

Annual Progress Report (APR)



2022 Air Quality Annual Progress Report (APR) for Perth & Kinross Council

In fulfilment of Part IV of the Environment Act 1995

Local Air Quality Management

June 2022

Perth & Kinross Council

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Executive Summary: Air Quality in Our Area

Air Quality in Perth & 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).

For a third year in a row, no exceedances of NO₂ were identified within Perth and Kinross. during the reporting year. NO₂ levels have however increased noticeably from those recorded in 2020, despite continued lockdowns and restrictions during the early parts of the year. The most recent traffic data within Perth City (shown in Appendix D) suggests that traffic volume is almost back to pre-pandemic levels, and in some cases now exceeds previous levels during the middle of the day (9:30am-3:30pm). This could be due to more prevalent flexible working arrangements (Home working, Hybrid working etc) for those who would have commuted to an office pre pandemic, allowing travel to be shifted outside traditional peak commuting hours. This noticeable increase in traffic levels can attribute to the increase in NO₂ concentrations seen in 2021. No new sources of NO₂ emissions have been identified within Perth & Kinross.

In 2021 PM₁₀ levels returned in general to pre-pandemic levels (2019) at the Atholl Street (Perth), Crieff and Muirton (Perth) real time monitors (RTM), though remain below national objectives. The RTM relocated from High St to Bridgend was upgraded from TEOM to FIDAS, allowing PM₁₀ levels to be monitored as well as PM_{2.5}, however a trend has yet to be established due to the short monitoring period so far.

There were no exceedances of the annual mean objective and no exceedance of the overall PM₁₀ 24-Hour Mean national objective during the reporting year, however there were 7 exceedances of the 50 µg/m³ 24-Hour Mean at Atholl St in 2021 between 28/06/21 and 09/07/21. This was caused by an isolated incident relating to building works nearby and is not expected to regularly impact PM₁₀ levels in the area in the long term.

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}.

As with the previous reporting year, it is recognised that the results from 2021 were likely impacted by reduced vehicle movements due to the Covid-19 pandemic, particularly during the first six months of the year where lockdowns and restrictions were still prevalent. It is therefore assumed that the pollutant levels observed may not be sustained and will likely increase in the future years as things return to more normal conditions.

A review of the existing Perth Air Quality Action Plan (AQAP) is currently underway and has been progressed significantly in 2021. An updated Perth air quality model has been created by Sweco using a recent traffic model from Systra, and a full source apportionment exercise was then carried out. A list of 29 new or updated AQ improvement measures has been produced for the updated Perth AQAP and has gone through consultation with an internal steering group. A final draft of the AQAP is in development at the time of writing and public consultation is expected later in 2022. Completion and publication of the final Perth AQAP will then follow, likely in early 2023.

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 this area of work has been delayed by the Covid-19 situation and staff resource in 2021 being focused on the Perth AQAP Review. As was the case across P&K in 2021, NO₂, PM₁₀ and PM_{2.5} levels have increased in Crieff from those during 2020, however no exceedances were recorded.

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 2021.

Air quality consultants Sweco were commissioned by PKC in 2020 to assist in the review of the Perth AQAP. This work included 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. The source apportionment analysis was completed in late 2021 and showed that whilst cars were the highest vehicle contributor to emissions out with the city centre area, buses/coaches are also contributing a significant proportion of NOx emissions particularly on South Street, Mill Street, South Methven Street and York Place.

AQ modelling work and source apportionment were followed by internal steering group consultation in October on necessary improvement measures informed by the modelling and source apportionment data. A long list of proposed improvement measures was created (see below) made up of a range of ongoing measures from the previous action plan, updates to previous measures and a number of new measures aimed at areas not currently addressed in the existing Perth AQAP such as EV infrastructure. Climate change colleagues are part of the steering group for this project and ensure that the proposed measures align with the joint remit of improving air quality and addressing climate change. The final draft of the updated Perth AQAP is nearing completion at the time of writing this report. Following internal consultation of the final draft, public consultation will be carried out in late 2022.

Measures selected for inclusion in the Perth AQAP by Steering Group (draft)

A. Strategic Measures

- A.1 Improve Links with Regional Transport Strategy
- A.2 Ensure Mobility Strategy created in line with CAFS2
- A.3 Ensure Integration of Air Quality with Other Council Strategies and Policies
- A.4 Planning & AQ

B. Move Traffic Away from AQMA

- B.1 Cross Tay Link Road
- B.2 Incentivise parking out with City Centre hotspots
- B.3 Discourage Car Culture through Planning

C. Traffic Measures

- C.1 Continued improvement of UTM system
- C.2 Anti-Idling Scheme
- C.3 Traffic Monitoring

D. Reduce the Emissions from Source

- D.1 Encourage local fleet operators to pursue cleaner vehicles
- D.2 Freight Improvements
- D.3 Public transport improvements

D.4 Continue to evaluate the need for an LEZ in the AQMA
D.5 Fleet Improvement
D.6 Fleet Management
D.7 Licencing & AQ
D.8 EV Charging Infrastructure
D.9 School Travel Plans
E. Reduce Emissions by Reducing Demand for Traffic
E.1 Promotion and Development of car clubs
E.2 Park & Rides
F. Education and Community Measures
F.1 Promotion of active travel
F.2 Provision of travel information
F.3 Awareness raising and education
F.4 Encourage move to EV
F.5 Improve Council's provision of AQ information
G. Other
G.1 Increase AQ Monitoring Network
G.2 Increased AQ Modelling
G.3 Scenario Modelling

- PKC's Environment and Infrastructure Committee in March 2022 approved an anti-idling strategy. It is intended that PKC parking attendants will carry out anti-idling enforcement on an intelligence-led basis, beginning in 2022. This will be carried out following the '4 E's' approach – Engage, Explain, Encourage, Enforce. Only if after following the first three E's there is continued refusal by the offender to stop idling unnecessarily will the final sanction of Enforcement be carried out: issuing a fixed penalty notice
- 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. ECO Stars is a scheme aimed to reduce emissions from businesses with large vehicle fleets, with ECO Stars staff working on PKC's behalf to recruit members who operate within P&K, assess their fleet vehicles/operations and give a roadmap on reducing their emissions and fuel usage. At the time of writing, we now have 160 members within PKCs ECO Stars Scheme, across a range of industries. Taxi company recruitment to PKC's ECO Stars began in 2020, supported by our Licencing team. Currently 6 taxi companies have been recruited in Perth & Kinross, covering 103 vehicles.
- COP26 Education Event –PKC carried out an education and awareness raising event coinciding with the United Nations Conference of Parties 26 (COP26) in November 2021. Alongside social media content, education activities were delivered at three primary schools within Perth's AQMA, designed to help pupils understand key issues

around air pollution and climate change. In addition to these class activities, three Airly Particulate Matter (PM) sensors were installed outside each of the schools to incorporate air quality monitoring as part of next year's Clean Air Day education package.



Airly PM Sensor at Balhousie Primary School Gates

- PKC has continued to work with Sustrans to employ an IBike Officer to provide sessions at schools throughout Perth and Kinross. In 2021 these sessions included bike maintenance, scooter & cycle skills, adult and family cycle confidence sessions and Bikeability Cycle Training across over 16 schools to encourage pupils and their parents to take up sustainable and active travel. In October the #AndSheCycles campaign was officially launched. Half as many pupils who identify as girls aged 13-18 cycle to school compared to those who identify as male. The #AndSheCycles campaign wants to change this, and Kinross High Schools has established girls groups this year with the intention of taking part in the inaugural #AndSheCycles festival in June 2022.



Kinross High School pupils on a bike ride with iBike Officer (top), Comrie primary pupils playing some cycling games (bottom)

- Investment continues to be made in the provision of attractive and secure cycle parking in Perth city centre, 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. Due to available underspend this year, Scottish Government funding was also used to purchase scooters for Tulloch Primary school as well as create a fun ‘playable’

route to Balhousie Primary school to encourage more children to walk or cycle to school.

- PKC continues to upgrade the bus stop infrastructure throughout the region with new shelters and Real Time Passenger Information Displays to encourage the move to public transport. In 2021 six new RTPI displays were installed in Perth City and have been utilised to advertise public transport related sites such as PK On The Go and Traveline Scotland. Smarter Choices Smarter Places (SCSP) funding has allowed Perth On The Go Vinyls to be installed on bus shelters on a number of bus corridors into Perth. In addition, SCSP funding enabled the installation of 2 electronic ticket machines with contactless payment facilities at Sweeney's Garage in Muthill, a bus provider who operate in the Crieff Area



New PK On The Go Vinyls on Bus Shelters

- Six new electric vehicle charge points were installed within Perth & Kinross in 2021, 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 to install these chargers. The Local Authority Installation Program funding from Transport Scotland ended in 2021, meaning partnering with private industry will be the route forward for further EV infrastructure in the future.

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 needed 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 CTRLR was awarded 23rd June 2021. Advance construction works have now begun.

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.

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 Perth & Kinross during 2021. It fulfils the requirements of Local Air Quality Management (LAQM) as set out in Part IV of the Environment Act (1995) and the relevant Policy and Technical Guidance documents.

The LAQM process places an obligation on all local authorities to regularly review and assess air quality in their areas, and to determine whether or not the air quality objectives are likely to be achieved. Where an exceedance is considered likely the local authority must declare an Air Quality Management Area (AQMA) and prepare an Air Quality Action Plan (AQAP) setting out the measures it intends to put in place in pursuit of the objectives. This Annual Progress Report (APR) summarises the work being undertaken by 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	31.12.2021
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

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. Further information related to declared AQMAs, including maps of AQMA boundaries are shown in Figure 2.1 and 2.2 below.

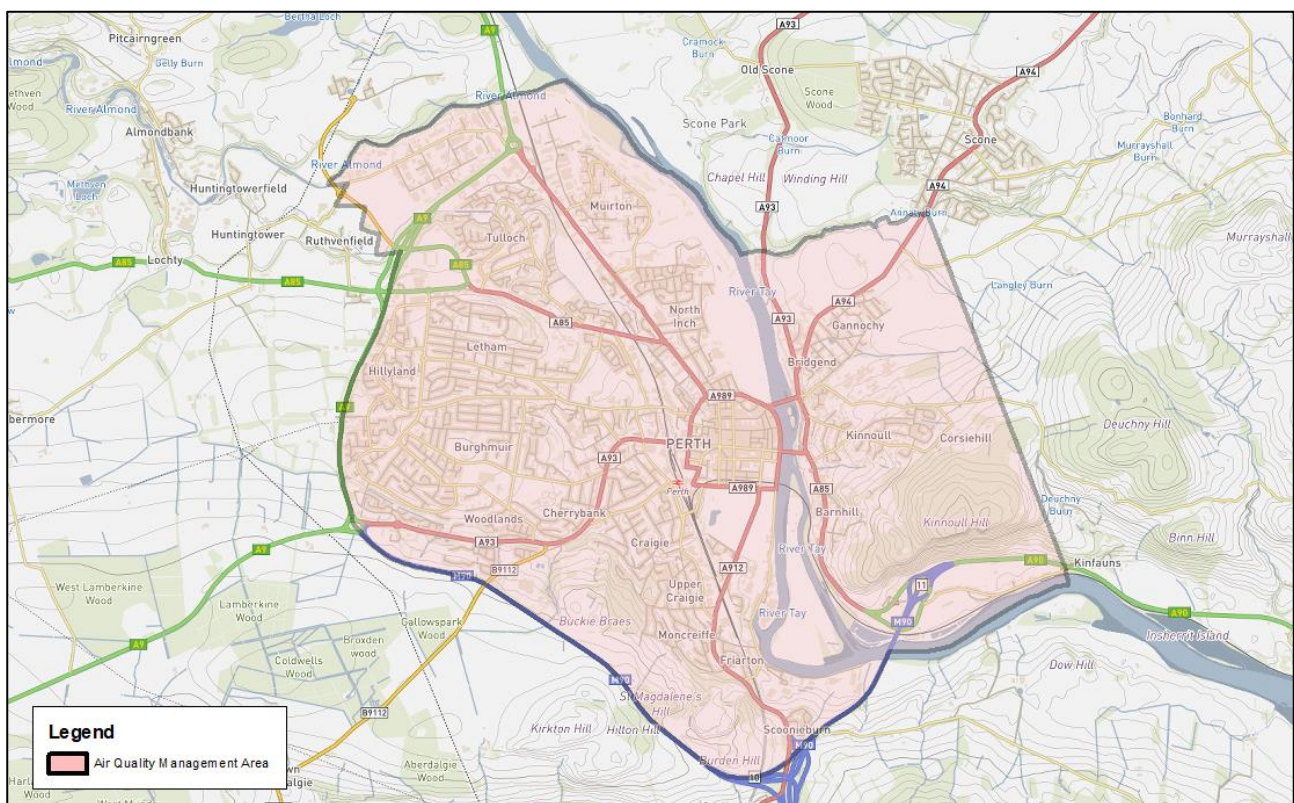


Figure 2.1: Perth AQMA Boundary

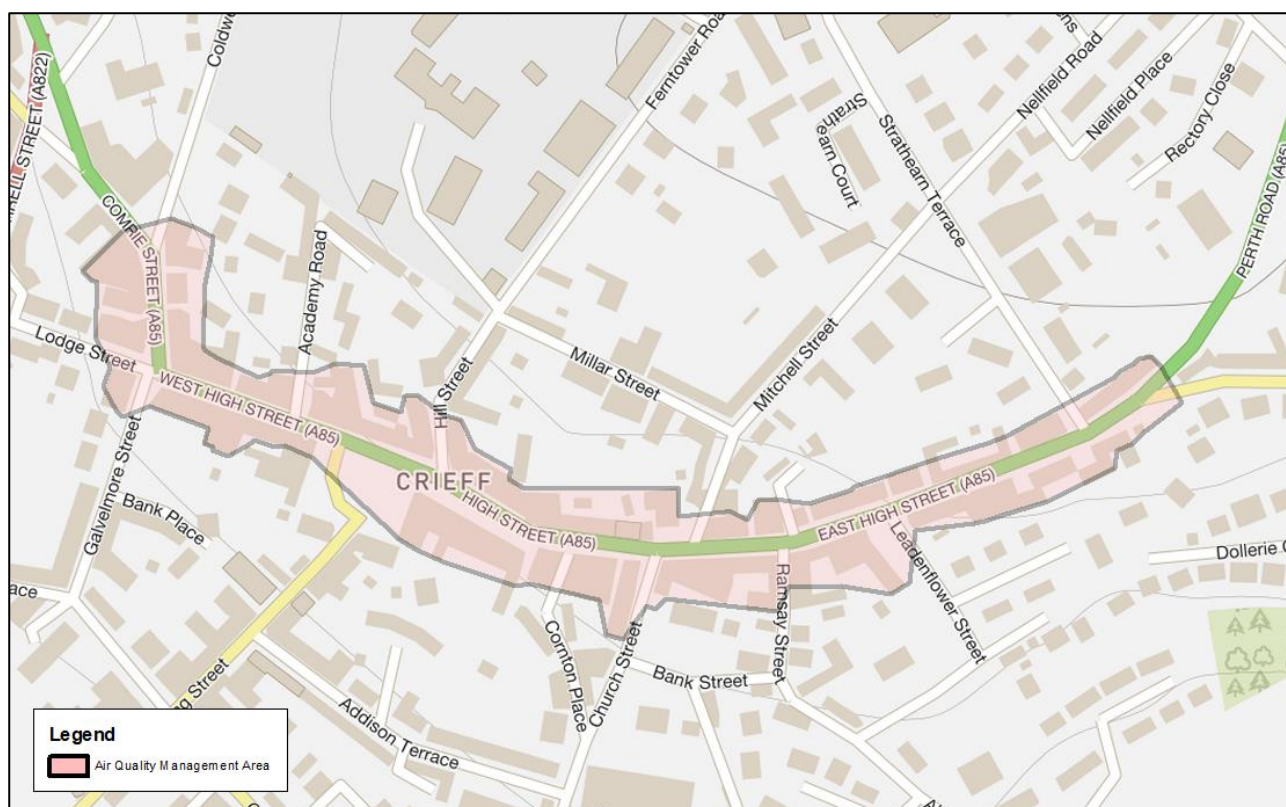


Figure 2.2: Crieff AQMA Boundary

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_Pert_h_Kinross_Council_Crieff_Air_Quality_Action_Plan.pdf?m=637080263860030000

Cleaner Air for Scotland 2

[Cleaner Air for Scotland 2 – Towards a Better Place for Everyone \(CAFS2\)](#) is Scotland's second air quality strategy. CAFS2 sets out how the Scottish Government and its partner organisations propose to further reduce air pollution to protect human health and fulfil Scotland's legal responsibilities over the period 2021 – 2026. CAFS2 was published in July 2021 and replaces [Cleaner Air for Scotland – The Road to a Healthier Future \(CAFS\)](#), which was published in 2015. CAFS2 aims to achieve the ambitious vision for Scotland "to have the best air quality in Europe". 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 for which local authorities are the lead delivery bodies within this strategy is demonstrated below.

2.1.1 Placemaking – Plans and Policies

Local authorities with support from the Scottish Government will assess how effectively air quality is embedded in plans, policies, City Deals and other initiatives, and more generally in cross departmental working, identifying and addressing evidence, skills, awareness and operational gaps.

Perth & Kinross Council has worked hard over recent years to ensure air quality is a consideration through all relevant plans and policies across the council, and has a number of cross departmental groups in place to co-ordinate best practices across all services:

- The Perth & Kinross Local Development Plan (2019) was adopted on 29 November 2019 and covers the whole Perth and Kinross area (apart from those areas covered by the National Parks). Air Quality is considered within the new plan for the whole region, not just AQMAs. 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.
- PKC released a [Placemaking Guide](#) in 2020 to help achieve the policy requirements within the Local Development Plan and ensure high quality development within the Perth & Kinross Council area that responds to our unique setting. Air quality is a key consideration within this document, providing guidance to developers on how to avoid

exacerbation of pollution during construction or resident exposure to pollutant sources such as busy roads.

- In addition to the above Placemaking Guide and the supplementary air quality planning guidance, Environmental Health Officers review all planning applications received by PKC to assess potential air quality impacts caused both directly by the development and through increased traffic on the existing road network. All planning applications containing a wood burning or biomass appliance are also assessed and documented to keep record of the continually growing number of domestic burning appliances in the council area
- PKC and TACTRAN continue to work in conjunction to ensure air quality is considered within the Regional Transport Strategy and projects such as freight consolidation, park and ride, lift share, walking and cycling initiatives. The Regional Transport Strategy is currently under review, to be adopted late 2022, and PKC are involved in the review consultation process.
- A TACTRAN-wide freight quality partnership (FQP) was formed a number of years ago, including members from PKC, Scottish Enterprise and the private freight sector. PKC and Dundee Council Environmental Health teams continue to attend meetings to ensure air quality is integrated into the FQP.
- To work towards the delivery of Perth and Kinross Council's climate change plans and targets, a Climate Change Working Group (CCWG) has been set up. The CCWG consists of representatives from relevant teams which allows for co-ordinated sharing of best practice across Council services. The CCWG is divided into thematic subgroups (Energy & Buildings, Transport, Climate Resilience, Waste & Circular Economy, Education & Engagement, Business & Industry, and Land use) and although air quality is a recurring theme across all subgroups, air quality related issues fall within the remit of the Transport subgroup, where it is a standing item on the agenda.

2.1.2 Transport – Low Emission Zones

Local authorities working with Transport Scotland and SEPA will look at opportunities to promote zero-carbon city centres within the existing LEZs structure.

Perth & Kinross Council carried out the National Low Emission Framework (NLEF) Stage 1 Screening Appraisal for both the Perth and Crieff AQMAs as part of the 2020 APR. The screening appraisal results suggested that a low emission zone was not necessary to address air quality issues in Perth as proposed projects were expected to impact positively on the AQ. Similarly, due to the Crieff AQMA covering essentially a single street, in line with the guidance provided for carrying out the NLEF assessment a low emission zone was not thought to be a proportionate measure in this situation.

PKC therefore currently has no plans to implement a low emission zone in either the Perth or Crieff AQMAs, however this option remains continually under review.

2.1.3 Climate Change – Co-ordination of climate change and air quality policies

Perth and Kinross Council's Climate Change Strategy and Action Plan was unanimously approved by the Council in December 2021. The Action Plan sets out PKC's vision in reaching net zero targets and achieving a climate resilient Perth and Kinross by outlining key short-term and long-term actions in relation to Energy & Buildings, Transport, Climate Resilience, Waste & Circular Economy, Education & Engagement, Business & Industry, and Land use. A web-based version of the Strategy and Action Plan is available on the Perth and Kinross Climate Action [website](#) which was launched in early 2022, in order to act as a central hub for climate-related information across Perth and Kinross. The website features 'Take Action' pages in relation to each area where changes need to be made, as well as key resources such as funding, events and climate-related news.

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 2021 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:

- Perth AQAP – Completion of updated Perth City AQ modelling and source apportionment, development of new suite of AQ improvement measures through steering group consultation, final draft AQAP nearing completion at time of writing
- Anti-idling enforcement proposal went to PKC Environment & Infrastructure Committee in 2022 and was approved for implementation
- ECO Stars scheme continuation, recruiting a further 37 members covering 841 new vehicles
- COP26 Education event delivered with social media, school participation and installation of Airly sensors at three schools for 12 months
- iBike Officer continued to provide cycle activities and training at schools across Perth & Kinross
- Further cycle parking infrastructure installed in Perth, in addition to provision of scooters for Tulloch Primary School and creation of a ‘playable’ active travel route to Balhousie Primary school
- 6 new electric vehicle charge points installed in 2021, further expanding PKC charging network

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

- 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, delaying further AQAP review progress. However, this has now been resolved and the project is progressing as planned.

- Zephyr Monitoring – Due to procurement issues re. insurance and sourcing of Zephyr monitors themselves; project did not begin until April 2022
- EV Chargers Perth – Due to a severe lack of EV staff capacity, Riverside Car Park and Victoria Car Park charger projects could not be progressed in 2021

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

- Review of Perth's AQAP to be completed in 2022/23
- Perth Baseline model refinement – An ANPR study carried out in Perth in 2020 will be used to build a bespoke EFT for Perth. This will then be used to update the Perth traffic model and source apportionment analysis, ensuring Perth AQ modelling is as accurate as possible
- Future Scenario testing will be carried out for both Perth and Crieff AQMAs to quantify the benefit of various potential interventions on air quality. Three modelling scenarios will be carried out per AQMA
- Following the Crieff community engagement event held in February 2020, public feedback prioritised certain measures within the Crieff AQAP. Once the Perth AQAP review is completed, officer capacity will be available to further progress these measures.
- Anti-Idling enforcement is expected to begin in Perth & Kinross by mid/late 2022 following a 4-week comms campaign advising the motoring public of upcoming enforcement.
- 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

- 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 2022/23. 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. In addition to these chargers, a further 10 EV charge points are scheduled for installation in 2022/23 across Perth & Kinross
- Clean Air Day – PKC has once again taken part in Clean Air Day for 2022. Further details will be included as part of next year's APR.
- Zephyr Monitoring Study – AQ consultants Sweco will complete the 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:
- Zephyr Monitor & Traffic Management Trial – 2 Zephyr monitors will be incorporated within our traffic control system (Stratos) for a 12-month pilot. Air quality limits will be set, and when exceeded will trigger additional traffic signal green time to try reduce congestion and air pollution within Atholl Street

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 the 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 have now started	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	An Active Travel Strategy for Perth and Kinross was approved by committee in 2018 Shaping Perth's Transport Future 2011 and the wider regional document published Transport Strategy for Perth Shaping Perth's Transport Future. PKC is currently developing a Mobility Strategy encompassing all	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	

									travel within the local authority area. As part of the updated Perth AQAP, a new measure is proposed ensuring this mobility strategy is created in line with CAFS2 and air quality considerations	Interchange Study.	
4.	Park & Ride	Transport Planning and Infrastructure	Operate existing Park & Ride (PR) Schemes. Perth PR (Broxden) Scone PR Kinross PR Walnut Grove PR Planning Permission 15/01808/FLM approved. Maintain high levels of usage. We will carry out intermittent surveys to assess vehicles using the sites.	PKC	2009 - ongoing	Ongoing	Annual usage statistics A calculator of avoided NO _x /PM ₁₀ will be provided	Medium	An Electric Hub has been developed at the Broxden PR with the installation of 3'Rapid' DC/AC chargers 3'Fast' AC chargers servicing 12 EV parking bays. European Funding and Tay Cities Deal funding obtained for a low carbon transport hub southeast of Broxden P&R Emtec Energy have been awarded a contract to design and build the Broxden P&R low carbon transport hub on PKC's behalf	Ongoing	A fast EV charging unit is due to be installed at Scone PR in 22/23
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	TACTRAN PKC	Ongoing to 2024	Ongoing to 2024 More specific timescales are available in TACTRAN's RTS delivery plan/capital and	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.	EH continue to attend meetings to ensure AQ is integrated into the FQP.	

			Councils drawing upon established guidance, to help deliver cost effective packages of freight related interventions across the region			revenue programme			<p>PKC and Dundee's EH managers are members of the Freight Quality Partnership. AQ is integrated into the Freight Quality partnership.</p> <p>A freight consolidation center has been proposed as part of the Perth West Development</p>		
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	Ongoing	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	<p>Base-line staff travel survey carried out in 2019.</p> <p>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.</p> <p>PKC promotes a car hire salary sacrifice scheme (Tusker) to staff which only provides LEV or ULEVs.</p>	Ongoing	
		Promoting travel alternatives		<p>TACTRAN</p> <p>(Through the sustainable Travel Liaison Group)</p> <p>PKC.</p>	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 assess their use through our school co-ordinators.	PKC	2009 then ongoing	Ongoing	Survey data will be requested from PKC schools as to the journeys avoided from their GTPs. We will estimate vehicle kilometers avoided in the AQMA and report reduction in emissions of NO _x and PM ₁₀ .	Medium	<p>SG grant funding allows for the continued support for green travel plans.</p> <p>The road network team promotes Cycling, walking (WoW) initiatives.</p> <p>A review of all school green travel plans is proposed as a measure for inclusion within the updated Perth AQAP</p> <p>SG AQ Funding utilised to purchase scooters for Tulloch Primary school, and create a playable route to school to encourage more children to walk or cycle to Balhousie primary school</p>	Ongoing	Hands up survey 2021 determined that the percentage of school pupils using active travel modes to get to school is 59.2%. Walking has increase in use by 3.9% since 2019
		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	<p>Continued promotion of Lift share including PKC and PRI, SSE and Aviva with stalls within workplaces.</p> <p>PKCs Liftshare platform no longer has the engagement or membership to make the licence cost economically viable moving forward.</p> <p>PKC Liftshare members will therefore be transferred to the Perth & Kinross regional Liftshare platform, which is paid for by TACTRAN.</p>	Ongoing	Proposed measure within the updated Perth AQAP will focus more on development of car share scheme than liftshare
		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	<p>A Stratos UTM Common Database has been installed and a main link has been secured.</p> <p>21/22 - Reviewed and Validated the traffic signal operation, phasing and timings of the Dunkeld Road/Atholl Street Corridor to try and improve traffic flow through this corridor and ensure the junctions are working together as efficiently as possible.</p> <p>•Reviewed and validated the traffic signal operation, phasing and timings of the Perth Bridge/Bridgend/Isla Road Corridor.</p> <p>•Investigating new technology and how we can fully utilise our systems to improve the operation of the city centre to allow us to hopefully reduce queuing and congestion.</p>	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	<p>The <u>Perth & Kinross Local Development Plan (2019) [46Mb]</u> was adopted on 29 November 2019 and covers the whole Perth and Kinross area (apart from those areas covered by the National Parks).</p> <p>AQ is considered within the new plan for the whole region, not just AQMAs.</p> <p>Supplementary air quality planning guidance was approved in 2020 and sets out how air quality will be considered when determining planning applications and details the circumstances in which an air quality assessment may be required</p>	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 produced a 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 will be necessary in the short term to establish the	PKC	Fleet Survey in year 1 of AQAP, then ongoing as tender arises as part of the standards specification	Ongoing	If vehicles are replaced like for like, the number will be reported annually, with Euro standards and that of the vehicle replaced. This will feed into an emissions calculation and the saving in NO _x and PM ₁₀ will be reported	Small – Medium	PKC continue to replace Euro Standard vehicles with newer Euro 6 vehicles or EVs where appropriate. All new Fleet vehicles in 2020 were either Euro 6 or EV. Currently PKC has a total of 17 EVs in its fleet. In 2021, 8 diesel vehicles were replaced with EVs which were leased with funding from Switched on Fleet. In addition, 55 hybrid diesel/electric vehicles were added to PKC Fleet in 2021	Ongoing	Future funding from Switched on Fleet will be put towards EV chargers rather than vehicles to establish necessary infrastructure

			baseline for improvements				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.		<p>PKC continue to expand electric charging point network to accommodate a more electric fleet. PKC Fleet now have a total of 20 EV chargers installed, with funding for an additional 10 chargers approved.</p> <p>A Fleet EV Strategy is near completion which will cover all council Depots (Friarton, Crieff, Kinross, Blairgowrie and Pitlochry)</p> <p>Chargers at 4 of the 6 Community Campuses in P&K have been approved for installation</p>		
11.	Eco-driver training	Vehicle fleet efficiency	<p>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.</p> <p>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.</p>	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	<p>Eco driving training is part of the Midas training and driver training for HGV.</p> <p>PKC Fleet currently does not have the resources to deliver this training. Alternative resources or eco driver training will be reviewed as part of the updated Perth AQAP</p>	2023/24	
	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 RTPI within our Perth City Centre offices public reception area giving bus timetable information In 2020/21, RTPI Screens were installed at 7 bus shelters throughout Perth City as part of ongoing infrastructure improvements In 21/22, six further RTPI screens were installed within Perth City. As well as being used for bus information, these signs have been utilized for advertisement of PK On The Go and Traveline Scotland sites	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	Ongoing liaison/review	We will liaise with TACTRAN annually and report progress with individual measures implemented under the Strategy.	Medium	SG funding was attained again this year to match fund the IBike Officer. Various activities such as Bikeability training, bike maintenance sessions at over 16 locations over the course of the year. 2 e-bikes are being trialled as part of the project by active school coordinators at Kinross, and a girl's cycle group has also been created at Kinross High School in advance of the #AndSheCycles festival in June 2022 '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	Anti-Idling enforcement was approved by Environment & Infrastructure Committee in early 2022. It is intended that PKC parking attendants will carry out enforcement on an intelligence-led basis from mid to late 2022	2022/23	
17.	Roadside Emission	Roadside Emission	Authorised Personnel to	PKC and	Feasibility Study	No Progress	Number of vehicles subject	Small	No progress	No progress	

	Testing	Testing	carry out roadside testing.	Police	involving surrounding Local authorities by end 2010.		to enforcement				
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. PKC AQ currently under review to improve provision of information for the public	Ongoing	
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. High St. RTM was relocated to Bridgend in 2021 to assess potential exceedances of NO ₂ . A Zephyr monitor was installed in Bridgend in April 2022 for a 12-month study to assess whether the new RTM readings are representative of street canyon pollution levels, both for NO ₂ and PM ₁₀	Ongoing	

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 the 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	PKC is in the process of developing a Mobility Strategy encompassing all transport within the local authority area. Air Quality will be a key consideration within this document	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	Small	PKC Local Development Plan: https://www.pkc.gov.uk/article/15042/Local-Development-Plan-	Ongoing	

							Development Plan (LD), and provide evidence that air quality considerations have been formalized within the LDP.		<p><u>2019-</u></p> <p>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.</p> <p>Air Quality is a major consideration within the PKC Climate Action Plan.</p> <p>EH is regularly consulted on upcoming Council plans and strategies regarding Air Quality integration</p>		
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	<p>PKC Local Development Plan: https://www.pkc.gov.uk/article/15042/Local-Development-Plan-2019-</p> <p>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.</p> <p>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</p>	2019-2024	

									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	2023/2024	2023/2024	NO ₂ & PM levels. Parking space occupancy on A85.	Medium	Subject was raised at the 2020 Crieff public engagement event. EH is working with PKCs Transport & Network team to remove 6 parking spaces on West High Street responsible for significant narrowing of road space at this point, causing congesting and increased vehicle emissions. Due to Traffic & Network's high workload across P&K, there is currently no predicted timescale for this project	Ongoing	
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	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	2021/2022	

				BEAR Scotland					Transport Scotland are ongoing. Due to limited resource during the Covid-19 pandemic and the focus on the Perth AQAP review in 2022 no further progress has been made		
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	Anti-Idling enforcement was approved by Environment & Infrastructure Committee in early 2022. It is intended that PKC parking attendants will carry out enforcement on an intelligence-led basis from mid to late 2022	2022/2023	
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	2023/2024	2023/2024	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 and the focus on the Perth AQAP review in 2022 no further progress has been made	2023/2024	
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	2023/2024	2023/2024	% 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 and the focus on the Perth AQAP review in 2022 no further progress has been made	2023/2024	

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	<p>PKC ECO Stars works with operators in the area to improve fleet efficiency, supporting their move to more efficient vehicles. 37 new members were recruited in 2012/22 to PKCs ECO Stars Scheme, across a range of industries, covering 841 new vehicles.</p> <p>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.</p>	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	<p>The road network team promotes Cycling, walking (WoW) initiatives through and iBike officer and cycle/scooter storage facilities.</p> <p>Hands up survey 2018 determined that the percentage of Perth primary pupils regularly cycling to school is 6.6% and 6.5% pupils</p>	Ongoing	

									scouted 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 passenger information screens were installed in two locations within Methven, and a power supply was installed at a bus shelter in Comrie in preparation for an RTPI. In 2021/22, two electronic ticket machines with contactless payment facilities were installed at Sweeneys Garage in Muthill, who operate in the Crieff area	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	37 new members were recruited in the third year of PKCs ECO Stars Scheme, across a range of industries, covering 841 new vehicles. Promotion to taxi providers is now 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	2020/2021 then ongoing	Ongoing	Activity data will be collected annually from	Small	Continued promotion of Lift share including PKC and PRI, SSE and Aviva with stalls within	Ongoing	

				TACTRAN	thereafter.		both schemes, and we will estimate vehicle km avoided in the AQMA and report reduction in emission of NO _x and PM ₁₀ .		workplaces. PKCs Liftshare platform no longer has the engagement or membership to make the licence cost economically viable moving forward. PKC Liftshare members will therefore be transferred to the Perth & Kinross regional Liftshare platform, which is paid for by TACTRAN.		
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	TACTRAN utilises Transport Scotland funding to provide travel planning advice for businesses across Scotland under the guises of the TravelKnowHow programme. This is through both online tools and direct 1-1 support	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 SUSTRAN S TACTRAN Cycling Scotland Paths for All (SCSP)	2018 - 2020	Ongoing	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	Small	Base-line staff travel survey carried out in 2019. Staff travel report went to Senior Management in early 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.	Ongoing	

							of NO _x and PM ₁₀ .		PKC promotes a car hire salary sacrifice scheme (Tusker) to staff which only provides LEV or ULEVs.		
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 again this year to match fund the IBike Officer. Various activities such as bikeability training, bike maintenance sessions at over 16 locations over the course of the year. 2 ebikes are being trialled as part of the project by active school coordinators at Kinross, and a girl's cycle group has also been created at Kinross High School in advance of the #AndSheCycles festival in June 2022 '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	Ongoing	

									activities were carried out at two schools in Perth and one in Crieff. No further progress made in 2021		
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	2023/2024	2023/2024	It is not possible to assign a quantitative indicator.	Small	No progress	2023/2024	
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	2023/2024	2023/2024	It is not possible to assign a quantitative indicator.	Small	No progress	2023/2024 – 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. A Zephyr monitor was installed in West High	Ongoing	

									St in April 2022 for a 12-month study to assess whether RTM readings are representative of street canyon pollution levels, both for NO ₂ and PM ₁₀ .		
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	2023/2024	2023/2024	It is not possible to assign a quantitative indicator.	Small	No progress	2023/2024	
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. 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.	Ongoing	

3 Air Quality Monitoring Data and Comparison with Air Quality Objectives

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.

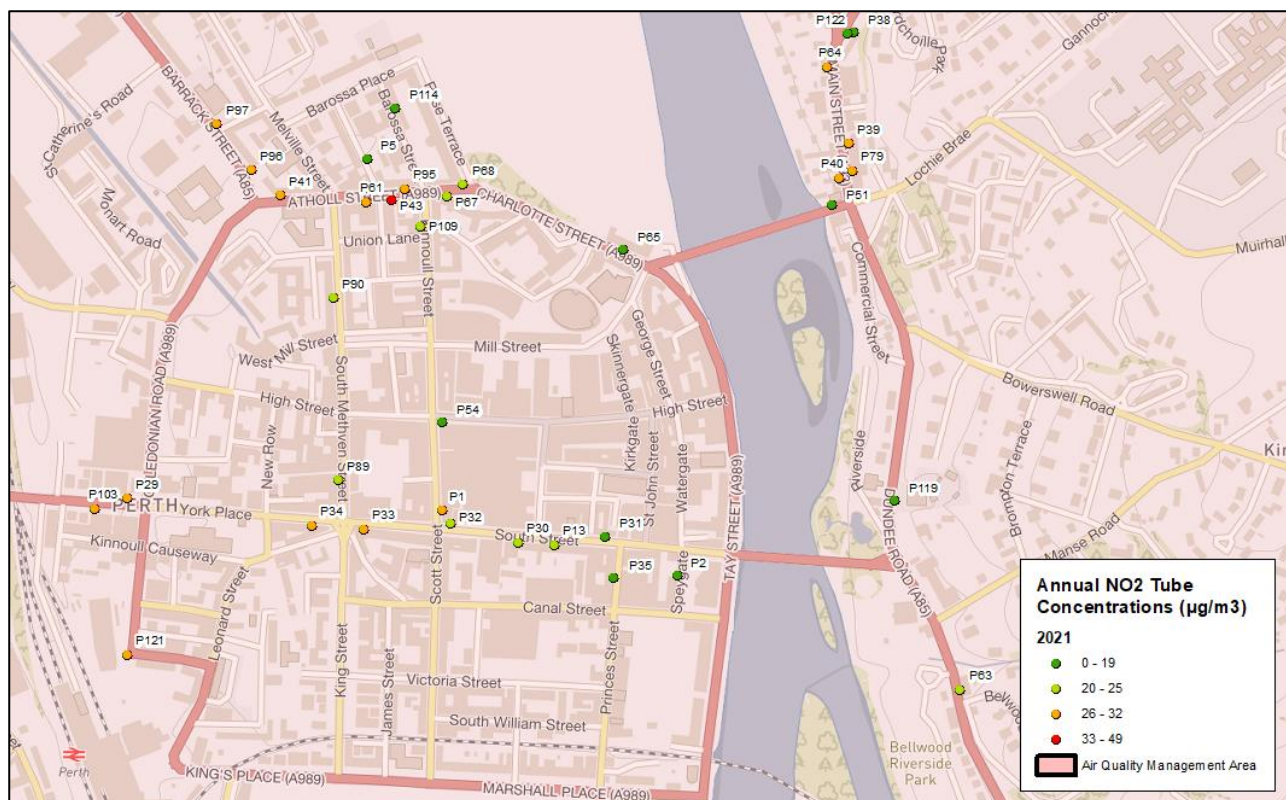
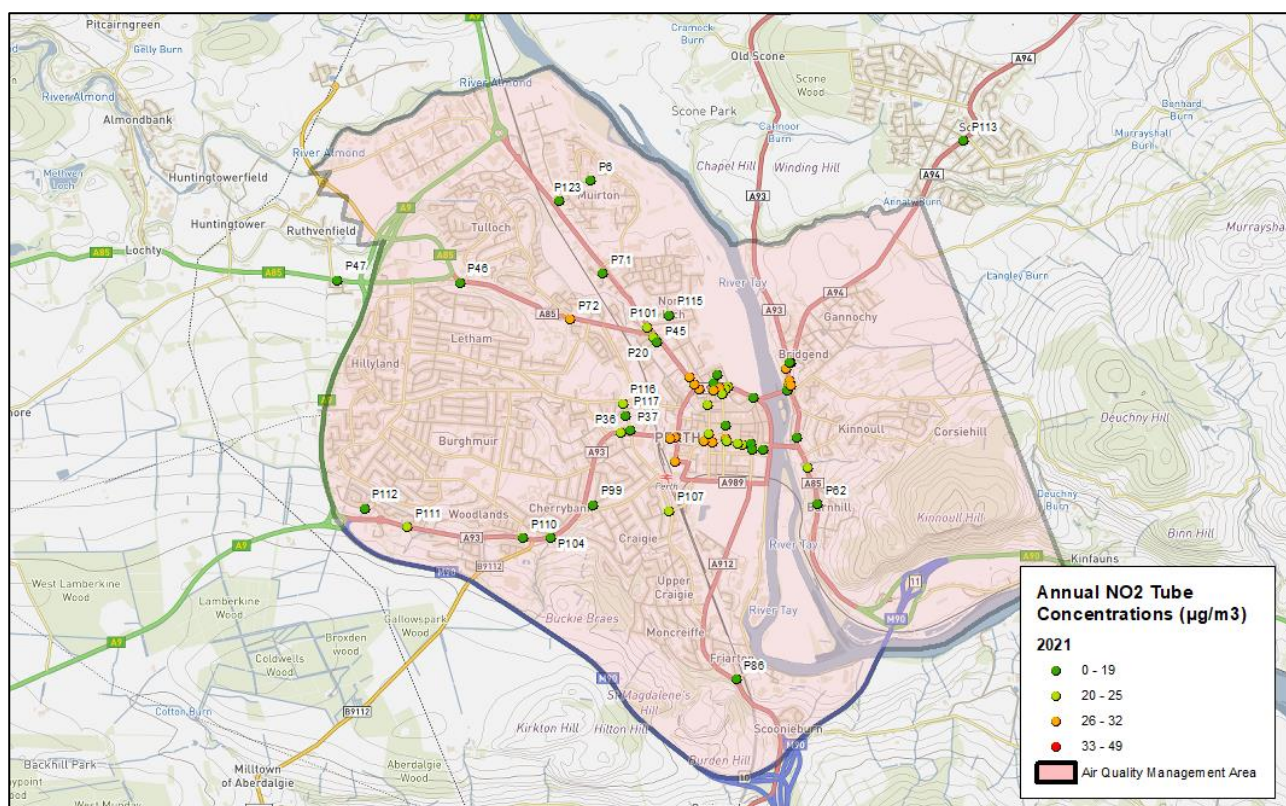
Perth and Kinross Council undertook automatic (continuous) monitoring at 4 sites during 2021. Table A.1 in Appendix A shows the details of the sites. National monitoring results are available at <https://www.scottishairquality.scot/latest>.

Maps showing the location of the monitoring sites are provided in 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 2021. Table A.2 in Appendix A shows the details of the sites.

Maps showing the location of the monitoring sites are provided in <https://www.scottishairquality.scot/latest> as well as in Figure 3.1, 3.2, 3.3 and 3.4. 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 LocationsFigure 3.2: Perth Area NO₂ Diffusion Tube Locations

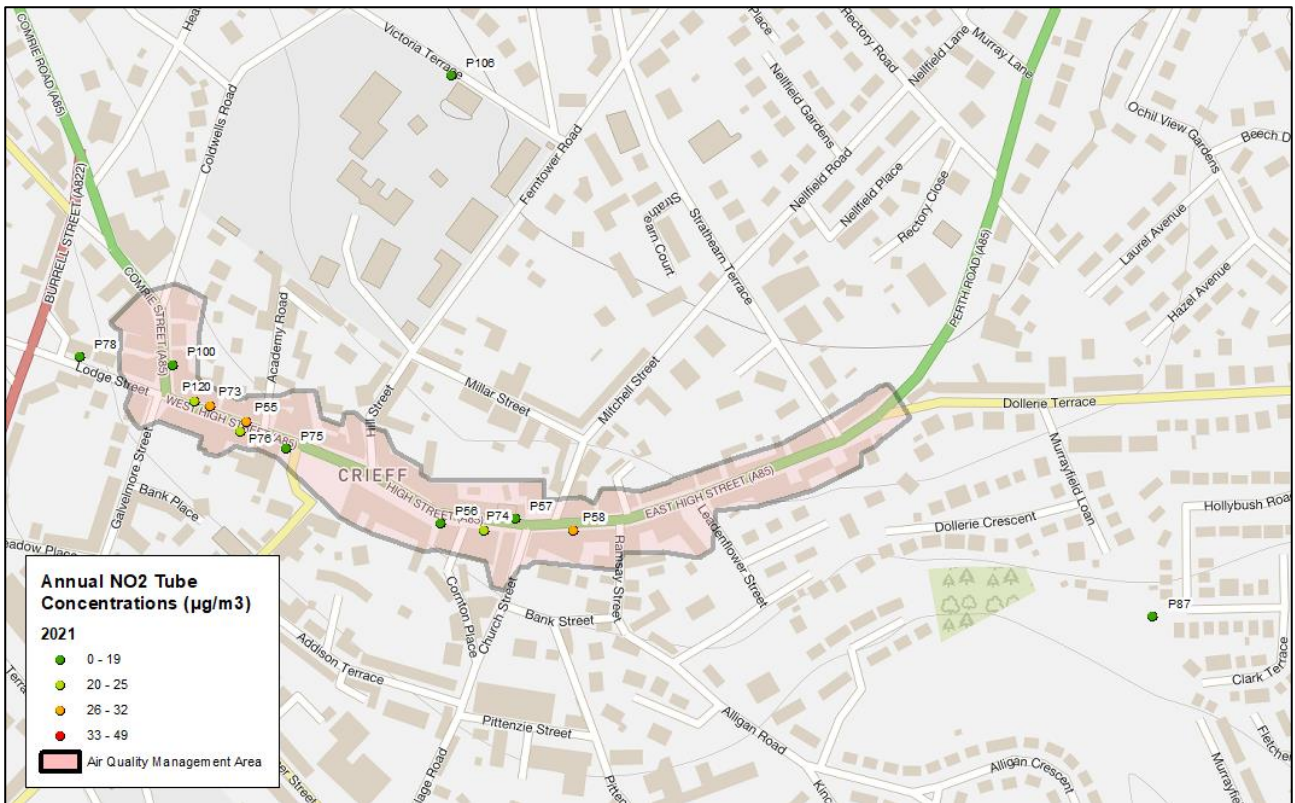


Figure 3.3: Crieff NO₂ Diffusion Tube Locations

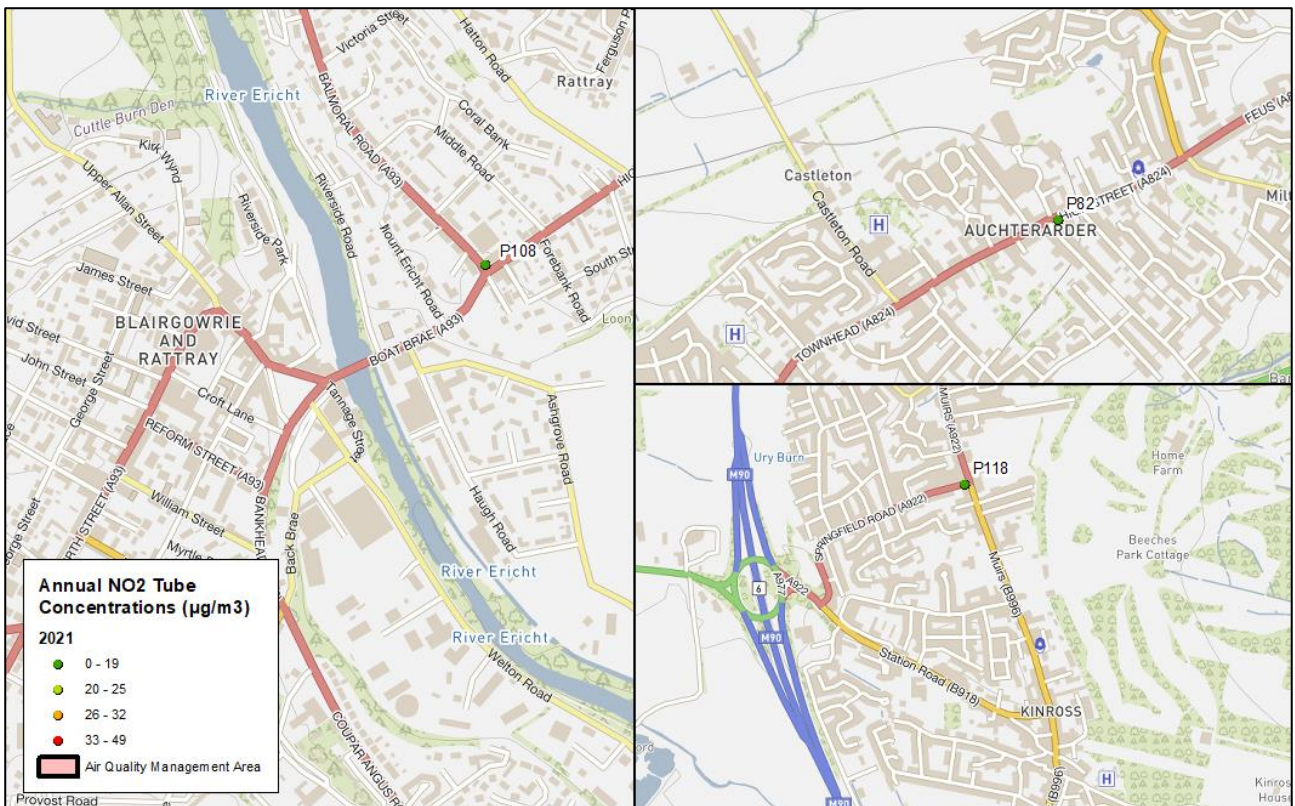


Figure 3.4: Blairgowrie, Auchterarder and Kinross NO₂ Diffusion Tube Locations

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.

3.1.3 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 two locations where it has not been possible to provide a result as the data capture across the year is less than 33% - Perth High Street RTM ((P54CLR) and 93-109 Main St, Bridgend (P38). The low level of data capture in these locations is due to cessation of monitoring at these locations early in the year. Perth High Street RTM diffusion tubes were moved when the Bridgend Real Time Monitor was relocated in March 2021. The tube at 93-109 Main St, Bridgend was also relocated at this time as the new RTM was close proximity to its location, and it was thought the tube could be better utilised elsewhere. The new monitoring location for this tube was selected based the upcoming development of the Cross Tay Link Road, as works traffic for this development is expected on Bute Drive in the near future.

For diffusion tubes, the full 2021 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 2021 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 and Figure A.2 in Appendix A for the Atholl St and Crieff automatic monitoring sites. As the Bridgend site has only been in place since 2020, there is not enough data to establish a trend yet.

Diffusion tube monitoring also indicated no exceedances of NO₂ at any locations across the monitoring network, however NO₂ levels have increased noticeably from 2020 levels.

It is accepted that both the RTM and diffusion tube results from early 2021 have been impacted by the decrease in road traffic resulting from the Covid-19 pandemic and subsequent lockdowns, thus lower NO₂ levels are at least partly attributable to this.

3.1.4 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.

Overall PM₁₀ levels have returned to pre-pandemic levels (2019), and may have been decreased in the early months of 2021 during lockdown periods. PM₁₀ trends for Atholl Street, Muriton and Crieff can be seen in Figures A.3 - A.5 in Appendix A. The RTM relocated from High St to Bridgend was upgraded from TEOM to FIDAS, allowing PM₁₀ levels to be monitored as well as PM_{2.5}, however a trend has yet to be established due to the short monitoring period so far.

In 2021 there were no exceedances of the annual mean level and no exceedance of the overall PM₁₀ 24-Hour Mean national objective, however there were 7 exceedances of the 50 µg/m³ 24-Hour Mean at Atholl St in 2021 between 28/06/21 and 09/07/21. These exceedances are visible as a high peak in Figure A.3 in Appendix A.

This was caused by building works being undertaken within the building directly behind the RTM (18 North William Street). These works included the removal of plasterboard across all three floors of the building, resulting in significant quantities of dust being released into Atholl St. In addition, during the same time period temporary traffic lights were in place on Melville Street which may also have increased PM₁₀ levels. This was an isolated incident and is not expected to regularly impact PM₁₀ levels in the area in the long term, however building works at the location are ongoing and will likely affect RTM readings in 2022. EH officers are working closely with Planning colleagues to ensure the strict implementation of a Construction Environmental Management Plan (CEMP) by the developer to keep future pollutants to a minimum during the construction.

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 may not represent the

worst case. In order to address this, a Zephyr monitor was installed in April 2022 within the street canyon for a 12 month study 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, and will be included as part of the 2023 APR.

3.1.5 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. Perth High Street RTM was moved to Bridgend in 2021, where PM_{2.5} monitoring has continued.

The data indicates no exceedances of the objective at any of these locations during 2021, however results will likely have been impacted by the effects of the pandemic

PM_{2.5} trends for Atholl Street, Muirton and Crieff can be seen in Figures A.6 - A.8 in Appendix A. Levels have remained fairly steady since monitoring began, though a gradual decreasing trend may be emerging.

3.1.6 Sulphur Dioxide (SO₂)

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

3.1.7 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 within Perth & Kinross

4 New Local Developments

Road Traffic Sources

Dualling works on the A9 have continued through 2021. The section of dualling from Luncarty to the Pass of Birnam was completed in August 2021.

Final approval was granted for the Cross Tay Link Road in 2020, and work on the project has now started.

Other Transport Sources

No new sources within Perth and Kinross have been identified.

Industrial Sources

Plastic Recycling Facility proposed at Binn Farm, near Perth. Detailed dispersion modelling has been carried out, and the impact of emissions from the proposed installation was assessed as not significant to human health and that the air quality objectives would be met.

Westfield Energy Recovery Ltd have submitted an application to vary the existing Pollution Prevention and Control (PPC) permit for the Energy Recovery Facility on site at Kinglassie. These amendments would include increasing thermal capacity, changes to the building and stack configuration. The site in question is on the boundary between Perth & Kinross and Fife, and due to the possibility of trans boundary emissions PKC were informed of the application. The dispersion modelling assessment undertaken for this application found that both short- and long-term emissions from the proposed facility will not breach any AQ national objectives.

Commercial and Domestic Sources

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

No new CHP plants or significant sources of solid fuel burning were identified in 2021.

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

Planning Ref	Location	Thermal Output (kW)	In AQMA	DA Required
22/00362/FLL	Binn Farm, Glenfarg	150	No	No ⁽¹⁾

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

The application for Binn Farm was made in retrospect as a replacement for existing LPG gassed/kerosene fuelled space heating. The air quality biomass screening tool found that no pollutant issues were anticipated and therefore the application was approved.

156 planning applications containing domestic woodburning stoves were received in 2021 across Perth & Kinross. Environmental Health Officers have seen an increase in complaints about wood burning stove smoke and odour nuisance over recent years, however there are few powers available to PKC to control their installation (due to permitted development) or restrict what fuel is being burned.

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 was undertaken in November 2021. This assessment found that despite the predicted additional load of 2 µg/m³ for both PM₁₀ & PM_{2.5} due to the opencast site operations, the objectives of 18 µg/m³ and 10 µg/m³ will not be exceeded in the worst-case scenario.

5 Planning Applications

Food and Drink Park (adjacent), Perth 21/00752/IPM (in principle, approved) – Proposed employment/business park. Assessments of the impact on air quality from both construction and operational phases were made. It was concluded that the development will have a negligible impact on NO₂, PM₁₀ and PM_{2.5} levels in the area.

Scone North 21/00609/AMM (approved) – Erection of 58 dwellinghouses and 3 detached garages. AQ Screening assessment predicted that the increase in traffic for the houses, permitted to be occupied prior to the CTRLR being constructed, would be in the order of 3% which is less than the 5% threshold which would require a detailed air quality assessment to be undertaken as per EPUK document *Development Control: Planning for Air Quality*.

Murrayshall Country House Hotel and Golf Club 21/00508/IPM – Residential development, extension of hotel accommodation units, café, spa and leisure facilities. Application site is adjacent to Perth AQMA, and Paramics model testing undertaken by Systra predicted increases in traffic on the local road network in Bridgend. In light of this, an air quality screening assessment has been requested from the developer.

Algo Ltd Auld Bond Road, Perth 21/01106/FLL (approved) – Erection of 11 light industrial units. A detailed air quality assessment was submitted in 2021 for both operational and construction emissions. The assessment found that the impact on pollution levels for NO₂ and PM₁₀ & PM_{2.5} from the proposed development are negligible.

6 Conclusions and Proposed Actions

Conclusions from New Monitoring Data

No exceedances for either NO₂ or PM₁₀ were identified at any locations across Perth and Kinross, however levels have increased from those seen during the Covid-19 pandemic in 2020. Reduced traffic volumes as a result of lockdowns and restrictions in early 2021 will likely have also impacted monitoring data in 2021.

Monitoring of PM_{2.5} has continued in 2021, and no exceedances at any of the monitoring locations were recorded.

Conclusions relating to New Local Developments

Three proposed developments have been considered for potential impact in air quality – two in Perth within the AQMA, and one in Scone. An air quality assessment has been requested for a development outside Scone (Murrayshall) which is out with any AQMA however may impact traffic levels in Bridgend, Perth.

Assessments carried out identified that it was unlikely that the three aforementioned developments would have a significant impact upon local air quality. It is also worth noting that there are other developments progressing, but these have been considered in previous progress reports.

Developments assessed for air quality impacts in previous Annual Progress Reports can be found here: <https://www.pkc.gov.uk/article/15307/Air-quality-reports>

Proposed Actions

Based on the information gathered in 2021 no changes are currently recommended to either the Perth or the Crieff AQMA. However as was stated in previous years, the data collected from Crieff indicates that over the last seven 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 is carrying out a twelve-month monitoring study in 2022/23 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. This Zephyr monitoring study will be completed in time for the next APR submission, and its data will therefore be used to make an informed decision on revocation of the Crieff AQMA at that time. In the meantime, PKC will continue to deliver the air quality improvement measures contained within the Crieff AQAP.

A review of the Perth AQAP is well underway, with traffic, air quality modelling and source apportionment work complete and a new raft of AQ improvement measures drafted in collaboration with various internal stakeholders. A final draft AQAP is nearing completion at the time of writing this APR, after which internal and public consultations will be undertaken. It is expected that the review of the Perth AQAP will be completed by 2023. Once this is complete and the new Action Plan is in place, PKC will work towards implementation of the newly agreed measures and continue to deliver those measures which have already been started.

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	Bridgend	Roadside	312254	724159	NO ₂ ; PM ₁₀ ; PM _{2.5} ; PM ₁	Y; Perth AQMA	Chemiluminescent; FIDAS	2.90	2.92	1.8
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
N/A ⁽³⁾	High Street	Roadside	311687	723626	NO ₂ ; PM _{2.5}	Y; Perth AQMA	Chemiluminescent; TEOM	20.4	4.8	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.

(3) High Street monitor was relocated to Bridgend in March 2021

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)
P1C, P1L, P1R	42 Scott St Perth	Roadside	311674	723501	NO2	Yes, Perth City	0.6	2.3	N	2.3
P2	17 Speygate Perth	Roadside	312018	723411	NO2	Yes, Perth City	3.8	1.2	N	2.3
P5	8 Stormont Street	Urban Centre	311584	723993	NO2	Yes, Perth City	13.6	1.3	N	2.5
P6	41 Mull Place	Urban Background	310501	725764	NO2	Yes, Perth City	6.6	1.6	N	2.4
P13	86 South Street	Roadside	311846	723454	NO2	Yes, Perth City	0.0	2.6	N	2.9
P20	2 Crieff Road	Roadside	311058	724395	NO2	Yes, Perth City	0.3	4.4	N	2.3
P29	37 York Place	Roadside	311252	723518	NO2	Yes, Perth City	2.8	4.9	N	2.3
P30C, P30L, P30R	114 South Street	Roadside	311797	723457	NO2	Yes, Perth City	0.0	2.5	N	2.9
P31	45-47 South Street	Roadside	311925	723465	NO2	Yes, Perth City	0.0	3.6	N	2.8
P32	135 South Street	Roadside	311704	723483	NO2	Yes, Perth City	0.0	5.3	N	2.7
P33	216 South Street	Roadside	311587	723475	NO2	Yes, Perth City	0.0	2.2	N	3.0
P34	10 County Place	Roadside	311503	723480	NO2	Yes, Perth City	0.0	2.1	N	2.9
P35	17 Princes Street	Roadside	311930	723416	NO2	Yes, Perth City	7.2	1.5	N	2.7
P36	51 Glasgow Road	Roadside	310773	723557	NO2	Yes, Perth City	12.4	1.6	N	2.4
P37	Riggs Road	Roadside	310857	723577	NO2	Yes, Perth City	0.0	7.6	N	2.7

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)
P38	93-109 Main St Bridgend	Roadside	312264	724168	NO2	Yes, Perth City	0.0	7.6	N	2.4
P39	39 Main Street	Roadside	312257	724013	NO2	Yes, Perth City	2.0	2.6	N	2.4
P40	18 Main Street	Roadside	312245	723965	NO2	Yes, Perth City	0.1	2.2	N	2.6
P41	76 Atholl Street	Roadside	311462	723941	NO2	Yes, Perth City	0.5	2.2	N	2.9
P43C, P43L, P43R	17 Atholl Street	Roadside	311619	723933	NO2	Yes, Perth City	0.0	2.3	N	2.9
P45	Ballantine Place	Urban Centre	311095	724356	NO2	Yes, Perth City	3.7	1.8	N	3.1
P46	204 Crieff Road	Roadside	309364	724875	NO2	Yes, Perth City	11.7	4.0	N	2.1
P47	5 East Huntingtower	Roadside	308293	724892	NO2	Yes, Perth City	5.3	1.9	N	2.8
P51	2 West Bridge St	Roadside	312233	723921	NO2	Yes, Perth City	2.5	1.9	N	2.5
P54C, P54L, P54R	Perth High St RTM	Roadside	311692	723627	NO2	Yes, Perth City	5.3	5.2	N	1.7
P55	7 West High Street, Crieff,	Roadside	286334	721640	NO2	Yes, Crieff	1.8	0.4	N	2.4
P56	39 High Street, Crieff,	Urban Centre	286541	721559	NO2	Yes, Crieff	0.0	1.3	N	2.4
P57	62 High Street, Crieff,	Urban Centre	286541	721563	NO2	Yes, Crieff	0.6	1.6	N	2.5
P58	9 East High Street, Crieff,	Urban Centre	286582	721553	NO2	Yes, Crieff	0.5	1.2	N	2.5
P61C, P61L, P61R	RTM, Atholl Street	Roadside	311584	723931	NO2	Yes, Perth City	0.6	2.2	Y	1.8
P62	84 Dundee Road	Roadside	312503	722930	NO2	Yes, Perth City	0.8	1.6	N	2.6

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)
P63	30 Dundee Road	Roadside	312413	723252	NO2	Yes, Perth City	1.2	1.2	N	2.6
P64	Isla Road	Roadside	312228	724120	NO2	Yes, Perth City	0.2	2.6	N	2.6
P65	5 Charlotte Street	Roadside	311943	723864	NO2	Yes, Perth City	2.4	2.0	N	2.5
P67	1 Atholl Street	Roadside	311697	723939	NO2	Yes, Perth City	0.3	2.4	N	2.5
P68	2 Atholl Street	Roadside	311720	723955	NO2	Yes, Perth City	6.6	1.3	N	2.1
P71	134 Dunkeld Road	Roadside	310621	724951	NO2	Yes, Perth City	4.3	1.8	N	2.7
P72	82 Crieff Road	Roadside	310335	724550	NO2	Yes, Perth City	11.1	2.4	N	2.4
P73	19 West High Street, Crieff	Urban Centre	286302	721651	NO2	Yes, Crieff	0.0	1.6	N	2.4
P74	43 High Street, Crieff	Urban Centre	286517	721559	NO2	Yes, Crieff	2.4	1.5	N	2.4
P75C, P75L, P75R	RTM, Crieff	Roadside	286360	721617	NO2	Yes, Crieff	5.1	3.7	Y	1.6
P76	10/12 West High Street, Crieff	Urban Centre	286324	721632	NO2	Yes, Crieff	0.0	1.4	N	3.2
P78	1 Lodge Street, Crieff	Urban Centre	286194	721692	NO2	Yes, Crieff	0.0	1.7	N	3.1
P79C, P79R, P79L	17 Main Street	Roadside	312262	723976	NO2	Yes, Crieff	0.0	3.0	N	2.5
P82	66 High Street, Auchterarder	Roadside	294569	712888	NO2	No	1.7	0.5	N	3.1
P86	2 Friarton Road	Roadside	311788	721397	NO2	Yes, Perth City	3.7	1.2	N	2.1

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)
P87	Hollybush Road	Suburban	287043	721486	NO2	No	17.0	7.0	N	2.6
P89	59 South Methven St	Roadside	311546	723544	NO2	Yes, Perth City	0.0	3.0	N	2.2
P90	22 North Methven St	Roadside	311539	723798	NO2	Yes, Perth City	0.0	3.0	N	2.6
P95	26-28 Atholl Street	Kerbside	311636	723950	NO2	Yes, Perth City	1.7	0.9	N	2.2
P96	22 Barrack St	Kerbside	311424	723976	NO2	Yes, Perth City	3.0	0.5	N	2.6
P97	St Ninians School,	Roadside	311370	724040	NO2	Yes, Perth City	7.0	1.9	N	2.4
P99	15 Murray Cr Perth	Roadside	310536	722928	NO2	Yes, Perth City	6.8	1.6	N	2.3
P100	9 Comrie Street, Crieff	Urban Centre	286271	721684	NO2	Yes, Crieff	0.0	2.0	N	2.3
P101	28 Dunkeld Road	Roadside	311012	724483	NO2	Yes, Perth City	4.1	3.1	N	2.4
P103	28 York Place	Roadside	311207	723504	NO2	Yes, Perth City	8.0	2.1	N	2.6
P104	202 Glasgow Road	Roadside	310157	722634	NO2	Yes, Perth City	5.6	1.5	N	2.4
P106	Victoria Terrace, Crieff	Roadside	286491	721913	NO2	No	2.9	1.5	N	2.5
P107	1 Glover Street Perth	Roadside	311201	722871	NO2	Yes, Perth City	3.5	1.0	N	2.6
P108	Balmoral Road, Blairgowrie	Roadside	318293	745415	NO2	No	0.2	1.8	N	2.3
P109	44 Kinnoull Street, Perth	Roadside	311660	723897	NO2	Yes, Perth City	2.8	2.4	N	2.4
P110	231 Glasgow Road, Perth	Roadside	309922	722633	NO2	Yes, Perth City	2.8	2.4	N	2.3

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)
P111	Glasgow Road nr Lamberkine Road, Perth	Roadside	308904	722731	NO2	Yes, Perth City	0.9	1.0	N	2.3
P112	Lamberkine Drive, Perth	Roadside	308528	722895	NO2	Yes, Perth City	20.3	1.8	N	2.9
P113	38 Perth Road, Scone	Roadside	313781	726119	NO2	No	4.7	1.8	N	2.5
P114	Barossa Street, Perth	Roadside	311625	724063	NO2	Yes, Perth City	0.0	1.3	N	2.6
P115	Balhousie Street, Perth	Roadside	311197	724857	NO2	Yes, Perth City	5.0	3.2	N	2.4
P116	Jeanfield Road, Perth	Roadside	310791	723817	NO2	Yes, Perth City	8.0	1.6	N	2.6
P117	19 Riggs Rd, Perth	Roadside	310791	723817	NO2	Yes, Perth City	6.0	1.7	N	2.6
P118	Springfield Rd, Kinross	Roadside	311654	703014	NO2	No	12.0	1.5	N	2.6
P119	Kinnoull PS, Dundee Rd	Roadside	312322	723515	NO2	Yes, Perth City	18.0	2.3	N	2.5
P120	25 West High St, Crieff	Roadside	286286	721656	NO2	Yes, Crieff	4.0	1.8	N	2.5
P121	Railway Sidings, Caledonia Rd	Roadside	311252	723301	NO2	Yes, Perth City	16.0	2.2	N	2.6
P122C, P122L, P122R	Bridgend RTM	Roadside	312260	724170	NO2	Yes, Perth City	5.0	2.5	Y	1.8
P123	9 Lismore Court, Perth	Urban Centre	310231	725590	NO2	Yes, Perth City	5.5	24.0	N	2.4

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 2021 (%) ⁽²⁾	NO ₂ Annual Mean Concentration (µg/m ³)				
						2017	2018	2019	2020	2021
P1C, P1L, P1R	42 Scott St Perth	R	Diffusion	N/A	92.3	35.0	33.0	33.0	26.0	28.6
P2	17 Speygate Perth	R	Diffusion	N/A	92.3	22.0	18.0	18.0	13.0	12.8
P5	8 Stormont Street	UC	Diffusion	N/A	100.0	20.0	18.0	18.0	13.0	13.6
P6	41 Mull Place	UB	Diffusion	N/A	100.0	11.0	10.0	10.0	8.0	8.6
P13	86 South Street	R	Diffusion	N/A	100.0	31.0	27.0	26.0	22.0	22.3
P20	2 Crieff Road	R	Diffusion	N/A	90.4	26.0	25.0	23.0	16.0	19.7
P29	37 York Place	R	Diffusion	N/A	75.0	31.0	29.0	28.0	19.0	25.9
P30C, P30L, P30R	114 South Street	R	Diffusion	N/A	100.0	35.0	30.0	29.0	24.0	23.6
P31	45-47 South Street	R	Diffusion	N/A	100.0	25.0	23.0	22.0	18.0	19.1
P32	135 South Street	R	Diffusion	N/A	100.0	32.0	29.0	30.0	22.0	24.7
P33	216 South Street	R	Diffusion	N/A	92.3	31.0	30.0	32.0	23.0	26.7
P34	10 County Place	R	Diffusion	N/A	100.0	41.0	38.0	37.0	30.0	32.3
P35	17 Princes Street	R	Diffusion	N/A	100.0	23.0	21.0	20.0	16.0	16.5
P36	51 Glasgow Road	R	Diffusion	N/A	100.0	28.0	27.0	26.0	18.0	21.7
P37	Riggs Road	R	Diffusion	N/A	100.0	25.0	23.0	22.0	16.0	18.5
P38	93-109 Main St Bridgend	R	Diffusion	15.4	15.4	27.0	27.0	22.0	18.0	-

P39	39 Main Street	R	Diffusion	N/A	100.0	35.0	36.0	32.0	25.0	28.0
P40	18 Main Street	R	Diffusion	N/A	100.0	40.0	34.0	32.0	27.0	27.1
P41	76 Atholl Street	R	Diffusion	N/A	100.0	37.0	34.0	31.0	24.0	28.4
P43C, P43L, P43R	17 Atholl Street	R	Diffusion	N/A	100.0	44.0	41.0	38.0	32.0	34.9
P45	Ballantine Place	UC	Diffusion	N/A	100.0	20.0	17.0	18.0	14.0	16.5
P46	204 Crieff Road	R	Diffusion	N/A	100.0	25.0	25.0	19.0	15.0	16.9
P47	5 East Huntingtower	R	Diffusion	N/A	100.0	22.0	21.0	19.0	14.0	16.2
P51	2 West Bridge St	R	Diffusion	N/A	100.0	27.0	24.0	23.0	18.0	19.0
P54C, P54L, P54R	Perth High St RTM	R	Automatic	15.4	15.4	17.0	21.0	21.0	15.0	-
P55	7 West High Street, Crieff,	R	Diffusion	N/A	100.0	38.0	37.0	35.0	23.0	28.3
P56	39 High Street, Crieff,	UC	Diffusion	N/A	100.0	24.0	25.0	22.0	16.0	18.0
P57	62 High Street, Crieff,	UC	Diffusion	N/A	100.0	25.0	24.0	24.0	18.0	18.8
P58	9 East High Street, Crieff,	UC	Diffusion	N/A	100.0	34.0	31.0	29.0	23.0	27.1
P61C, P61L, P61R	RTM, Atholl Street	R	Automatic	N/A	100.0	40.0	37.0	36.0	28.0	31.4
P62	84 Dundee Road	R	Diffusion	N/A	100.0	28.0	25.0	23.0	16.0	19.0
P63	30 Dundee Road	R	Diffusion	N/A	100.0	37.0	31.0	30.0	22.0	25.3
P64	Isla Road	R	Diffusion	N/A	100.0	42.0	39.0	36.0	28.0	31.7
P65	5 Charlotte Street	R	Diffusion	N/A	100.0	28.0	26.0	24.0	18.0	18.2
P67	1 Atholl Street	R	Diffusion	N/A	100.0	34.0	30.0	28.0	23.0	24.3
P68	2 Atholl Street	R	Diffusion	N/A	92.3	28.0	23.0	26.0	23.0	20.9

P71	134 Dunkeld Road	R	Diffusion	N/A	100.0	15.0	14.0	13.0	10.0	11.5
P72	82 Crieff Road	R	Diffusion	N/A	100.0	33.0	28.0	28.0	24.0	25.6
P73	19 West High Street, Crieff	UC	Diffusion	N/A	100.0	39.0	47.0	34.0	24.0	28.8
P74	43 High Street, Crieff	UC	Diffusion	N/A	100.0	29.0	25.0	21.0	15.0	20.4
P75C, P75L, P75R	RTM, Crieff	R	Automatic	N/A	100.0	25.0	17.0	16.0	14.0	13.7
P76	10/12 West High Street, Crieff	UC	Diffusion	N/A	100.0	33.0	31.0	28.0	21.0	24.4
P78	1 Lodge Street, Crieff	UC	Diffusion	N/A	100.0	21.0	20.0	19.0	16.0	17.7
P79C, P79R, P79L	17 Main Street	R	Diffusion	N/A	100.0	34.0	32.0	30.0	24.0	26.4
P82	66 High Street, Auchterarder	UC	Diffusion	N/A	92.3	24.0	22.0	20.0	17.0	16.4
P86	2 Friarton Road	UC	Diffusion	N/A	100.0	25.0	23.0	20.0	15.0	16.9
P87	Hollybush Road	S	Diffusion	N/A	100.0	7.0	6.0	6.0	4.0	5.2
P89	59 South Methven St	R	Diffusion	N/A	100.0	34.0	28.0	29.0	23.0	24.9
P90	22 North Methven St	R	Diffusion	N/A	100.0	30.0	26.0	25.0	21.0	20.6
P95	26-28 Atholl Street	K	Diffusion	N/A	100.0	43.0	35.0	36.0	26.0	31.6
P96	22 Barrack St	K	Diffusion	N/A	75.0	33.0	33.0	30.0	24.0	27.7
P97	St Ninians School,	R	Diffusion	N/A	100.0	31.0	33.0	27.0	24.0	26.4
P99	15 Murray Cr Perth	R	Diffusion	N/A	100.0	17.0	15.0	14.0	11.0	11.8
P100	9 Comrie Street, Crieff	UC	Diffusion	N/A	92.3	19.0	18.0	19.0	11.0	14.3
P101	28 Dunkeld Road	R	Diffusion	N/A	90.4	26.0	23.0	24.0	22.0	22.6

P103	28 York Place	R	Diffusion	N/A	100.0	38.0	37.0	35.0	22.0	29.5
P104	202 Glasgow Road	R	Diffusion	N/A	92.3	30.0	27.0	26.0	18.0	19.0
P106	Victoria Terrace, Crieff	R	Diffusion	N/A	100.0	9.0	9.0	9.0	6.0	6.4
P107	1 Glover Street Perth	R	Diffusion	N/A	100.0	29.0	29.0	25.0	21.0	23.5
P108	Balmoral Road, Blairgowrie	R	Diffusion	N/A	100.0	N/A	23.0	24.0	17.0	18.8
P109	44 Kinnoull Street, Perth	R	Diffusion	N/A	100.0	N/A	26.0	25.0	20.0	20.6
P110	231 Glasgow Road, Perth	R	Diffusion	N/A	100.0	N/A	N/A	23.0	16.0	17.4
P111	Glasgow Road nr Lamberkine Road, Perth	R	Diffusion	N/A	84.6	N/A	N/A	24.0	19.0	21.2
P112	Lamberkine Drive, Perth	R	Diffusion	N/A	100.0	N/A	N/A	19.0	13.0	15.6
P113	38 Perth Road, Scone	R	Diffusion	N/A	100.0	N/A	N/A	21.0	17.0	17.8
P114	Barossa Street, Perth	R	Diffusion	N/A	82.7	N/A	N/A	16.0	13.0	10.8
P115	Balhousesie Street, Perth	R	Diffusion	N/A	100.0	N/A	N/A	18.0	14.0	13.6
P116	Jeanfield Road, Perth	R	Diffusion	N/A	100.0	N/A	N/A	26.0	22.0	21.3
P117	19 Riggs Rd, Perth	R	Diffusion	N/A	100.0	N/A	N/A	N/A	16.0	16.0
P118	Springfield Rd, Kinross	R	Diffusion	N/A	100.0	N/A	N/A	N/A	9.0	11.0
P119	Kinnoull PS, Dundee Rd	R	Diffusion	N/A	100.0	N/A	N/A	N/A	13.0	19.0
P120	25 West High St, Crieff	R	Diffusion	N/A	100.0	N/A	N/A	N/A	20.0	23.7
P121	Railway Sidings,	R	Diffusion	N/A	92.3	N/A	N/A	N/A	25.0	29.8

	Caledonia Rd									
P122C, P122L, P122R	Bridgend RTM	R	Automatic	100	76.9	N/A	N/A	N/A	N/A	19.4
P123	9 Lismore Court, Perth	UC	Diffusion	100	76.9	N/A	N/A	N/A	N/A	12.7

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**.

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 2021 (%) ⁽²⁾	2017	2018	2019	2020	2021
Perth 1 (Bridgend)	Roadside	Automatic	89	75	N/A	N/A	N/A	N/A	0
Perth 2 (Atholl Street)	Roadside	Automatic	98	98	1	0	0	0	0
Crieff (James Square)	Roadside	Automatic	94	94	0	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%).

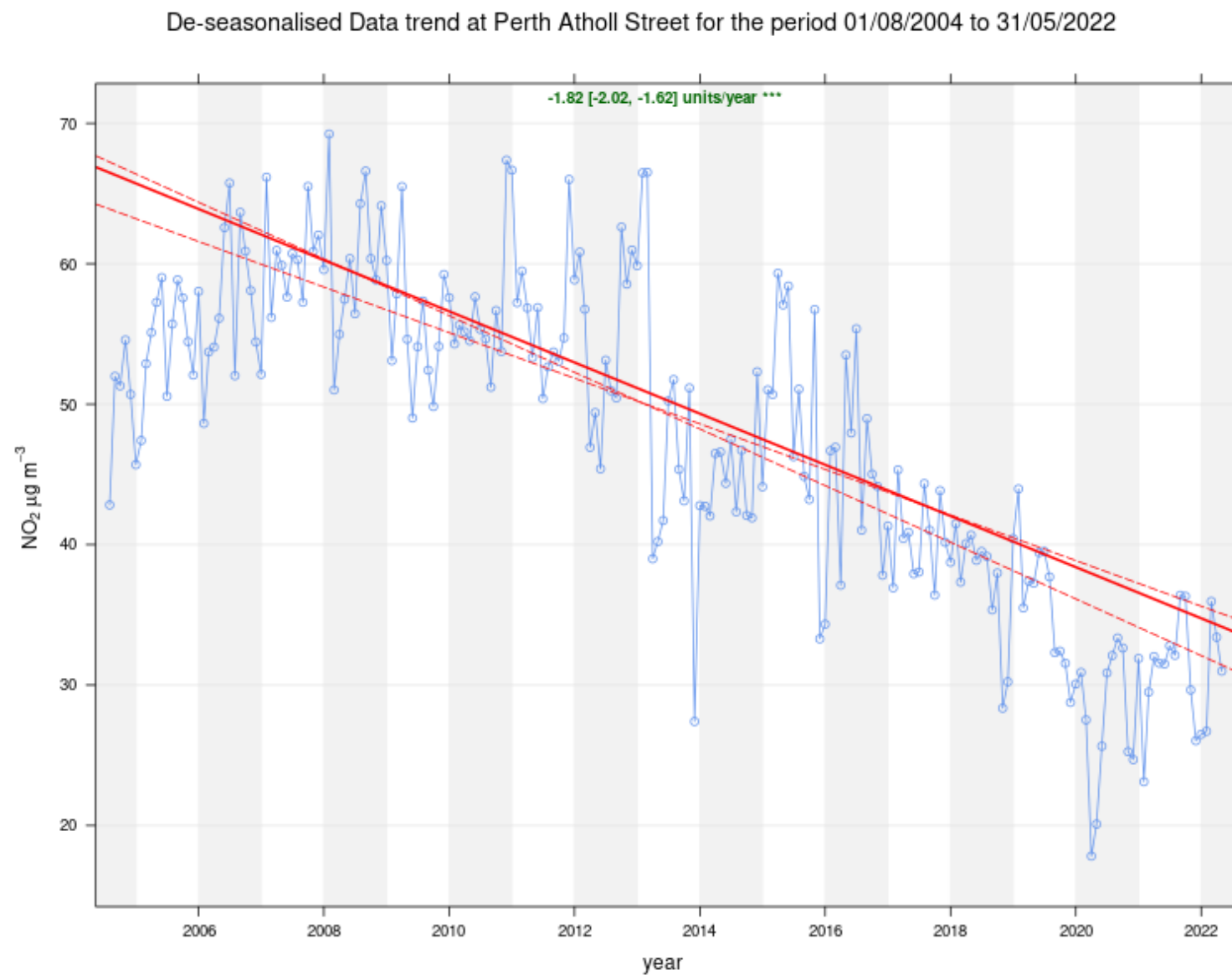
Figure A.1: Annual Mean Trend for NO₂ at Atholl Street

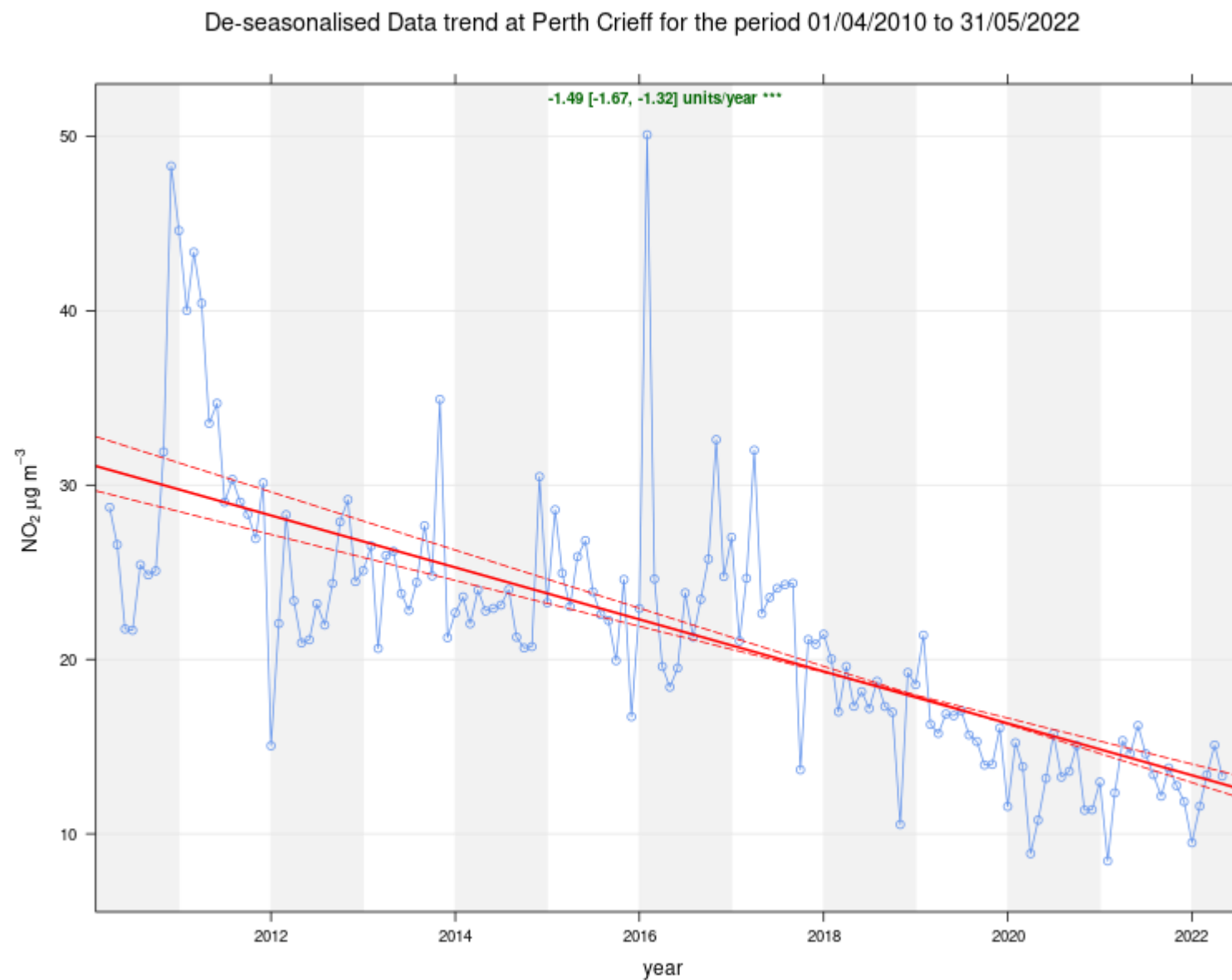
Figure A.2: Annual Mean Trend for NO₂ at Crieff

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

Site ID	Site Type	Valid Data Capture for Monitoring Period (%) ⁽¹⁾	Valid Data Capture 2021 (%) ⁽²⁾	2017	2018	2019	2020	2021
Perth 1 (Bridgend)	Roadside	95	79	N/A	N/A	N/A	N/A	10
Perth 2 (Atholl Street)	Roadside	99	99	17	14	13	10	14
Perth 3 (Muirton)	Urban Background	98	98	9	10	9	6	8
Crieff (James Square)	Roadside	89	89	11	10	9	7	9

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 2021 (%) ⁽²⁾	2017	2018	2019	2020	2021
Perth 1 (Bridgend)	Roadside	95	79	N/A	N/A	N/A	N/A	0
Perth 2 (Atholl Street)	Roadside	99	99	4	0	1	0	7
Perth 3 (Muirton)	Urban Background	98	98	0	0	1	0	0
Crieff (James Square)	Roadside	89	89	0	0	1	0	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%).

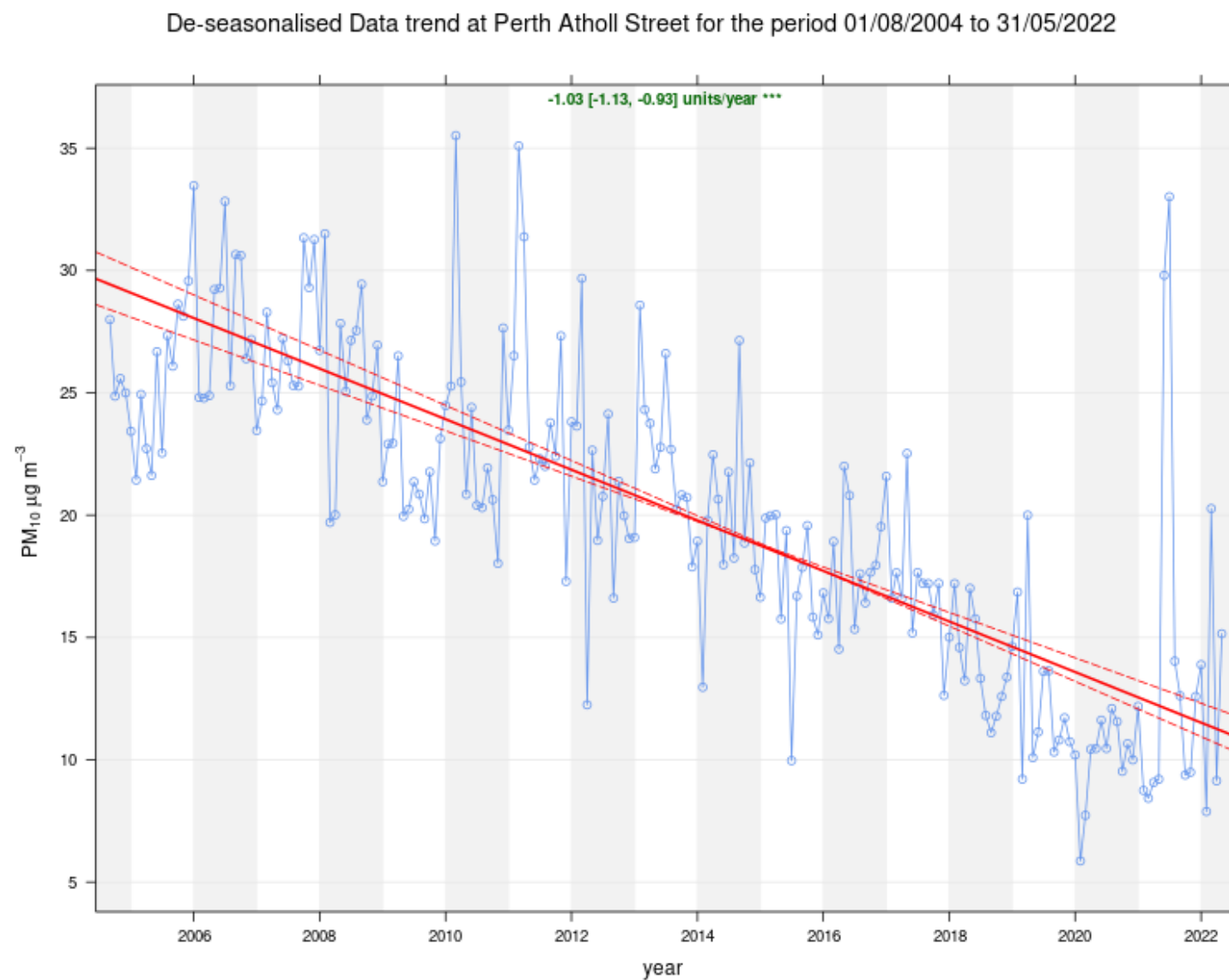
Figure A.3: PM₁₀ Trend for Atholl Street

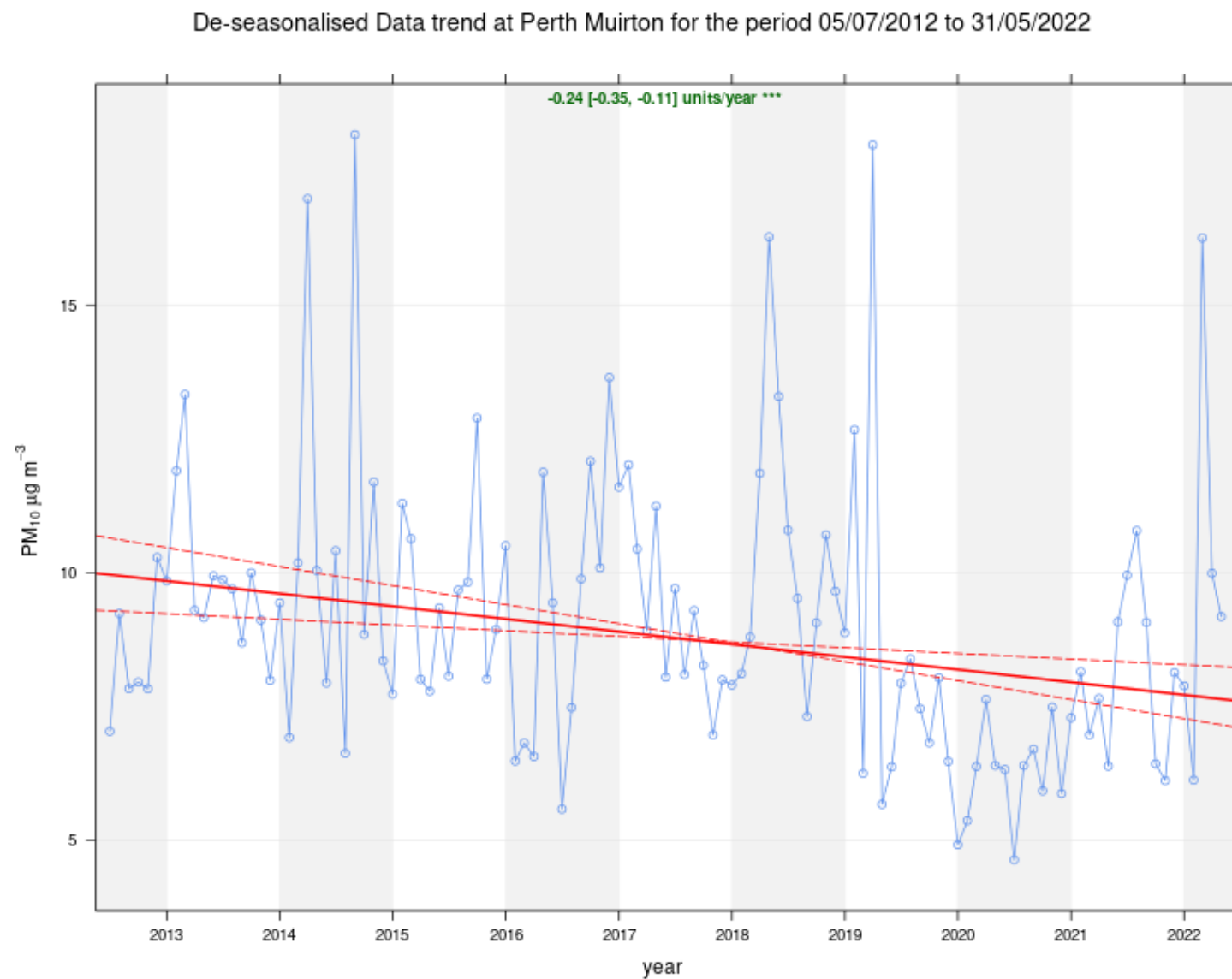
Figure A.4: PM₁₀ Trend for Muirton

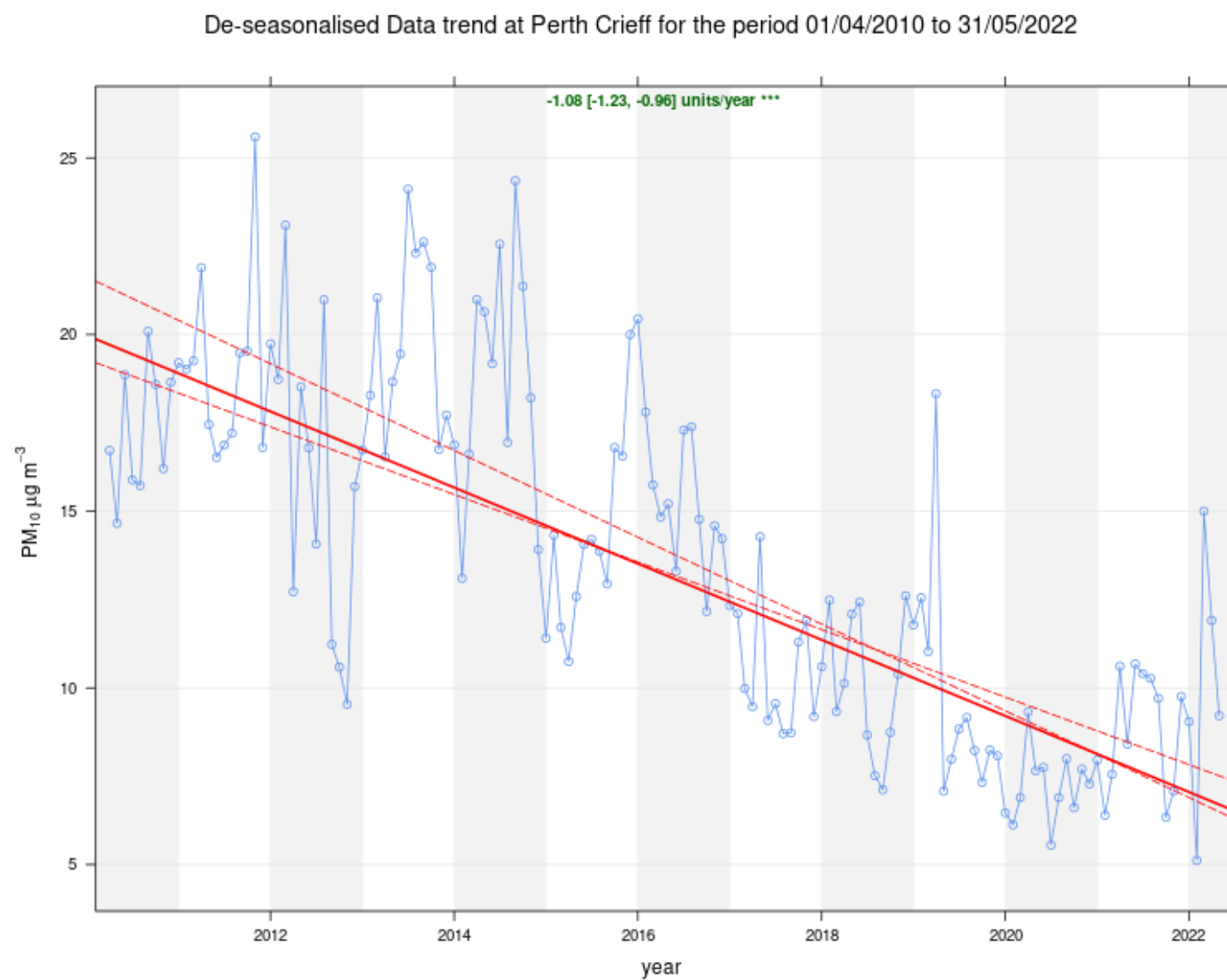
Figure A.5: PM₁₀ Trend for Crieff

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 2021 (%) ⁽²⁾	2017	2018	2019	2020	2021
Perth 1 (Bridgend)	Roadside	95	79	N/A	N/A	N/A	N/A	5
Perth 2 (Atholl Street)	Roadside	99	99	N/A	7	7	6	6
Perth 3 (Muirton)	Urban Background	98	98	N/A	N/A	5	4	5
Crieff (James Square)	Roadside	89	89	N/A	6	5	4	5

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%).

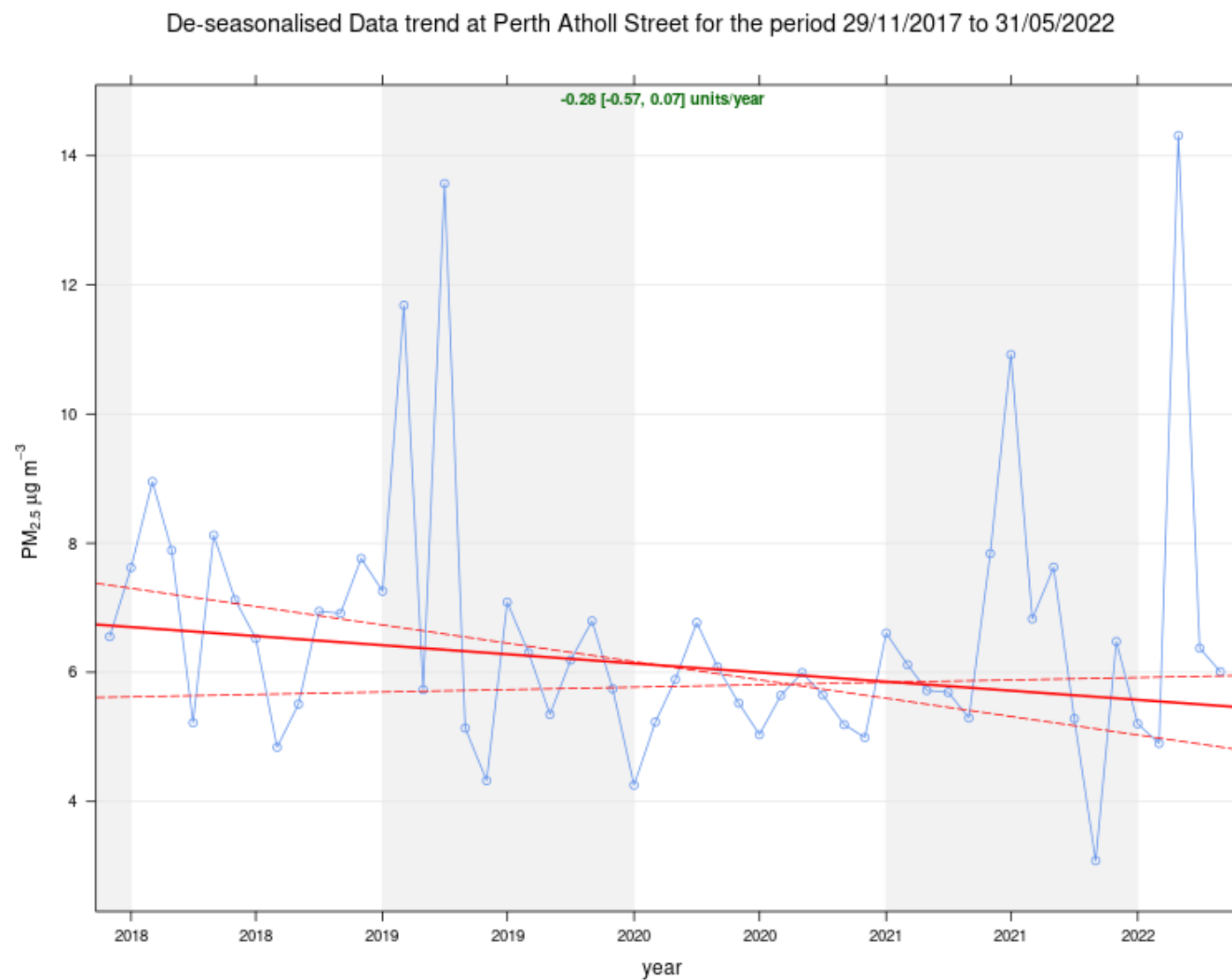
Figure A.6: PM_{2.5} Trend for Atholl St

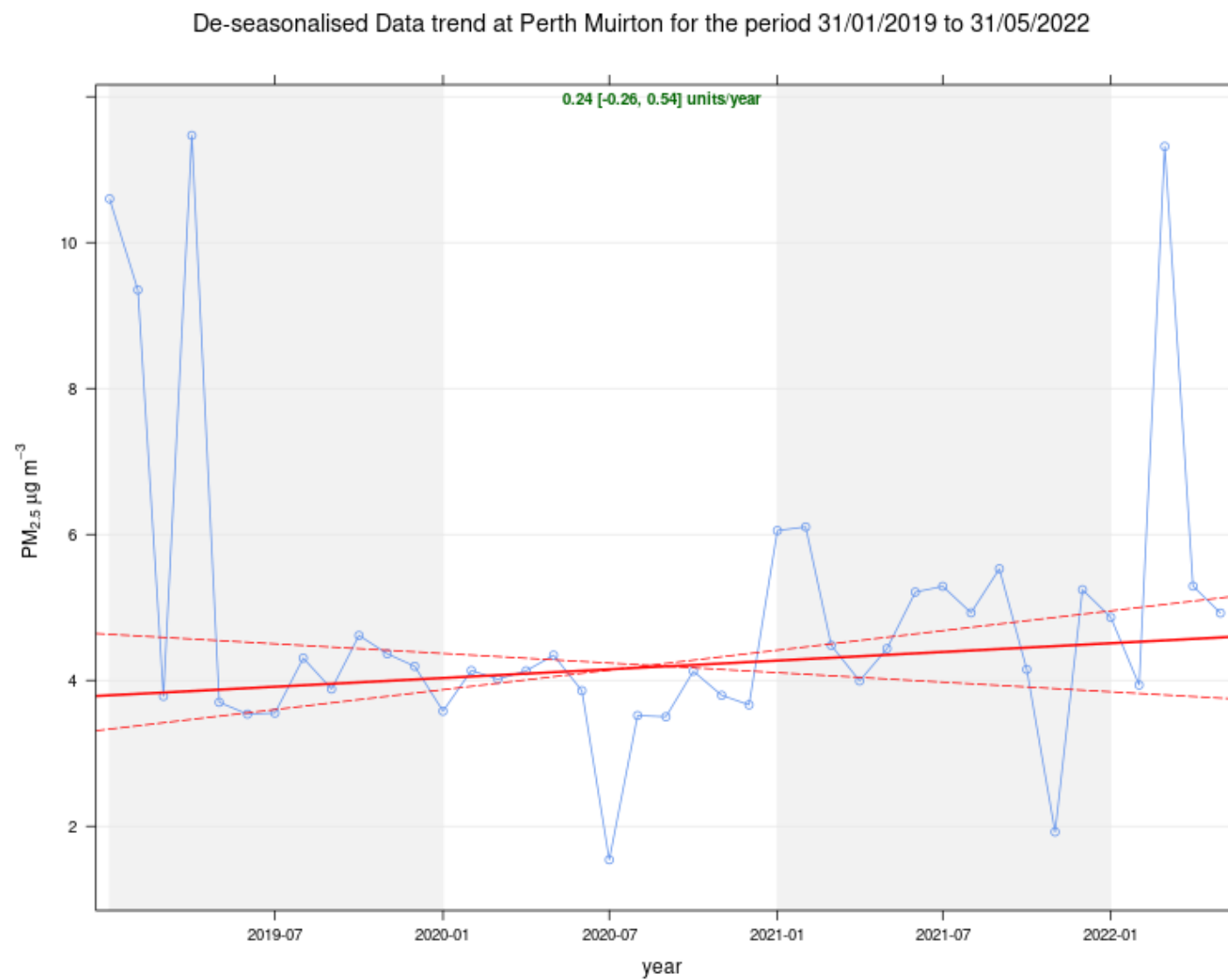
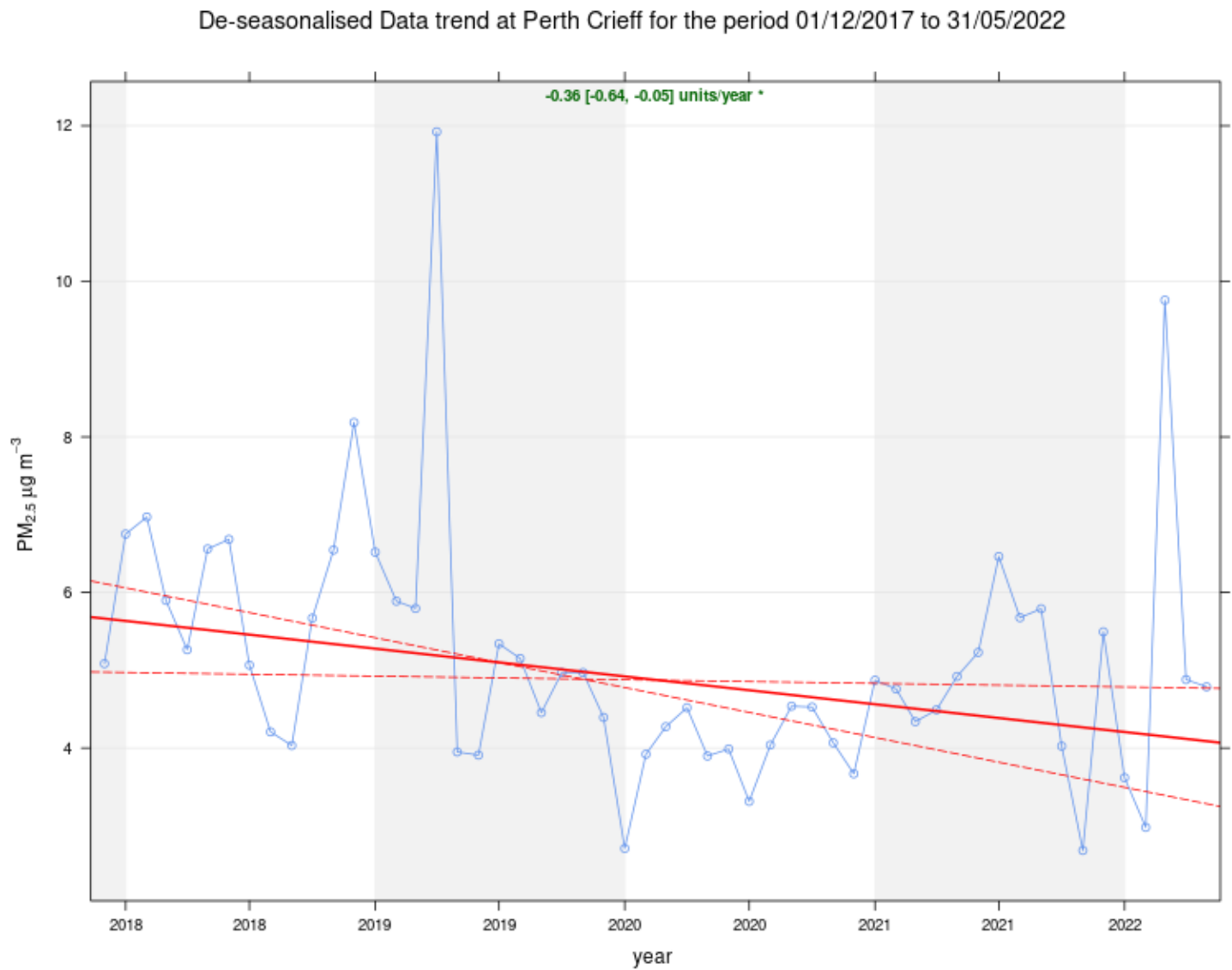
Figure A.7: PM_{2.5} Trend for Muirton

Figure A.8: PM_{2.5} Trend for Crieff



Appendix B: Full Monthly Diffusion Tube Results for 2021

Table B.1 – NO₂ 2021 Monthly Diffusion Tube Results (µg/m³)

Site ID	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean: Raw Data	Annual Mean: Bias Adjusted (1)
P1C	42.5	34.5	27.0	30.3	31.0	-	-	28.5	16.5	36.7	-	43.1	-	-
P1L	45.3	34.9	30.5	32.4	31.7	-	25.6	30.8	17.2	37.4	36.3	40.2	-	-
P1R	44.6	35.3	31.8	30.2	32.9	-	29.5	29.7	16.6	34.5	32.8	39.9	32.5	28.6
P2	-	16.6	14.2	13.1	12.2	10.0	11.9	12.3	8.9	21.2	23.9	15.3	14.5	12.8
P5	20.0	19.4	16.3	11.4	10.8	10.6	10.4	12.2	10.3	23.4	17.4	23.6	15.5	13.6
P6	17.5	11.6	10.4	7.3	5.3	4.5	5.5	7.0	5.0	13.2	14.0	15.5	9.7	8.6
P13	36.2	25.1	26.1	21.1	20.2	29.8	18.2	18.4	14.6	31.8	32.2	30.8	25.4	22.3
P20	29.5	27.3	22.6	21.2	21.1	15.0	18.5	21.1	13.9	30.2	25.9	-	22.4	19.7
P29	39.4	36.8	29.5	26.3	24.2	17.1	22.2	-	-	-	30.7	38.4	29.4	25.9
P30C	39.1	27.4	29.3	22.7	20.3	19.6	22.0	23.9	17.3	33.5	35.9	34.8	-	-
P30L	37.6	27.0	29.5	22.0	20.0	18.6	21.6	25.0	17.9	30.8	34.8	32.8	-	-
P30R	39.0	28.9	28.4	22.6	22.0	19.6	21.2	23.2	16.7	33.7	34.0	33.8	26.8	23.6
P31	33.1	24.4	19.7	21.5	18.7	13.9	13.9	22.7	11.3	25.6	26.5	29.5	21.7	19.1
P32	41.2	26.3	28.7	28.2	27.3	18.6	20.4	24.2	14.0	30.1	41.5	36.1	28.1	24.7
P33	-	41.0	28.6	26.2	25.1	21.3	25.6	31.8	16.4	38.2	32.8	46.3	30.3	26.7
P34	43.5	36.7	33.8	31.8	31.9	31.3	36.1	42.7	25.0	45.3	43.3	38.9	36.7	32.3
P35	34.3	19.2	17.3	15.9	12.6	11.2	12.4	16.1	10.1	24.4	25.0	26.9	18.8	16.5
P36	27.2	28.0	22.0	22.2	18.8	15.8	19.2	22.2	14.7	31.9	31.5	42.0	24.6	21.7
P37	31.6	23.9	19.3	18.7	19.9	13.1	15.9	20.2	13.1	24.0	22.7	29.7	21.0	18.5
P39	43.0	38.0	28.6	33.5	36.7	26.7	32.3	31.6	19.0	36.4	32.2	23.8	31.8	28.0
P40	43.6	29.6	33.3	30.7	28.1	24.1	17.7	29.3	20.5	37.4	36.3	38.5	30.8	27.1
P41	43.3	35.3	27.4	32.7	33.1	24.4	32.7	32.4	17.0	35.0	34.9	39.8	32.3	28.4
P43C	-	38.7	41.9	37.3	37.1	32.2	32.0	37.5	22.6	48.1	46.8	50.1	-	-
P43L	44.7	39.8	37.2	37.1	20.3	31.9	35.8	38.6	24.4	45.5	46.0	47.8	-	-
P43R	54.7	43.4	40.5	38.6	40.9	25.9	35.4	37.0	27.0	50.3	48.5	63.8	39.7	34.9
P45	32.1	23.2	18.3	17.2	17.2	10.6	11.5	15.1	8.4	21.4	21.3	28.1	18.7	16.5
P46	27.0	24.3	14.5	19.8	19.6	12.6	17.3	21.0	11.2	21.4	16.3	25.3	19.2	16.9
P47	26.4	18.6	13.9	17.6	19.0	13.9	17.5	20.1	12.2	17.2	17.7	27.1	18.4	16.2

Site ID	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean: Raw Data	Annual Mean: Bias Adjusted (1)
P51	34.6	22.6	20.5	22.6	21.7	14.2	16.3	18.4	10.7	23.2	27.0	27.6	21.6	19.0
P55	37.0	31.3	26.0	36.5	44.4	28.2	37.5	32.9	19.5	34.8	35.3	22.1	32.1	28.3
P56	27.5	21.5	16.8	17.3	20.0	13.8	16.1	22.0	12.1	23.4	24.9	30.5	20.5	18.0
P57	29.3	20.2	17.4	21.7	23.4	16.7	18.6	21.9	11.8	23.8	22.9	29.0	21.4	18.8
P58	34.3	31.1	24.7	28.9	30.7	22.8	29.6	26.9	18.7	34.4	35.6	52.6	30.9	27.1
P61C	38.6	34.6	41.0	33.6	32.3	14.8	27.0	36.3	23.8	45.1	44.4	44.0	-	-
P61L	39.2	37.6	39.2	32.9	28.4	33.7	-	36.3	20.7	46.7	43.5	45.1	-	-
P61R	36.2	39.0	38.2	33.3	31.5	31.6	33.4	35.8	21.7	49.6	44.2	42.0	35.7	31.4
P62	31.1	20.2	17.2	21.4	21.4	16.1	20.8	22.6	13.1	24.2	25.8	25.7	21.6	19.0
P63	32.6	29.1	23.8	29.9	30.9	22.0	25.7	30.6	19.2	32.5	34.6	34.7	28.8	25.3
P64	46.7	33.6	35.3	35.7	31.8	27.3	27.1	37.2	26.2	42.9	45.1	42.9	36.0	31.7
P65	27.0	19.0	18.9	20.5	20.7	16.1	16.5	22.9	12.0	23.7	25.6	25.5	20.7	18.2
P67	30.4	25.5	30.1	22.7	21.3	25.0	21.2	22.5	18.5	38.9	38.6	36.1	27.6	24.3
P68	-	24.9	26.1	21.5	19.3	16.6	13.0	21.1	15.0	32.2	35.9	35.9	23.8	20.9
P71	23.0	16.8	11.2	10.0	10.7	8.4	8.7	11.5	5.8	15.5	14.2	20.8	13.1	11.5
P72	36.6	30.3	26.2	27.1	22.9	25.6	23.3	23.6	17.8	35.7	34.5	45.3	29.1	25.6
P73	30.6	31.5	22.6	35.3	39.5	24.2	33.4	40.0	18.3	35.0	34.4	48.5	32.8	28.8
P74	25.7	25.2	21.5	22.5	25.5	20.3	21.8	22.9	11.7	24.2	26.2	30.7	23.2	20.4
P75C	16.9	17.1	15.5	14.1	13.5	12.0	11.8	13.5	8.5	21.2	22.9	24.2	-	-
P75L	21.2	14.5	18.0	13.1	9.9	13.5	11.9	13.2	8.3	19.4	21.5	22.3	-	-
P75R	20.9	10.8	17.1	13.3	11.6	11.8	9.6	13.8	7.8	18.9	22.4	23.0	15.5	13.7
P76	30.4	25.2	25.0	20.6	31.6	25.8	28.7	31.3	16.7	36.3	30.2	30.8	27.7	24.4
P78	23.6	23.6	15.1	18.5	23.9	18.0	19.2	18.8	10.1	22.2	20.5	27.8	20.1	17.7
P79C	31.9	31.5	25.9	29.8	35.4	24.4	30.7	31.1	17.3	32.0	32.1	34.1	-	-
P79R	35.6	33.1	26.5	30.6	35.1	24.8	29.3	29.7	17.4	32.7	30.6	35.5	-	-
P79L	37.1	31.8	26.4	30.2	33.9	22.8	30.4	31.9	17.8	34.6	31.5	33.7	30.0	26.4
P82	-	21.2	19.4	19.0	16.8	14.3	13.2	18.9	10.3	22.2	22.9	27.2	18.7	16.4
P86	22.0	21.2	16.1	17.1	17.5	14.5	16.5	19.8	13.1	22.9	23.4	26.6	19.2	16.9
P87	8.2	7.4	5.1	4.1	3.8	3.3	10.2	4.7	2.8	6.5	6.6	8.3	5.9	5.2
P89	37.5	28.6	29.9	26.7	22.1	20.6	21.6	25.3	19.1	35.7	38.6	34.6	28.4	24.9
P90	33.1	28.2	21.1	21.4	17.4	16.0	17.5	19.6	13.7	31.6	29.8	31.9	23.4	20.6
P95	49.1	30.5	36.1	37.4	34.8	25.4	31.2	35.6	19.0	41.1	45.4	45.1	35.9	31.6
P96	39.0	33.6	29.4	29.2	30.3	20.8	25.6	-	-	-	34.0	41.8	31.5	27.7
P97	38.9	33.1	29.1	25.3	21.9	21.5	21.6	26.3	17.4	40.7	38.8	45.3	30.0	26.4
P99	22.6	16.1	11.5	12.1	11.4	6.4	8.7	9.8	7.6	16.0	15.9	22.3	13.4	11.8

Site ID	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean: Raw Data	Annual Mean: Bias Adjusted (1)
P100	23.7	19.8	12.1	15.7	18.2	12.6	14.9	18.7	8.5	16.9	-	17.6	16.2	14.3
P101	35.1	25.6	29.2	-	23.6	19.2	18.6	23.3	17.1	32.1	18.1	40.9	25.7	22.6
P103	35.7	32.1	29.6	30.9	28.9	27.8	33.8	36.2	21.0	45.4	39.9	41.3	33.6	29.5
P104	32.3	29.6	20.1	15.0	20.5	13.9	15.4	-	12.5	24.7	25.0	29.1	21.6	19.0
P106	10.7	10.1	6.5	6.1	5.8	3.4	4.9	5.9	3.7	8.8	10.3	11.1	7.3	6.4
P107	37.5	33.7	27.7	26.6	21.7	19.7	18.9	23.3	15.6	29.3	32.0	34.4	26.7	23.5
P108	26.5	25.3	17.5	18.9	24.2	18.0	19.3	21.4	16.4	26.8	22.3	20.3	21.4	18.8
P109	28.2	23.3	24.5	23.5	19.0	16.7	18.0	21.8	14.4	26.7	30.2	34.1	23.4	20.6
P110	28.4	22.6	19.2	21.1	16.8	11.2	14.3	15.8	10.7	20.1	27.0	30.6	19.8	17.4
P111	38.0	24.4	20.1	20.4	17.1	-	17.0	-	16.0	28.0	31.0	29.4	24.1	21.2
P112	25.6	19.7	16.1	16.6	13.2	11.1	13.4	15.4	11.7	23.0	23.2	24.3	17.8	15.6
P113	30.1	21.7	20.5	17.6	14.7	14.3	14.1	15.6	12.3	24.2	28.3	29.3	20.2	17.8
P114	20.0	16.7	13.4	9.6	7.9	8.5	7.9	9.8	6.6	-	-	22.1	12.3	10.8
P115	24.4	17.8	16.1	11.9	11.3	8.3	9.9	11.6	9.3	19.4	22.5	23.5	15.5	13.6
P116	31.7	27.6	23.6	20.4	22.0	17.5	15.9	19.1	15.4	29.0	34.0	34.8	24.3	21.3
P117	25.8	23.6	15.5	13.9	15.9	12.0	13.9	15.6	11.6	21.7	21.7	26.9	18.2	16.0
P118	16.4	13.3	10.9	12.4	11.5	9.9	9.6	9.1	6.5	13.9	15.7	21.3	12.5	11.0
P119	26.3	21.0	20.7	18.6	22.0	17.7	18.8	24.4	14.2	25.6	22.4	28.1	21.7	19.0
P120	37.3	30.0	19.6	29.3	33.5	19.7	25.4	29.3	13.6	28.2	26.6	30.9	27.0	23.7
P121	49.9	37.9	37.6	33.0	27.3	24.7	24.7	29.7	22.7	43.7	-	41.6	33.9	29.8
P122C	-	-	-	21.5	23.0	19.5	13.9	26.3	12.8	26.5	26.5	22.1	-	-
P122L	-	-	-	19.9	24.3	19.2	23.5	25.0	12.1	26.0	15.9	30.5	-	-
P122R	-	-	-	21.7	25.3	20.2	25.4	24.3	12.4	24.9	23.8	29.0	22.1	19.4
P123	-	-	-	10.9	10.3	10.4	9.9	11.7	9.7	20.7	22.1	23.8	14.4	12.7

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 2021

Perth and Kinross Council has not identified any new sources relating to air quality within the reporting year of 2021.

Additional Air Quality Works Undertaken by Perth & Kinross Council During 2021

Perth & Kinross Council has not completed any additional works within the reporting year of 2021.

QA/QC of Diffusion Tube Monitoring

Analysis of diffusion tubes in 2021 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 2021 Diffusion Tube Monitoring calendar.

Diffusion Tube Annualisation

All diffusion tube monitoring locations within PKC recorded data capture of 75% therefore it was not required to annualise any monitoring data. In addition, any sites with a data capture below 25% do not require annualisation.

Diffusion Tube Bias Adjustment Factors

Perth and Kinross Council have applied a local bias adjustment factor of 0.88 to the 2021 monitoring data. The adjustment factor has been calculated from all three of the roadside

monitors –Perth Atholl Street, Bridgend and Crieff. 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
2021	Local	-	0.88
2020	Local	-	0.8
2019	Local	-	0.8
2018	Local	-	0.85
2017	Local	-	0.88

NO₂ Fall-off with Distance from the Road

No diffusion tube NO₂ monitoring locations within Perth and Kinross required distance correction during 2021.

QA/QC of Automatic Monitoring

Ricardo E&E Ltd 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 <https://www.scottishairquality.scot/latest>

PM₁₀ and PM_{2.5} Monitoring Adjustment

The type of PM₁₀/PM_{2.5} monitors utilised within PKC do not require the application of a correction factor.

Automatic Monitoring Annualisation

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

NO₂ Fall-off with Distance from the Road

No automatic NO₂ monitoring locations within Perth & Kinross required distance correction during 2021.

Table C.2 – 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	11	6	10	N/A	N/A
Bias Factor A	0.87 (0.78 - 0.98)	0.92 (0.75 - 1.21)	0.85 (0.76 - 0.96)	N/A	N/A
Bias Factor B	15% (2% - 29%)	8% (-17% - 34%)	18% (4% - 31%)	N/A	N/A
Diffusion Tube Mean ($\mu\text{g}/\text{m}^3$)	36.5	21.6	15.0	N/A	N/A
Mean CV (Precision)	4.9%	5.9%	7.5%	N/A	N/A
Automatic Mean ($\mu\text{g}/\text{m}^3$)	31.7	20.0	12.7	N/A	N/A
Data Capture	97%	95%	96%	N/A	N/A
Adjusted Tube Mean ($\mu\text{g}/\text{m}^3$)	32 (28 - 36)	20 (16 - 26)	13 (11 - 14)	N/A	N/A

Notes:

A single local bias adjustment factor has been used to bias adjust the 2021 diffusion tube results.

Appendix D: Covid-19 Traffic Surveys

Summary

SYSTRA was commissioned by Perth & Kinross Council in May 2020 to undertake a series of traffic surveys at five locations in Perth city centre. The purpose of surveys was to provide a measure for PKC to monitor traffic flows in and around the city centre during a period of travel restrictions following the Covid-19 outbreak.

The surveys were first undertaken on Thursday 21st May 2020, prior to the move to Phase 1 of the Scottish Government's recovery route map which came into effect on Thursday 28th May 2020. The surveys were repeated on Thursday 2nd July 2020, at which point Scotland had moved to Phase 2 of the recovery route map. A further survey was undertaken on Thursday 3rd September 2020, by which point Scotland had moved to Phase 3 of the recovery route map and schools across Scotland had reopened. The surveys were repeated in February 2021, when mainland Scotland remained in Tier 4 (lockdown) restrictions with a legal requirement forbidding anyone from leaving their home except for essential purposes

The surveys were again repeated in August 2021, following Scotland's move beyond level 0 on Monday 9th August. At this time, the majority of the remaining legally imposed restrictions, most notably, on physical distancing and limits to the size of social gatherings were lifted. This also meant that no venues were legally required to close.

Following the publication of Scotland's Strategic Framework in February 2022, which sets out Scotland's approach to managing Covid 19 for the long term, subsequently the surveys were again undertaken in March 2022. At this point the majority of restrictions had been lifted, the main ones that remained were the wearing of face masks, self-isolation and the collection of customer details in indoor hospitality.

Junction count surveys were undertaken at the same five location on the edge of the city ring road between 06:30 and 18:30 on Thursday 3rd March 2022.

The surveyed locations can be seen in Figure D.1.

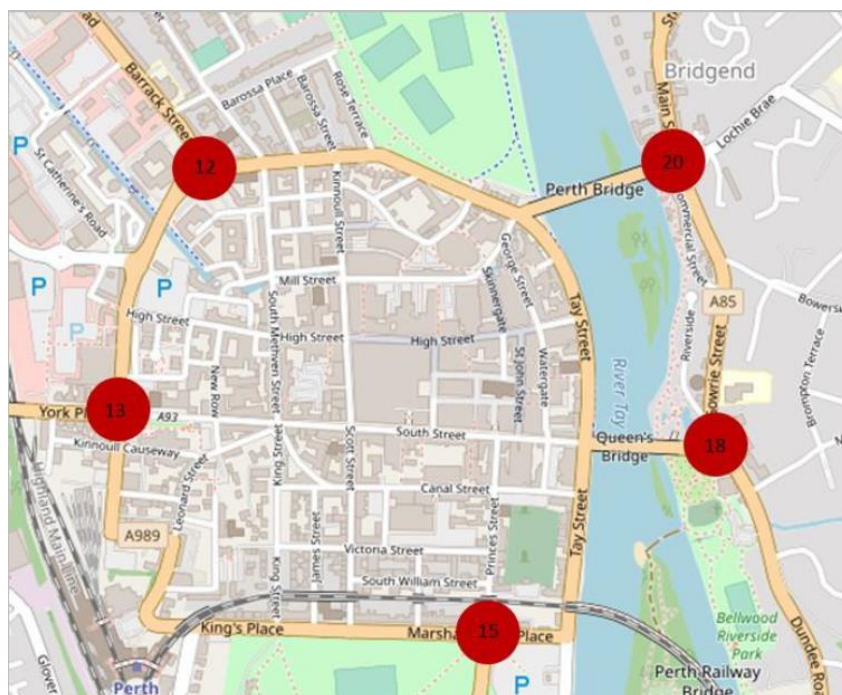


Figure D.1: Perth Covid-19 Traffic Survey Locations

Findings

Overall Demand

Figure D.2 provides a summary of the changes in observed traffic flows in and around Perth city centre during the period of travel restrictions. The figures reflect all movements at the five survey locations, compared with the average of previous datasets pre-pandemic. The results show that as of 3/03/2022, overall traffic levels across Perth City have almost returned to pre-pandemic levels with an increase during the Inter Peak.

Date	AM Peak (0630-0930)	Inter Peak (0930-1530)	PM Peak (1530-1830)	12hr (0630-1830)
21 st May 2020	43%	52%	46%	48%
2 nd July 2020	60%	76%	70%	71%
3 rd September 2020	79%	89%	81%	85%
18 th February 2021	63%	70%	66%	66%
26 th August 2021	86%	96%	93%	94%
3 rd March 2022	95%	97%	95%	97%

Figure D.2: Summary of Traffic Flows in Perth (All Movements)

Perth Bridges

Figure D.3 and D.4 provide a summary of the two-way flow across Perth Bridge and Queens Bridge respectively. Once again it is clear that traffic has returned to close to pre-pandemic levels, with Perth Bridge actually exceeding previous traffic levels in August while Queens Bridge traffic levels remain slightly lower.

Date	AM Peak (0630-0930)	Inter Peak (0930-1530)	PM Peak (1530-1830)	12hr (0630-1830)
21 st May 2020	51%	67%	53%	60%
2 nd July 2020	71%	91%	79%	84%
3 rd September 2020	87%	100%	89%	95%
18 th February 2021	75%	89%	75%	83%
26 th August 2021	95%	109%	97%	104%
3 rd March 2022	97%	104%	98%	102%

Figure D.3: Summary of Traffic Flows across Perth Bridge (2-way)

Date	AM Peak (0630-0930)	Inter Peak (0930-1530)	PM Peak (1530-1830)	12hr (0630-1830)
21 st May 2020	43%	46%	42%	45%
2 nd July 2020	58%	73%	65%	68%
3 rd September 2020	81%	85%	81%	85%
18 th February 2021	60%	64%	55%	62%
26 th August 2021	84%	88%	90%	89%
3 rd March 2022	107%	94%	99%	100%

Figure D.4: Summary of Traffic Flows across Queens Bridge (2-way)

Traffic Composition

Analysis of the vehicle composition shows that the percentages have remained relatively consistent, with slightly fewer cars and buses, and a slight increase in delivery vehicles compared to an average of previous survey datasets (pre-Covid-19).

The proportion of cyclists which had suggested a slight increase in May 2020 had returned to pre-Covid-19 levels by July 2020 and remained at this level in September 2020.

The proportion of cyclists in spring 2022 is similar to spring 2021.

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)
ANPR	Automatic Number Plate Recognition
COP26	Conference of Parties 26 (United Nations)
CHP	Combined Heat and Power
Defra	Department for Environment, Food and Rural Affairs
DMRB	Design Manual for Roads and Bridges – Air quality screening tool produced by Highways England
EV	Electric Vehicle
EFT	Emissions Factor Toolkit
FDMS	Filter Dynamics Measurement System
LAQM	Local Air Quality Management
LDP	Local Development Plan
LEZ	Low Emission Zone
NO ₂	Nitrogen Dioxide
NO _x	Nitrogen Oxides
PM ₁₀	Airborne particulate matter with an aerodynamic diameter of 10µm (micrometres or microns) or less
PM _{2.5}	Airborne particulate matter with an aerodynamic diameter of 2.5µm or less

PKC	Perth & Kinross Council
QA/QC	Quality Assurance and Quality Control
RTPI	Real Time Passenger Information
RTM	Real Time Monitor
SO ₂	Sulphur Dioxide
TACTRAN	Tayside & Central Scotland Transport Partnership

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->

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

Perth & Kinross Council's Climate Change Strategy and Action Plan
<https://www.pkclimateaction.co.uk/climate-change-strategy-and-action-plan>

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