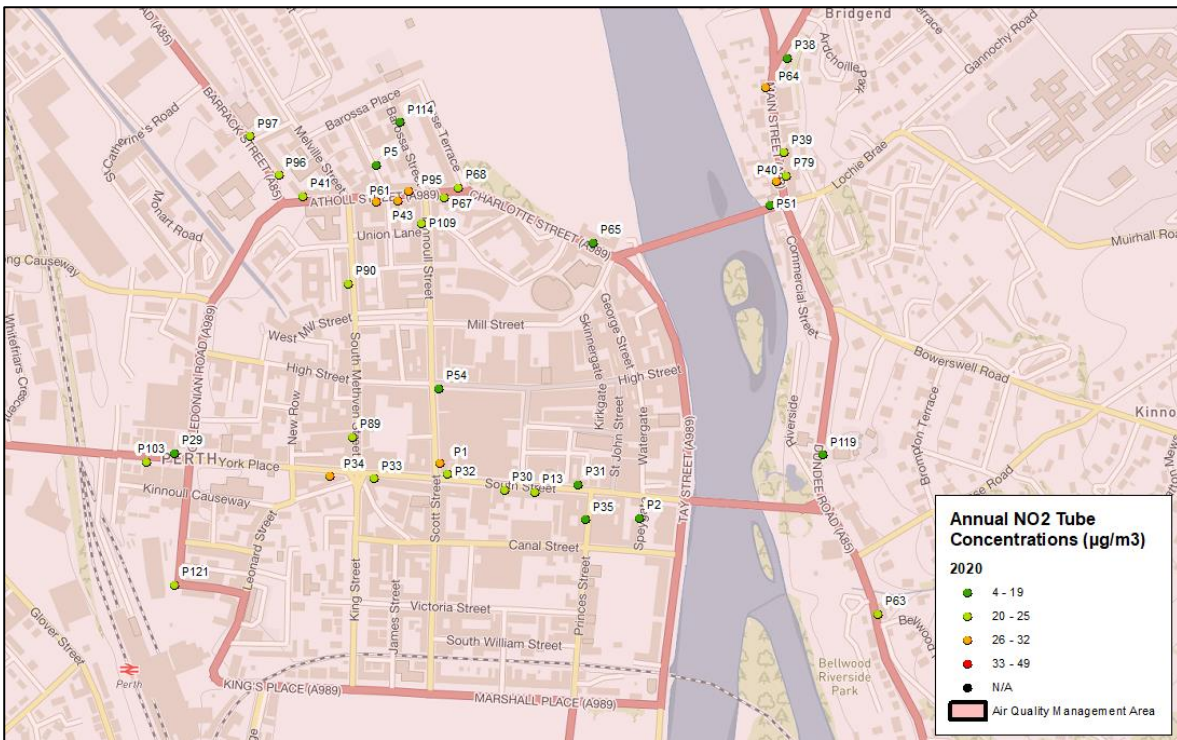


Figure 3.1: Perth City Centre NO₂ Diffusion Tube Locations

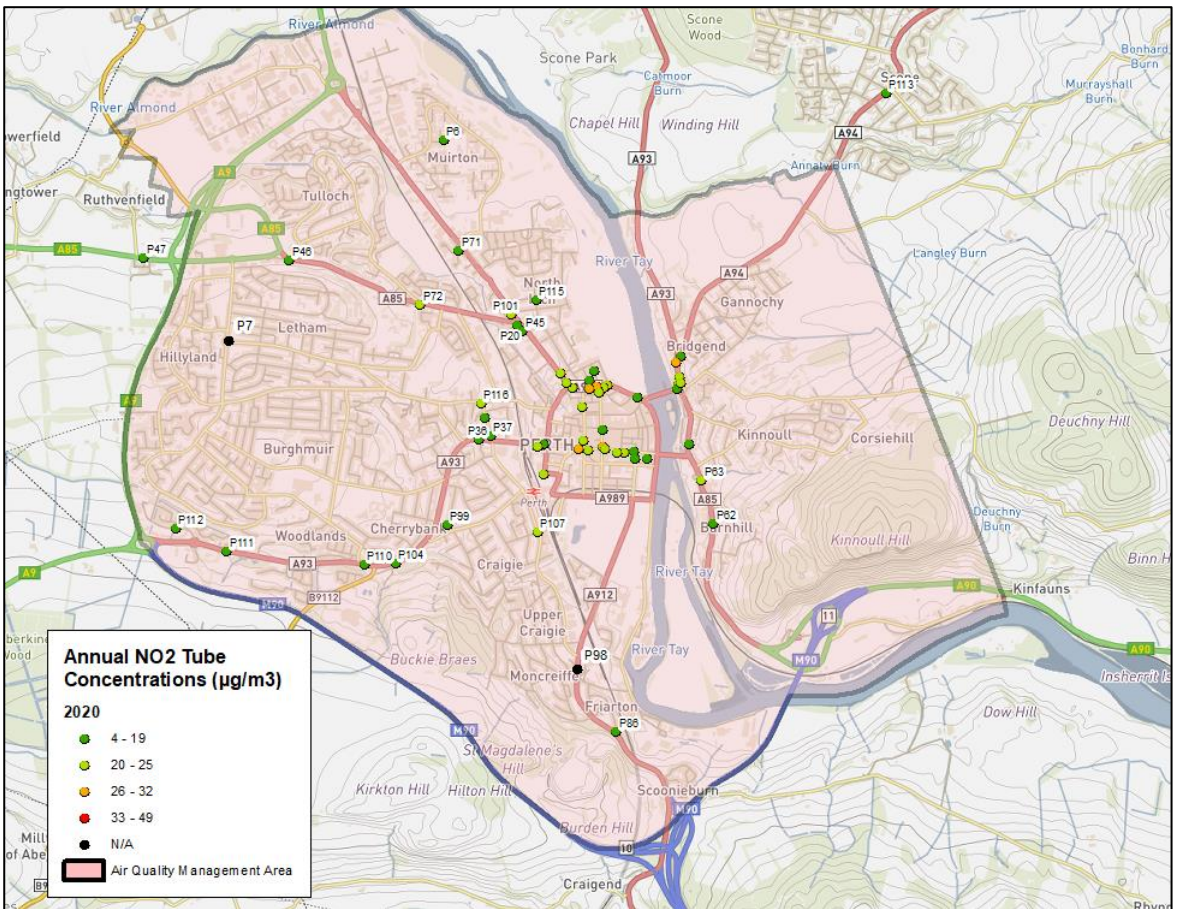


Figure 3.2: Perth Area NO₂ Diffusion Tube Locations

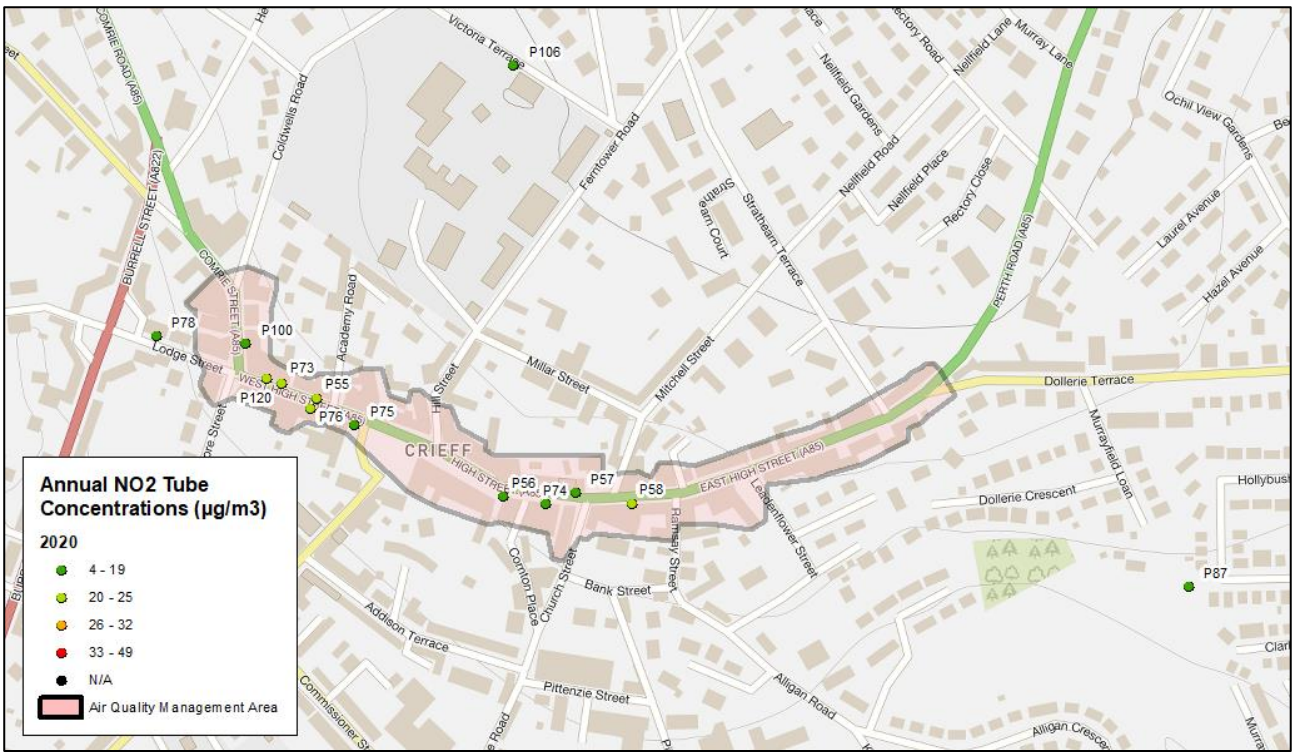


Figure 3.3: Crieff NO₂ Diffusion Tube Locations



Figure 3.4: Coupar Angus, Auchterarder, Blairgowrie and Kinross NO₂ Diffusion Tube Locations

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 (NO₂)

Table A.3 in Appendix A compares the ratified and adjusted monitored NO₂ annual mean concentrations for the past five years with the air quality objective of 40 µg/m³. There are 5 locations where it has not been possible to provide a result as the data capture across the year is less than 33%. The low level of data capture in these locations is due to cessation of monitoring at the locations early in the year. During 2020 a review of the diffusion tube network was carried out. Using results from the past 5 years it was decided to stop monitoring at Rannoch Road, Perth (P7), High Street, Kinross (P81), one of the sites on High Street, Auchterarder (P83), Queen Street, Coupar Angus (P94) and Edinburgh Road, Perth (P98) as during this period the levels were consistently at least 35% below the objective level.

New monitoring locations have been selected based on recent or planned development, as well as one located close to Perth Railway Station due to concerns raised locally.

For diffusion tubes, the full 2020 dataset of monthly mean values is provided in Appendix B. As none of the monitoring locations had a result of greater than 36µg/m³ it has not been necessary to carry out any calculations for the fall off of NO₂ with distance.

Table A.4 in Appendix A compares the ratified continuous monitored NO₂ hourly mean concentrations for the past five years with the air quality objective of 200µg/m³, not to be exceeded more than 18 times per year.

No exceedances of either the annual mean objective level or the hourly mean objective level were observed during 2020 at any of the three automatic monitoring sites where NO₂ levels are monitored. This follows on from no exceedances at these locations in 2018 and 2019. The continuing downward trend is shown in Figure A.1, Figure A.2 and Figure A.3 in Appendix A.

Diffusion tube monitoring also indicated no exceedances of NO₂ at any locations across the monitoring network.

However it is accepted that both the RTM and diffusion tube results from 2020 have been impacted by the decrease in road traffic resulting from the Covid-19 pandemic and so the decrease in NO₂ levels seen is at least partly attributable to this.

3.2.2 Particulate Matter (PM₁₀)

Table A.5 in Appendix A compares the ratified and adjusted monitored PM₁₀ annual mean concentrations for the past five years with the air quality objective of 18µg/m³.

Table A.6 in Appendix A compares the ratified continuous monitored PM₁₀ daily mean concentrations for the past five years with the air quality objective of 50µg/m³, not to be exceeded more than seven times per year.

A decrease in PM₁₀ levels has been seen at all monitoring locations, however again this is likely largely attributable to the effects of the pandemic. PM₁₀ trends for Atholl Street, Muriton and Crieff can be seen in Figures A.4 - A.6 in Appendix A. PM₁₀ levels were not recorded at the Perth High Street RTM during 2020, as due to size constraints of existing RTM cabinet High St. the upgrade from TEOM to FIDAS analyser could not be carried out until site relocation to Bridgend. In 2020 there were no exceedances of the annual mean level and no occurrences at any of the locations where the 50µg/m³ level was exceeded.

It should be noted that due to limited pavement space the continuous monitor at Crieff is not located within the street canyon, and therefore the PM₁₀ results do not likely represent the worst case. In order to address this it is proposed that during 2021/22 we will utilise small monitoring units mounted on lamp posts within the street canyon to try and build a more accurate picture of the PM₁₀ levels in this location. The results of this monitoring will provide some of the evidence to be used in assessing whether the Crieff AQMA can be revoked.

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 five years with the air quality objective of 10µg/m³.

Monitoring of PM_{2.5} began at three locations within Perth and Kinross in late 2017 – Atholl Street (Perth), Perth High Street and Crieff. Monitoring at the fourth continuous monitoring site at Muirton (Perth) began in late January 2019. The data indicates no exceedances of the objective at any of these locations during 2020, however results will have been

impacted by the effects of the pandemic. Graphs indicating data trends for PM2.5 have not been included as PM2.5 has only been monitored for a relatively short time and therefore this type of data analysis does not provide any meaningful information.

3.2.4 Sulphur Dioxide (SO₂)

PKC do not currently monitor SO₂ as there are no significant sources in Perth & Kinross

3.2.5 Carbon Monoxide, Lead and 1,3-Butadiene

PKC do not currently monitor carbon monoxide, lead or 1,3-butadiene as there are no significant sources in Perth & Kinross

4 New Local Developments

4.1 Road Traffic Sources

Dualling works on the A9 have continued through 2020.

Final approval was granted for the Cross Tay Link Road in 2020, however work on the project has not yet started.

4.2 Other Transport Sources

No new sources within Perth and Kinross have been identified.

4.3 Industrial Sources

Perth and Kinross Council are not aware of any new sources however due to a cyber-attack SEPA have been unable to provide information in this regard.

A planning application was submitted for the erection of 4 poultry rearing sheds near Murthly (ref 20/01173/FLM). This application was subsequently withdrawn with the expectation that it will be resubmitted. However, an air quality assessment was completed. This determined that the PM₁₀ levels from dust would not exceed the annual mean objective of 18ugm³ at any of the 13 identified sensitive receptors. The location of the proposed development is out with either of the AQMAs.

4.4 Commercial and Domestic Sources

Table 4.1 below shows all planning applications for biomass boilers, between 50kW and 20MW.

Table 4.2 gives details of planning applications for CHP plants.

No areas of significant solid fuel burning were identified.

Table 4.1 - Planning applications for biomass boilers 50kW - 20MW

Planning Ref	Location	Thermal Output (kW)	In AQMA	DA Required
20/00008/FLL	Townhead, Balbeggie	990	No	No ⁽¹⁾
20/00186/FLL	Easter Bonhard, Murrayshall	897	No	Yes
20/00646/FLL	Keepers House, Braco	100	No	No ⁽¹⁾
20/01051/FLL	Wharlawhill Farm, Carnbo	1000	No	Yes
20/01615/FLL	Gleneagles Hotel	1400	No	No ⁽¹⁾

(1) Installation was assessed by PKC using the individual screening tool assessment, and confirmed that detailed assessment was not required

For the application at Easter Bonhard, it was concluded that the overall impact on air quality from the installations would be negligible.

The application at Wharlawhill Farm was made in retrospect. An air quality impact assessment report concluded that the existing flue heights would be insufficient, and that emission target levels for NO₂ and PM₁₀ and PM_{2.5} would be exceeded. A condition was therefore applied to the planning application requiring that the flue height be increased within two months.

Table 4.2 - Planning applications for CHP plant

Planning Ref	Location	Thermal Output	In AQMA	DA Required
20/00583/FLL	Yard Road, Blairgowrie	955	No	No

4.5 New Developments with Fugitive or Uncontrolled Sources

An application has been received for a proposed extension to Marlee Quarry, Essendy. This will include a new haul route. An assessment of the impact on local air quality will be required.

5 Planning Applications

Cross Tay Link Road 19/01837/FLM (approved) - Formation of road across the River Tay from A9 to A93 North of Scone. The potential for local residents to be impacted by dust during the construction phase has been highlighted. A Construction Environmental Management Plan is to be implemented to address this impact.

Milnathort 19/00522/FLM (approved) - Erection of 59 dwellinghouses and 8 flats. This application was included within the 2020 APR however at that time the application had been refused. Following an appeal, it has now been approved. An air quality assessment has been completed and determined that the development will have a negligible impact upon local air quality.

Dundee Road, Perth 20/01779/FLL (approved) – Erection of 77 bed care home. An air quality assessment has been completed and concluded that the development would have a negligible impact on local air quality.

Food and Drink Park, Perth 20/01778/SCOP – 4ha extension to existing Food and Drink Park. Assessments of the impact on air quality from both construction and operational phases are to be made.

Perth, 20/00505/FLL – Erection of 49 dwellinghouses west of Cherrybank Gardens. A screening assessment was not required.

Perth West, 20/00667/IPM – Mixed use development. An air quality impact assessment has been submitted. This has determined a slight adverse significance for both NO₂ and PM_{2.5} and PM₁₀ at some receptors. However, air quality is predicted to comply with objective levels at all sensitive receptors. Given the scale of the development a condition has been applied requiring an updated air quality impact assessment at each phase of development.

6 Impact of COVID-19 upon LAQM

When the national lockdown was announced in March 2020 the decision was taken to suspend diffusion tube monitoring. There was a period of 3 months where tubes were not changed over and therefore no data is available for March, April and May 2020, with the exception of that from the RTMs. Diffusion tube monitoring resumed once procedures had been agreed to ensure the work could be carried out safely and in line with guidance. However, resource pressures due to Covid-19 also impacted upon changeover of some tubes in the outlying areas of Perth meaning some data is not available for October and November (tubes of most importance e.g within AQMA's were prioritised at this time). Automatic monitoring continued throughout the Covid-19 pandemic, with procedures put in place to ensure the safety of any persons accessing the monitors.

No monitoring in addition to the diffusion tubes and the automatic monitors has been carried out during this period.

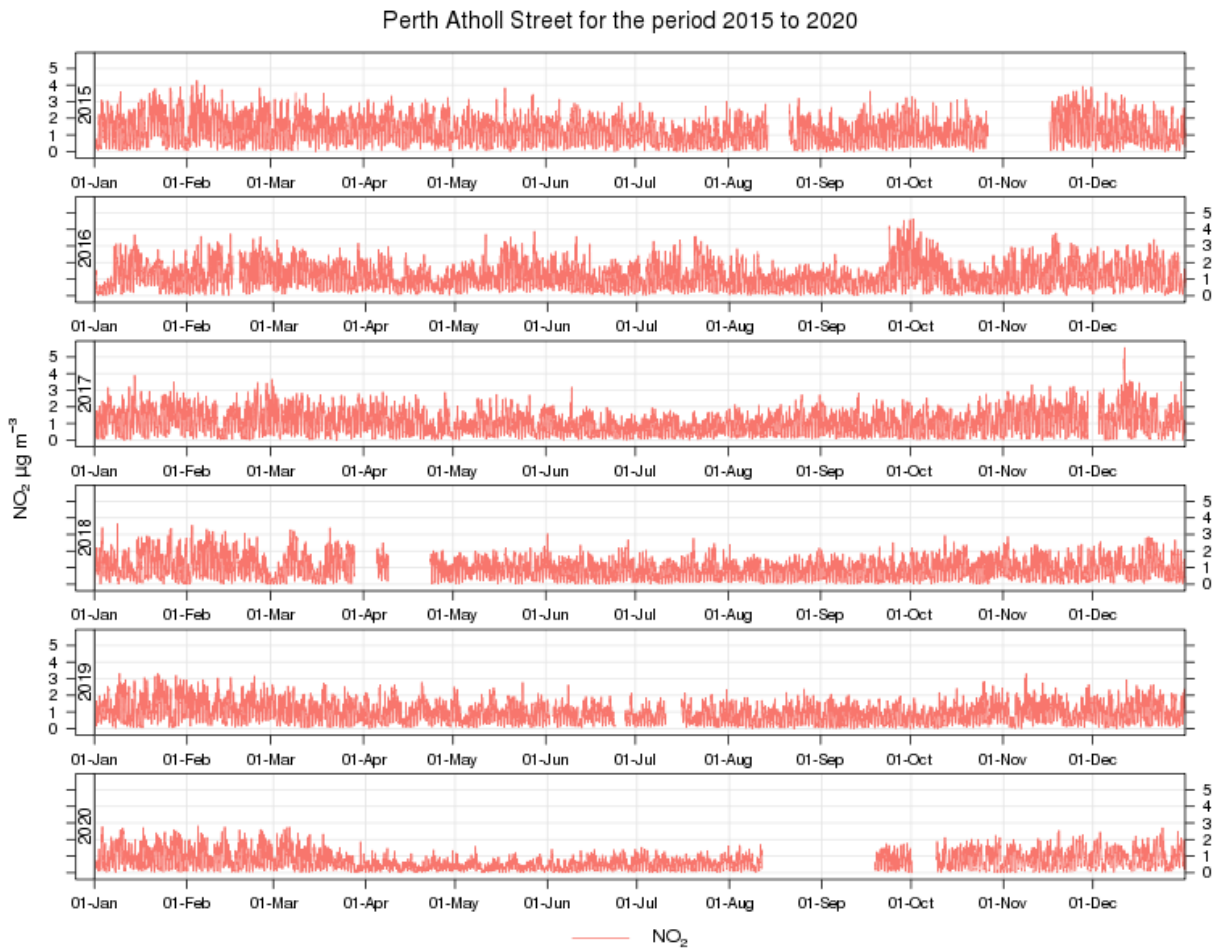
All air quality monitoring is now being carried out as normal, although Covid-19 restrictions and the impact they have on traffic volumes have continued to impact the recorded data.

A report produced for PKC in May 2020 by Ricardo looked at the impact of the lockdown from 23 March 2020 – 29 April 2020 in Atholl Street, Perth. The data used at the time was unratified however it does give a good indication of the scale of the impact of road traffic on air quality, and the reduction in pollutants when that road traffic is reduced. Table 6.1 below is taken from the report and shows the reduction in NO₂ in 2020 as compared with the same period from previous years. Figure 6.1 gives some indication of the difference between NO₂ levels in 2020 as compared with previous years.

Table 6.1 - Reduction in NO₂ concentrations from 23/03 to 20/04, 2015-2020 (µgm-3)

	2015	2016	2017	2018	2019	2020
Perth Atholl Street	23	19	22	17	22	14
% drop in 2020 concentrations relative to comparison yr (23 March – 29 April)	-39	-26	-36	-18	-36	-

Figure 6.1: Atholl St RTM NO₂ Levels 2015 to 2020



7 Conclusions and Proposed Actions

7.1 Conclusions from New Monitoring Data

No exceedances for either NO₂ or PM₁₀ were identified at any locations across Perth and Kinross. However as detailed above reduced traffic volumes as a result of the Covid-19 pandemic has impacted upon monitoring data from 2020.

Monitoring of PM_{2.5} has continued in 2020, and no exceedances at any of the monitoring locations were recorded.

7.2 Conclusions relating to New Local Developments

A number of applications for biomass units and CHP plant have been received. Where necessary air quality assessments have been requested. None of these applications are for locations with in either of the AQMAs.

One development, located in Milnathort, has been considered for potential impact on air quality. An assessment has concluded that the development will have a negligible impact upon air quality.

Final approval has also been granted for the Cross Tay Link Road. An assessment has not identified any significant impacts upon air quality from the development, however recommendations have been given regarding management of dust emissions during the construction phase.

7.3 Proposed Actions

Based on the information we have no changes are currently recommended to either the Perth or the Crieff AQMA. However as was stated in the previous year, the data collected from Crieff indicates that over the last six years, with the exception of one location in 2018, there have been no exceedances of either NO₂ or PM₁₀ (the one exceedance in 2018 is believed to be an outlier result). PKC is therefore considering the evidence for revocation of this AQMA.

In addition to previous year's data to be considered for revocation, PKC will carry out a twelve-month monitoring study in 2021/22 using Zephyr monitors to gather additional data within the Crieff AQMA. Currently, the RTM at James Square provides the only PM data within Crieff and does so from out with the canyon at East and West High Street. The Zephyr monitors can be deployed at locations within the Crieff High Street corridor where the pavement would be too narrow for the RTM, providing more representative data on both PM and NO₂ concentrations within the AQMA which will be used to make an informed decision on revocation of the Crieff AQMA.

A review of the Perth AQAP is underway, with traffic and air quality modelling work complete and source apportionment work due to be complete in the coming weeks. Meetings with various internal stakeholders will begin in Sep 2021 to determine a new raft of AQ improvement measures for Perth, after which the public will be consulted on a draft of the updated AQAP. It is expected that the review of the Perth AQAP will be completed in 2022. Once this is complete and the new Action Plan is in place, PKC will work towards implementation of the agreed measures.

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? Which AQMA?	Monitoring Technique	Distance to Relevant Exposure (m) ⁽¹⁾	Distance to kerb of nearest road (m) ⁽²⁾	Inlet Height (m)
Perth 1	High Street	Roadside	311687	723626	NO ₂ ; PM _{2.5}	Y; Perth AQMA	Chemiluminescent; TEOM	20.4	4.8	1.5
Perth 2	Atholl Street	Roadside	311575	723917	NO ₂ ; PM ₁₀ ; PM _{2.5} ; PM ₁	Y; Perth AQMA	Chemiluminescent; FIDAS	22.3	2.3	1.5
Perth 3	Muirton	Background	310658	725658	PM ₁₀ ; PM _{2.5} ; PM ₁	Y; Perth AQMA	FIDAS	N/A	N/A	2
Crieff 1	James Square	Roadside	286363	721614	NO ₂ ; PM ₁₀ ; PM _{2.5} ; PM ₁	Y; Crieff AQMA	Chemiluminescent FIDAS	9.5	5.3	1.5

Notes:

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

(2) N/A if not applicable.

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? Which AQMA?	Distance to Relevant Exposure (m) (1)	Distance to kerb of nearest road (m) (2)	Tube co-located with a Continuous Analyser?	Tube Height (m)
P1	42 Scott St Perth	R	311674	723501	NO ₂	Y; Perth AQMA	0.57	2.26	N	2.26
P2	17 Speygate Perth	R	312018	723411	NO ₂	Y; Perth AQMA	3.82	1.23	N	2.25
P5	8 Stormont Street	UC	311584	723993	NO ₂	Y; Perth AQMA	N/A	1.32	N	2.48
P6	41 Mull Place	UB	310501	725764	NO ₂	Y; Perth AQMA	6.55	1.62	N	2.44
P7	257 Rannoch Road	UC	308926	724286	NO ₂	Y; Perth AQMA	8.1	2.24	N	2.58
P13	86 South Street	R	311846	723454	NO ₂	Y; Perth AQMA	0	2.6	N	2.87
P20	2 Crieff Road	R	311058	724395	NO ₂	Y; Perth AQMA	0.3	4.43	N	2.26
P29	37 York Place	R	311252	723518	NO ₂	Y; Perth AQMA	2.8	4.9	N	2.31
P30	114 South Street	R	311797	723457	NO ₂	Y; Perth AQMA	0	2.53	N	2.86
P31	45-47 South Street	R	311925	723465	NO ₂	Y; Perth AQMA	0	3.58	N	2.82
P32	135 South Street	R	311704	723483	NO ₂	Y; Perth AQMA	0	5.25	N	2.70

P33	216 South Street	R	311587	723475	NO ₂	Y; Perth AQMA	0	2.16	N	3.03
P34	10 County Place	R	311503	723480	NO ₂	Y; Perth AQMA	0	2.70	N	2.90
P35	17 Princes Street	R	311930	723416	NO ₂	Y; Perth AQMA	0	2.1	N	2.70
P36	51 Glasgow Road	R	310773	723557	NO ₂	Y; Perth AQMA	7.24	1.46	N	2.42
P37	Riggs Road	R	310857	723577	NO ₂	Y; Perth AQMA	12.40	1.62	N	2.68
P38	93 Main Street	R	312264	724168	NO ₂	Y; Perth AQMA	0	7.6	N	2.37
P39	39 Main Street	R	312257	724013	NO ₂	Y; Perth AQMA	2.02	2.55	N	2.43
P40	18 Main Street	R	312245	723965	NO ₂	Y; Perth AQMA	0.1	2.15	N	2.57
P41	76 Atholl Street	R	311462	723941	NO ₂	Y; Perth AQMA	0.47	2.18	N	2.90
P43	17 Atholl Street	R	311619	723933	NO ₂	Y; Perth AQMA	0	2.28	N	2.87
P45	Ballantine Place	UC	311095	724356	NO ₂	Y; Perth AQMA	3.72	1.75	N	3.05
P46	204 Crieff Road	R	309364	724875	NO ₂	Y; Perth AQMA	11.65	4	N	2.14
P47	5 East Huntingtower	R	308293	724892	NO ₂	N	5.3	1.89	N	2.84
P51	2 West Bridge St	R	312233	723921	NO ₂	Y; Perth AQMA	2.46	1.94	N	2.53
P54	RTM, 176 High Street, Perth	R	311692	723627	NO ₂	Y; Perth AQMA	5.30	5.2	Y	1.66

P55	7 West High Street, Crieff,	UC	286334	721640	NO ₂	Y; Crieff AQMA	1.8	0.42	N	2.36
P56	39 High Street, Crieff,	UC	286541	721559	NO ₂	Y; Crieff AQMA	0	1.28	N	2.36
P57	62 High Street, Crieff,	UC	286541	721563	NO ₂	Y; Crieff AQMA	0.57	1.6	N	2.54
P58	9 East High Street, Crieff,	UC	286582	721553	NO ₂	Y; Crieff AQMA	0.49	1.17	N	2.48
P61	RTM, Atholl Street	R	311584	723931	NO ₂	Y; Perth AQMA	0.63	2.2	Y	1.83
P62	84 Dundee Road	R	312503	722930	NO ₂	Y; Perth AQMA	0.81	1.58	N	2.58
P63	30 Dundee Road	R	312413	723252	NO ₂	Y; Perth AQMA	1.19	1.22	N	2.58
P64	Isla Road	R	312228	724120	NO ₂	Y; Perth AQMA	0.18	2.59	N	2.60
P65	5 Charlotte Street	R	311943	723864	NO ₂	Y; Perth AQMA	2.35	1.95	N	2.50
P67	1 Atholl Street	R	311697	723939	NO ₂	Y; Perth AQMA	0.3	2.44	N	2.52
P68	2 Atholl Street	R	311720	723955	NO ₂	Y; Perth AQMA	6.55	1.33	N	2.14
P71	134 Dunkeld Road	R	310621	724951	NO ₂	Y; Perth AQMA	4.34	1.8	N	2.66
P72	82 Crieff Road	R	310335	724550	NO ₂	Y; Perth AQMA	11.13	2.35	N	2.39
P73	19 West High	UC	286302	721651	NO ₂	Y; Crieff AQMA	0	1.63	N	2.42

	Street, Crieff									
P74	43 High Street, Crieff	UC	286517	721559	NO ₂	Y; Crieff AQMA	2.37	1.47	N	2.43
P75	RTM, Crieff	R	286360	721617	NO ₂	Y; Crieff AQMA	5.1	3.72	Y	1.62
P76	10/12 West High Street, Crieff	UC	286324	721632	NO ₂	Y; Crieff AQMA	0	1.42	N	3.20
P78	1 Lodge Street, Crieff	UC	286194	721692	NO ₂	Y; Crieff AQMA	0	1.72	N	3.05
P79	17 Main Street	R	312262	723976	NO ₂	Y; Perth AQMA	0	3.04	N	2.49
P81	76 High Street, Kinross	R	311936	702183	NO ₂	N	0	1.44	N	3.56
P82	66 High Street, Auchterar der	R	294569	712888	NO ₂	N	1.74	0.49	N	3.10
P83	176 High Street, Auchterar der	R	294266	712729	NO ₂	N	2.40	0.86	N	2.14
P86	2 Friarton Road	R	311788	721397	NO ₂	Y; Perth AQMA	3.7	1.17	N	2.13
P87	Hollybush Road	BG	287043	721486	NO ₂	N	N/A	6.95	N	2.57
P89	59 South Methven St	R	311546	723544	NO ₂	Y; Perth AQMA	0	2.98	N	2.24
P90	22 North Methven St	R	311539	723798	NO ₂	Y; Perth AQMA	0	2.96	N	2.60
P94	Queen Street,	UC	322232	739915	NO ₂	N	0.42	1.17	N	2.31

	Coupar Angus									
P95	26-28 Atholl Street	K	311636	723950	NO ₂	Y; Perth AQMA	1.73	0.91	N	2.22
P96	22 Barrack St	K	311424	723976	NO ₂	Y; Perth AQMA	2.99	0.47	N	2.26
P97	St Ninians School,	R	311370	724040	NO ₂	Y; Perth AQMA	7	1.91	N	2.44
P98	30 Edinburgh Road	R	311496	721856	NO ₂	Y; Perth AQMA	7.16	2.81	N	2.49
P99	15 Murray Cr Perth	UB	310536	722928	NO ₂	Y; Perth AQMA	6.81	1.62	N	2.28
P100	9 Comrie Street, Crieff	UC	286271	721684	NO ₂	Y; Crieff AQMA	0	1.97	N	2.32
P101	28 Dunkeld Road	R	311012	724483	NO ₂	Y; Perth AQMA	4.13	3.11	N	2.41
P103	28 York Place	R	311207	723504	NO ₂	Y; Perth AQMA	8	2.05	N	2.57
P104	202 Glasgow Road	R	310157	722634	NO ₂	Y; Perth AQMA	5.55	1.47	N	2.41
P106	Victoria Terrace, Crieff	R	286491	721913	NO ₂	N	2.85	1.54	N	2.50
P107	1 Glover Street Perth	R	311201	722871	NO ₂	Y; Perth AQMA	3.46	1.01	N	2.61
P108	Balmoral Road, Blairgowrie	R	318293	745415	NO ₂	N	0.17	1.83	N	2.26
P109	44 Kinnoull	R	311660	723897	NO ₂	Y; Perth AQMA	2.79	2.35	N	2.36

	Street, Perth									
P110	231 Glasgow Road, Perth	R	309922	722633	NO ₂	Y; Perth AQMA	2.79	2.43	N	2.29
P111	Glasgow Road nr Lamberki ne Road, Perth	R	308904	722731	NO ₂	Y; Peth AQMA	0.85	0.96	N	2.31
P112	Lamberki ne Drive, Perth	R	308528	722895	NO ₂	Y; Perth AQMA	N/A	1.81	N	2.92
P113	38 Perth Road, Scone	R	313781	726119	NO ₂	N	4.74	1.77	N	2.53
P114	Barossa Street, Perth	R	311625	724063	NO ₂	Y; Perth AQMA	0	1.3	N	2.63
P115	Balhousesie Street, Perth	R	311197	724857	NO ₂	Y; Perth AQMA	4.95	3.24	N	2.40
P116	Jeanfield Road, Perth	R	310791	723817	NO ₂	Y; Perth AQMA	8.0	1.64	N	2.64
P117	19 Riggs Rd, Perth	R	310791	723817	NO ₂	Y; Perth AQMA	6.04	1.73	N	2.63
P118	Springfiel d Rd, Kinross	R	311654	703014	NO ₂	N	12	1.5	N	2.56
P119	Kinnoull PS, Dundee Rd	R	312322	723515	NO ₂	Y; Perth AQMA	18	2.33	N	2.5
P120	25 West High St, Crieff	R	286286	721656	NO ₂	Y; Crieff AQMA	4.0	1.8	N	2.52
P121	Caledonia Rd	R	311252	723301	NO ₂	Y; Perth AQMA	16	2.18	N	2.58

Notes:

- (1) 0m if the monitoring site is at a location of exposure (e.g., installed on/adjacent to the façade of a residential property).
- (2) N/A if not applicable.

Table A.3 – Annual Mean NO₂ Monitoring Results (µg/m³)

Site ID	Site Location	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) ⁽¹⁾	Valid Data Capture 2020 (%) ⁽²⁾	NO ₂ Annual Mean Concentration (µg/m ³)				
						2016	2017	2018	2019	2020
P1	42 Scott St Perth	R	Diffusion	N/A	75	37	35	33	33	26
P2	17 Speygate Perth	R	Diffusion	N/A	66	22	22	18	18	13
P5	8 Stormont Street	UC	Diffusion	N/A	58	20	20	18	18	13
P6	41 Mull Place	UB	Diffusion	N/A	58	11	11	10	10	8
P7	257 Rannoch Road	UC	Diffusion	N/A	17	19	16	21	14	N/A
P13	86 South Street	R	Diffusion	N/A	75	31	31	27	26	22
P20	2 Crieff Road	R	Diffusion	N/A	66	27	26	25	23	16
P29	37 York Place	R	Diffusion	N/A	58	33	31	29	28	19
P30	104 South Street	R	Diffusion	N/A	75	33	35	30	29	24
P31	45-47 South Street	R	Diffusion	N/A	75	27	25	23	22	18
P32	135 South Street	R	Diffusion	N/A	75	33	32	29	30	22
P33	216 South Street	R	Diffusion	N/A	75	35	31	30	32	23
P34	10 County Place	R	Diffusion	N/A	75	43	41	38	37	30
P35	17 Princes Street	R	Diffusion	N/A	75	26	23	21	20	16
P36	51 Glasgow Road	R	Diffusion	N/A	58	29	28	27	26	18
P37	Riggs Road	R	Diffusion	N/A	58	26	25	23	22	16
P38	93 Main Street	R	Diffusion	N/A	75	28	27	27	22	18

P39	39 Main Street	R	Diffusion	N/A	75	38	35	36	32	25
P40	18 Main Street	R	Diffusion	N/A	75	41	40	34	32	27
P41	76 Atholl Street	R	Diffusion	N/A	75	39	37	34	31	24
P43	17 Atholl Street	R	Diffusion	N/A	75	46	44	41	38	32
P45	Ballantine Place	UC	Diffusion	N/A	75	21	20	17	18	14
P46	204 Crieff Road	R	Diffusion	N/A	66	31	25	25	19	15
P47	5 East Huntingtower	R	Diffusion	N/A	75	25	22	21	19	14
P51	2 West Bridge St	R	Diffusion	N/A	75	27	27	24	23	18
P54	High Street RTM, Perth	R	Automatic	N/A	80	23	17	21	21	15
P55	7 West High Street, Crieff	UC	Diffusion	N/A	66	42	38	37	35	23
P56	39 High Street, Crieff	UC	Diffusion	N/A	66	26	24	25	22	16
P57	62 High Street, Crieff	UC	Diffusion	N/A	75	27	25	24	24	18
P58	9 East High Street, Crieff	UC	Diffusion	N/A	75	34	34	31	29	23
P61	Atholl Street RTM, Perth	R	Automatic	N/A	86	45	40	37	36	28
P62	84 Dundee Road	R	Diffusion	N/A	75	30	28	25	23	16
P63	30 Dundee Road	R	Diffusion	N/A	75	39	37	31	30	22
P64	Isla Road	R	Diffusion	N/A	75	43	42	39	36	28
P65	5 Charlotte Street	R	Diffusion	N/A	75	30	28	26	24	18
P67	1 Atholl Street	R	Diffusion	N/A	75	33	34	30	28	23
P68	2 Atholl Street	R	Diffusion	N/A	75	29	28	23	26	23

P71	134 Dunkeld Road	R	Diffusion	N/A	58	16	15	14	13	10
P72	82 Crieff Road	R	Diffusion	N/A	75	34*	33	28	28	24
P73	19 West High Street, Crieff	UC	Diffusion	N/A	75	39	39	47	34	24
P74	43 High Street, Crieff	UC	Diffusion	N/A	75	29	29	25	21	15
P75	James Square RTM, Crieff	R	Automatic	N/A	94	26	25	17	16	14
P76	10/12 West High Street, Crieff	UC	Diffusion	N/A	66	34	33	31	28	21
P78	1 Lodge Street, Crieff	UC	Diffusion	N/A	75	23	21	20	19	16
P79	17 Main Street	R	Diffusion	N/A	75	37	34	32	30	24
P81	76 High Street, Kinross	R	Diffusion	N/A	17	23	22	18	19	N/A
P82	66 High Street, Auchterarder	R	Diffusion	N/A	75	26	24	22	20	17
P83	176 High Street, Auchterarder	R	Diffusion	N/A	17	19	15	15	15	N/A
P86	2 Friarton Road	R	Diffusion	N/A	58	25	25	23	20	15
P87	Hollybush Road	BG	Diffusion	N/A	66	6	7	6	6	4
P89	59 South Methven St	R	Diffusion	N/A	75	37	34	28	29	23
P90	22 North Methven St	R	Diffusion	N/A	75	30	30	26	25	21
P94	Queen Street, Coupar Angus	UC	Diffusion	N/A	17	24	21	19	19	N/A

P95	26-28 Atholl Street	K	Diffusion	N/A	66	40*	43	35	36	26
P96	22 Barrack St	K	Diffusion	N/A	75	35*	33	33	30	24
P97	St Ninians School,	R	Diffusion	N/A	75	33*	31	33	27	24
P98	30 Edinburgh Road	R	Diffusion	N/A	8	22*	20	22	18	N/A
P99	15 Murray Cr Perth	UB	Diffusion	N/A	58	18*	17	15	14	11
P100	9 Comrie Street, Crieff, PH7 4AX	UC	Diffusion	N/A	75	21*	19	18	19	11
P101	28 Dunkeld Road	R	Diffusion	N/A	75	28*	26	23	24	22
P103	28 York Place	R	Diffusion	N/A	66	41*	38	37	35	22
P104	202 Glasgow Road	R	Diffusion	N/A	58	31*	30	27	26	18
P106	Victoria Terrace, Crieff	R	Diffusion	N/A	75	N/A	9	9	9	6
P107	1 Glover Street Perth	R	Diffusion	N/A	50	N/A	29	29	25	21
P108	Balmoral Road, Blairgowrie	R	Diffusion	N/A	75	N/A	N/A	23	24	17
P109	44 Kinnoull Street, Perth	R	Diffusion	N/A	75	N/A	N/A	26	25	20
P110	231 Glasgow Road, Perth	R	Diffusion	N/A	58	N/A	N/A	N/A	23	16
P111	Glasgow Road nr Lamberkine Road, Perth	R	Diffusion	N/A	58	N/A	N/A	N/A	24	19
P112	Lamberkine Drive, Perth	R	Diffusion	N/A	58	N/A	N/A	N/A	19	13
P113	38 Perth Road, Scone	R	Diffusion	N/A	66	N/A	N/A	N/A	21	17
P114	Barossa Street, Perth	R	Diffusion	N/A	75	N/A	N/A	N/A	16	13

P115	Balhouseie Street, Perth	R	Diffusion	N/A	58	N/A	N/A	N/A	18	14
P116	Jeanfield Road, Perth	R	Diffusion	N/A	58	N/A	N/A	N/A	26	22
P117	19 Riggs Road, Perth	R	Diffusion	N/A	42	N/A	N/A	N/A	N/A	16
P118	Springfield Road, Kinross	R	Diffusion	N/A	50	N/A	N/A	N/A	N/A	9
P119	Kinnoull PS, Dundee Road	R	Diffusion	N/A	42	N/A	N/A	N/A	N/A	13
P120	25 West High Street, Crieff	R	Diffusion	N/A	58	N/A	N/A	N/A	N/A	20
P121	Calendonia Road, Perth	R	Diffusion	N/A	33	N/A	N/A	N/A	N/A	25

Notes:

Exceedances of the NO₂ annual mean objective of 40µg/m³ are shown in bold.

NO₂ annual means exceeding 60µg/m³, indicating a potential exceedance of the NO₂ 1-hour mean objective are shown in **bold and underlined** (none recorded within PKC between 2016-2020).

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.

- (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%).

Table A.4 – 1-Hour Mean NO₂ Monitoring Results, Number of 1-Hour Means > 200µg/m³

Site ID	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) ⁽¹⁾	Valid Data Capture 2020 (%) ⁽²⁾	2016	2017	2018	2019	2020
Perth 1 (High Street)	Roadside	Automatic	80	80	0	0	0	0 (88)	0 (66)
Perth 2 (Atholl Street)	Roadside	Automatic	86	86	0	1	0	0	0
Crieff (James Square)	Roadside	Automatic	94	94	4	0	0	0	0

Notes:

Exceedances of the NO₂ 1-hour mean objective (200 µg/m³ not to be exceeded more than 18 times/year) are shown in bold.

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

(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%).

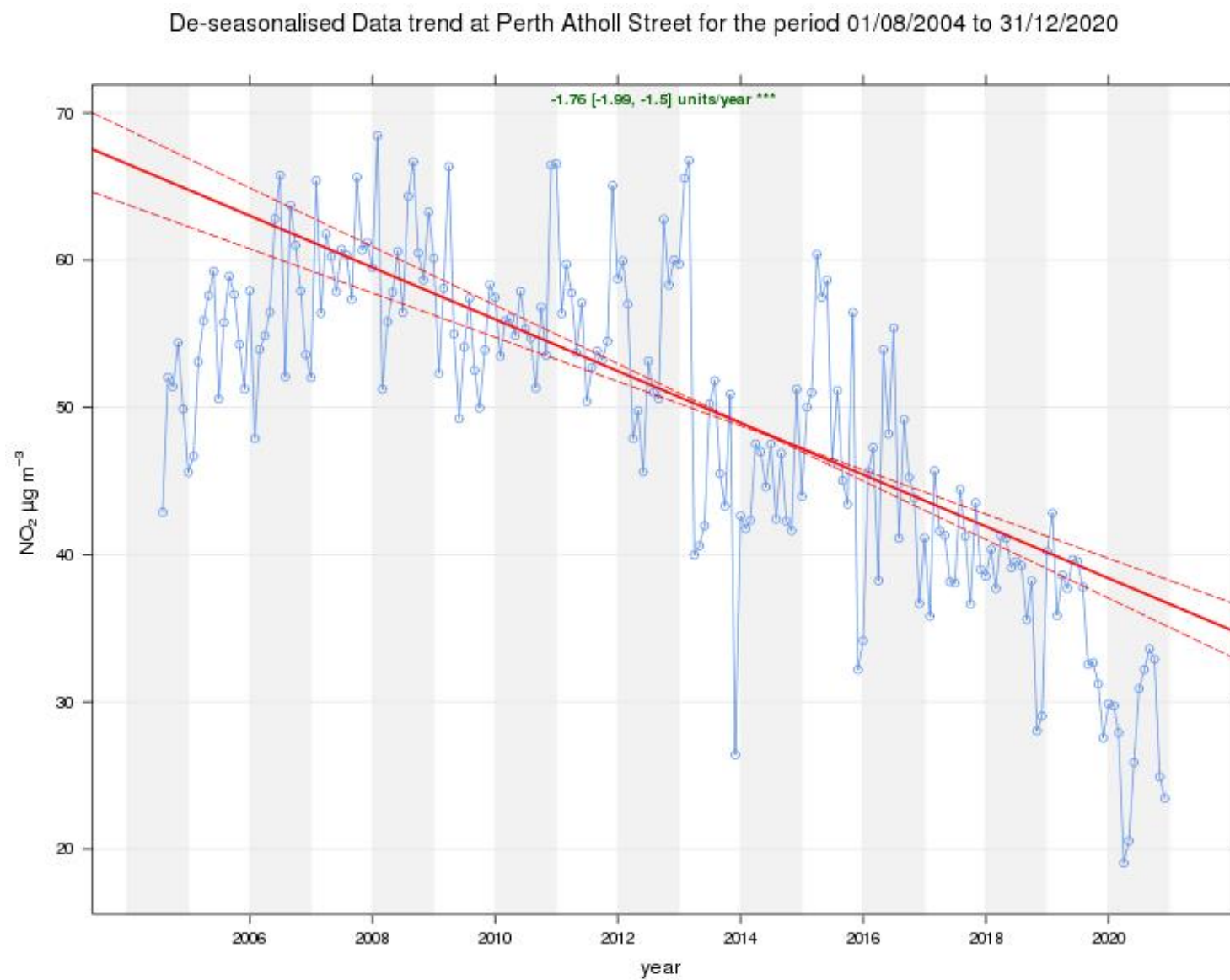
Figure A.1: Annual Mean Trend for NO₂ at Atholl Street

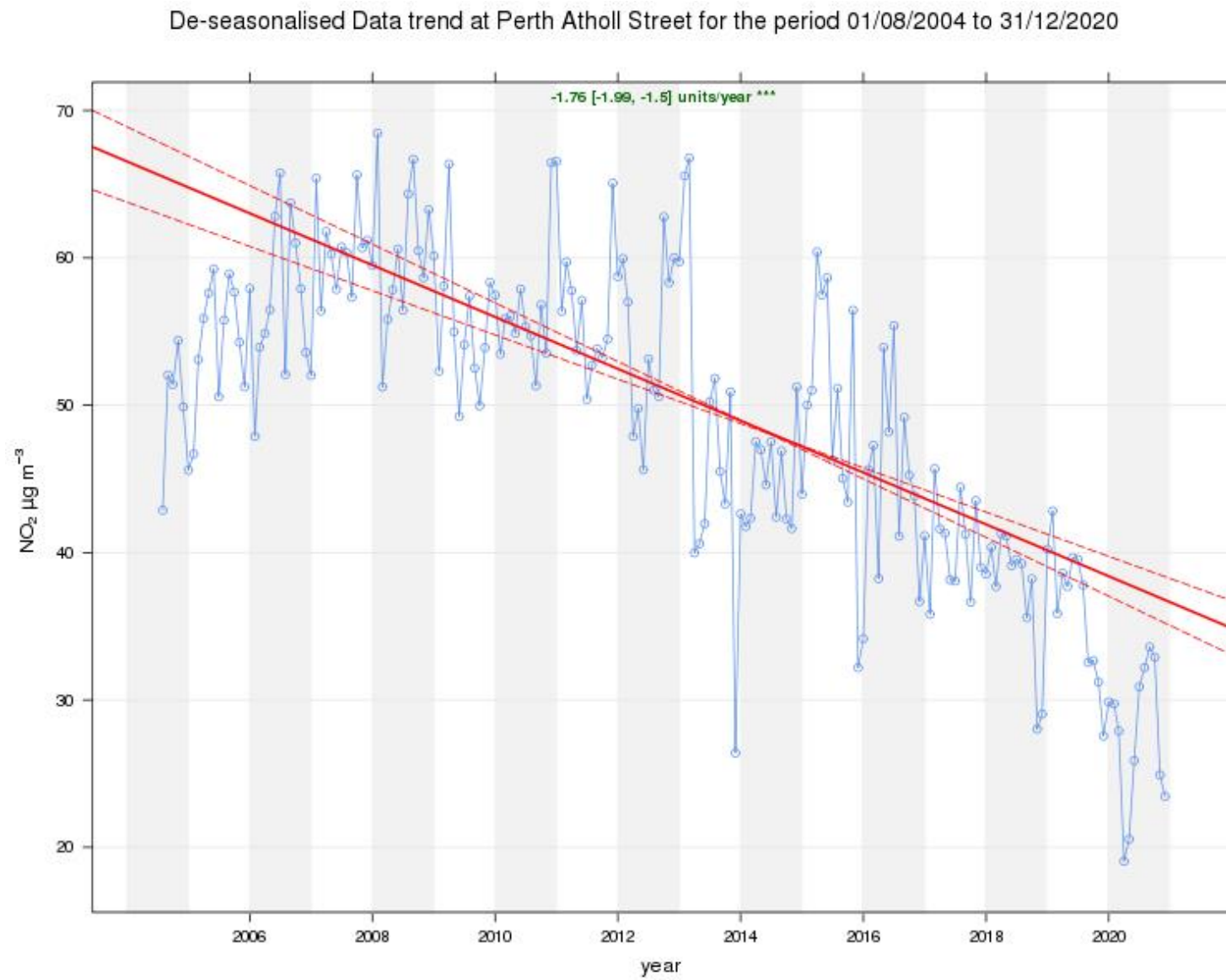
Figure A.2: Annual Mean Trend for NO₂ at Perth High Street

Figure A.3: Annual Mean Trend for NO₂ at Crieff

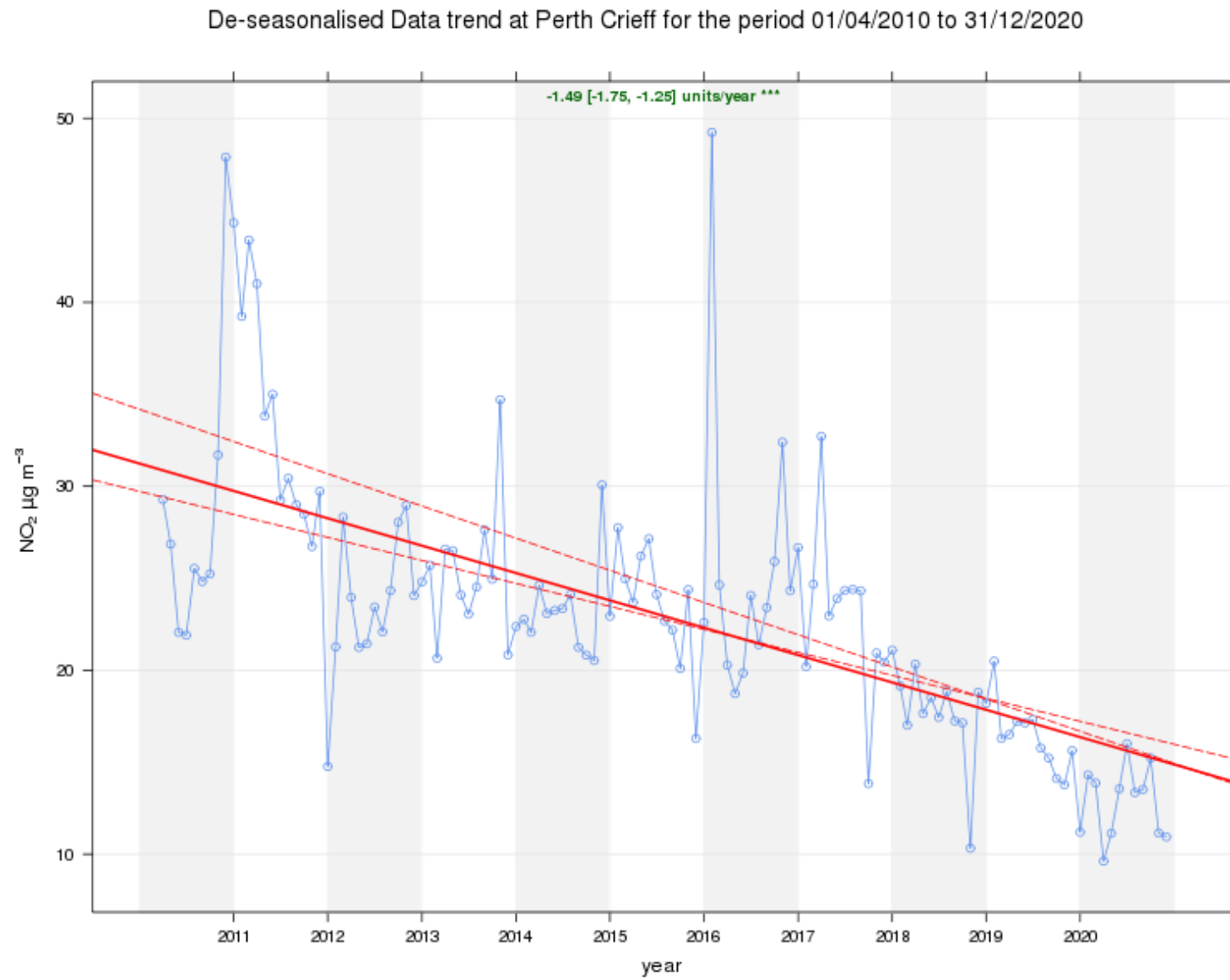


Table A.5 – Annual Mean PM₁₀ Monitoring Results (µg/m³)

Site ID	Site Type	Valid Data Capture for Monitoring Period (%) ⁽¹⁾	Valid Data Capture 2020 (%) ⁽²⁾	2016	2017	2018	2019	2020
Perth 2 (Atholl Street)	Roadside	87	87	18	17	14	13	10
Perth 3 (Muirton)	Roadside	98	98	10	9	10	9	6
Crieff (James Square)	Roadside	88	88	16	11	10	9	7

Notes:

Exceedances of the PM₁₀ annual mean objective of 18 µg/m³ are shown in bold.

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.

(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%).

Table A.6 – 24-Hour Mean PM₁₀ Monitoring Results, Number of PM₁₀ 24-Hour Means > 50µg/m³

Site ID	Site Type	Valid Data Capture for Monitoring Period (%) ⁽¹⁾	Valid Data Capture 2020 (%) ⁽²⁾	2016	2017	2018	2019	2020
Perth 2 (Atholl Street)	Roadside	87	87	0	4	0	1	0
Perth 3 (Muirton)	Roadside	98	98	0	0	0	1	0
Crieff (James Square)	Roadside	88	88	0	0	0	1	0

Notes:

Exceedances of the PM₁₀ 24-hour mean objective (50 µg/m³ not to be exceeded more than seven times/year) are shown in bold.

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

(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%).

Figure A.4: PM₁₀ Trend for Atholl Street

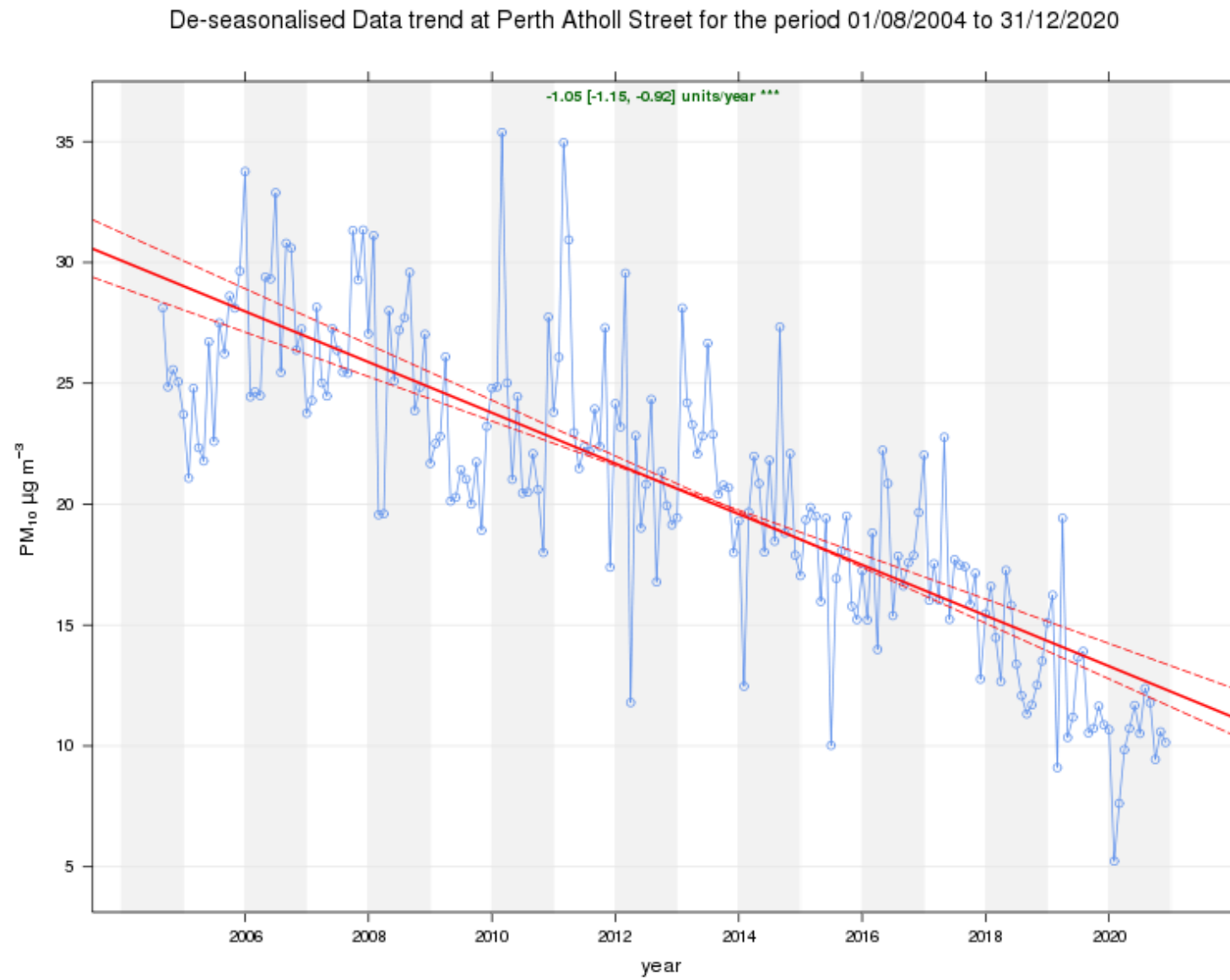


Figure A.5: PM₁₀ Trend for Muirton

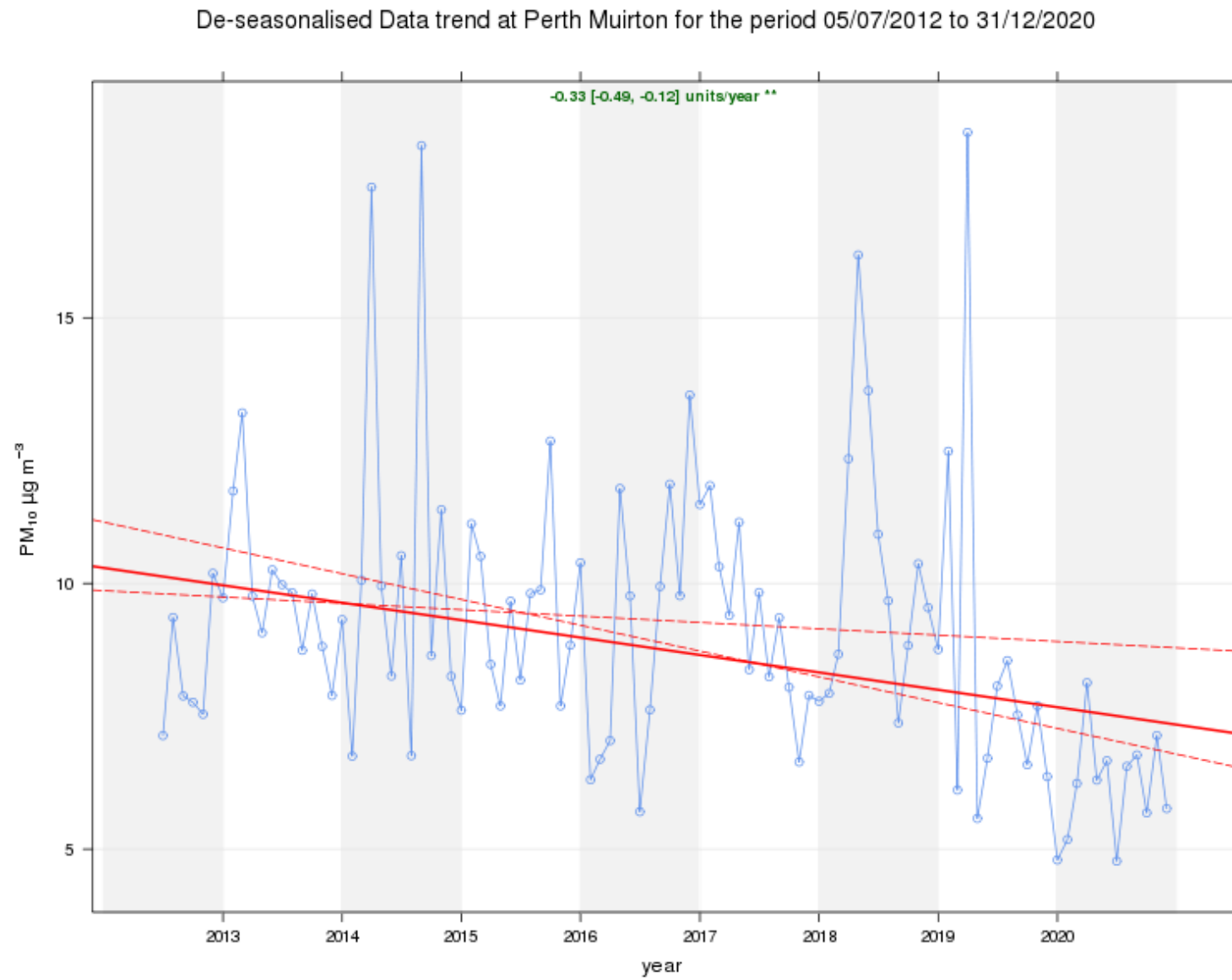


Figure A.6: PM₁₀ Trend for Crieff

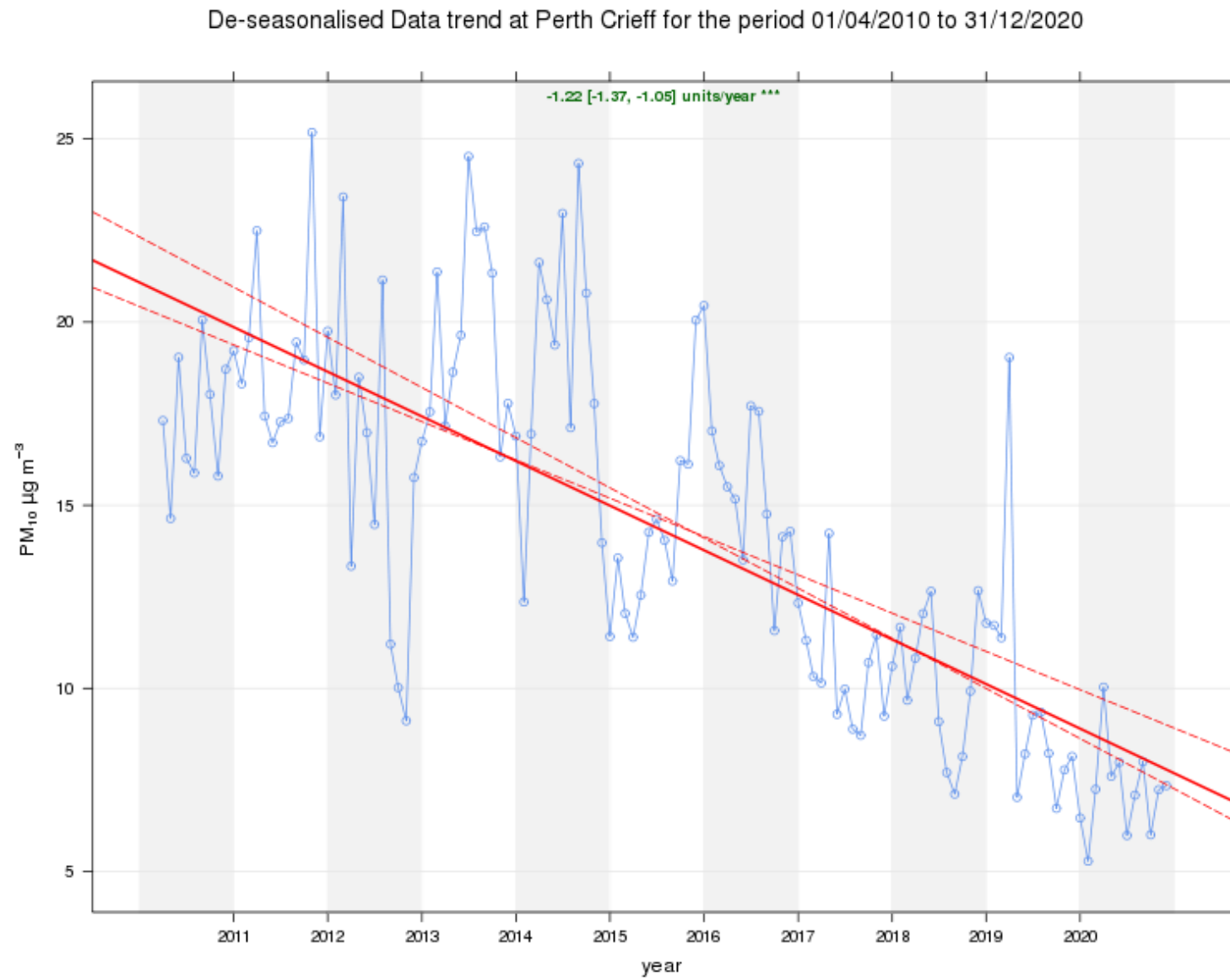


Table A.7 – Annual Mean PM_{2.5} Monitoring Results (µg/m³)

Site ID	Site Type	Valid Data Capture for Monitoring Period (%) ⁽¹⁾	Valid Data Capture 2020 (%) ⁽²⁾	2016	2017	2018	2019	2020
Perth 1 (High Street)	Roadside	86	86	N/A	N/A	7	8	6
Perth 2 (Atholl Street)	Roadside	87	87	N/A	N/A	7	7	6
Perth 3 (Muirton)	Roadside	98	98	N/A	N/A	N/A	5	4
Crieff (James Square)	Roadside	88	88	N/A	N/A	6	5	4

Notes:

Exceedances of the PM_{2.5} annual mean objective of 10 µg/m³ are shown in bold.

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.

(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%).

Appendix B: Full Monthly Diffusion Tube Results for 2020

Table B.1 – NO₂ 2020 Monthly Diffusion Tube Results (µg/m³)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean: Raw Data	Annual Mean: Bias Adjusted ⁽¹⁾
P1 – 42 Scott St	37.4	37.6	X	X	X	22.6	19.0	31.8	29.0	34.3	30.6	47.0	32.1	26
P2 – 17 Speygate	25.9	2*	X	X	X	8.3	8.9	12.3	16.3	20.9	17.2	26	16.4	13
P5 – 8 Stormont St	X	X	X	X	X	9.6	11	12.8	15	21.6	20.1	23.5	16.1	13
P6 – 41 Mull PI	18.3	12.6	x	x	x	4	4.6	5.6	7.5	X	X	19.3	10.3	8
P7 – 257 Rannoch Rd	15.5	13.9	X	X	X	X	X	X	X	X	X	X	N/A	N/A
P13 – 86 South St	40	37.5	X	X	X	16.4	21	24.3	24.3	28.7	24.4	31.4	27.6	22
P20 – 2 Crieff Rd	31.4	27.3	X	X	X	15.2	12.1	19.8	21.1	X	10.7	36.9	20.6	16
P29 – 37 York PI	36.7	25.5	x	x	x	14.8	12	21.2	22.7	X	X	35.1	23.6	19
P30 – 104 South St	43.5	37.8	X	X	X	16.5	21.5	22.6	26.0	32.4	30.8	34.9	29.6	24
P31 – 45-47 South St	33.4	25.4	X	X	X	13.9	12.1	17.5	19.5	26.7	26.5	29.8	22.8	18
P32 – 135 South St	37.8	35.6	X	X	X	17.8	19.1	22.6	26	32.3	25.1	33.5	27.8	22
P33 – 216 South St	37.9	31.1	x	x	x	17.5	17.4	26.7	25.4	32.6	25.9	43	28.6	23
P34 – 10 County PI	52.8	48.2	X	X	X	23.3	25	34.6	32.2	38.9	33.6	45.5	37.1	30

P35 – 17 Princes St	28.1	25.5	X	X	X	9.7	12.6	14.5	17.3	22.8	19.9	26.7	19.7	16
P36 - 51 Glasgow Rd	31.1	25.7	X	X	X	15.8	13.5	21	21.1	X	X	34.7	23.0	18
P37 - Riggs Rd	25	23.7	x	x	x	14.7	11.3	17.7	19.3	X	X	31.5	20.2	16
P38 - 93 Main St	26.8	25.1	X	X	X	20	14.4	23.2	19	23.4	19.5	26.4	22.0	18
P39 – 39 Main St	40.6	37.6	X	X	X	22.6	20.3	32.2	30	36.2	26.6	37.9	31.6	25
P40 – 18 Main St	42.7	40.5	X	X	X	23.3	26.7	30.9	29.5	38.1	29.4	38.1	33.2	27
P41 – 76 Atholl St	37.7	32.2	x	x	x	27.4	17.1	31.5	29.6	37.1	24.4	38.3	30.6	24
P43 – 17 Atholl St	54.1	50.1	X	X	X	27.3	28.3	37.4	35.4	43.3	42.0	43.4	40.1	32
P45 – Ballantine Pl	22.7	20.3	X	X	X	10.6	6.5	14.1	15.4	22.1	17.7	32.5	18.0	14
P46 – 204 Crieff Rd	21.6	1.8*	X	X	X	14.8	9.5	22.7	16.1	23.7	16.9	29.5	18.7	15
P47 – 5 East Huntingtower	19.5	20.9	x	x	x	11.8	9.3	17.7	15.8	21.7	18.5	25.3	17.8	14
P51 – 2 West Bridge St	28.8	27.2	X	X	X	16.2	16.9	17.2	20.9	27.8	20.9	31.9	23.1	18
P54 – High St RTM	31.6	26.7	X	X	X	11.6	13.6	17.2	17.6	27.5	26.4	30.2	22.5	18
P55 – 7 West High St	X	16.6	X	X	X	31.8	21.8	37.4	32.1	37.4	23.6	37.3	28.2	23
P56 – 39 High St	25.4	18.8	x	x	x	14.3	13.1	19.3	20	24.4	X	26.3	19.5	16
P57 – 62 High St	32.4	21.6	X	X	X	14.7	15.9	23.4	21.2	28.7	22.9	25.4	22.9	18
P58 – 9 East High St	39.4	28.6	X	X	X	21.1	20.9	26.5	26.9	35.3	29.5	31.7	28.9	23
P61 – Atholl St RTM	54.3	50.1	X	X	X	23.6	27.9	34.8	32.9	39.6	36.6	40.8	37.8	30
P62 – 84 Dundee Rd	24.1	23	x	x	x	14.4	11.8	20.6	18.8	24.2	18	29	20.4	16
P63 – 30 Dundee Rd	35.7	30.6	X	X	X	20.8	16.3	28.6	25	33.3	26.5	33.5	27.8	22

P64 – Isla Rd	46.7	41.3	X	X	X	22.7	26.9	31.6	33.5	40.8	34.8	39.4	35.3	28
P65 – 5 Charlotte St	28.1	26.7	X	X	X	18.2	11.6	22.5	18.8	24.5	19.3	28.1	22.0	18
P67 – 1 Atholl St	43.9	41.6	x	x	x	17.3	21.3	23.1	22.7	31	28.1	35.1	29.3	23
P68 - 2 Atholl St	43.9	39.5	X	X	X	15	20.9	22.7	24.1	33.2	29.1	35.2	29.3	23
P71 - 134 Dunkeld Rd	16.9	15	X	X	X	8.4	5.1	10	11.4	X	X	25.4	13.0	10
P72 – 82 Crieff Rd	41.4	42.3	X	X	X	18.2	19.8	22.1	27	33.3	24.9	39.2	29.8	24
P73 – 19 West High St	35.2	34.6	x	x	x	25.6	16.8	35.2	29.5	36.1	24.6	34.7	30.3	24
P74 – 43 High St	25.1	20.8	X	X	X	12.3	12	18	15.4	22.9	17.4	25	18.8	15
P75 – Crieff RTM	27.5	24.9	X	X	X	7.4	14.1	10.4	14.7	20.1	17.7	20.8	17.5	14
P76 - 10/12 West High St	38.1	34.5	X	X	X	18.7	21.9	29.5	27.1	X	26.7	30.4	26.7	21
P78 - 1 Lodge St	22.1	21	x	x	x	16	10.7	20.4	18.1	25.9	17.9	24.5	19.6	16
P79 – 17 Main St	35.2	35.5	X	X	X	24.5	18.8	31.2	27.4	33.7	28.1	32.8	29.7	24
P81 - 76 High St	27.5	21.5	X	X	X	X	X	X	X	X	X	X	N/A	N/A
P82 - 66 High St	31.6	26.9	X	X	X	8.5	16.9	19.6	19.6	20.8	21	25.9	21.2	17
P83 - 176 High St	21.1	14.5	x	x	x	8.5	X	X	X	X	X	X	N/A	N/A
P86 – 2 Friarton Rd	20.5	25.4	X	X	X	13.8	10.4	17.4	18.2	X	X	24.8	18.4	15
P87 – Hollybush Rd	8.1	8.2	X	X	X	3.1	2.7	3.9	4.1	6.2	X	0.7	5.5	4
P89 – 59 South Methven St	38.8	39.7	X	X	X	14.2	20	24.6	26.1	33.2	26.1	39.7	29.2	23
P90 – 22 North Methven St	36.3	35.4	x	x	x	12.4	15.7	19.2	22.4	29.7	25.2	37.5	26.0	21

P94 - Queen St	19.1	25.3	X	X	X	X	X	X	X	X	X	X	N/A	N/A
P95 – 26-28 Atholl St	41.5	40.8	X	X	X	23.9	X	34.7	34	39.1	30.4	43.5	31.9	26
P96 – 22 Barrack St	36.9	33.5	X	X	X	22	15.9	30	27.2	36.3	26.3	44.4	30.3	24
P97 – St Ninians School	42.1	33.5	x	x	x	15.5	15.5	23.5	25.7	36.1	29.9	44.2	29.6	24
P98 – 30 Edinburgh Rd	X	17.1	X	X	X	X	X	X	X	X	X	X	N/A	N/A
P99 – 15 Murray Cr	20	16.3	X	X	X	6.7	7	9.6	15	X	X	24.5	14.0	11
P100 – 9 Comrie St	21.5	17.6	X	X	X	12.1	8.6	17.7	13.8	19.6	15.9	20.8	14.2	11
P101 – 28 Dunkeld Rd	36.6	30.4	x	x	x	16	19.2	22.1	23.9	30.1	24.9	40.1	27.0	22
P103 – 28 York Pl	31	30.3	X	X	X	21.7	18.1	31.3	29.1	23.3	X	46.2	27.9	22
P104 – 202 Glasgow Rd	28.9	24	X	X	X	13.3	14.1	24.3	20	X	X	35.8	22.6	18
P106 – Victoria Terrace	12	8.6	X	X	X	3.3	3.1	5.3	5.7	9.1	8.9	16.3	8.0	6
P107 – 1 Glover St	33.4	32.3	x	x	x	17.9	17.4	X	24.4	X	X	42.2	25.9	21
P108 - Balmoral Rd	29	25.3	X	X	X	16.6	12.7	21.9	18.2	25.8	18.7	28.4	21.8	17
P109 – 44 Kinnoull St	34.9	33.1	X	X	X	12	18.1	19.1	22.4	31.4	22.5	32	25.1	20
P110 – 231 Glasgow Rd	23.9	23.9	X	X	X	10.9	11.8	18	21.4	X	X	30.4	19.8	16
P111 – Glasgow Rd	32.5	26.7	x	x	x	12	15.4	19.5	23.5	X	X	37.6	23.6	19
P112 – Lamberkine Dr	26.8	21.8	X	X	X	9	10.4	8	17.4	X	X	25.4	16.8	13
P113 – 38 Perth Rd	34.9	28.2	X	X	X	12.2	13.7	15.4	21.3	X	23.9	31.9	21.4	17

P114 – Barossa St	25.8	19.6	X	X	X	6.1	7.1	12.3	10.7	19.4	15.7	27.9	16.1	13
P115 – Balhousie St	31.8	20.3	x	x	x	7.5	8.5	11.2	14.7	X	X	28.4	17.3	14
P116 - Jeanfield Rd	42.2	28.4	X	X	X	17	17.6	23.5	24.2	X	X	39.1	27.1	22
P117 - 19 Riggs Rd	X	X	X	X	X	X	8	14	16.4	29.7	X	30	20.1	16
P118 - Springfield Rd	X	X	X	X	X	X	7.5	10.4	11.1	15.6	13.8	19	11.8	9
P119 - Kinnoull PS	X	X	x	x	x	X	X	12.8	12.1	26	20.6	25.9	16.5	13
P120 - 25 West High St	X	X	X	X	X	22.4	14.5	27.5	24.6	31.6	20.3	38.1	25.4	20
P121 - Caledonia Rd	X	X	X	X	X	X	25.5	22.7	27.5	X	X	46.1	30.7	25

Notes:

(1) See Appendix C for details on bias adjustment

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

New or Changed Sources Identified Within Perth & Kinross Council During 2020

Perth and Kinross Council has not identified any new sources relating to air quality within the reporting year of 2020.

Additional Air Quality Works Undertaken by Perth and Kinross Council During 2020

Perth and Kinross Council has not completed any additional works within the reporting year of 2020.

QA/QC of Diffusion Tube Monitoring

Analysis of diffusion tubes in 2020 was carried out by SOCOTEC at the Didcot lab. The method of preparation used was 20% TEA in water.

The analysis carried out by SOCOTEC on the diffusion tubes is covered within their UKAS schedule. SOCOTEC participate in the AIR-PT scheme in which they are rated a satisfactory laboratory.

Monitoring was carried out in line with the 2020 Diffusion Tube Monitoring calendar with the exception of the three-month period where no tube changeovers were carried out, and the October period which was changed over on 8th October rather than 30th September.

Diffusion Tube Annualisation

Where less than 75% data capture, but greater than 33%, for the diffusion tubes has been achieved the data has been annualised using the procedure laid out in LAQM TG.16. The data has been annualised using two continuous background monitors located within 50 miles of Perth and Kinross. Details of the sites requiring annualisation are provided in Table C.2. Diffusion Tube Bias Adjustment Factors. Due to there being a period where

tubes were not changed over due to Covid-19 there are a greater number of locations than normal where annualisation has been required.

Diffusion Tube Bias Adjustment Factors

Perth and Kinross Council have applied a local bias adjustment factor of 0.8 to the 2020 monitoring data. The adjustment factor has been calculated from one of the roadside monitors – the Crieff RTM. Data from the Perth Atholl Street and Perth High Street monitors were not included in the calculation due to poor overall data capture for the year. The use of a local adjustment factor is consistent with our approach in previous years and is also more conservative than the relevant national adjustment factor.

A summary of bias adjustment factors used by Perth and Kinross Council over the past five years is presented in Table C.1.

Table C.1 – Bias Adjustment Factor

Year	Local or National	If National, Version of National Spreadsheet	Adjustment Factor
2020	Local	-	0.8
2019	Local	-	0.8
2018	Local	-	0.85
2017	Local	-	0.88
2016	Local	-	0.92

NO₂ Fall-off with Distance from the Road

No diffusion tube NO₂ monitoring locations within Perth and Kinross required distance correction during 2020.

QA/QC of Automatic Monitoring

Ricardo carries out the data management and Local Site Operator (LSO) duties for the automatic monitors in P&K.

The monitors are serviced on a six-monthly basis in coordination with Ricardo's QA/QC audits (i.e., service is carried out following the audit). During each site audit the performance of the analysers is checked, in addition to a traceable calibration to UK and international metrology standards for the on-site calibration gases. Site calibrations are also carried out on a three weekly basis using a traceable gas standard. Data is ratified on a 3-monthly basis, the process for which consists of detailed review of calibrations, diagnostics, faults and engineer visits.

All data used within this report has been ratified. Live and historic data for the RTMs is available from [Latest pollution map - Air Quality in Scotland \(scottishairquality.scot\)](https://scottishairquality.scot)

PM₁₀ and PM_{2.5} Monitoring Adjustment

The type of PM₁₀/PM_{2.5} monitor(s) utilised within Perth and Kinross do not require the application of a correction factor.

Automatic Monitoring Annualisation

All automatic monitoring locations within Perth and Kinross recorded data capture of greater than 75% therefore it was not required to annualise any monitoring data.

Table C.2 – Annualisation Summary (concentrations presented in $\mu\text{g}/\text{m}^3$)

Site ID	Annualisation Factor Dundee Mains Loan	Annualisation Factor Edinburgh St Leonards	Annualisation Factor Site 3 Name	Annualisation Factor Site 4 Name	Average Annualisation Factor	Raw Data Annual Mean	Annualised Annual Mean	Comments
P2	0.95	0.98	N/A	N/A	0.97	16.4	13	
P5	0.97	1.02	N/A	N/A	0.99	16.1	13	
P6	1.00	1.00	N/A	N/A	1.00	10.3	8	
P20	0.94	0.95	N/A	N/A	0.94	20.6	16	
P29	1.00	0.97	N/A	N/A	0.98	23.6	19	
P36	1.00	0.98	N/A	N/A	0.99	23.0	18	
P37	1.00	0.98	N/A	N/A	0.99	20.2	16	
P46	0.95	0.98	N/A	N/A	0.97	18.7	15	
P55	0.94	0.96	N/A	N/A	0.95	28.2	23	
P56	0.98	0.96	N/A	N/A	0.97	19.5	16	
P71	1.00	0.98	N/A	N/A	0.99	13.0	10	
P76	0.94	0.95	N/A	N/A	0.94	26.7	21	

Site ID	Annualisation Factor Dundee Mains Loan	Annualisation Factor Edinburgh St Leonards	Annualisation Factor Site 3 Name	Annualisation Factor Site 4 Name	Average Annualisation Factor	Raw Data Annual Mean	Annualised Annual Mean	Comments
P86	1.00	0.98	N/A	N/A	0.99	18.4	15	
P87	1.09	1.04	N/A	N/A	1.07	5.5	5.5	
P95	0.86	0.91	N/A	N/A	0.89	31.9	26	
P99	1.00	0.98	N/A	N/A	0.99	14.0	11	
P103	0.98	0.96	N/A	N/A	0.97	27.9	22	
P104	1.00	0.98	N/A	N/A	0.99	22.6	18	
P107	0.95	0.9	N/A	N/A	0.93	25.9	21	
P110	1.00	0.98	N/A	N/A	0.99	19.8	16	
P111	1.00	0.98	N/A	N/A	0.99	23.6	19	
P112	1.00	0.98	N/A	N/A	0.99	16.8	13	
P113	0.94	0.95	N/A	N/A	0.94	21.4	17	
P115	1.00	0.98	N/A	N/A	0.99	17.3	14	
P116	1.00	0.98	N/A	N/A	0.99	27.1	22	

Site ID	Annualisation Factor Dundee Mains Loan	Annualisation Factor Edinburgh St Leonards	Annualisation Factor Site 3 Name	Annualisation Factor Site 4 Name	Average Annualisation Factor	Raw Data Annual Mean	Annualised Annual Mean	Comments
P117	0.98	1.06	N/A	N/A	1.02	20.1	16	
P118	0.9	0.93	N/A	N/A	0.92	11.8	9	
P119	0.81	0.89	N/A	N/A	0.85	16.5	13	
P120	0.97	1.02	N/A	N/A	0.99	25.4	20	
P121	1.02	0.99	N/A	N/A	1.01	30.7	25	

Table C.3 – Local Bias Adjustment Calculations

	Local Bias Adjustment Input 1	Local Bias Adjustment Input 2	Local Bias Adjustment Input 3	Local Bias Adjustment Input 4	Local Bias Adjustment Input 5
Periods used to calculate bias	8	N/A	N/A	N/A	N/A
Bias Factor A	0.8 (0.74 – 0.87)	N/A	N/A	N/A	N/A
Bias Factor B	25% (15% - 36%)	N/A	N/A	N/A	N/A
Diffusion Tube Mean ($\mu\text{g}/\text{m}^3$)	18	N/A	N/A	N/A	N/A

	Local Bias Adjustment Input 1	Local Bias Adjustment Input 2	Local Bias Adjustment Input 3	Local Bias Adjustment Input 4	Local Bias Adjustment Input 5
Mean CV (Precision)	4.0%	N/A	N/A	N/A	N/A
Automatic Mean ($\mu\text{g}/\text{m}^3$)	15.0	N/A	N/A	N/A	N/A
Data Capture	97%	N/A	N/A	N/A	N/A
Adjusted Tube Mean ($\mu\text{g}/\text{m}^3$)	15 (13 – 16)	N/A	N/A	N/A	N/A

Notes:

A single local bias adjustment factor has been used to bias adjust the 2020 diffusion tube results.

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
AURN	Automatic Urban and Rural Network (UK air quality monitoring network)
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
NO ₂	Nitrogen Dioxide
NO _x	Nitrogen Oxides
PM ₁₀	Airborne particulate matter with an aerodynamic diameter of 10µm (micrometres or microns) or less
PM _{2.5}	Airborne particulate matter with an aerodynamic diameter of 2.5µm or less
PM ₁	Airborne particulate matter with an aerodynamic diameter of 1µm or less
QA/QC	Quality Assurance and Quality Control
SO ₂	Sulphur Dioxide

References

Smart Growth for Perth <http://www.pkc.gov.uk/smartgrowth>

Perth Transport Futures <http://www.pkc.gov.uk/transportfutures>

Active Travel Strategy for Perth and Kinross [Active Travel Strategy for Perth and Kinross](#)

Active Travel Strategy Action Plan [Active Travel Strategy Action Plan](#)

Regional Transport Strategy <http://www.tactran.gov.uk/documents/TACTRANRTS-FinalNov2008.pdf>

Perth & Kinross Council Local Development Plan adopted 2014

http://www.pkc.gov.uk/media/23633/Local-Development-Plan/pdf/Adopted_LDP_Web_Version.pdf?m=636099646768900000

Perth & Kinross Council Local Development Plan Review (2018 -2023)

<http://www.pkc.gov.uk/article/15042/Local-Development-Plan-Review-2018-2023->

Mains Issue Report <http://www.pkc.gov.uk/article/15073/Main-Issues-Report>

Scotland's Climate Change Declaration (SCCD) Perth & Kinross Council's first annual progress report <http://www.keepsotlandbeautiful.org/sustainability-climate-change/sustainable-scotland-network/climate-change-reporting/201415-submitted-reports/?cid=15383>

Renewable energy installation capacity Perth and Kinross

<http://www.pkc.gov.uk/media/13053/Renewables-Installed-Capacity-/pdf/RenewableInstalledCapacity.pdf?m=636118891999370000>

Sustainable Design and Zero Carbon Development Supplementary Guidance

http://www.pkc.gov.uk/media/24773/Sustainable-Design-SPG/pdf/P_K_Sustainable_Design_SPG_Corrected_Version

Renewables and Low Carbon Energy

<http://www.pkc.gov.uk/media/39833/PKCRenewableSG-Draft/pdf/PKCRenewableSG-Draftv1-31>

Perth and Kinross Local Climate Impacts Profile (LCLIP)

http://www.pkc.gov.uk/NR/rdonlyres/E590425C-2665-4D13-B8DD-B70C659B3080/0/PerthandKinrossLocalClimateImpactProfile2008_w.pdf

Cleaner Air for Scotland Strategy

<https://www.gov.scot/news/cleaner-air-for-scotland-1/>