Portsmouth CITY COUNCIL

2022 Air Quality Annual Status Report (ASR)

In fulfilment of Part IV of the Environment Act 1995

Local Air Quality Management

Date: March 2023

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Executive Summary: Air Quality in Our Area

Air Quality in Portsmouth

Being an island city with only three roads on and off of the island, Portsmouth faces unique challenges in improving air quality. It is recognised that air pollution has negative effects on health and can have a disproportionate impact on the most vulnerable in society such as children, older people, and those with pre-existing medical conditions. Portsmouth City Council (PCC) recognises the importance of reducing harmful levels of Nitrogen Dioxide (NO_2) and is keen to continue to build on the progress already made in respect to improving air quality, delivering a package of measures which will contribute positively to the health of residents, employees, and visitors to the city.

Travel in the city is a major contributor to air pollution and the type of transport we choose for our journeys can help to improve our air quality. The council is making transport improvements to the city including safer cycling routes and facilities to make it easier to choose this way of travelling, improving public transport connectivity with the wider region, and providing electric charging points for residents choosing greener vehicles. We are improving the options for travel and together we can choose a greener, cleaner way of travelling for cleaner air in Portsmouth. Despite the work that has and continues to be undertaken, the city still faces challenges to reduce the concentrations of harmful pollutants in the air.

This 2022 Annual Status Report (ASR) published by PCC does not seek to provide comprehensive detail on all Local Air Quality Management (LAQM) related activities in Portsmouth during 2021 and beyond. The primary purpose of this document is to report upon the levels of pollution from monitoring data obtained during 2021 and provide a comparison with data sets from previous years and therefore other publications and reports should be read in conjunction with this report into actions taken to reduce pollution concentrations.

As a result of impacts from COVID-19 and the associated restrictions on activity / mobility during 2021 this document follows the Department for Environment and Rural Affairs (DEFRA) guidance published in April 2021 with respect to LAQM duties, as described in Part IV of the Environment Act 1995, for the 2022 reporting year. DEFRA recognise that air pollutant concentrations will have been impacted by the change in activity observed

across the United Kingdom (UK) as a result of COVID-19 and the Government's associated measures to combat community transmission of this virus since March 2020. This is highly likely to have led to changes in compliance with Air Quality Strategy Objectives (NAQO) in Air Quality Management Areas (AQMAs) since 2020 and impacted upon any increases in pollution in 2021 when compared directly with the previous reporting years of 2019 and 2020.

When considering the 2021 data provided within this ASR the council recommends exercising caution in interpreting the efficacy of improvement measures on pollution concentrations as it is likely that restrictions on activities will have had a notable impact on measured concentrations following the Government's lockdown measures, restrictions and advice.

Air pollution and poor air quality is associated with various adverse health impacts. It is recognised as a contributing factor in the onset of heart disease and respiratory disease including lung cancer. Additionally, air pollution particularly affects the most vulnerable in society: children and older people, and those with heart and lung conditions, exacerbating issues of health outcome inequality. The annual health cost to society of the impacts of particulate matter alone in the UK is estimated to be around £16 billion.

Attributing health outcomes from exposure to individual constituent pollutants in emissions is not simple. This supports the need to tackle emissions in general and not necessarily to focus on individual pollutants. However, with reference to the limit and target values, the main pollutant of concern in Portsmouth is Nitrogen Dioxide (NO_2).

In 2018 a different assessment regime of the European Union (EU) Directive on AQ led to an obligation on PCC to develop a plan to tackle exceedances where these have been identified by DEFRA. This was in addition to where we have previously identified pollution hotspots and where we have been monitoring pollutant levels for many years. Consequently, since 2018 parts of Portsmouth not previously assessed under the LAQM regime and where there is an absence of long-term public exposure (pavements alongside busy roads with no nearby relevant exposure as identified in the 2018 Local Air Quality Management Technical Guidance (LAQM.TG(18)) became a new focus. The main areas of concern centered around Alfred Road between Hope Street roundabout and the Queen Street / Anglesea Road / Alfred Road intersection and Mile End Road between the southern end of the M275 and Church Street roundabout.

In addition to deploying monitoring devices along the above-named roads, since 2018 PCC further increased its number of Nitrogen Dioxide Diffusion Tube (NDDT) monitoring

locations around the city. The reason for this is threefold, firstly as a consequence of DEFRAs interest in new geographic areas where exposure to NO_2 is possible, secondly to assess the impact of PCCs activities to reduce NO_2 over the longer-term and thirdly, most recently, to monitor and evaluate the introduction of the Clean Air Zone (CAZ) introduced in November 2021.

This increased level of monitoring has continued to enable a higher resolution picture to be formulated with respect to NO_2 concentrations than that which was available in previous years. Consequently, this has created a materially different narrative with respect to areas of exceedance which exist.

PCC has for many years retained 5 Air Quality Management Areas (AQMAs) declared on the grounds of monitored or modelled exceedances of the UK annual mean NO_2 NAQO. It is our intention to keep all these areas under review. We have no intention to revoke AQMAs even where levels have been recorded in compliance with the NAQO. Currently, the primary reasons for this are the uncertainties presented in respect to the efficacy of pollution data collected during the COVID-19 pandemic and the comparison of data sets during the reportable years 2019, 2020 and 2021.

Actions to Improve Air Quality

The Local Air Quality Plan Outline Business Case (OBC) published in 2019 set out Portsmouth City Council's approach to achieving compliance with legal limits for NO_2 at all locations citywide, leading to a healthier environment for all. The Plan was produced in response to the Ministerial Direction issued to PCC on 4th October 2018, requiring the council to develop a plan which identified how compliance with legal limits for nitrogen dioxide can be achieved in the shortest possible time.

The OBC technical work led to a preferred package of measures to achieve the primary objective of delivering a scheme that leads to compliance with NO_2 concentrations in the shortest possible time, without significantly worsening emissions elsewhere. These measures are outlined below with respective status updates:

- Class B Charging Clean Air Zone (CAZ) - operational since November 2021.
- Changes to parking capacity and pricing south of the city centre - work ongoing.
- Improvements to strategic cycling routes - changes implemented as part of strategic schemes, but part of a wider rolling programme for active travel.

- Changes to Alfred Road traffic signals - implemented with ongoing monitoring to assess for any unforeseen consequences on the local network.
- Progressive tightening of taxi licensing rules - Portsmouth's licensed fleet is now 97% compliant with the Clean Air Zone.
- Rapid charging points at taxi ranks - ongoing roll out across the City.
- Reduced fee/ free residents parking permits for low emission vehicles - work ongoing.
- Travel planning and behaviour change measures - a rolling programme.
- Targeted communications and marketing initiatives - a rolling programme.

Tackling air pollution goes beyond these measures, as recognised by Local Transport Plan 4 (adopted in October 2021) which sets out our priority towards sustainable travel such as cycling, walking and public transport, which will help us to develop cleaner air and healthier lifestyles for everyone who lives, works, visits and studies in Portsmouth. Some highlights of the nature of schemes implemented in the last 12 months include:

- The Clean Air Zone operational from November 29th 2021, with 96% compliance in initial month to the end of the year.
- Clean Air Fund - PCC secured £3.52 million to help the most affected businesses upgrade ahead of CAZ launch.
- Applications opened in March 2021 to high levels of demand. To date, PCC have allocated:
    - 70 HGV grants, £16,000 available per vehicle.
    - 58 to buses and coaches, £15,000 available per vehicle (is in addition to 105 buses already retrofitted in the city).
    - 170 to taxis and private hire vehicles. £1,500 available per standard vehicle; £5,000 available per wheelchair accessible vehicle (26). Licensed fleet now 97% compliant.
- x4 Engagement Officers employed to engage directly with stakeholder groups – a great model which has now been broadened to wider transport scheme delivery.
- 98 charge points have been installed through the ORCS scheme. A funding bid for a further 321 more chargers is being developed for the third phase of the project.
- Workplace Sustainable Travel Fund: In 2021/22 18 businesses benefitted from up to £4,000 grant funding packages. Funding has been secured for a 2023 round of support to further encourage more businesses to install and take up sustainable travel initiatives.

- Solent Mobility Zone is a programme that works in partnership to deliver future transport solutions. So far, the City has seen the establishment of the Voi e-scooter pilot. Initial reports from Voi suggest a level of modal shift that can be equated to savings in PM2.5 - future Air Quality Action Plans will monitor this closely.
- A number of previous schemes identified in the Air Quality Action Plan are now complete and will be removed from future reports.

Challenges

There are a number of key challenges to successful implementation of planned schemes, as well as future work planning including:

- Securing long-term funding which directly supports delivery air quality interventions.
- Staff capacity to deliver schemes and monitor the air quality impact - as with many organisations nationally, we are experiencing significant staff shortages, high vacancies and challenges with recruitment; this has had a notable impact on the ability to progress air quality work.

Future Work

There are a range of strategic schemes underway which will start to deliver over coming years - all of which may directly and indirectly have a positive influence on air quality:

- BSIP - an Enhanced Partnership with the bus operators First Solent and Stagecoach South. Through this partnership the Council and operators will deliver the Bus Service Improvement Plan, to encourage modal shift and sustainable travel, for which a government grant of £48.3m was awarded in April 2022.
- Zero Emission Buses (ZEBRA) – part of National Bus Strategy - with 34 Arriva electric buses covering 4 routes across Portsmouth, Fareham, Gosport. In Portsmouth, these routes cover 4 of 5 city AQMAs, with projected savings of 12.1kg PM and 194kg NOx per annum.

There are also a range of possible work options to explore for inclusion in further iterations of the Air Quality Action Plan, including a thorough review of the Plan itself, and:

- Closer working with key stakeholders - Portsmouth International Port, Wightlink Ferry Port - in relation to air quality and broader sustainability plans.
- Clean Air Day 2023 - as part of a broader Greener Me in 23 campaign.
- Evaluation of behaviour change interventions such as Workplace Sustainable Travel Fund.

Future Transport Zones

Portsmouth City Council alongside other organisations in the wider 'Solent Transport' group were awarded £29m from the Department for Transport (DfT) to implement innovative future transport solutions around personal mobility and freight movements. The funding means the Solent area will benefit from several innovative transport solutions including smartphone apps for planning and paying for sustainable journeys, e-bike and e-scooter share scheme, and new approaches to freight distribution including drone freight trials for NHS deliveries across the Solent to the Isle of Wight.

Conclusions and Priorities

PCC has frequently revised its non-automatic monitoring of NO_2 network via Nitrogen Dioxide Diffusion Tubes (NDDT) expanding it to reach 233 sites in 2021 (not including co-location sites) as a result of the additional monitoring requirements of the CAZ. The expansion of NDDT monitoring network has however occurred consistently since 2017 as summarised* below:

- 27 sites prior to 2017.
- 76 additional monitoring sites were deployed in the period 2017-2018 (103 sites in total).
- 41 additional monitoring sites were deployed in 2019 (144 sites in total).
- 17 additional monitoring sites were deployed in 2020 (161 sites in total).
- 72 additional monitoring sites were deployed 2021 to specifically assess the performance of the CAZ (233 sites in total).

  * the number of locations may have been subject to change during each year.

NDDT monitoring sites since 2017 have increased by 763%. NDDT monitoring locations between 2020 and 2021/2022 increased by 45%. An expansion of the Continuous AQ Monitoring Station (CAQMS) network occurred in 2020, increasing the PCC network from four to five. The additional station was installed in Alfred Road to further assess the impact of the CAZ.

The impact of the increasing demands for data upon the existing staffing resource of 1 FTE created significant problems in respect to mandatory reporting during 2021/2022. This resourcing issue has been carefully considered and additional funding has now been provided to Regulatory Services (RS) to secure additional personnel to maintain the

existing R&A requirements and the further reporting needs which have arisen as a result of the CAZ. It is therefore anticipated that PCC will be better placed to meet the requirements of DEFRA, both in relation to the ASR reporting process, and reporting the performance of the CAZ, moving forward. Whilst the reporting of data has been significantly impacted as a consequence of the increased need for such, PCC has acquired and retained the necessary data as required by DEFRA therefore, completing its mandatory reporting requirements.

A downward trend emerged at all 162 monitored locations in the last 5 years since 2017 similarly to the monitored locations for the 5-year period commencing in 2016. For the same monitored locations, NO_2 annual mean levels were in excess of the annual mean NAQO in 2021 at the same two locations where the annual mean was breached in year 2020. These are identified as Alfred Road and Hope Street both of which are within an Air Quality Management Area (AQMA) and within the geographical location of the CAZ.

Of 162 monitored locations in both 2020 and 2021 the changes in NO_2 annual mean levels exhibited the following characteristics:

- 43 locations exhibited beneficial change in LAQ (26.56%).
    - Negligibly beneficial at 28 out of 162 locations (17.28%).
    - Slightly beneficial at 6 out of 162 locations (3.70%).
    - Moderately beneficial at 9 out of 162 locations (5.56%).
- 119 locations exhibited adverse change in LAQ (73.46%).
    - Negligibly adverse at 63 out of 162 locations (38.89%).
    - Slightly adverse at 34 out of 162 locations (20.99%).
    - Moderately adverse at 22 out of 162 locations (13.58%).

A closer examination of the newly added 72 NDDT monitored locations in 2021 revealed that two locations are likely to be in breach of NAQO. These are located at the top of the Eastern Road and in Fratton Road which are not located in AQMA or within the geographical location of the CAZ. NDDT data capture from these locations was less than 25% (therefore unreliable) and was not subjected to any form of corrections.

The 2021 NO_2 annual mean level increased across two out of the five CAQMSs but still met the NO_2 annual mean NAQO at all CAQMSs. These changes are considered as adverse with variable degrees. However, an overall long-term improvement in AQ over the last five years is demonstrated.

The maximum-recorded concentration was registered at Mile End Road CAQMS (34.83µg/m^3). The NO_2 annual mean met the NAQO for the second year in a row across all five continuous monitoring stations. Data collected at PCC CAQMSs did not register any exceedance of the NO_2 hourly mean NAQO. In addition, none of CAQMS NO_2 annual mean exceeded 60µg/m^3 which indicates that an exceedance of the 1-hour mean NAQO was unlikely.

It should again be noted that, as a result of the impact of the Covid-19 pandemic, levels of pollution fell uncharacteristically in 2020 and therefore it may not be unexpected that increases in NO_2 occurred in 2021 as traffic levels returned to pre-pandemic levels when compared with the levels recorded in 2020. Therefore, a collation between levels of NO_2 increasing in 2021 as a consequence of other contributory factors is uncertain.

The legal limit for NO_2 is an annual mean of 40 µg/m3. Extensive modelling has been undertaken to identify areas where air quality is not expected to meet legal limits in 2022. This modelling is based on extensive roadside air quality monitoring and traffic surveys. Two local road sections in central Portsmouth were identified where modelled NO_2 concentrations are forecast to exceed the statutory limit of 40 µg/m3 (or 40.49 µg/m3 unrounded) in 2022. These are:

- A3 Alfred Road (Unicorn Rd to Queen St, 41.7 µg/m3)
- A3 Commercial Road (south of Church St, 41.1 µg/m3).

These road links are located in the city centre area, on the main A3 route in and out of the city. An estimated reduction in NOx of 4%-7% is required to achieve the statutory limit. For context, 2022 is the earliest year in which compliance is considered feasible as a result of implementing a charging CAZ and represents the benchmark for assessing options.

Portsmouth is under ministerial direction to reach the legal limit in the shortest possible time. In the absence of any intervention, compliance would be achieved in 2023 at the identified exceedance locations, due to assumed background changes in fleet composition. However, the coronavirus pandemic has created some uncertainty around the background rate at which vehicles are renewed, due to a decline in the number of new vehicle registrations in the first six months of 2020. This could extend the baseline year of compliance.

There are five AQMAs currently in place within Portsmouth's statutory boundary, due to exceedance in annual NO_2 at these locations. Four of these are either within or border the CAZ, with the fifth covering the southern end of Eastern Road.

Annual reporting at these five locations has shown that in most locations there has been a slow downward trend in NO_2 since their designation, as a result of actions undertaken by PCC and a renewing of vehicles to cleaner models, and personal choices made by residents to travel in more sustainable ways. Despite the decline air quality is still poor in many parts of the city.

Because of the danger to human health that poor air quality poses, Portsmouth is legally obliged to bring levels of NO_2 down to within legal limits in the shortest possible time. This meant that PCC had to take stringent actions, such as introducing the CAZ and its complimentary measures. This may bring Portsmouth into compliance with legal limits, but it is recognised that there is still further to go to improve air quality and residents' health and wellbeing. That is why measures such as the ZEBRA bus scheme and on-street electric vehicle charging points are being pursued, with further actions being planned as PCC explore other ways in which Portsmouth's air quality can be improved.

There are also five road sections on the A27/M27 Strategic Road Network (operated by National Highways) where NO_2 concentrations are forecast to exceed the statutory limit in 2022. The highest exceedance is on the section of the A27 immediately north of Portsea Island, requiring a reduction in road NOx of 30% to achieve the limit value. These locations are National Highways' responsibility, but PCC is expected to ensure local measures do not adversely impact on these sites. The introduction of the CAZ in the south-west of the city is not expected to adversely impact these sites.

Local Engagement and How to get Involved.

As private vehicles contribute the most to poor air quality in the city, the most effective way for the public to get involved with improving air quality in Portsmouth is to choose active and sustainable travel where possible. More information on this can be found at the My Journey website which gives information on public transport, walking, cycling and other opportunities.

For specific air quality inquiries please contact: CleanerAir@portsmouth.gov.uk

You can also visit the below sites which provide additional information in respect to air quality related information:

Portsmouth Travel Planners Network (via My Journey): Home | My Journey Portsmouth

Clean Air Portsmouth: Home - Cleaner Air Portsmouth

Clean Air Zone: Clean Air Zone - Penalty Charge Notices - Portsmouth City Council

Local Responsibilities and Commitment

This ASR was prepared by Regulatory Services of Portsmouth City Council with the support and agreement of the following officers and departments:

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The Group Leader of the City Council - Councillor Vernon-Jackson

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Cabinet Member for Traffic and Transportation - Councillor Lynne Stagg

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If you have any comments on this ASR, please send them to Redouan Sadak at:

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1 Local Air Quality Management

This report provides an overview of air quality in Portsmouth City Council 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 Status Report (ASR) is an annual requirement showing the strategies employed by Portsmouth City Council to improve air quality and any progress that has been made.

The statutory air quality objectives applicable to LAQM in England are presented in Table E.1.

2 Actions to Improve Air Quality

Portsmouth has persistent exceedances of the legal limits of NO_2. Extensive modelling showed two locations, on Alfred Road and Commercial Road, which would be in exceedance in 2022 unless action was taken to reduce emissions. Both are on the A3 route in and out of the city.

An estimated reduction in NOx of 4%–7% is required to achieve the legal limit at these sites. There are also a further six road sections where NO_2 concentrations were forecast above >37 µg/m3 in 2022, which, whilst not in exceedance of legal limits, are still considered high.

In order to identify the most suitable options for bringing down levels of NO_2 to within legal limits, a longlist of 64 different interventions was considered. These included both non-charging (such as anti-idling campaigns, changes to traffic signals etc) and charging interventions (i.e., different levels and types of vehicle charging). These options were assessed and refined using a series of assessment criteria.

The primary assessment criteria were:

- delivery timescales, where the charging CAZ benchmark was assumed to be 12–18 months.
- potential scale of NO_2 reduction, based on emissions modelling undertaken as part of the 2018 Targeted Feasibility Studies or proxy estimates based on the potential change in vehicle flow, speeds and/or delay.
- certainty of delivering the estimated change identified above, e.g., high certainty for options which ban traffic or reduce per vehicle emissions and low certainty for options which rely on individuals choosing to change their behaviour (e.g., travel planning initiatives); and
- risk of displacement of traffic or air quality limit exceedance to other Air Quality Management Areas.

The four sub-criteria which were assessed were the strategic case for the intervention, supply side capacity and capability, affordability, and achievability.

Portsmouth Clean Air Zone

Delivery of a Charging Clean Air Zone was forecast to take 12–18 months. As this was Central Government's preferred tool for bringing down emissions to within legal limits in the shortest possible time, any alternative suggestion would need to achieve the same reduction in emissions in a similar time frame. Therefore, any options which would take more than 24 months were assumed to have failed in the objective to reduce emissions to within legal limits in the shortest possible time.

After extensive studies and numerical modelling, looking at both charging and non-charging options, it was identified that a Class B+ CAZ was needed to bring levels of pollutants down to within legal limits in the shortest possible time. There was no non-charging measure which on their own, or in combination with other interventions, could sufficiently reduce emissions to within legal limits in the shortest possible time, as Portsmouth had legally been mandated to do by Central Government.

The final option, which Central Government instructed Portsmouth City Council (PCC) to implement, was a Class B+ CAZ. A Class B CAZ is one which charges non-compliant heavy goods vehicles, buses, coaches, taxis and private hire vehicles.

In order to reach compliance with legal limits PCC also delivered a number of non-charging measures alongside the Class B CAZ (the + element) such as changes to traffic signals and revising Portsmouth’s taxi and private hire licensing policy. The modelling forecast that this option would be effective at reducing emissions to within legal limits in the shortest possible time. There was therefore no legal need to introduce a CAZ C or D which could charge vans and cars.

The CAZ will need to be in place until compliance with legal limits have been met and have been proved to be permanent. Portsmouth will need to have been compliant with legal limits for at least two years and provide demonstratable evidence in the success of the measures to improve air quality, such that the removal of the Clean Air Zone will not lead to a reversal of these. Central Government are developing a framework for Clean Air Zone decommissioning that Portsmouth will work within.

PCC was legally mandated to implement a Class B CAZ and the COVID-19 pandemic has significantly impacted on local economies and how, why, and when we travel. The pandemic has the potential to influence future NO_2 concentrations, by impacting future

travel behaviour, the economy (affecting both the volume of travel and the rate at which vehicles are upgraded), and background NO_2 levels.

Within Portsmouth, the initial lockdown measures resulted in significant reductions in vehicle movements in the city as residents observed the lockdown restrictions. Those who could worked at home, schools closed, and many shops, services and leisure businesses closed or switched to online operation only.

At the height of the March 2020 lockdown use of motorised traffic in the city decreased to less than a third of pre-lockdown levels and cycling numbers increased by more than 150% compared to 2019. However, as lockdown eased, traffic levels increased along the main routes in the city and have mostly recovered to the levels seen pre-pandemic.

There is some evidence that the peak in people cycling more remains higher than it was in 2019, before the pandemic. Any move away from the private car to increased bike use will lead to better air quality, however, it is too early to draw any long-term conclusions from the data.

An important implication of the pandemic is the disruption that it was caused to the automobile market. In 2020, new car sales were down to their lowest level since 1992, and the number of newly licensed Heavy Goods Vehicles nationally was at its lowest level since 2014. With the difficulties in obtaining a new vehicle, this has been a boost to the second-hand market. From an air quality perspective, this is problematic as the newer vehicles are significantly less polluting than older vehicles. As a result, the improvement in per vehicle emissions has been less than the improvement that would have occurred without COVID-19 (as without the pandemic a greater number of older vehicles would have been replaced by new cars).

The drop in new Heavy Goods Vehicles is particularly a cause for concern as it is in the vehicles with Heavy Duty Engines where the biggest improvements in air quality have been seen in recent years. Lower rates of upgrade in this vehicle group could mean older, more polluting vehicles continuing to operate. PCC will continue to monitor these statistics. The introduction of a Class B CAZ is likely to drive upgrades in this vehicle group, as otherwise they will be subject to a £50 daily charge.

The Portsmouth CAZ will remain in operation until Portsmouth has achieved and maintained compliance with legally binding targets in air quality. Whether or not

Portsmouth has achieved compliance will rest on an evidence base of long-term monitoring. This potentially will need to demonstrate 2 years' worth of data that the shows NO_2 levels are below the legal limit of 40µg/m3, and a further year to ensure that levels remain within legal limits.

The data that central government use to monitor compliance with legal limits is currently based on their national Automatic Urban and Rural Network of air quality monitors and modelled concentrations from the Pollution Climate Mapping (PCM). This is different from the data that PCC collect to monitor air quality in the city. In future, it is likely that a combination of monitored and modelled data will be used to assess compliance.

PCC rely on a significant network of diffusion tubes and a limited number of continuous monitoring sites for air quality data. The diffusion tubes themselves are analysed and verified yearly, meaning that data for 2022 will not be available until 2023. Whilst useful, the six continuous monitoring sites on their own cannot give a true picture of air quality in Portsmouth as they only provide a snapshot of air quality in a particular location and not in the city as a whole.

The CAZ will not be ‘switched off’ as soon as legal limits have been met - this runs the significant risk that air quality would just return to levels seen before the CAZ was introduced. Instead, the CAZ will be decommissioned when real world data and modelling demonstrates that removing the CAZ is unlikely to result in emission levels reaching above the legal limits.

PCC recognises that by introducing the CAZ, many businesses will find their operations interrupted on a day-to-day basis. In order to help them upgrade their vehicles before the CAZ launched, PCC applied to central government’s Clean Air Fund (CAF) to secure funding for Heavy Goods Vehicles, buses, coaches, taxis and Private Hire Vehicles. Applications opened in March 2021 and since then have been heavily subscribed. Whilst we have not been able to award funding for every applicant who requested it, we have been able to support those most in need in replacing their vehicles. Applications were scored against a set of criteria, the most significant of which were:

- Location – is the business located in Portsmouth or the Isle of Wight?
- Is the business micro, small or medium sized (i.e., 0–249 employees)?
- How often does the vehicle enter the CAZ?

- Can the business rotate their fleet or plan routes that don't result in non-compliant vehicles entering the CAZ?

Traffic surveys undertaken to support the implementation of the Portsmouth CAZ suggested that funding was needed to upgrade 69 Heavy Goods Vehicles. PCC were successful in securing grants of £16,000 per vehicle. This fund has been fully subscribed. As there are not many retrofit options for Heavy Goods Vehicles, most have opted to replace their older, non-compliant vehicle with one that is Euro 6 compliant.

As with HGVs, traffic surveys done to support the implementation of the CAZ suggested that funding was needed to support the upgrade of 57 buses and coaches. PCC were successful in securing grants of £15,000 per vehicle. This funding was targeted at small and medium sized enterprises. A previous round of funding in 2019 (focused on scheduled bus services run by First and Stagecoach) retrofitted 105 vehicles who regularly entered the CAZ, to bring them up to Euro VI standard.

The CAF for buses and coaches has been fully subscribed, with 23 vehicles choosing to replace their older, non-compliant vehicle with a Euro 6. A further 33 vehicles have so far chosen to retrofit their existing vehicles. A single vehicle has used the CAF funding to exit their lease agreement on a non-compliant vehicle.

Hackney Carriages and Private Hire Vehicles

PCC operate as the Licensing Authority for the Hackney Carriages (taxis) and Private Hire Vehicles (PHVs) based in Portsmouth. As such, the council applied for enough funding to support the drivers of all the non-compliant vehicles in the fleet to upgrade. Through the CAF, grants of £1,500 per vehicle for a standard taxi or PHV, and £5,000 per Wheelchair Accessible Vehicles (WAVs), were secured. The higher grant amount for the Wheelchair Accessible Vehicles reflected the higher upgrade costs. Since the CAF opened to Hackney Carriages and Private Hire Vehicles in March 2021, PCC has actively supported the replacement of 119 vehicles, including 26 WAVs.

Wheelchair Accessible Vehicles also play a key role in providing mobility for wheelchair users in Portsmouth and so it was particularly important to ensure that vehicle owners were supported in upgrading their vehicles. PCC were able to secure an additional £1,000 per vehicle from central government, raising the funding available from £4,000 to £5,000. Moreover, around 30 PCC licensed Wheelchair Accessible Vehicles were granted a six-

month sunset period where they were exempt from the CAZ charge, which ended on the 31 May 2022. This sunset period was in place to give drivers longer to upgrade their vehicles, recognising the higher upgrade costs for WAVs and the key role that they play in supporting those with mobility difficulties. We are actively supporting vehicle owners through our dedicated Engagement Officer to help them reach compliance.

In December 2020, PCC's Licensing Committee agreed to change licensing requirements for hackney carriages and private hire vehicles so that they could only be licensed until they reached eight years of age. This meant that older, more polluting vehicles would be phased out of use in the taxi and private hire trade. Owners of older vehicles could apply for a CAF grant to help them upgrade. The new requirements came into effect on 1 January 2022, so owners of non-compliant vehicles had a full year to replace them. Portsmouth local fleet of taxis and PHV is now 97% compliant with the requirements of the Portsmouth CAZ (as of May 2022) - up from 62% when the CAZ Outline Business Case was submitted in the autumn of 2019. It was also agreed by the Licensing Committee that any new vehicle licensed after 1 January 2025 would need to be Zero Emissions Capable. Many hybrids and all electric vehicles are classed as Zero Emissions Capable. By making this commitment to cleaner vehicles in the longer term, PCC was able to successfully bid for £500,000 in funding for rapid electric vehicle (EV) chargers specifically for the taxi and private hire trade.

Traffic control measures

Alfred Road is one the two sites on Portsea Island where emissions were forecast to exceed legal limits in 2022. Whilst this site is within the CAZ, PCC has also made changes to the signals to optimise traffic flow. Less queuing traffic will contribute to a lower build-up of emissions at this location. In particular, PCC has made changes to the traffic signals at Alfred Road / Queen Street junction. These are:

- A shorter cycle time during the AM and PM peak periods. A junction's cycle time is the time it takes to move through all the 'stages', with all arms having a green light, including space for pedestrian movements. A shorter cycle time means shorter wait times for vehicles, resulting in shorter queues and lower 'at point' emissions, and shorter wait times for pedestrians and students.
- Reversing two of the signal phases. This will allow a 'green wave' effect for southbound traffic to flow straight through the junction, reducing the amount of congestion at the

exceedance location. In combination with the CAZ and other measures being introduced to improve air quality in the city, these changes are forecast to lead to an improvement in the level of air pollution at Alfred Road.

- Monitoring of the above changes will be undertaken to ensure that there a no unintended consequences of such measures.

Workplace Sustainable Travel Fund

The aim of the Workplace Sustainable Travel Fund is to reduce single occupancy car journeys and encourage cycling and walking for both business journeys and travel to and from work. These behaviours translate into helping to improve the air quality in Portsmouth. The 2021/22 fund was distributed as grants of up to £4,000, with at least 10% match funding required. The fund was oversubscribed, with 33 applications received. PCC were able to award funding to 22 applicants - 17 with the full funding requested and 5 part-funded. Applications were received from churches, a nursery, various businesses (such as solicitors, mobile barista's, engineering consultancies) and non-for-profit organisations. Using the funding, they were able to purchase pool bikes, e-cargo bikes, bike shelters, cycling and walking accessories (helmets, hi-vis, waterproof clothing).

Additional measures

Further to those measures identified in the LAQP and noted above a number of measures have been implemented in recent years, are currently being implemented, or are expected to be implemented soon. These have the potential to make a positive contribution to improving air quality in Portsmouth. These are summarised within the paragraphs below:

Due to the changes made in Licensing Policy for taxis and private hire vehicles, PCC were able to bid for funding from Central Government for £500,000 for rapid electric vehicle charging points around the city exclusively for the use of the taxi and private hire trade. The rapid chargers are sized at 50kW each and to begin with the tariff is expected to be 40p/kWh. The first of these was installed in February 2022 at Stubbington Avenue. The next proposed phase is a planned charger at both London Road and Isambard Brunel Surface carparks followed by the Park and Ride site with up to three chargers. With a requirement for all new taxis and private hire vehicles to be Zero Emissions Capable by 2025, the introduction of these charge points will enable this change.

Portsmouth's fleet of refuse collection vehicles are now run-on Green D+ Hydro-treated Vegetable Oil (HVO), rather than diesel. HVO fuels are made using used second-hand oils and fats from cooking and other industries. Emissions data indicates that Green D+ HVO fuel results in the following fuel efficiencies:

- Carbon Dioxide (equivalent) – reduction of up to 90%
- Nitrogen Oxide – reduction of up to 30%.
- Particulates – reduction of up to 85%.

By using HVO fuels for refuse collection vehicles this reduces the impact that statutory services such as refuse collections have on the city's air quality. Whilst the switch from regular fuel to the Green D+ HVO fuel is not sufficient to bring the refuse collection vehicles in line with Euro 6 standards – particularly with regards to NOx, it still offers a smart, effective reduction at very little cost to the taxpayer. Because the refuse collection vehicles will be operating across the city, and not just within the CAZ, these emissions savings will benefit everyone. It also means that the council can invest in new Euro 6 refuse collection vehicles when the current contract ends in October 2023. Moreover, the significant reduction in CO2 (e) means that the use of Green D+ HVO fuel has wider ranging benefits to the environment, beyond improvements to air quality. The benefits of Green D+ is such that one engine running on diesel produces as much CO2 (e) as 10 running on Green D+ – helping Portsmouth tackle the climate emergency through simple steps in the way in which the council operates.

In partnership with First Solent and Hampshire County Council, PCC has been awarded £6.5 million to replace 34 diesel buses with new electric buses on three key routes across the Gosport, Fareham and Portsmouth area (First bus routes 1, 3, 9/9a). Portsmouth and Hampshire are just one of twelve areas across England to be awarded funding for electric buses, alongside the required charging infrastructure.

The buses are forecast to be able to operate for up to 300 miles between charges. The buses will run through areas where a quarter of households are without a car, providing much needed clean connectivity. Furthermore, as electric vehicles are much less polluting than diesel vehicle, with zero tailpipe exhausts, this will support air quality improvements on the bus routes that travel through four of Portsmouth's air pollution hotspots.

PCC is making travel greener by introducing electric vehicle charging points on-street and in our car parks. Whether residents have chosen an electric vehicle for its low running costs or because they want to help improve air quality in the city, PCC want to help residents to charge their vehicles near to their home. This supports our commitment towards creating cleaner air for our city and improving health for everyone who lives, works, visits and studies here.

Since 2019 we have installed a network of nearly 100 on-street residential charge points, thanks to funding from the Office for Zero Emission Vehicles (OZEV). Our award-winning system uses a charging point housed inside a streetlamp column or slimline bollard, enabling residents to safely charge their vehicle close to home, on a pay-as-you-go basis. Portsmouth was one of the first local authorities in the UK to develop this approach to on-street charging, which has been introduced over two phases.

If we have the opportunity to increase the number of residential charge points in Portsmouth, we will carry out technical surveys to all proposed sites and include a public consultation, once the funding has been secured.

We are conducting a trial of electric vehicle charge points in two of our off-street car parks: Isambard Brunel multi-storey and Seafront Esplanade. Two charge points are also available for use at Portsmouth Park & Ride. We have received a large number of requests for residential charge points and are currently assessing over 270 new sites across the city. Portsmouth is leading the way in charge point provision and was recently found to be the third most accessible city for electric vehicle charge points in the UK with 59 per cent of residents now living within a five-minute walk of a charge point.

We are working on a proposal for government funding to continue the scheme, which will be submitted in autumn 2022. If this is successful, we hope to begin installing the next round of charge points in summer 2023. The timeline below sets out the proposed dates for the next round of funding, planning and installation.

- Autumn 2022 – Bid submission to the Energy Saving Trust and grant award.
- Winter 2022 / 2023 – Supplier selection, contract award and planning.
- Spring 2023 – Site surveys and consultation with residents.
- Summer 2023 – Installation.

The Portsmouth Transport Strategy 2021 – 2038 sets out our vision of a greener, safer and healthier future for everyone who travels into and around the city. Our policies and objectives will support economic growth, reduce the damaging impact on air quality caused by transport, explore the use of new advances in technology and transport and better connect Portsmouth with the wider region, whilst helping people to have safer, greener, and cleaner journeys. This Implementation Plan supports the delivery of the strategy and enables us to think ahead, capitalise on opportunities and shape our city for generations to come whilst delivering cleaner air, prioritising walking and cycling, transforming public transport whilst supporting businesses and protecting our assets. Other activities to improve air quality include:

- Expanding sustainable alternatives to the car with the introduction of the new Park & Ride route, PR3 to Southsea.
- Improving traffic flow across the city with projects like moving and enhancing the Anglesea Road crossing.
- Making sustainable travel choices more accessible with improvements to cycling including a new tiger crossing in Fratton, raised tables along A2047 and a new city bus depot being investigated.
- Managing finite parking capacity fairly with residential parking zones with a rolling programme of consultation so residents can decide what is right for their area.
- Securing over £2.5m in funding to help address air pollution in the city.

For most, the health benefits of walking and cycling far outweigh the risks of roadside exposure to air pollution. Aside from the health benefits of the additional exercise, it has the potential to reduce exposure to air pollution. This is because air quality inside a vehicle can be worse than it is outside. In February 2022, PCC received responses from over 700 people in support of proposed walking and cycling improvement plans, which shows the importance of making these travel options better for people in the city.

The improvements cover cycling and walking routes in the ‘east to west corridor’, spanning from Milton and Southsea, through the city centre and towards The Hard Interchange. It is hoped that this will lead to more people choosing to walk, cycle or scoot on these safer, improved routes.

The project is also focusing on key areas around Goldsmith Avenue, Fratton Bridge, Sydenham Terrace and Winston Churchill Avenue, and includes various ways to improve

walking and cycling options. These include adding in separate cycle lanes where there is space, improving crossings, and making road junctions safer.

A total of 773 people responded to the online survey, with most respondents agreeing with the proposals. On Goldsmith Avenue, 77% of respondents agreed or strongly agreed that the route needs to be safer for cyclists, and the majority of respondents were in support of all the proposed changes. For the route from Fratton Bridge to the city centre, 79% of respondents agreed or strongly agreed that the route needs to be safer for people walking and cycling while a further 69% agreed that the footpaths need to be improved. Finally, on Winston Churchill Avenue, most supported all the proposals, with 78% agreeing with plans to create a new off-road cycle lane.

The proposals in the survey included:

- improving the cycle route along Goldsmith Avenue with physical segregation for cyclists.
- improving the junction with Southern Railway depot on Goldsmith Avenue to make it safer for cyclists and pedestrians.
- adding a loading bay for large vehicles outside the Rifle Club on Goldsmith Avenue.
- adding a two-way cycle track, making more space for people walking and improving lighting and CCTV along Sydenham Terrace.
- making the road closure for motorised vehicles on Canal Walk permanent.
- improving crossings on Victoria Road North and Winston Churchill Avenue.
- creating a new off-road, two-way cycle lane on Winston Churchill Avenue.

These proposed schemes are just part of an overall South East Hampshire Rapid Transit project, funded by the government's Transforming Cities Fund (TCF), as well as forming part of the Local Transport Plan.

Drivers in Portsmouth are asked to switch their car engines off when they are stationary and it is safe to do so, to improve people's health by lowering air pollution. The new campaign 'When you stop, engine stops' is focused on how a single minute of a car's engine idling releases 150 balloons worth of harmful emissions into the air and aims to evoke thoughts on how small changes to everyday habits can create big changes. Portsmouth City Council is asking residents to consider the next generation, and that if

public transport is not an option, to drive responsibly and not idle. This builds upon the successful 'Cough Cough, Engine Off' branding that is well established across the city.

The council has launched the awareness campaign just over a year after the Clean Air Zone was introduced in a bid from government to lower air pollution rates in the city.

Residents can also report incidents of engine idling using an online tool at cleanerairportsmouth.co.uk/engineidling, to help support the council in identifying key target areas where engines are kept running.

Key challenges and progression for the year ahead

Portsmouth is a bustling south coast city with unique geography, being surrounded by 49km of coastline on three sides. Its historic, diverse and vibrant waterfront contains the HM Naval Base, Portsmouth International Port, and major tourist attractions (such as Southsea seafront, Gunwharf Quays retail outlet, and the world-renowned Portsmouth Historic Dockyard / Mary Rose Museum). In addition, the University of Portsmouth in the city centre has a population of c. 20,000 students and has ambitious plans for growth.

Portsmouth is one of the most densely populated cities in Europe (with a population density higher than some parts of London), and its population of around 217,000 is expected to grow to 236,000 by 2040.

These factors create unique challenges for Portsmouth in terms of improving its air quality. It is well documented that road traffic is a significant contributor to air pollution and in July 2017 the UK government (DEFRA and the Department for Transport (DfT)) published the UK plan for tackling roadside NO_2 concentrations[1], setting out its commitment to achieving a cleaner and healthier environment, with the aim of benefitting both people and the economy.

Air pollution is the largest environmental risk to public health in the UK and it is known to have disproportionate effects on vulnerable groups. Air quality disproportionately affects

[1] Air quality plan for nitrogen dioxide (NO2) in UK (2017)

the very old, the very young, and those with chronic conditions. It also has greater impact on those who live, work, or go to school in more deprived areas.

With such clear evidence about the impact of air pollution on people's health, PCC has been clear about its plans to improve air quality in the city, as set out in the Air Quality Strategy 2017-2027[2]. This strategy sets out a commitment to “work collaboratively to improve and maintain a healthy local AQ in the city in order to protect health and the environment, enhancing our status as a great waterfront city”.

PCC sets out the following strategic aims to:

- foster closer working relationships between council directorates and external partners.
- create a focus on sustainable travel, including the promotion of a modal shift in transport from the car to active travel.
- provide high quality information and guidance on local AQ to members of the public.
- develop and implement measures to reduce traffic and congestion-related emissions, addressing road network flow and functionality.
- support and stimulate sustainable citywide economic growth, including a focus on reducing carbon emissions and -
- ensure that as a council we lead by example in supporting sustainable working practices, minimising our own emissions and carbon footprint.

The strategic objectives are underpinned by the following core principles: evidenced-based practice, innovation, collaborative working, monitoring and evaluation, ambition, seeking funding, and analysis.

The strategic aims of the strategy and core principles have been applied in the development of Portsmouth's LAQP produced in response to ministerial directions requiring PCC to make improvements to concentrations of NO_2 in the city in the 'shortest possible time'.

Having received ministerial approval on the LAQP FBC from 1st March 2021, PCC was from that date, and remains, fully committed to delivering compliance against legal limits

[2] PCC Air Quality Strategy PDF

for NO_2 in the shortest possible time. The key measure through which this success will be achieved is through the implementation of the Class B charging CAZ.

Engagement activity

Decision makers both locally and nationally continue to be engaged in the work to improve AQ across the city. Cabinet Members for Traffic & Transport and the Environment & Climate Change, engage with the Air Quality and Active Travel Board, and regular briefings are held for all Councillors to update on the work across the authority in respect to measures to improve air quality.

PCC are continuing to engage with a diverse range of external stakeholders on the issue of air pollution and the steps being taken to reduce it. In order to facilitate our activities, our engagement officers continue to connect with businesses, the public and interested parties following the implementation of the charging CAZ and to support them in taking steps to reduce their own emissions, as well as signposting them towards funding to help them do this. The work of the engagement officers complements our existing commitments to engage in air quality related projects and other activities involved or connected to reducing levels of pollution within the city.

Building on the public consultation which took place in summer 2020, reaching 93,000 households in the city as well as local businesses, a business advisory group has been setup to engage local businesses with continual CAZ updates. The group acts to ensure businesses who may be impacted by the CAZ are kept updated with progression on elements such as vehicle exemptions, and funding opportunities.

Throughout the COVID-19 pandemic and resulting national lockdown measures, one of the challenges faced across all engagement activities has been the safety concerns of holding public events. To overcome this the team achieved an increased online presence through social media activity and e-updates. This team continues to explore new opportunities as how best to engage with communities in respect to air quality messaging and reducing pollutant levels, and now all restrictions have been lifted we continue to support these methods of communication as well as face to face more traditional communication processes.

Travel in Portsmouth is a major contributor to air pollution and the type of transport chosen can help to improve air quality. PCC is making transport improvements to the city including safer cycling routes and facilities to make it easier to choose this way of travelling, improving public transport connectivity with the wider region, funding the upgrade of some of the most polluting vehicles on our roads, and providing electric charging points for residents choosing greener vehicles. PCC are improving the options for travel and together we can choose a greener, cleaner way of travelling for cleaner air in Portsmouth.

Despite the work that has and continues to be undertaken, Portsmouth still faces challenges to reduce the concentrations of harmful pollutants in the air. The CAZ is one of the key challenges of addressing air pollution as it can be difficult to accept that our own actions are part of the problem and therefore changing behaviours is part of the solution. It is therefore important to consider that we all have a part to play in improving the air quality in the city.

2.1 Air Quality Management Areas

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

A summary of AQMAs declared by PCC can be found in Table 2.1. The table presents a description of the 5 AQMAs that are currently designated within Portsmouth.

Appendix D: Map(s) of Monitoring Locations and AQMAs provides maps of AQMA(s) and also the AQ monitoring locations in relation to the AQMA(s). The NAQO pertinent to the current AQMA designation are as follows:

- NO_2 annual mean

Further information relating to declared or revoked AQMAs, including maps of AQMAs boundaries are available online here.

The 5 AQMAs currently in place within Portsmouth statutory boundary which were declared due to exceedances in the annual NO_2 NAQO are:

- AQMA6 - which extends north along Fratton Road from Fratton Bridge to Kingston Road, continuing into London Road until the roundabout junction with Stubbington Avenue and Gladys Avenue.
- AQMA7 - covering Hampshire Terrace and the St Michael's Road gyratory.
- AQMA9 - covering the southernmost section of Eastern Road from Sword Sands Road south into Velder Avenue and its junction with Milton Road.
- AQMA11 - which extends from Rudmore Roundabout south to Church Street roundabout; and
- AQMA12 - encompassing the greater part of Queen Street from The Hard to St James's Street.

Additionally, because of DEFRA's focus on additional areas of the city through the PCM model, the following 2 road links in Portsmouth have subsequently been modelled and exceed the annual mean NO_2 limit value:

- A3, Alfred Road between Hope Street roundabout and the Queen Street / Anglesea Road / Alfred Road intersection.
- A3, Mile End Road between the southern end of the M275 and Church Street roundabout (located within AQMA 11).

Table 2.1 – Declared Air Quality Management Areas

AQMA Name	Date of Declaration	Pollutants and Air Quality Objectives	One Line Description	Is air quality in the AQMA influenced by roads controlled by National Highways?	Level of Exceedance: Declaration	Level of Exceedance: Current Year	Name and Date of AQAP Publication	Web Link to AQAP
AQMA 6	2005	NO_2 Annual Mean	An area encompassing a large number of residential properties extending north along Fratton Road; from Fratton Bridge into Kingston Road, continuing into London Road until the roundabout junction with Stubbington Road and Gladys Avenue	NO	59.9 µg/m^3	From to 36.51 µg/m^3 to 36.30 µg/m^3	PCC's AQAP was set up as a citywide AQAP rather than specifying actions for individual AQMAs.	AQAP
AQMA 7	2005	NO_2 Annual Mean	An area encompassing a number of residential properties along Hampshire Terrace and St Michaels Road gyratory	NO	43.36 µg/m^3	From to 29.67 µg/m^3 to 31.64 µg/m^3	PCC's AQAP was set up as a citywide AQAP rather than specifying actions for individual AQMAs.	AQAP
AQMA 9	2005	NO_2 Annual Mean	An area encompassing a number of residential properties near to the southernmost section of Eastern Road from Sword Sands Road south into Velder Avenue and its junction with Milton Road	NO	43.1 µg/m^3	From to 28.59 µg/m^3 to 29.22 µg/m^3	PCC's AQAP was set up as a citywide AQAP rather than specifying actions for individual AQMAs.	AQAP
AQMA 11	2010	NO_2 Annual Mean	This area encompasses a large number of residential properties east of the west transport corridor extending along part of the M275 and Mile End Road stretching from Rudmore roundabout south to Church Street roundabout	NO	46.25 µg/m^3	From to 28,20 µg/m^3 to 29.24 µg/m^3	PCC's AQAP was set up as a citywide AQAP rather than specifying actions for individual AQMAs.	AQAP

AQMA Name	Date of Declaration	Pollutants and Air Quality Objectives	One Line Description	Is air quality in the AQMA influenced by roads controlled by National Highways?	Level of Exceedance: Declaration	Level of Exceedance: Current Year	Name and Date of AQAP Publication	Web Link to AQAP
AQMA 12	2005	NO_2 Annual Mean	An area encompassing a number of residential properties along Queen Street mainly an area stretching from The Hard to St James's Road	NO	33.11 µg/m^3	From to 27.15 µg/m^3 to 27.67 µg/m^3	PCC's AQAP was set up as a citywide AQAP rather than specifying actions for individual AQMAs.	AQAP

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

☒ **Portsmouth City Council confirms that all current AQAPs have been submitted to Defra.**

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

Portsmouth City Council

Defra's appraisal of last year's ASR concluded that PCC needed to make additional efforts to achieve compliance with the prescriptive requirements of the ASR template. PCC has made additional efforts to comply with such within this 2022 ASR. PCC have always taken a view to provide additional information, particularly in respect to its long monitoring sites which have been reported within all previous ASR submissions and will continue to do so.

Portsmouth City Council has taken forward a number of direct measures during the 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. 69 measures are included within Table 2.2, with the type of measure and the progress PCC have made during the reporting year of 2021 presented. Where there have been, or continue to be, barriers restricting the implementation of the measure, these are also presented within Table 2.2.

More detail on these measures can be found in our respective Action Plan 2019 and its relevant Appendices, the Portsmouth Clean Air Zone Consultation report 2019 and Portsmouth Clean Air Zone Consultation 2020. Additionally, Portsmouth has published a number of technical reports relating to air quality impact assessments and air quality modelling.

Alongside many other busy cities around the UK, Portsmouth has been identified as a city that needs to reduce air pollution levels as quickly as possible.

We are working closely with Government's Joint Air Quality Unit (JAQU) to ensure that levels of nitrogen dioxide in the city are reduced below legal limits in the shortest possible time. This is known as our Air Quality Local Plan.

The process that we have to follow to produce our Air Quality Local Plan has been set out by JAQU and there are a number of documents and data sets that we are required to submit to Government for review.

The problems that PCC are facing are complex. Portsmouth is a densely populated partial island city with 3 primary north south main road links. NO_2 pollution from road traffic is the most significant problem in Portsmouth particularly where high volumes or congested traffic travels through street canyons.

Combinations of the measures contained within Table 2.2. are required to contribute towards compliance. Whilst some narrative has been provided within the relevant text boxes, at this point in time it is not possible to confirm the funding sources of all these schemes or the estimated costs of all measures. This information is being collated and will be published as the situation becomes clearer.

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

PCC worked to implement pollution reduction measures in partnership with the following stakeholders during 2021 to reduce levels of NO_2, working partnership with road users, focus groups such as taxi drivers (hackney carriage drivers, private hire vehicle drivers, and taxi companies), local businesses (including city centre retailers, manufacturing businesses, hauliers, Wightlink, Portsmouth International Port and the Naval Base), regional partners, other Local Authorities and government agencies such as JAQU and the National highways Authority.

Table 2.2 – Progress on Measures to Improve Air Quality - Rated (red least effective / green most effective)

Measure No.	Measure	Category	Classification	Year Measure Introduced	Estimated / Actual Completion Year	Organisations Involved	Funding Source	Defra AQ Grant Funding	Funding Status	Estimated Cost of Measure	Measure Status	Reduction in Pollutant / Emission from Measure	Key Performance Indicator	Progress to Date	Comments / Barriers to Implementation
APV1	Car Clubs	Alternatives to Private Vehicle Use	Car Clubs	2020	2023	PCC	PCC	No	Funded	£100k - £500k	Implementation	<0.1µgm3 Car Club sharing has the potential to reduce the cars per person on the road and therefore reduce emissions.	Use of Car Club	FTS advertised concession procurement process launched formally December 2022. Bids have been assessed, a preferred bidder award recommendation approved in accordance with Council governance processes, award notification letters have been issued to bidders and a 10 day standstill period has now expired. The Council is now in the process of finalising the scheme in partnership with the preferred bidder prior to entering into formal contract in the coming months. This scheme will be in addition to the current car club scheme operation in the city at St Marys Hospital and Wimbledon Park. An information update report will be presented to the Cabinet Member for Traffic & Transportation on the 23rd March 2023 outlining the next steps for implementation.	
APV2	Promoting bus use	Alternatives to private vehicle use	Bus based Park & Ride	2009	2032	Bus Operators PCC	PCC	No	Funded	£10k-£50k	Implementation	Increased bus patronage has the potential to reduce the cars per person on the road and therefore reduce emissions.	Increase in bus patronage	The Public Transport team is continually working with bus operators to promote and increase bus patronage. To grow the market for regular (non-Park & Ride) bus travel, the Council have entered into an Enhanced Partnership with the bus operators First Solent and Stagecoach South. Through this partnership the Council and operators will deliver the Bus Service Improvement Plan, for which a Government grant of £48.3m was awarded in April 2022. In summer 2022 an additional Park & Ride route was run from Tipner to Southsea, serving Clarence Pier and the Castle/D-Day Museum. Supporting this service was a publicity campaign 'Bus to the Beach' using social media, run to attract users visiting the City.	Bus patronage levels are still recovering from the impact of COVID pandemic, and initial Government guidance to avoid using public transport. Plans for additional summer 2023 onwards Park & Ride Services subject to funding.
APV3	Working with SouthWestern Railway to implement improved public transport connectivity	Alternatives to private vehicle use	Other	2019	2022	PCC SWR	South East Hampshire Rapid Transit Programme	No	Funded	£10k-£50k	Completed	Increased public transport patronage has the potential to reduce the cars per person on the road and therefore reduce emissions.	N/A	The Public Transport team is in regular contact with South Western Railway officers to discuss potential improvements at stations in the city. Electronic signage and directions for on-ward travel by bus and ferry are now in place. Meetings continue to be held with the rail operator to work through proposals to improve stations and services.	

Measure No.	Measure	Category	Classification	Year Measure Introduced	Estimated / Actual Completion Year	Organisations Involved	Funding Source	Defra AQ Grant Funding	Funding Status	Estimated Cost of Measure	Measure Status	Reduction in Pollutant / Emission from Measure	Key Performance Indicator	Progress to Date	Comments / Barriers to Implementation
APV4	Park and Ride expansion	Alternatives to private vehicle use	Bus based Park & Ride	2017	2032	PCC funding feasibility study	None	No	Not funded	£100k - £500k	Planning	If this development is successful, it would potentially double the parking spaces available at the park and ride, assisting in reducing traffic flow through into the city through the Clean Air Zone.	Delivery of additional Park and Ride capacity	Tipner Park and Ride site is to be developed to provide a Transport Hub, which will include parking for Portsmouth International Port, as well as some cycle facilities. The feasibility study has been completed for this scheme, and if developed will provide increased parking space availability at the Park and Ride site, allowing for increased usage of the service. At present, the Park and Ride provides 665 parking spaces. If the new decking is developed to make the car park a multi-storey, it is proposed that an additional 1000 spaces will be provided, taking the total car parking spaces up to 1650. The Transport Hub is a key part of the emerging Portsmouth Parking Strategy which will support parking outside of the city centre. The Parking Strategy is currently being developed and is due to go for public consultation in autumn 2023.	This scheme was the subject of an unsuccessful bid for a "Levelling Up" grant from the Government; further funding opportunities will now need to be identified.
C1	The provision of appropriate cycle parking at key destinations across the city	Promoting Travel Alternatives	Promotion of cycling	2012	2032	PCC	PCC	No	Funded	£10k-£50k	Implementation	<0.1µgm3 This measure will support cycling in the city.	Utilisation of bike parking provision	Cycle parking is continually introduced and improved as required and as funding is available. Further cycle parking will be provided at various locations through ongoing schemes. Throughout 2020/21 PCC will oversaw the provision of new bike 'hangars' which will facilitate the storage of multiple bikes. New cycle corrals at 45 spaces on street are currently delayed to Q1 2023. A trial of new cycle stands for Locksway Road and Copnor Road to be installed Q1 2023 followed by a trial for cycle storage at the Park and Ride but this is likely Q2 2023.	Continuation of this will be dependent upon funding.
C2	Local Cycling and Walking Infrastructure Plan (LCWIP)	Promoting Travel Alternatives	Promotion of cycling	2017	2031	PCC Transport PCC Infrastructure PCC Planning PCC Public Health DfT Portsmouth Friends of the Earth Portsmouth Cycle Forum Sustrans WSP SEHRT Delivery Board	DfT - LCWIP technical development PCC - Feasibility PCC - schemes SEHRT - schemes	No	Partially Funded	>£10m	Implementation	<0.1µgm3 This measure will support cycling in the city.	Completion of LCWIP Scheme delivery	The Portsmouth Local Cycling and Walking Infrastructure Plan (LCWIP) was adopted in February 2022. The long list of schemes will be delivered on a priority and available funding basis, with the LCWIP acting as a dynamic document that will be re-profiled as schemes are delivered. SEHRT active travel schemes to be delivered early 2023 are all included in the LCWIP. Some sections of Eastern Road improvements are also included in the LCWIP - this has been put forward for capital funding and funding from SUSTRANS and further bids such as the Active Travel Fund 4.	LCWIP routes caveat that additional land may be required for construction - limited opportunity for land grab and purchase. Many schemes are yet to have funding identified.

Measure No.	Measure	Category	Classification	Year Measure Introduced	Estimated / Actual Completion Year	Organisations Involved	Funding Source	Defra AQ Grant Funding	Funding Status	Estimated Cost of Measure	Measure Status	Reduction in Pollutant / Emission from Measure	Key Performance Indicator	Progress to Date	Comments / Barriers to Implementation
C3	Bike Hire Scheme	Promoting Travel Alternatives	Promotion of cycling	2022	2024	PCC Transport PCC Infrastructure PCC Planning Solent Transport Beryl	DfT Future Transport Zone Grant Funding	No	Funded	£500k - £1m	Implementation	<0.1µgm3 This scheme is likely to provide only a very small reduction in air pollution initially, however, there is the possibility that greater overall reductions could be achieved over time, as uptake of the scheme increases.	Bike hire utilisation Associated air pollution reductions	'Beryl Bikes by Breeze' Scheme launched in November 2022 as part of a two year trial. Phase 1 implemented in the City Centre, extending across Southsea to Fratton Rail Station. Expansion of the scheme across the City underway. As a result as yet no usage figures are currently available.	Due to COVID-19 and Brexit the industry supply of bikes and e-bikes is currently limited, which is likely to affect delivery schedule for this project.
C4	Family Cycle Grants and Family Cycle Training	Promoting Travel Alternatives	Promotion of cycling	2017	2018/19	PCC Transport PCC Public Health	DEFRA PCC	Yes	Funded	£10k-£50k	Completed	The small scale nature of the scheme means that reduction in air pollution is difficult to attribute and quantify. As part of a collective of cycling schemes however, it contributes to larger potential reductions.	Uptake of Family Bike Grant scheme and cycle training	Successfully delivered in 2016/17, enabling lower income families to access safe cycling and move away from the private car. Also successfully delivered in 2018/19 through the Air Quality Grant. For the family cycle training scheme, 36 families received cycle training, to increase skills and confidence, learn to effectively shepherd children and to journey plan. A further 22 sessions have run cycle maintenance training. Evaluation suggests that both training sessions have been very well received and have been effective in increasing confidence and rates of cycling and reducing the barriers to cycling. For the family cycle grants, 24 families received a grant towards new bikes and associated safety equipment (helmets, lights, locks and high vis). 36 adult bikes were funded and 33 children's bikes. Feedback suggests that the families in receipt of the bikes and safety equipment are cycling more, using the bikes for leisure, school and work and are cycling more as families. A funding bid for £35,000 has been made in the Capability fund in order to restart the program.	Further roll out of this scheme will be dependent upon further funding becoming available.
C5	Community Cycle Hub Continued partnership working to support and generate income through community events and initiatives using Bike Doctor	Promoting Travel Alternatives	Promotion of cycling	2014	2019	PCC Transport Somerstown Hub	LSTF				Discontinued	N/A	Level of uptake of Cycle Hub services	Community Cycle Centre CIC provided low cost repairs and low cost second hand bicycles.	Somerstown Hub closed down.

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C6	Supply of sustainable travel options for staff business travel	Promoting Travel Alternatives.	Promotion of cycling	2012	2032	PCC	DfT Capability Fund	No	Funded	£50k	Planning	<0.1µgm3	Uptake of pool bikes, electric vehicles for business staff travel	New pool bikes and electric pool bikes are being looked at for staff. The bike repair dock will likely be installed when the new pool bike contract is set up. Electric vehicles are available for staff business use. Booking system available to enable online bookings. Staff bus passes are also available.	The impact of the COVID pandemic on the way we work has fundamentally altered working patterns, work locations and travel to work patterns. PCC is still working to capture this which does mean delays to Staff Travel Planning initiatives.
C7	City-wide Early Release Low Level Cycle Signals	Promoting Travel Alternatives	Promotion of cycling	2018/19	2023	PCC	PCC	No	Partially Funded	£100k - £500k	Implementation	<0.1µgm3 This measure will support cycling in the city. The localised nature of the individual sites means that reduction in air pollution is difficult to attribute and quantify. As part of a collective of cycling schemes however, it contributes to larger potential reductions.	Installation of early release signals	This ongoing installation of low level signals and early release at existing signalised junctions, improving cycle safety. Schemes often include bus detectors.	No funding identified for 2023/24 financial year onwards.
C8	Quiet Routes	Promoting Travel Alternatives.	Promotion of cycling	2016	2031	PCC	PCC	No	Funded	£100k - £500k	Delivered	<0.1µgm3 Supports travel behaviour change, strengthening the cycle routes in the city, particularly for short local journeys.	Upgrading of signage	A number of 'Quieter Routes' have been marked out in the city, with the use of coloured stickers on lampposts. There are currently five routes between the north and south of the city, and five between the east and west. Signage was upgraded on these routes during 2019/20 with continued investigation of new signage to further improve the routes. The project has been progressing route by route, and after a pause has recently started again with parking revenue reactivated and funding available again. Routes to continue to be audited with increase of team resource from late summer 21, with more signage to be installed. The existing network of 20mph roads support the formation of the 'Quiet Routes' network. The Quieter Routes map is available at https://www.portsmouth.gov.uk/wp-content/uploads/2020/05/trv-quieter-routes-cycle-map.pdf Monitoring data Current cycle data shows annual average of 23,000 cycle journey during the week and over 16,000 cycle journeys at weekends. Largest increase in local cycling at monitoring sites is Sydenham Terrace in Fratton.	Funding

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C9	Road Safety and Active Travel Events Programme	Promoting Travel Alternatives.	Promotion of cycling	2017	2031	PCC	DfT Capability Fund - Active Travel only	No	Partially Funded	£50k	Implementation	<0.1µgm3 Whilst the events themselves won't deliver a significant reduction in pollution levels, the awareness raising achieved will have longer term benefits.	Delivery of cycling events and attendance levels	Successfully delivered Pedal Portsmouth events, Glow Ride, Changing Places and Be Bright Be Seen in 2017 and 2018. Pedal Portsmouth Events, Glow Ride.	Continuation of this will be dependent upon funding resources. There is no funding allocated for road safety initiatives or events.
C10	Promoting Road Safety & Active Travel initiatives.	Promoting Travel Alternatives	Promotion of cycling	2010	2031	PCC	PCC	No	Not funded	N/A	Implementation	<0.1µgm3 Promotion of active travel initiatives will support the uptake of sustainable travel modes and contribute to positive travel behaviour change.	Delivery of cycling, road safety and active travel initiatives	Walking and cycling map is a popular resource. Planning is underway for an interactive map on the council website. Works in conjunction with stakeholders such as Portsmouth Cycle Forum continue. Educational programmes in schools continue to be delivered, such as the Pompey Monsters Challenge. App launched in 2021 to support School Streets trials. Trials already delivered to 5 schools since Autumn 2021 A dedicated Travel publication was distributed in February 2023 to every household and business in the city. This provided an overview of the adopted Portsmouth Transport Strategy, as well as promoting active travel initiatives and a survey to understand travel behaviours. This survey will be collated over the coming months and an action plan developed.	Continuation of events will be dependent upon funding resources.
PGDC 1	Air Quality Planning and Policy Guidance	Policy Guidance and Development Control	Air Quality Planning and Policy Guidance	2012	2032	PCC	None	No	N/A	N/A	Planning	N/A	N/A	There is an ongoing involvement with Planning Policy on the air quality effects of developments through the Planning Process. Consideration is given to limiting air pollution issues which may arise from new developments both during and after construction. A strong air quality policy has been embedded in the emerging Local Plan - D3 Pollution , Health and Amenity. This is at Reg 19 stage.	
PGDC 2	Air Quality Board	Policy Guidance and Development Control	Other	2018	2032	PCC	None	No	N/A	N/A	Implementation	N/A	Regular meetings/ updates to Air Quality Board	The Transport Air Quality Board continues, providing oversight and governance of the transport air quality work programme. In 2022, an Air Quality and Active Travel Board was established to deliver on the Health and Wellbeing Strategy. This Board is chaired by Public Health and membership includes relevant PCC teams, as well as wider public sector organisations across the City.	The Board in is the process of agreeing its action plan.

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PGDC 3	Portsmouth International Port Air Quality Action Plan	Policy Guidance and Development Control	Low Emissions Strategy	2019	Ongoing	PCC, PIP, DfT	Shape UK Interreg2 SEAs	No	Partially Funded	Not available	Implementation	There is the potential for significant reductions in emissions around the Port.	AQ monitoring for PM10, PM2.5, PM0.1, NO_2, Carbon and Sulphur	Portsmouth International Port has made a commitment to become the first net carbon neutral UK port by 2030, and the first zero emission port by 2050. Its sustainability plans link to government's Maritime Strategy to 2050, see https://portsmouth-port.co.uk/about-us/sustainability/ The Port has installed 5 real time air quality monitors as a result of the PECS (port energy and carbon savings) project which was funded by Interreg 2 SEASs, and now have 1 years' worth of data. SHAPE UK funding enabled the digital twin ecosystem where the AQ monitor data is shared. However the actual AQ monitors came out of a fund back in 2020 which allowed for their install, so that project needs to be included.	Capacity to analyse monitoring data.
PGDC 4	Air Quality Local Plan	Policy Guidance and Development Control	Air Quality Planning and Policy Guidance	2019	2020/21	DEFRA / JAQU PCC	None	No	N/A	N/A	Completed	The plan aims to achieve a significant reduction in NO_2 emissions, particularly in areas which current exceed legal limits.	Implementation of package of measures identified in Local Plan	The Air Quality Local Plan was published in 2019, setting out Portsmouth City Council's approach to achieving compliance with legal limits for NO2 at all locations citywide, leading to a healthier environment for all. The Plan has been produced in response to the Ministerial Direction issued to Portsmouth City Council on 4th October 2018, requiring the council to develop a plan which identifies how compliance with legal limits for nitrogen dioxide can be achieved in the shortest possible time.	
PI 1	Provision of information regarding air quality, including real time monitoring data and information regarding assessments of air quality to enable public awareness of issues and success of actions implemented	Public Information	Other	2019	2032	PCC	None	No	Not funded	N/A	Planning	N/A	N/A	The provision of real-time information remains under exploration and feasibility work with highways network management and passenger transport operators	Funding Capacity
PI 2	Air Quality Communications and Marketing - Clean Air Day 2022	Public Information	Via the internet Via leaflets Via other mechanisms	2021	17th June 2021	PCC	None	No	N/A	N/A	Aborted	N/A	Involvement and participation in Clean Air Day events	PCC did not engage in Clean Air Day 2022 due to resource and funding constraints.	
PI 3	Air Quality Steering Group	Public Information	Other	2018	2021	PCC	None	No	N/A	N/A	Completed	N/A	Attendance at Air Quality Steering Group	The purpose of the group was to provide input into the development of the air quality local plan by 2019 and was operational during the CAZ implementation phase up until the CAZ became operational in November 2021.	

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PI 4	Business Advisory Group	Public Information	Via the internet	2019	2021	PCC Local trade organisations	None	No	N/A	N/A	Completed	N/A	Attendance at Business Advisory Group	The Business Advisory Group ran until the launch of the CAZ. PCC continue to engage with local stakeholders through a range of forums, including the Transport Liaison Group which has citywide stakeholder attendance, as well as through direct engagement with key stakeholder groups.	.
PI 5	Sustainable Travel Behaviour Change	Public Information	Other	2012	2032	PCC	Some historical schemes funded through DEFRA PCC	No	N/A	N/A	Implementation	<0.1µgm3 Raising awareness of sustainable travel.	Mode shift, particularly for short local journeys around the city	The promotion of sustainable travel is an ongoing element of many schemes including: Workplace Sustainable Travel Fund, rolling communications and campaigns, the Voi e-scooters pilot, and the My Journey programme.	Future running of specific behaviour change programmes will be dependent upon securing future funding.
PI 6	Personal Journey Planning	Public Information	Via leaflets Via other mechanisms	2018	2024	PCC	Defra PCC	Yes	Funded	Not available	Completed	<0.1µgm3 Awareness raising with local residents and visitors.	No. of people engaged within residential and events based activities	Personal Journey Planning (PJP) work was undertaken during 2018 as part of the Air Quality Grant work. An element of this programme focussed on PJP in AQMA 6, involving both residential and event based activities. Previous PJP work has also been carried out with the use of Travel Advisors, through the LSTF and Sustainable Travel Transition Year programmes. Where funding has been available on street travel advisors has been used at various events held across the city. Further recent work has focused on sustainable travel planning alongside key businesses.	
PI 7	Air Quality Communications and Marketing - Anti Idling Campaign	Public Information	Other	2018	Ongoing	PCC	Funded through JAQU CAZ funding for behavioural change support	Yes	Funded	£50k - £100k	Implementation	<0.1µgm3 Whilst not delivering a significant reduction in air pollution, this campaign has raised significant awareness of the need to switch off vehicle engines when stationary for more than a couple of minutes.	Reduction of idling vehicles in the city Raising awareness and educating drivers about the impact of engine idling.	Anti-idling campaign ongoing across lifetime of CAZ, supported by Idling Behaviours public consultation.	Resource limited which lowers the level of citywide exposure ideally needed for behavioural change campaigns.
PI8	Traveline	Public Information	Other	2016	2032	PCC	PCC	No	Funded	£10k - £50k per year	Implementation	Although not delivering measurable air pollution reduction targets, public transport information supports uptake of active travel.	Continued up to date travel and public transport information on Traveline	Traveline consists of a national database for all bus stops and timetables which is updated daily, providing comprehensive information and is used to populate all journey planning engines.	This an ongoing statutory service.
PI9	Public Transport Network Maps	Public Information	Other	2017	2018	PCC	PCC	No	N/A	N/A	Completed	N/A Supporting public transport use	Completion of online mapping system	New Public Transport Network Hub map produced in 2017. An online mapping system using network maps was developed and completed June 2018. Work is ongoing to explore the development of online active travel maps. The Public Transport Department regularly produces an updated map covering all public transport services in the city. The most recent edition is below. https://www.portsmouth.gov.uk/wp-content/uploads/2020/11/Portsmouth-Public-Transport-Information-Map.pdf	

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PI10	Public transport information	Public Information	Other	2012	2032	PCC	PCC, with TCF element funded by DfT	No	N/A	N/A	Completed	N/A Although not delivering measurable air pollution reduction targets, public transport information supports uptake of active travel.	Provision of public transport information	SMS/ texting / bus timetable downloads; Improved Shelters with 90 real-time passenger information units installed in 2017/18. The TCF Tranche 1 has delivered 120 RTI units which have been installed at bus stops across the city, with a further 20 RTI pole only locations and 13 interchange screens with bus destinations and COVID information. On all 210 RTI units bus occupancy details are now displayed.	Journey planning and interactive mapping delayed COVID-19 restrictions.
PLE T1	Electric Vehicle Charge Point scheme - off street	Promoting Low Emission Transport	Other	2018	2026	PCC	Charge points funded by City EV Bay marking	No	Funded	None	Completed Planning	<0.1µgm3 This measure will initially only achieve a very low level of NO_2 reduction. There is potential for greater reductions to be achieved over time as EV usage increases across the city.	Installation of charge points and level of usage	Off street charge points have been installed at 3 car parks in the city: Isambard Brunel Multi storey, Esplanade car park and Clarence Pier car park. Clarence Pier car park is currently not accessible due to seafront works. A feasibility study regarding implementation of more off-street charge points in PCC owned car parks will be undertaken to improve their availability.	
PLE T2	Electric Vehicle Residential Charge point schemes - phase 1	Promoting Zero Emission Transport	Other	2018	2019	PCC	Office for Zero Emission Transport 75% PCC 25%	No	Funded	£100k-£500k	Completed	<0.1µgm3 This measure will initially only achieve a very low level of NO_2 reduction. There is potential for greater reductions to be achieved over time as EV usage increases across the city.	Installation of charge points and level of usage	36 on-street charge points have been installed through the ORCS scheme, at various locations in the city, where requested by residents. All charge points have been installed at locations where the resident does not have off street parking. The original contract has expired in March 2022 and we are liaising with the supplier to extend this for another 3 years subject to approval of new tariff prices to align with the recent energy price rises.	Information is being gathered on residents interested in a residential on- street charge point, to further develop the network when funding becomes available.
PLE T3	Electric Vehicle Residential Charge Point scheme - phase 3	Promoting Low Emission Transport	Other	2020	2024	PCC	Office for Zero Emission Transport 75% PCC 25%	No	Funded	£100k-£500k	Completed	<0.1µgm3	Installation of further charge points and level of usage	Funding for the second phase has been secured, where 63 on-street charging points will be delivered and have now been installed from November 2021 - March 2022.	
PLE T4	Electric Vehicle Residential Charge Point scheme - phase 3	Promoting Low Emission Transport	Other	2020	2024	PCC	Office for Zero Emission Vehicles (ORCS) Grant 60% PCC 40%	No	Not funded	£1m - £10m	Planning	<0.1µgm3	Installation of further charge points and level of usage	A funding bid of 321 on-street residential charge points is being finalised to send to the Energy Savings Trust for review, before being sent to OZEV for grant funding. All charge points in the bid are based on resident demand.	Constraints with regards resources and funding.

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PLE T5	Review of PCC fleet and moving away from diesel vehicles	Promoting Low Emission Transport	Company vehicle procurement	2019	2024	PCC	PCC	No	Not funded	Not available	Implementation	N/A	Reduced emissions from Council vehicles	Future consideration to be given to PCC fleet procurement, with a view to moving away from Diesel vehicles, and increasing the number of electric vehicles in the fleet. As council vehicles come up for lease renewal the Fleet team offer advice and technical expertise on the procurement of electric and hybrid vehicles if available and suitable. There is a trial program using hydrogenated vegetable oil fuel. This is in partnership with PCC Housing. Since 2021 we have procured 22 EV's as direct replacement for diesel vehicles (16% of the fleet). With a further 5 on order. Infrastructure, purchasing costs and vehicle availability are hampering the further potential to expand the EV fleet. Subsequently we're exploring other greener alternatives including hybrid vehicles (we have 4 to date) and the utilisation of HVO fuels which we hope to roll out to the whole of our diesel fleet in early 2023.	Further work is necessary to progress this further, however it is a clear aspiration of PCC and as a result an independent assessment of both the fleet and the working practices is currently underway that will help inform the future fleet renewal progress.
PLE T6	Electric Vehicle Promotion	Promoting Low Emission Transport	Other	2018	2024	PCC	Funded through Defra Clean Air Grant	Yes	Funded	<£10k	Implementation	N/A	Uptake of electric vehicles/ULEV	Promotion of electric vehicle charge points available through OLEV's ORCS scheme, encouraging further uptake of electric and hybrid vehicles in the city. An off street EV charge point trial also taking place at three city car parks. Promotion of electric vehicle charge points available through OZEV's ORCS scheme, encouraging further uptake of electric and hybrid vehicles in the city. Portsmouth City Council EV page promotes all the charge points available for use that have been installed via the council. There is also a FAQs section along with other useful information on the webpage. Our comms team undertake general promotion of EVs as and when they can as part of the council's air quality improvements. Future promotion of future phases and installation of council installed chargepoints will occur through a media/social media release.	
PLE T7	Electric Vehicle Rapid Chargers for Taxi/PHVs	Promoting Low Emission Transport	Other	2019	2024	PCC Taxi/PHV Trade	DEFRA - JAQU	Yes	Funded	£100k - £500k	Implementation	<0.1µgm3 This measure will initially only achieve a very low level of NO_2 reduction. There is potential for greater reductions to be achieved over time as EV usage increases across the city.	Uptake of EVs in taxi/PHV licensed fleet, usage of chargers	2 rapid charge points have been installed for taxis and PHVs in Stubbington Avenue Car Park and London Road car park. There has been significant monitoring of the usage in Stubbington Avenue Car Park and this site has been given approval to be opened up to the general public to use (awaiting TRO change). So far, we have had 9 taxi/PHV users sign up to use these 2 charge points, with a further 3 to be installed in Park and Ride, 1 in IKB surface car park at the end of February 2023 and another 3 potentially in All Saints car park (awaiting feasibility report).	Long lead times with DNO works and location feasibility can often act as a constraint.

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PLE T8	Clean Air Fund	Promoting Low Emission Transport	Other	2019	2021	Defra PCC	JAQU	Yes	Funded	£1m - £10m	Implementation	This measure will help to support CAZ affected vehicles upgrade/retrofit to compliant emissions standard. In doing so a small reduction in NOx as well as other pollutants will be achieved.	Uptake of funding	Taxis and PHVS can still apply for Clean Air Fund grants. Grants for buses, coaches, and Heavy Goods Vehicles are currently closed. The Clean Air Fund has seen successful uptake across the three vehicle groups: Bus/Coach, HGVs, and Taxi/Private Hire Vehicles. The fund remains open whilst remaining applicants await their vehicles.	Long lead times for specialist vehicles purchased under the grant has delayed closure until 2023.
PLET 9	Electric Vehicle Infrastructure Strategy	Promoting Low Emission Transport	Other	2022	2024	PCC	None	No	N/A	N/A	Planning	This strategy will help support Portsmouth grow its EV chargepoint network to facilitate the uptake of EVs for residents in the city and provide a sustainable network for those visiting to charge.	Uptake of EVs and increased electric vehicle charge points	Initial workshop with the Energy Savings Trust has been undertake on how to develop an EV strategy. TfSE are developing an EV strategy currently, of which we are awaiting this to aid the development of our own.	Resources to deliver.
PTA1	'Play Streets' Development	Promoting Travel Alternatives	Other	2019	2020	PCC Sustrans	PCC - LTP allocation 2022/23 Play Streets and School Streets	No	Funded	£50k - £100k	Implementation	<0.1µgm3 There is the potential for reductions in NO_2 to be achieved in the play street locations.	Delivery of Play Streets	The first Play Street Pilot was successfully delivered along Francis Avenue. Further Play Streets have been confirmed since for Whitwell Road and Francis Avenue, with Chetwynd Road and Lindley Avenue also looking likely. Work is ongoing. PCC are in the process of formalising online application details with a view to rolling out by March 2023. The Play Streets application form has gone onto the website and has received 4 applications.	
PTA2	Safer Routes to School Minor Remedial Works	Promoting Travel Alternatives	School Travel Plans	2014	2030	PCC	PCC - LTP	No	Funded	£100k - £500k	Planning	<0.1µgm3 Safer routes to school schemes tend to be small scale, supporting sustainable travel to school through increasing safety and supporting walking to school.	Completion of schemes, and uptake by parents/ pupils	This work is on-going and will be completed year on year. This is for the New Road/New Road East junction improvements. There are preliminary designs, awaiting detailed designs.	No funding for this type of work in the 2022-23 budget. Any successful bids for funding will allow for a program of small-scale schemes to be implemented

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PTA3	Pompey Monster Walk to School Challenge - school behaviour change	Promoting Travel Alternatives	Promotion of walking	2016	2024	PCC	DEFRA PCC - Travel Demand Management Funding Further work funded from DfT Capability fund	Yes	Funded	£10k - £50k	Complete	<0.1µgm3 Supporting sustainable travel to school.	Uptake of scheme by schools	The Pompey Monsters Scheme was introduced in 2016/17, and a trial of the scheme was carried out at three schools in the city, as part of the STTY scheme. This successful initiative is popular with the children and encouraged an increase in walking to school. This scheme was delivered to 4 further schools within or close to AQMA's in 2018/19, through the DEFRA Air Quality Grant. The scheme now supports 6 schools to encourage travel behaviour change. School travel challenge accompanies School Streets trials. 6 schools have benefitted from the Pompey Monster Walk to School Challenge through the Clean Air Grant. Half term events in libraries encouraged children to walk with their families. Evaluation is underway to assess modal shift. A new air quality Pompey Monster was developed, Breezy, and air quality messages promoted in the school via assemblies, and also the Pompey Monster packs.	December 2023 - No further work on this has taken place since the Clean Air Grant finished. There has been work on School Streets through the Active Travel Fund and the Capability Fund.
PTA4	School travel plans	Promoting Travel Alternatives	School Travel Plans	2014	2032	PCC	PCC, with funding from Air Quality Grant to deliver further schemes in 2018/19	Yes	Funded	£10k - £50k	Delivered	<0.1µgm3 Supporting sustainable travel to school.	Delivery of school travel plan schemes, and effect on school travel models	Active travel pack for schools created in 2022 includes tools for pupil travel monitoring, facilities audit and variety of active travel initiatives to choose from. To be shared with wider number of schools as a part of engagement e.g. walk to school challenge and School Streets trials.	Further development of school travel plan schemes dependent on funding and resources - There hasn't been statutory funding for School Travel Plans since 2010.

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PTA5	Workplace travel plans (WPTP)	Promoting Travel Alternatives	Workplace Travel Planning	2014	2024	PCC	PCC DfT Capability Fund	No	Funded	£10k - £50k	Planning	<0.1µgm3 Workplace travel plans can support increases in sustainable travel.	Number of travel plans implemented, or engagement with WPTP activities	Through the work delivered through the Clean Air Grant 2018/19 provided various engagement materials to the 4 businesses involved, including, Clean Air Initiative flyers, travel information flyers, printed and online pledge cards. Clean Air Initiative flyers were also distributed to SMEs along the AQMA 6 corridor. Through "lunch and Learn" sessions, eco driving, bike doctor Portsmouth City Council - ASR 2020 25 and engagement, 94 people have pledged to travel to work more sustainably. Follow up emails will be sent to all those that have pledged to see if there has been any modal shift. Further Workplace Travel Planning activities are dependent upon further funding becoming available. Further to previously completed workplace travel planning opportunities, engagement through STTY and WSTF will help to establish a greater base of workplaces to work alongside and develop travel plans. We are launching a trial behavioural change workplace travel planning programme in mid-2023, this will tie in with a further round of Workplace Sustainable Travel Funding.	Year on year continuation of 2023 scheme will be dependent on funding.
PTA6	Workplace Sustainable Travel Fund (WSTF)	Promoting Travel Alternatives	Workplace Travel Planning	2016/2017	2023	PCC Local businesses	DEFRA Round 1 PCC Rounds 2 & 3	Yes	Funded	£50k - £100k per round	Implementation	<0.1µgm3 Whilst this fund would only make a very small impact on local air pollution levels, it is a useful measure in raising awareness of and supporting sustainable travel for local work related journeys.	Delivery of WSTF to businesses located close to or within an AQMA	In 2020/21 19 business benefitted from up to £5,000 grant funding packages. In 2021/22 18 businesses benefitted from up to £4,000 grant funding packages. Funding has been secured for a 2023 round of support to further encourage more businesses to install and take up sustainable travel initiatives.	Year on year continuation of 2023 scheme will be dependent on funding.
PTA7	Emergency Active Travel Fund	Promoting Travel Alternatives	Other	2020	2020	DfT	DfT Emergency Active Travel Fund	No	Funded	£100k - £500k	Completed	There is potential for NOx emissions to be improved on some links in the city where active travel measures are introduced if modal shift is achieved.	Shift to active travel modes	PCC were successful in securing funding from the DfT Emergency Travel Fund. This funding was used to deliver a range of active travel schemes in the city in adherence to COVID-19 guidelines.	
TM1	LTP Programme	Traffic Management	Strategic highway improvement, re-prioritising road space away from cars, including Access management, Selective vehicle priority, bus priority, high vehicle occupancy lane.	2012	2032	PCC	PCC DfT DEFRA	Yes	Partially Funded	>£10m	Implementation	<0.1µgm3 Pollution reductions achieved by individual LTP schemes will be low, however the combination of these measures would likely have an overall positive impact on assisting with reducing levels of NO_2.	Implementation of LTP schemes	Schemes being developed and delivered through the LTP programme, including improvements to Active Travel facilities around the city, aim to encourage modal shift and will provide improvements to local air quality.	Delivery of schemed dependent on funding being identified.

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TM2	Speed Reduction Schemes	Traffic Management	Other	2012	2032	PCC	PCC	No	Partially Funded	£50k - £100k	Implementation	<0.1µgm3 Speed reduction measures can help in increasing uptake of walking and cycling through improved safety.	Implementation of schemes	Various speed reduction schemes have recently been completed to improve safety and encourage uptake of walking and cycling. Measures included additional speed cushions and coloured surfacing.	Priority scheme funding is limited, with a long list of schemes that cannot be delivered until funding is identified.
TM3	Signs and Lines	Traffic Management	Other	2012	2032	PCC	PCC	No	Funded	£50k - £100k	Implementation	N/A Whilst these measures will not deliver measurable air pollution targets, they will assist in improving traffic flow.	Implementation of schemes	Various small city wide improvements to existing road signage and markings are carried out on a rolling basis.	Statutory service
TM4	Variable message signs	Traffic Management	Other	2012	2032	PCC	PCC	No	Partially Funded	£10k - £50k per VMS	Implementation	<0.1µgm3	Installation & operational VMS	Several VMS signs are already in place in the city. In late 2017 five new signs displaying live car park occupancy information were installed. These signs incorporated the 'Cough Cough Engine Off' anti-idling campaign messages between January and April 2019. All Cough Cough messages cleared from display early 2020. A new Swarco multi-text sign has now been installed inbound on Commercial rd. between the Hope St and Marketway Rbts. Additionally we are currently waiting for live car park data to be supplied & displayed from the Historic Dockyard. Live car park data is now supplied & displayed from the Historic Dockyard and Gunwharf Quays. New VMS installed (Feb 2023) in Southampton Rd, Paulsgrove. Potential for further 10 locations (2 currently funded, 8 need future funding). Potentially a further 2 signs to be installed in the Portsbridge and Cosham Wards - funding dependent.	VMS signs in city centre and Clean Air Zone now consistently displaying air pollution and anti-idling messaging Further capital funding required to deliver future VMS.
TM5	Traffic Signal Reconfiguration	Traffic Management	Other	2014	2032	PCC	PCC	No	Not funded	N/A	Implementation	0.1µgm3 Will provide Improved journey times and less congestions in specific areas.	Completion of signalised Junctions and crossing review	Ongoing yearly small, funded scheme which always seeks to address any issues in the city in relation to sites which have a detrimental effect on vehicle flow but do not fall within the Colas PFI contract. Changes will often include improved bus detectors or a trial of small funded new tech.	Dependent on available funding.

Measure No.	Measure	Category	Classification	Year Measure Introduced	Estimated / Actual Completion Year	Organisations Involved	Funding Source	Defra AQ Grant Funding	Funding Status	Estimated Cost of Measure	Measure Status	Reduction in Pollutant / Emission from Measure	Key Performance Indicator	Progress to Date	Comments / Barriers to Implementation
TM6	Junction improvements	Traffic Management	Strategic highway improvements	2013	2032	PCC SEHRT	PCC TCF / SEHRT	No	Funded	Not available	Implementation	<0.1µgm3 Will provide improved journey times and less congestion in specific areas.	Completion of city wide junction review	On-going improvements to junctions. Recently completed 3 junction upgrades as part of an award from Tranche 1 of the Transforming Cities Fund. These included more efficient vehicle detection and low-level cycle signals. 2 junction upgrades on two of the city's busiest junctions to improve pedestrian facilities including the first example of an "X" crossing in Portsmouth were also completed during 2019/20. A further 5 junction schemes are committed for implementation as funded through the Transforming Cities Fund which will help to deliver improved bus priority and journey times as well as improved pedestrian and cycle facilities.	
TM7	Smart Motorways M27 Jct. 11	Traffic Management	Strategic highway Improvements Re-prioritising road space away from cars, including Access management, Selective vehicle priority, bus priority, high vehicle occupancy lane	2017	2019	PCC Transport PCC Infrastructure National Highways	Not available	No	Not funded	Not available	Planning	Unknown	Completion of works	Upgrade and improvements from M27 Junction 4 - junction 11 to the A27/A3 (M) junction to include: Smart Motorways, ALR, and off-HE network investment in connecting junctions including Farlington and Portsbridge roundabouts.	Programme to junction 11 is under consideration as part of National Highways improvement programme
TM8	Wightlink increased vehicle stacking capacity and reduced queuing	Traffic Management	Other	2017	2018	Wightlink PCC	Wightlink	No	Funded	Not available	Completed	<0.1µgm3 Significant congestion can occur at this location. The introduction of ANPR will go some way in addressing this issue and reducing local NO_2 levels in the Clean Air Zone.	Reduced queuing of vehicles entering the ferry port following completion of planned works	Wightlink completed the upper deck of their car park in 2018, thus increasing their stacking capacity. This copes with traffic demands at busy-times. The only queuing that usually occurs on the highway now is when Wightlink have a technical problem and lose vessel capacity. Wightlink now have a plan to communicate pro-actively with customers and move them to later sailings as required. When congestion is caused on the highway, Wightlink move to a turn-up and go operating model, getting as many vehicles as possible away on the first available ferry, maximising their operating capacity.	

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TM9	Eastern Corridor Phase 2 Works	Traffic Management	Other	2017	2032	PCC	PCC	No	Funded	£1m - £10m	Planning	Significant congestion can occur at this location. Traffic management solutions that alleviate standing traffic will potential contribute to sustained air quality improvements over time.	Completion of all schemes of works Air quality monitoring	A comprehensive study of the Eastern Road corridor was conducted, which will deliver identifiable solutions for this key corridor into the city. The study identified problems of current uses and identified future uses and solutions. Further development of the plan is on hold to ensure shared interests with the Coastal Defence strategy are met.	Milton Common Cycle Path falls within a site of importance for Nature Conservation (SINC) and is close to sites that are important for Brent Goose feeding. Planning permission or permitted development is required. Development alongside Coastal Defence works.
TM10	A27 Safer Roads Funds	Traffic Management	Strategic highway improvement, re-prioritising road space away from cars, including Access management, Selective vehicle priority, bus priority, high vehicle occupancy lane	2017	2020	DfT, PCC	Safer Roads Fund	No	Funded	Not available	Completed	<0.1µgm3	Delivery of traffic safety measures	Traffic safety measures including improved facilities for active travel modes, high friction surfacing, signage, and modifications to the shared footway. A further intervention is to be made in FY21/22 to add a controlled pedestrian/cycle crossing at a busy junction. The primary measure identified by the DfT of a split toucan crossing facility at the north junction of the A27 with Compass Road has now been constructed. The crossing provides cyclists and pedestrians with traffic free accessibility to the junction with Compass Road, connecting the strategic shared cycle/pedestrian route being upgraded as part of a Safer Roads Fund Year 1 bid.	There are some small outstanding snagging issues which have been identified to the Contractor and we are awaiting confirmation that these have been carried out and completed.
TPI1	Access for people with disabilities	Transport Planning and Infrastructure	Other	2016	2032	PCC	PCC - LTP	No	Funded	£10k - £50k	Implementation	N/A Whilst not delivering high levels of direct pollution reduction, these measures will support mobility.	Delivery of measures to support access for people with disabilities	Currently PCC have instructed Colas to install the Smart Water Smart-Teck Wave Technology push button units complete with Bluetooth units. This allows the users hand to simply be 'Waved' in front of the push button to allow a pedestrian demand to be entered. The Bluetooth unit allows further technology by the way of Bluetooth buttons to be used for those with walking canes or wheelchair users where raising their hands to reach the button is difficult. The buttons are fixed to the canes or wheelchairs for convenience.	

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TPI2	ZEBRA (Zero Emission Bus Regional Area Grant)	Transport Planning and Infrastructure	Bus Route Improvements	2019	2025	PCC Hampshire County Council First Solent	DfT	No	Funded	£1m - £10m	Implementation	<0.1µgm3 This scheme has the potential to deliver significant benefits to the city in terms of public transport provision as these buses will have no tailpipe exhaust emissions.	Delivery of schemes.	Portsmouth City Council in partnership with Hampshire County Council and the bus operator First Solent have secured £6.5m of Government grants to deliver 34 battery-electric buses. Dec 2022 Portchester bus improvement scheme was launched and saw the installation of traffic signals at the Portchester precinct bus stop and at the roundabout, which are programmed to give bus services priority when exiting the bus lane. These buses will be used on the following city routes:1 Hard Interchange – Southsea circular; and 3 Southsea – Portsmouth city centre – Cosham – Portchester – Fareham. In addition - Sept 2022, approval was given to a new bus lane in Portsmouth City centre connecting Unicorn rd. to Cascades approach allowing buses swift access/egress and avoiding congestion on the busy Marketway Rd	
TPI3	Transforming Cities Fund / SEHRT	Transport Planning and Infrastructure	Other	2019	2025	PCC First Bus Stagecoach	DfT Bid awarded with match funding provided by each of the bidding authorities and their partners First Bus, Stagecoach, and the borough councils.	No	Funded	>£10m	Implementation	This scheme would deliver significant benefits to the city in terms of public transport provision and promoting active travel alternatives.	Completion of works	Construction work has begun on several schemes across PCC, HCC and the IoW. In Portsmouth. Work has been completed on the Rudmore Roundabout in Portsmouth. In Hampshire, schemes have been delivered. On the IoW, construction works are at an advance stage on the Ryde Interchange.	
TPI4	Central Corridor Scheme	Transport Planning and Infrastructure	Cycle Network	2018	2019	PCC	DEFRA	Yes	Funded	£100-£500k	Completed	<0.1µgm3 This measure will support cycling in the city.	Completion of scheme and improvements to cycle safety along route	Construction of raised tables at various sites along the A2047 and improvements to the cycle lane have now been completed.	
TPI5	Holbrook Road/ Arundel Street Roundabout	Transport Planning and Infrastructure	Other	2019	2019/20	PCC	PCC - LTP	No	Funded	£20,000	Completed	<0.1µgm3 Will increase safety for cyclists and encourage cycling.	Completion of works	Improve signage and lane discipline which will reduce the risks to cyclists at this roundabout, cycling on this route will be more attractive and therefore may increase the number of people choosing to cycle.	
TPI6	Northern Parade-Gladys Avenue junction improvement.	Transport Planning and Infrastructure	Other	2019	2019/20	PCC	PCC - LTP	No	Funded	£50,000	Completed	<0.1µgm3 Will increase safety for cyclists and pedestrians to encourage active travel.	Completion of works	A junction improvement that will make safety improvements for both pedestrians and cyclists, through kerb buildouts and a dedicated cycle lane across the junction with coloured surface treatment to increase driver awareness of cyclists.	

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TPI7	Zebrite	Transport Planning and Infrastructure	Other	2022/23	2024/25	PCC	PCC - LTP	No	Partially Funded	£10k - £50k	Implementation	N/A	Successful implementation of beacons	Roll out of enhanced LED belisha beacons which provide greater increased visibility of zebra crossings and are especially effective at crossings that experience vehicles not stopping for pedestrians. The Zebrite beacons draw attention to the crossing thus making it more likely that a pedestrian waiting to cross will be seen and therefore road safety is improved.	Further funding is required to continue the roll out of Zebrite belisha beacons across the city, with funding expected to be secured for 2023.
TPI8	Fratton to the Hard Interchange Active Travel Corridor	Transport Planning and Infrastructure	Cycle Network	2019	2019/20	PCC	PCC - LTP funding available, though SEHRT may be used for Phase 1. If so, budget to be used for Phase 2 & 3	No	Funded	£100k - £500k	Planning	<0.1µgm3 Will increase safety for cyclists and encourage cycling.	Implementation of cycle route and usage of route by cyclists	As part of the Fratton to The Hard Interchange Active Travel Corridor to provide a segregated cycle lane, where feasible between the junction with Haslemere Road/ Goldsmith Avenue and the eastern approach to the Fratton Roundabout. Significant infrastructure. This scheme is currently waiting to be consulted on before any further progress can be made.	Fratton to the Hard Interchange Active Travel Corridor Re-development of Hard Interchange not yet commenced.
TPI9	Re-development of Hard Interchange	Transport Planning and Infrastructure	Public transport Improvements interchanges stations and services	2014	2017	PCC	Part of the Local Major Transport scheme bidding round through the Solent Local Enterprise Partnership	No	Funded	£1m - £10m	Completed	<0.1µgm3	Increase in bus patronage at The Hard Interchange	The new Interchange opened in May 2017, and provides improved links to rail and ferry services and improved pedestrian and cycle links to Gunwharf Quays and tourist attractions, helping to make public transport easier and more attractive to use. The interchange provides a modern, state of the art gateway to the city, with a secure environment for customers.	Bus and coach operators have reported an increase in bus patronage boarding at The Hard, and increased passenger satisfaction.
TPI10	Milton Road/ Priory Crescent Junction/crossing improvement	Transport Planning and Infrastructure	Other	2019	2019/20	PCC	PCC	No	Not funded	N/A	Aborted	<0.1µgm3 Will increase safety for cyclists and pedestrians to encourage active travel.	Completion of works	Proposed improvements to an existing junction to increase visibility and build cycle lanes to improve pedestrian and cycle safety has been incorporated into wider Locksway Road roundabout scheme.	Further casualty and speed surveys have been carried out and it was determined that nothing meaningful could be carried out within the current budget at this time. As a result the scheme has been paused and as yet has not been restarted

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TPI11	New Road Copnor-Junction Treatment	Transport Planning and Infrastructure	Other	2019	2019/20	PCC	PCC - LTP	No	Funded	£10k - £50k	Completed	<0.1µgm3 Will provide improved journey times and less congestion in specific areas.	Completion of Scheme	To improve an existing junction, to make safety improvements at the junction and its approaches. This will provide improved pedestrian facilities as well as increased cycle safety.	
VFE1	Bus Retrofit Programme	Vehicle Fleet Efficiency	Promoting Low Emission Public Transport	2018	2019/20	PCC First Bus Stagecoach	DEFRA	Yes	Funded	£1m - £10m	Completed	Buses upgraded to Euro 6 standard can result in significant reductions in levels of local air pollution. Compliance with legal NO_2 limits along Mile End Road.	Upgrading buses travelling along specific route to Euro 6 standard	The bus retrofit programme is for Stagecoach and First buses running along routes 48196 and 18114, it has enabled pre-Euro VI buses running along these routes to be upgraded to the higher emission standard of Euro VI. 105 buses were retrofitted by the end of the programme, and stickers to promote their upgrade are being applied.	Completed
VFE2	Eco Driver Training	Vehicle Fleet Efficiency	Driver training and ECO driving aids	2013	2018/19	PCC Local businesses	PCC DEFRA	Yes	Funded	£10k - £50k	Completed	<0.1µgm3 Whilst this training would only make a very small impact on local air pollution levels, it is a useful measure in raising awareness of and promoting eco driving techniques.	Delivery of Eco Driver training to businesses located within or close to AQMA	Eco Driver Training was delivered as part of the STTY project, with the training being offered to local businesses. Through funding received from Defra's Clean Air Fund, 104 drivers from 6 companies received eco driving training from the Blue Lamp Trust. Businesses within or close to an AQMA area were selected. Evaluation from these sessions showed an average fuel consumption decrease of 15%.	Further provision of this scheme will be dependent upon further funding becoming available.
W1	Rights of Way / Way finding and signage rationalisation	Promoting Travel Alternatives.	Promotion of walking.	2012	2031	PCC	PCC - LTP	No	Funded	£10k - £50k	Implementation	N/A	Delivery of access improvements for pedestrians	Rights of Way Improvement Plan review completed by 2019. PCC currently working on a contract for Routes4U, to bring about access improvements for pedestrians. This contract has been signed until the end of 2022. PCC has a statutory requirement to sign Rights of Way (paths which the public have a legally protected right to pass on) across the city and to investigate and resolve all Public Rights Of Way (PROW) claims put forward.	Delivered annually
W2	Promote walking Road Safety & Active Travel initiatives	Promoting Travel Alternatives.	Promotion of walking.	2010	2030	PCC Portsmouth Cycle Forum	N/A	No	Not funded	N/A	Implementation	N/A Whilst not providing a direct pollution reduction target, promoting active travel initiatives will support the uptake of sustainable travel modes and contribute to positive travel behaviour change.	Development of new walking and cycling strategy, uptake of initiatives such as Pompey Monsters Walk to School Challenge	Walking and cycling map is a popular resource. Planning is underway for an interactive map on the council website. Works in conjunction with stakeholders such as Portsmouth Cycle Forum continues. Education programmes in schools such as Bikeability and Pompey Monsters continue to be delivered. Junior Road Safety Officers are recruited annually and Portsmouth Smart Steps awards scheme has been developed in line with this.	Further funding will be required to take forward into the future

2.3 $PM_{2.5}$ – Local Authority Approach to Reducing Emissions and/or Concentrations

As detailed in Policy Guidance LAQM.PG16 (Chapter 7), local authorities are expected to work towards reducing emissions and/or concentrations of $PM_{2.5}$ (particulate matter with an aerodynamic diameter of 2.5µm or less). There is clear evidence that $PM_{2.5}$ has a significant impact on human health, including premature mortality, allergic reactions, and cardiovascular diseases.

PM is a generic term used to describe a complex mixture of solid and liquid particles of varying size, shape, and composition. Some particles are emitted directly (primary PM); others are formed in the atmosphere through complex chemical reactions (secondary PM). The composition of PM varies greatly and depends on many factors, such as geographical location, emission sources and weather. The size of the particles and the duration of exposure are the main determinants of the potential adverse health effects. Particles larger than 10µm are mainly deposited in the nose or throat, whereas particles smaller than 10µm pose the greatest risk because they can be drawn deeper into the lung. The strongest evidence for effects on health is associated with fine particles ($PM_{2.5}$). Exposure to PM increases mortality and morbidity from cardiovascular and respiratory diseases and can cause cancer. It is also causally linked to dementia and decline in cognitive function. There is growing evidence for associations with adverse birth outcomes and diabetes.

The main source of primary particulate emissions is combustion, such as from vehicles, domestic combustion, and power stations. Other man-made sources include industrial processes and tyre and brake wear. Natural sources include wind-blown dust, sea-salt and soil particles.

With current measures, outdoor concentrations of $PM_{2.5}$ are anticipated to further decline in the coming decades, although improvements will inevitably begin to slow, reflecting that many of the largest and most readily abated sources have already been addressed. What is left is a diverse mix of sometimes diffuse emissions, many of which have a more limited scope for reduction. As UK emissions reduce, transboundary particulate matter - which is not directly reducible through national action - and natural emissions become a larger fraction of the PM that remains. In the long-term however, $PM_{2.5}$ must inevitably reach a non-zero plateau in concentration that cannot be practically reduced further through reasonable technical or policy interventions. That value will depend on willingness to abate

the remaining controllable emissions and external factors relating to natural emissions, geography, and weather. The complex contributions to future $PM_{2.5}$ make this the most difficult pollutant to forecast long term with confidence.

Portsmouth City Council is taking the following measures to address $PM_{2.5}$:

Local hot spot background pollutant maps provided electronically by Defra also give a basic local background concentration for $PM_{2.5}$. This information may show areas of higher $PM_{2.5}$ concentrations which PCC could assess to determine if there are local particulate issues where specific measures could be implemented to reduce particulate emissions.

The above method can further be used to establish local $PM_{2.5}$ annual mean concentrations, identify the local health burden of particulate matter and identify any local hot spot areas for particulate matter that have not been identified to date. This will enable PCC to establish baseline figures for $PM_{2.5}$ with the aim to improve on the established baseline, including the possibility of setting targets for a measured reduction in the future, and to target resources to assess and improve any identified hot spot areas for $PM_{2.5}$.

The origin of $PM_{2.5}$ can be usefully categorised as being 'primary' or 'secondary'. Primary $PM_{2.5}$ is pollution released directly from a source, such as a tailpipe, the abrasion from a brake pad, or wear of a tyre on the road. Secondary $PM_{2.5}$ are particles generated in the atmosphere from chemical reactions, typically occurring over hours to days, and are formed from gaseous precursor pollutants such as NOx, ammonia, and VOCs. Secondary PM is further sub-classified as secondary inorganic aerosols and secondary organic aerosols, both of which give rise to adverse health effects.

In many locations, urban and rural ambient $PM_{2.5}$ concentrations have declined over the last 20 years, with secondary particles now frequently making up a large fraction of the $PM_{2.5}$ that is experienced. This has implications for future policy and action. Primary $PM_{2.5}$ is a source of pollution that is potentially under direct and local control, while secondary $PM_{2.5}$ is a by-product from cumulative emissions of precursors from multiple sources and over large geographic areas, including those accumulated from transboundary movement of pollution between countries. Secondary $PM_{2.5}$ is harder to control as it depends on the chemical and physical interaction of pollutants, which can produce complex, non-linear responses to reductions in precursor emissions.

There are a multiplicity of primary sources in Portsmouth, including tailpipes, vehicle friction and abrasion, construction dust, combustion heating systems, cooking and so on. Historically substantial benefits to $PM_{2.5}$ air quality could be achieved through tackling

these urban sources; however, these are difficult to resolve locally. Given that a significant contribution to particulate pollution remains road traffic related, additionally dealing with the automotive related pollutants of PM_{10} and NO_2 may inherently reduce levels of $PM_{2.5}$. PCC will however continue with its work in respect to the burning of solid flues particularly within our designated smoke control areas.

3 Air Quality Monitoring Data and Comparison with Air Quality Objectives and National Compliance

This section sets out the monitoring undertaken within the year 2021 by Portsmouth City Council and how it compares with the relevant air quality objectives. In addition, monitoring results are presented for a five-year period between 2017 and 2021 to allow monitoring trends to be identified and discussed.

3.1 Summary of Monitoring Undertaken

PCC's NO_2, $PM_{2.5}$ and PM_{10} monitoring programmes are annually assessed to ensure that the local AQ monitoring requirements of the review and assessment processes are met. This includes the additional Ambient Air Quality Directive (AAQD) measurement requirements.

According to AAQD measurements must meet certain siting requirements. These requirements must be met for measurements collected by either method (automatic chemiluminescence analysers or Nitrogen Dioxide Diffusion Tubes (NDDT)). A summary of the NDDT siting requirements outlines that siting requirements for NO_2 measurements at roadside / urban traffic sites must be carried out at locations which meet specific siting requirements:

- Measurements should not be sited within 25m of a major junction.
- Measurements should be made within 10m from the curbside (NB. given the uncertainties in assessing access using aerial photography, roads with no clear access within 15m may be excluded from the PCM modelling).
- The inlet sampling point should be within 1.5-4m above the ground.
- Measurements should be representative of air quality for a street segment no less than 100m in length.

Local AQ monitoring program has been subject to the following changes since the publication of the 2017 ASR:

- In accordance with monitoring requirements, there has been significant change to PCC’s AQ monitoring program within the period 2018-2019 as the number of the newly

added NDDT sites increased by 39.09% (an addition of 43 sites) to reach 153 sites. This substantial increase in NO_2 monitoring using NDDT is to meet both PCC requirements under LAQM regime and stipulated monitoring requirements. Some of the added monitoring locations are within the 2 exceedance road links as identified by PCM model for Portsmouth. This local AQ monitoring is to be used instead of the corresponding PCM modelled concentrations for the purposes of determining compliance or non-compliance with the 40 µg/m^3 limit value. Other added monitoring locations across the city were identified as having similar criteria to those identified in the 2 road-links by the PCM model.

- PCC expanded the NDDT network further in the course of 2020 with an additional 16 locations to reach 162 locations (excluding co-locations), an increase of 10.96% in monitoring.

- The NDDT network was expanded further in 2021 / 2022 by 72 NDDT to allow for an effective assessment of the introduction of the CAZ from November 29th, 2021.

- In addition, to the above, in 2021 PCC acquired and located a new continuous monitoring station that is sited within Alfred Road for reviewing and assessing the impact of the CAZ.

- PCC currently monitor local AQ and in doing so meet the following 2 requirements. According to LAQM.TG, emphasis has been placed, for the annual mean NAQO, on monitoring and assessing non-occupational above or below ground level outdoor locations, where members of the public might be regularly exposed. These include:
    - Building facades of residential properties
    - Schools, hospitals, care homes, library facades etc.

3.1.1 Automatic Monitoring Sites

PCC continued undertaking automatic (continuous) monitoring at the four PCC owned CAQMS during 2021. In addition, local AQ monitoring data, from the DEFRA CAQMS in Anglesea Road, is included in this report for the fourth year in a row.

Details of all CAQMS sites are shown in Table A.1 (Appendix A).

Maps showing the location of individual CAQMSs and their proximity to AQMAs are also provided in Appendix D as follows:

- Map 1 shows the CAQMS locations across the city.
- Map 2, Map 3, Map 4, Map 5 and Map 6 show respectively individual locations of PCC's and DEFRA's owned CAQMSs: London Road, Gatcombe Park, Burrfield Road, Mile End Road and Anglesea Road.
- NO_2, $PM_{2.5}$ and PM_{10} continue to be continuously monitored as outlined below in accordance with the QA / QC protocols documented in Appendix C:

- CAQMS C2 (Map 2, Appendix D): This station is in a relatively narrow busy roadside shopping area where large numbers of pedestrians are present (with pavements in places approximately only 2 metres). This station is located within AQMA6. It is originally a fixed Curbside station set up to monitor NO_2, PM_{10} and $PM_{2.5}$ generated by the road traffic along London Road before the pavement was enlarged. Buildings in the immediate vicinity are predominantly commercial. However, residential units are located further north and south of the site typically at first floor level above retail outlet units. This shopping location has some of the characteristics of a street canyon-like siting with slow moving road traffic often causing congestion.

- CAQMS C4 (Map 3, Appendix D): An Automatic Urban and Rural Network (AURN) station located in an urban background location at Gatcombe Park Primary School, Curtis Mead. This station was fully refurbished in 2021. The pollutants monitored at are NO_2, PM_{10} and $PM_{2.5}$.

- CAQMS C6 (Map 4, Appendix D): This is a fixed roadside station established since 2007 to monitor NO_2 and PM_{10} generated by the road traffic along Burrfields Road. This station is located at a junction with large numbers of pedestrians and residential properties. Buildings in the immediate vicinity are a mixture of both commercial and residential. This station was mainly set up to monitor road traffic related pollution generated from the adjacent Burrfields Road / Copnor Road junction within the revoked AQMA3. A PM_{10} analyser was installed within this station in 2021 during our refurbishment programme.

- CAQMS C7 (Map 5, Appendix D): This station is located within AQMA11 approximately 6.5 metres from Mile End Road Curbside in a residential area. Buildings in the immediate vicinity are all residential. It is a fixed Roadside station established since

2007 to monitor road related NO_2 PM_{10} and $PM_{2.5}$ along Mile End Road and the southern end of the M275 into the City.

- CAQMS C8 (Map 6, Appendix D): In accordance with Ambient Air Quality Directive 2008/50/EC, Bureau Veritas identified Anglesea Road (A3) as a road link of main interest in respect of compliance in May the 5th 2016 to enhance the UK coverage of sites in order to better understand the nature of the compliance challenges. As a result, the required site type in the Portsmouth Urban Area was identified as an urban traffic site, which namely requires the site to be located close to a main road. Specifically, the site is required to be within 10m of a road where high level of traffic pollution (NO_2 and PM_{10}) are either modelled or are already measured. The site must not be located within 25m of a junction and the location must be representative of 100m of road length. Bureau Veritas installed a fixed roadside CAQMS (C8) as outlined above approximately 2.5 metres from Anglesea Road Curbside in a non-residential urban area. The nearest buildings are some distance and are either Portsmouth University buildings or HM Naval administrative buildings. This station was established since the beginning of 2018 to monitor road related NO_2 and PM_{10}.

3.1.2 Non-Automatic Monitoring Sites

Portsmouth City Council undertook non- automatic (i.e., passive) monitoring of NO_2 at 234 sites during 2021. Table A.2 in Appendix A presents the details of the non-automatic sites.

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

PCC revised its non-automatic (passive) monitoring of NO_2 network, NDDT network, to expand it to reach 234 sites in 2021 excluding the 6 co-locations sites.

This monitoring network expansion was initiated as a result of DEFRA's commentary on PCC's 2017 ASR and was expanded as follows (Appendix A shows the details of the sites):

- **Yellow** highlighted sites (27 sites excluding co-locations): Ongoing monitoring sites for many years.
- **Blue** highlighted sites (76 sites): The additional monitoring sites in the period 2017-2018.

- **Green** highlighted sites (41 sites): The additional monitoring sites since the beginning of year 2019 as results of DEFRA's commentary on PCC 2017 ASR report.
- **Red** highlighted sites (17 sites): Additional monitoring sites during the year 2020.
- **Orange** highlighted sites (72 sites): Additional monitoring sites during the year 2021 to enforce CAZ monitoring.
- **Black** highlighted sites (5 sites): Continuous air quality monitoring stations.

Maps showing the NDDT locations of the monitoring sites and their proximity to AQMAs are provided in Appendix D as follows:

Due to the large number of monitoring locations and their respective spread across the city maps showing PCC's NDDT monitoring network has been subdivided into various maps covering various zones in the city. These are numbered from individually to allow clear identification of the site locations:

- Map 7: Portsmouth map showing the 10 Zones for NDDT monitoring site locations.
- Maps 8 to Map 18: individual "zoomed in" area maps.

3.2 Individual Pollutants

The AQ monitoring results presented in these sections were subjected to various corrections depending on the monitored pollutant, monitoring methodology, and monitored duration in line with the COVID-19 2021 Supplementary Guidance. The air quality monitoring results presented in this section are, where relevant, adjusted for bias, annualisation (where the annual mean data capture is below 75% and greater than 25%), and distance correction. Further details on adjustments are provided in Appendix C.

3.2.1 Nitrogen Dioxide (NO_2)

In this section Table A.3 and Table A.4 in Appendix A compare the ratified and adjusted monitored NO_2 annual mean concentrations for the past five years with the air quality objective of 40µg/m^3. Note that the concentration data presented represents the concentration at the location of the monitoring site, following the application of bias adjustment and annualisation, as required (i.e. the values are exclusive of any consideration to fall-off with distance adjustment).

For diffusion tubes, the full most recent year of data (2021) dataset of monthly mean values is provided in Appendix B. Note that the concentration data presented in Table B.1 includes distance corrected values, only where relevant.

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

The NO_2 continuous monitoring program is supplemented by a non-automatic passive monitoring survey using an extensive NDDT network. These sites are located mainly near busy junctions at Curbside and roadside locations at relevant exposure locations as defined in Box 1.1 of the LAQM.TG guidance. Additional monitoring locations were needed to cover the ministerial direction for the road links to validate compliance in respect of the AAQD 2008/50/EC[3].

This monitoring program is no longer focusing on declared / revoked AQMAs but has been expanded as outlined above to include locations within the 2 exceedance road links as identified by PCM model for Portsmouth and monitoring sites in road links of similar criteria across Portsmouth.

The NDDT survey locations and monitoring site characteristics are summarised in Table A2, Appendix A and illustrated in Maps 7-18, Appendix D.

NDDT survey has been conducted in accordance with the QA / QC outlined in Appendix C.

The NDDT network was expanded by 72 as the number of locations increased from 162 locations (excluding five co-location sites) in 2020 to 234 locations in 2021 (excluding six co-location sites), an increase of 44.44%) to allow for an effective assessment of the introduction CAZ since November 29th, 2021.

In line with DEFRA's guidance the 2021 NDDT survey data was subjected up to 3 stage adjustments to be directly compared to the NO_2 annual mean NAQO. These correction stages are illustrated in the three sections that follows:

Data annualization (First correction)

[3] EUR-Lex - 32008L0050 - EN - EUR-Lex (europa.eu)

In this section Table A.3 in Appendix C presents Annualisation summary for the required monitoring locations.

According to Box 7.10 of LAQM.TG, data generated from NDDT survey was firstly annualised where monitoring had been carried out for a period greater or equal to 3 months (25%) and fewer than 9 months (75%).

As a result, the annualisation process covers 6 out of the 234 NDDT monitoring locations, one of which is a co-location site.

The data capture of 70 tubes was less or equal to 25%. This portion that represents 29.91% of the total number of NDDT monitoring locations was not subjected to annualisation and therefore cannot be subjected to any further corrections and hence will not be compared to the annual mean this year (2021). Monitoring at these locations continued in year 2022.

Locations that have been annualised with annulisation factor as tabulated below. Site identification details can be found in Table A.2.

ID Site	214	96	95	222	251	255	271	272
	AnR-Op DEFRACASQMS	AR MRC	CP-189	ComR-Col10	HS-Col10	HS-OppCol10	MW-Col2	MW-OppCol2
Annualisation Factor: **Rp** (ratio Am/Pm)								
Bournmouth Ratio **"Rb"**	0.93	1.002	0.90	0.93	0.93	0.93	0.93	0.93
Portsmouth DEFRA Ratio **"Rp"**	0.86	1.001	1.03	0.86	0.86	0.86	0.86	0.86
Annualisation Factor Average **"Ra"**	0.90	1.001	0.96	0.90	0.90	0.90	0.90	0.90
Measure Period Mean **"M"**	44.09	23.19	26.44	36.12	39.68	39.12	33.86	41.33
Annualised average" D1"	39.67	23.22	25.51	32.50	35.71	35.20	30.46	37.19

Bias Correction Factor (Second correction):

In this section Table A.3 in Appendix C presents data from the three Portsmouth based roadside stations.

NDDT data captured greater than 75%, which was subjected to annualisation Bias Correction Factor using locally generated Bias Correction Factors, from local co-location study and involving the exposure of a triplicate NDDTs at Burrfields Road, Mile End Road stations and DEFRA's CAQMSs.

Bias Correction Factors were generated from the five long-term continuous monitoring stations in the city, including DEFRA's approach prescribed within LAQM.TG. Using DEFRAs calculating precision and accuracy spreadsheet provided by DEFRA.

However, in 2021 due to poor data capture from AURN station (62.91%), and given that London Road station is sited at a curbside, the averaged Bias Correction Factor was generated using Bias Correction Factors from only:

- Tubes exposed at Burrfields Road and Mile End Road stations (both roadside stations) which generated 0.75 and 1.17 respectively, as the Bias Correction Factors.

- Tubes exposed at DEFRA's station (roadside station) generated 0.73, as the Bias Correction Factor.

The Five generated bias correction factors for individual stations are tabulated as follows:

CAQMSs	Criteria	Bias Factor A	Bias Factor B
Gatcombe Park (AURN)	Urban Background	0.87	0.15
London Road	Curbside	0.73	0.36
Burrfield Road	Roadside	0.75	0.33
Mile End Road	Roadside	1.17	-0.15
Anglesea Road (DEFRA)	Roadside	0.73	0.37
Average "Bias B"			0.183
(Average "Bias B")+1			1.183
Overall average "Bias Factor" (1/((Average "Bias B")+1)			**0.845**

The Bias Correction Factors from all but London Road and AURN stations were averaged using the methodology prescribed in the LAQM.TG. The 2021 NDDT survey results have consequently been bias adjusted using 0.845.

Distance Correction to the nearest relevant exposure (Third correction)

Where a NNDT is located at some distance from the receptor, a distance correction is deployed to predict the level of the pollutant at the façade of the sensitive premises. This has been carried out using the calculator made available via 'Air Quality Consultants'. This tool is provided to LA to predict the annual mean NO_2 concentration for a receptor location that is close to a monitoring site, but nearer or further to the curb than the monitor.

2 NDDT locations were however subjected to a further adjustment, as the monitoring points at these locations are distant from the facade of the nearest relevant exposure.

The two locations are:

- 106 Victoria Road North.
- Anchorage Road.

Nitrogen Dioxide Diffusion Tube data sets (2017-2021)

In this section the ratified and adjusted monitored NO_2 annual mean concentrations for the past 5 years are compared with the NAQO of 40µg/m^3 and a summary of which is presented below for individual years comencing by year 2017.

2017 NDDT

The 2017 NDDT survey data concluded that NO_2 annual mean levels were in excess of the annual mean NAQO at the following 3 locations:

- The Tap Public House on London Road, AQMA6.
- London Road CAQMS (C2), AQMA6.
- 117 Kingston Road, AQMA6.

A closer examination of the NDDT survey data for the period 2013 to 2017 revealed that a downward trend emerged of 34.37%. Locations monitored in the last 5 years, since 2013 compared to 40.6%. Locations monitored for the years 2012 to 2017, the NDDT annual mean levels decreased at 64.28%. Compared to 2016, the NO_2 annual mean levels decreased at 10.71% of the monitored locations compared to 2015.

- 7.14% of the monitored locations were in excess of the NAQO in 2017 compared to 17.86% in 2016.

In 2017, despite the seemingly contradicting statements above PCC concluded that AQ was moving towards compliance with the NAQO.

2018 NDDT

The 2019 ASR results compared the ratified and adjusted monitored NO_2 annual mean concentrations for the past 5 years with the NAQO of 40µg/m^3.

The 2018 NDDT survey data concluded that NO_2 annual mean levels were in excess of the annual mean NAQO, at 13 monitoring locations mostly in, very close to declared, revoked AQMAs. While others were located within the 2 exceedance road links, as identified by PCM model for Portsmouth. These were as follows:

The long-term monitoring locations registered 2 exceedances:

- Lord Montgomery Way 42.92µg/m3 AQMA7.
    - The NO_2 annual average remained above the NAQO in the previous 5 years, with the exception of 2017.
    - The NO_2 annual average exhibited a downward trend in the previous 5 years, demonstrating an AQ improvement in the long-term, similar to the previously reported 5 year trend.
- The Tap Public House, London Road 46.02µg/m3 AQMA6.
    - The NO_2 annual average remained above the NAQO for the previous 5 years.
    - The NO_2 annual average exhibited an upward trend in the previous 5 years, demonstrating a continued AQ deterioration in the long-term, similar to the previously reported 5 year trend.

The newly established monitoring locations since the beginning of 2018 registered 11 exceedances:

- 2-3 Selbourne Terrace 40.33µg/m3.
- 47 Queen Street 40.37µg/m3 AQMA12.

- 98/100 Albert Road 40.41µg/m^3 west of revoked AQMA2.
- 4 Market Way 40.41µg/m^3 west of AQMA11.
- Opposite 6 Market Way 41.97µg/m^3.
- 145 Albert Road 42.82µg/m^3 north of the revoked AQMA2.
- 137 London Road 44.18µg/m^3 north AQMA6.
- Mile End Road, Column 5 44.51µg/m^3 AQMA11.
- Alfred Road 47.51µg/m^3 southwest of AQMA11.
- Alfred Road 50.38µg/m^3 southwest of AQMA11.
- Alfred Road 50.42µg/m^3 southwest of AQMA11.

A closer examination at the NDDT survey data for the period 2014 to 2018, at the 28 long-term monitoring locations revealed that:

- In the long-term, a downward trend emerged at 60.716% (17 locations), monitored locations in the previous 5 years since 2014, compared to 34.37% monitored locations for the 5 years commencing year 2013. Therefore, AQ was considered to be improving in this year.

- In the short term NDDT monitoring revealed that the 2018 NDDT annual mean levels decreased at 53.57% of the monitored locations compared to 2017. This level of AQ improvement was lower than that registered in 2017 where the NDDT annual mean levels decreased at 64.28% of the monitored locations compared to 2016. This represented an AQ improvement in 2018 at a number of monitored locations, less than that of 2017 which was considered to be an AQ deterioration.

The 2018 NDDT annual mean levels exceeded the NO_2 NAQO at 7.14% of the monitored locations (2 locations). This percentage of difference was similar to the one registered in 2017 but with the following differences:

- Lord Montgomery Way AQMA7.

- The NO_2 annual average has remained above the NAQO in the previous 5 years, with the exception of 2017.

- The NO_2 annual average at this roadside monitoring location increased by 4.12µg/m3 (an increase of 10.29%) between 2017 and 2018 which exceeded the NAQO in 2018 (42.9µg/m3) representing an AQ deterioration in the short-term.
- The 2017-2018 NO_2 annual average change was described as being substantially adverse.
- The NO_2 annual average represented a downward trend in the previous 5 years demonstrating an AQ improvement in the long-term, similar to the previously reported 5 year trend.

- The Tap Public House, London Road AQMA6.

  - The NO_2 annual average remained above the NAQO for the last 5 years.
  - The NO_2 annual average at this curbside monitoring location increased by 2.93µg/m3 (an increase of 7.33%) between 2017 and 2018, and remained above the NAQO in 2018 (46µg/m3) representing an AQ deterioration in the short-term.
  - The 2017-2018 NO_2 annual average change was described as being substantially adverse.
  - The NO_2 annual average represented an upward trend in the previous 5 years, demonstrating a continued AQ deterioration in the long-term similar to the previously reported 5-year trend.

- 117 Kingston Road AQMA6.

  - The NO_2 annual average fell below the NAQO for the first time in the last 5 years.
  - The NO_2 annual average at this roadside monitoring location decreased by 6.07µg/m3 (a decrease of 15.17%) between 2017 and 2018, and remained below the NAQO in 2018 (38.2µg/m3) representing an AQ improvement in the short-term.

The 2017-2018 NO_2 annual average change was described as being substantially beneficial. The NO_2 annual average represented a downward trend in the previous 5 years demonstrating AQ improvement in the long-term, contrary to the previously reported five year trend. Monitoring at all added locations since the beginning of 2018 continued.

2019 NDDT

The 2020 ASR concluded that for the same monitored locations to those of 2018 the 2019 NO_2 annual mean levels were in excess of the annual mean NAQO, at 4 locations

compared to 13 monitoring locations in 2018 (1 exceedance at AQMA6 The Tap Public House) and 3 locations along the road links as identified by PCM model for Portsmouth.

A closer examination of the NDDT survey data for the period 2015 to 2019 at the 27 long-term monitoring revealed that:

- The 2019 NDDT annual mean levels decreased resulting in a beneficial change at all of the 27 long-term monitored locations (100%). This level of AQ improvement was higher than that registered in 2018 where the NDDT annual mean levels decreased at 53.57% of the monitored locations compared to 2017. AQ improved in 2019 in a number of monitored locations that were greater than that of 2018 and therefore represented an AQ improvement.

- The above beneficial change in AQ can be apportioned as follows:

  - Negligibly beneficial at 5 out of 27 locations (18.52%).
  - Slightly beneficial at 8 out of 27 locations (29.63%).
  - Moderately beneficial at 11 out of 27 locations (40.74%).
  - Substantially beneficial at 3 out of 27 locations (11.11%).

- The 2019 NDDT annual mean levels exceeded the NO_2 NAQO at 1 of 27 locations.

- In the long-term a downward trend emerged at 92.59% (25 out of 27 monitored locations) in the 5 years since 2015 compared to 60.72% of the monitored locations for the 5-year period commencing in year 2014. Therefore, AQ was considered to be improving.

- A closer examination of the dataset of the 77 NDDT locations added during the period 2018 to 2019 revealed, that exceedance of the annual mean levels NO_2 NAQO occurred at 3 locations along the road links as identified by PCM model for the second consecutive year.

  - Alfred Road, Column 9 south / west of AQMA11 48µg/m^3.
  - Alfred Road, Column 12 south / west of AQMA11 52.52µg/m^3.
  - Alfred Road, opposite St Agatha's bus stop south / west of AQMA11 46.90 µg/m^3.

- The change in AQ was beneficial at 72 out of 77 locations (93.51%).
- In summary, for 104 monitored locations in 2018 the 2019 change in NO_2 annual mean levels exhibited a beneficial change at 99 locations (95.19%):
  - Negligibly beneficial at 13 out of 104 locations (12.50%).
  - Slightly beneficial at 26 out of 104 locations (25.00%).
  - Moderately beneficial at 41 out of 104 locations (39.42%).
  - Substantially beneficial at 19 out of 104 locations (18.27%).
- As for the newly established 42 monitoring locations established in the year 2019, 8 monitored locations exhibited exceedances of the NO_2 annual mean NAQO. These were as follows:
  - 8 Old London Road, 40.81 µg/m^3
  - Hope Street by Sainsburys, 43.91 µg/m^3
  - Southampton Road, 41.97 µg/m^3
  - Southampton Road, 43.04 µg/m^3
  - Eastern Road, 40.92 µg/m^3
  - Eastern Road, 45.25 µg/m^3
  - Commercial Road, 41.50 µg/m^3
  - Fratton Road, 41.88 µg/m^3

Monitoring at all added locations since the beginning of 2019 continues.

2020 NDDT

According to 2020 NDDT survey dataset, for the same monitored locations to those of 2019, the 2020 NO_2 annual mean levels were in excess of the annual mean NAQO at 2 locations, compared to 12 monitoring locations in 2019 (both locations are along the road links as identified by PCM model for Portsmouth). A closer examination of the NDDT

survey data for the period 2016 to 2020 at the 27 long-term monitoring locations revealed that:

- The 2020 NDDT annual mean levels decreased at all the 27 long-term monitored locations (100%). This level of AQ improvement is similar to that registered in 2019.
- The beneficial change in AQ at all 27 long-term monitoring locations can be apportioned as follows:
  - Negligibly beneficial at 6 out of 27 locations (27%).
  - Slightly beneficial at 9 out of 27 locations (33%).
  - Moderately beneficial at 12 out of 27 locations (44%).
  - Substantially beneficial at none out of 27 locations (0%).
- The 2020 NDDT annual mean levels did not exceed the NO_2 annual mean NAQO at any of the long-term monitoring locations, compared with 1 exceedance in 2019.
- In the long-term a downward trend emerged at all long term (27) monitored locations in the last 5 years since 2016, compared to 92.59% of the monitored locations for the 5 year period commencing in 2016.
- A closer examination of the added 119 NDDT location dataset for the period 2018 and 2019 revealed that exceedance of the annual mean levels NO_2 NAQO occurred at 2 locations outside of AQMA11, along the road links as identified by PCM model for the second year in a row.
- The NO_2 annual average at this roadside monitoring location decreased by 6.96µg/m3 (a decrease of 14.50%) between 2019 and 2020, but remained above the NAQO in 2020 (41.04µg/m3) for the second consecutive year. This represented an AQ improvement in the short-term.

o Alfred Road, south / west of AQMA11.

- The 2018-2019-2020 NO_2 annual average decrease is described as substantially beneficial. The NO_2 annual average at this roadside monitoring location decreased by 10.32µg/m3 (a decrease of 19.15%) between 2019 and 2020, but remained

above the NAQO in 2020 (52.52µg/m3) for the second consecutive year. This represented an AQ improvement in the short-term.

- Hope Street south / west of AQMA11

  - The change in LAQ was beneficial at 112 out of 119 of the added monitored locations between 2018 and 2019 (94.12%). The beneficial change in AQ was apportioned as follows:

    - Negligibly beneficial at 17 out of 112 locations (15.18%) and of the total 119 locations (14.29%).

    - Slightly beneficial at 22 out of 112 locations (19.64%) and of the total 119 locations (18.49%).

    - Moderately beneficial at 70 out of 112 locations (62.5%) and of the total 119 locations (58.82%).

    - Substantially beneficial at 3 out of 112 locations (2.68%) and of the total 119 locations (2.52%).

  - The remaining 7 monitored locations (5.88%) exhibited an adverse change in AQ. This change was apportioned as follows:

    - Negligibly adverse at 6 out of the 7 monitored locations (85.71%) and of the total 119 locations (5.04%).

    - Substantially adverse at 1 out of 7 monitored locations (14.29%) and of the total 77 locations (0.84%).

  - A closer examination of the newly added 16 NDDT monitored locations revealed that:

    - The NO_2 annual mean NAQO was not registered, as breached at any of these added monitoring locations.

  - In summary, for the same 146 monitored locations to those of 2019, the 2020 change in NO_2 annual mean levels exhibited the following characteristics:

- 139 locations exhibited beneficial change in LAQ (95.20%)
- Negligibly beneficial at 23 out of 139 locations (16.55%) and of the total 146 locations (15.75%).
- Slightly beneficial at 31 out of 139 locations (22.30%) and of the total 146 locations (21.23%).
- Moderately beneficial at 82 out of 139 locations (58.99%) and of the total 146 locations (56.16%).
- Substantially beneficial at 3 out of 139 locations (2.16%) and of the total 146 locations (2.05%).
- 7 locations exhibited adverse change in AQ (4.79%).
- Negligibly adverse at 6 out of 7 locations (85.71%) and of the total 146 locations (4.11%).
- Slightly adverse at 1 out of 7 locations (14.29%) and of the total 146 locations (0.68%).

Monitoring at all added locations since the beginning of 2020 continues.

2021 NDDT

According to 2021 NDDT survey dataset, for the same monitored locations to those of 2020, the 2021 NO_2 annual mean levels were in excess of the annual mean NAQO at 2 locations, similar to those monitoring locations in 2020. These are along the road links, as identified by PCM model for Portsmouth, near the existing AQMA 11:

- Alfred Road, south / west of AQMA11:
  - The NO_2 annual average at Alfred Road (Column 9).
  - The NO_2 annual average at Alfred Road (Column 12).
- Hope Street south / west of AQMA11:

A closer examination of the 2021 NDDT survey data at the 27 long-term monitoring locations revealed that the nitrogen level increased at 77.78% of the locations and decreased at the remainder (22.22%).

Further closer examination of the NDDT survey data for the period 2017 to 2021, at the 27 long-term monitoring locations revealed that:

- 6 locations exhibited beneficial change in AQ out of the 27 long-term monitoring locations that are apportioned as follows:
  - Were negligibly beneficial at 6 out of 27 locations (22.22%).
- 21 locations exhibited adverse change in AQ out of the 27 long-term monitoring locations that were apportioned as follows:
  - Negligibly beneficial at 18 out of 27 locations (85.71%).
  - Slightly beneficial at 2 out of 27 locations (9.52%).
  - Moderately beneficial at 1 out of 27 locations (4.76%).
- The 2021 NDDT annual mean levels did not exceed the NO_2 annual mean NAQO, at any of the 27 long-term monitoring locations like 2020.
- In the long-term a downward trend emerged at 27 long term monitoring locations in the last 5 years since 2017.
- A closer examination of the added 135 NDDT location dataset for the period 2020-2021 revealed that exceedance of the annual mean levels NO_2 NAQO occurred at 2 monitoring locations outside AQMA11, along the road links as identified by PCM model for the second year in a row:
  - Alfred Road, south / west of AQMA11, the NO_2 annual average increased at two monitoring locations.
  - The NO_2 annual average at Alfred Road (Column 9) increased by 1.93µg/m3 (an increase of 4.71%) between 2020 and 2021 and remained above the NAQO in 2021 (42.97µg/m3) for the third consecutive year. This represents an AQ

deterioration in the short-term. The 2020-2021 NO_2 annual average decrease is described as negligibly adverse.

- The NO_2 annual average at Alfred Road (Column 12) increased by 2.91µg/m3 (an increase of 7.50%) between 2020 and 2021 to exceed the NAQO in 2021 (41.66µg/m3). This represents an AQ deterioration in the short-term. This 2020-2021 NO_2 annual average decrease is described as moderately adverse.

- Hope Street south / west of AQMA11:

- The NO_2 annual average at this roadside monitoring location decreased by 1.04µg/m3 (an increase of 2.39%) between 2020 and 2021 and remained above the NAQO in 2021 (44.63µg/m3) for the third consecutive year. This represents an AQ deterioration in the short-term. This 2020-2021 NO_2 annual average decrease is described as moderately adverse. The 2019-2020 NO_2 annual average decrease is described as substantially beneficial. Examination of the 135 added NDDT locations between 2020 and 2021 revealed that 37 locations exhibited beneficial change (27.41%) and were apportioned as follows:
  - Negligibly beneficial at 22 out of 135 locations (16.30%).
  - Slightly beneficial at 6 out of 135 locations (4.44%).
  - Moderately beneficial at 9 out of 135 locations (6.67%).
- 98 locations exhibited adverse change (72.59%) and apportioned as follows:
  - Negligibly adverse at 45 out of 135 locations (33.33%).
  - Slightly adverse at 32 out of 135 locations (23.70%).
  - Moderately adverse at 21 out of 135 locations (15.56%).
- The 73 added NDDT monitored locations in 2021 revealed that two locations are likely to be in breach of NAQO. These are located at the top of the Eastern Road and in Fratton Road. However, the DT data captured from these locations was less than 25% and was not subjected to any form of corrections.

In summary, for the same 162 monitored locations to those of 2020, the 2021 change in NO_2 annual mean levels exhibited the following characteristics:

- 43 locations exhibited beneficial change in LAQ (26.56%).
  - Negligibly beneficial at 28 out of 43 (17.28%).
  - Slightly beneficial at 6 out of 43 (3.70%).
  - Moderately beneficial at 9 out of 43 (5.56%).
- 119 locations exhibited adverse change in AQ (73.46%).
  - Negligibly adverse at 63 out of 119 (38.89).
  - Slightly adverse at 34 out of 119 (20.99%).
  - Moderately adverse at 22 out of 119 (13.58).

Monitoring at all 73 added locations since the beginning of 2021 continues.

NDDT Monitoring Conclusions

In the long-term a downward trend emerged at all 162 monitored locations in the last 5 years since 2017. The monitored locations for the 5-year period commencing in 2016.

For the same monitored locations NO_2 annual mean levels were in excess of the annual mean NAQO in 2021, at the same two locations where the annual mean was breached in the year 2020 at Alfred Road and Hope Street.

In summary, for the same 162 monitored locations to those of 2020, the 2021 change in NO_2 annual mean levels exhibited the following characteristics:

- 43 locations exhibited beneficial change in LAQ (26.56%).
  - Negligibly beneficial at 28 out of 162 locations (17.28%).
  - Slightly beneficial at 6 out of 162 locations (3.70%).
  - Moderately beneficial at 9 out of 162 locations (5.56%).

- 119 locations exhibited adverse change in AQ (73.46%).
  - Negligibly adverse at 63 out of 162 locations (38.89%).
  - Slightly adverse at 34 out of 162 locations (20.99%).
  - Moderately adverse at 22 out of 162 locations (13.58%).

A closer examination of the newly added 73 NDDT monitored locations in 2021 revealed that two locations are likely to be in breach of NAQO. These are located at the top of the Eastern Road and in Fratton Road. NDDT data capture from these locations was less than 25% and was not subjected to any form of corrections.

Monitoring at all 73 added locations since the beginning of 2021 continues.

Further illustration on the five-year trend of the 27 long term monitoring locations is presented in Appendix F from Figure 1 to Figure 27.

Continuous Air Quality Monitoring Station Data 2017 - 2021

CAQMS NO_2

Table A.6 in Appendix A compares the ratified and adjusted monitored NO_2 annual mean concentrations for the past 5 years with the NAQO (40µg/m^3).

The NO_2 continuous monitoring programme for the period 2017 to 2021 (five-year period) concluded that:

- The 2017 NO_2 annual mean level increased across 50% of CAQMSs compared to that of 2016. Levels met the NO_2 annual mean NAQO at all but the London Road CAQMS. The maximum-recorded concentration was at London Road curbside CAQMS 44.6µg/m^3. This level breached the NO_2 annual mean NAQO. The largest increase in 2017 NO_2 annual mean was registered at the London Road increasing by 3.39µg/m^3 compared to the level recorded in 2016.

- The 2018 NO_2 annual mean level increased slightly (from 33.54 µg/m^3 to 33.95µg/m^3) at 1 CAQMS (Mile End Road) compared to 2017 but, met the NO_2 annual mean NAQO at all but the London Road CAQMSs. The maximum recorded concentration was at

London Road CAQMS 40.57µg/m^3. This level constituted a breach of the NO_2 annual mean NAQO.

- The 2019 NO_2 annual mean level decreased cross the 5 CAQMS compared to that of 2018 but met the NO_2 annual mean NAQO at all but London Road CAQMS. The changes are considered as beneficial across the 5 stations with variable degrees (moderately beneficial 40%, slightly beneficial 20%, negligibly beneficial 40%). The maximum-recorded concentration was at London Road CAQMS (40.46µg/m3) which remained a continued breach of the NO_2 annual mean NAQO. The 5-year trend was downward at 2 CAQMS:
  - London Road CAQMS "upward".
  - Gatcombe Park CAQMS "downward".
  - Burrfields Road CAQMS "downward".
  - Mile End Road CAQMS "upward".

The NO_2 hourly mean did not exced 200µg/m^3 in 2019 at any of the CAQMS. The NO_2 hourly mean NAQO was not breached in 2019.

The 2020 NO_2 annual mean level decreased cross the 5 CAQMSs compared to that of 2019 and met the NO_2 annual mean NAQO at all CAQMSs. These changes are considered as beneficial cross the five stations with variable degrees (moderately beneficial 80% and negligibly beneficial 20%) representing an overall improvement in AQ. The maximum-recorded concentration was at London Road CAQMS (32.66µg/m^3) meeting the NAQO at this location for the first time in many years. The 5-year trend was downward at all PCC's owned CAQMSs.

London Road CAQMS, the NO_2 annual average decreased below the NAQO for the first time in the last five years.

The NO_2 annual average decreased by 7.8µg/m^3 (a decrease of 19.27%) between 2019 and 2020 to drop below the NAQO in 2020 (32.66µg/m^3) and representing an AQ improvement in the short-term.

The 2019-2020 NO_2 annual average decrease is described as moderately beneficial.

The NO_2 annual average downward trend in the last 5 years exhibits an AQ improvement in the long-term contrary to the previously reported 5-year trend that showed an upward trend and represents an AQ improvement.

Burrfields Road CAQMS, the NO_2 annual average decreased further below the NAQO.

The NO_2 annual average decreased by 4.42µg/m^3 (a decrease of 14.19%) between 2019 and 2020 (26.56µg/m^3) representing a continued AQ improvement in the short-term.

The 2019-2020 NO_2 annual average decrease is described as moderately beneficial.

The NO_2 annual average downward trend in the last 5 years represents an AQ improvement in the long-term that is consistent with the previously reported 5-year trend.

Mile End Road CAQMS, the NO_2 annual average decreased further below the NAQO.

The NO_2 annual average decreased by 5.86µg/m3 (a decrease of 14.65%) between 2019 and 2020 to 26.55µg/m3 representing an AQ improvement in the short-term.

The 2019-2020 NO_2 annual average decrease is described as moderately beneficial.

The NO_2 annual average downward trend in the last 5 years exhibits an AQ improvement in the long-term.

DEFRA's Anglesea Road CAQMS, the NO_2 annual average remained below the NAQO for the third monitored consecutive year.

The NO_2 annual average at this roadside monitoring location decreased by 6.51µg/m3 (a decrease of 23.41%) between 2019 and 2020 and remained below the NAQO in 2020 (21.29µg/m3) representing an AQ improvement in the short-term.

The 2019-2020 NO_2 annual average decrease is described as moderately beneficial.

The 2021 NO_2 annual mean level increased across 2 out of 5 CAQMSs and still met the NO_2 annual mean NAQO at all CAQMSs. These changes are considered as adverse with variable degrees. However, an overall long-term improvement in AQ over the last five years was still exhibited. Even though the maximum recorded concentration was registered at Mile End Road CAQMS (34.83µg/m^3), the NO_2 annual mean still meets the NAQO for the second year in a row across all five continuous monitoring stations, and the

5-year trend was downward at all Portsmouth based CAQMS. Hence an overall improvement in AQ over the past five years.:

- London Road CAQMS, the NO_2 annual mean decreased below the NAQO for the second time in the last five years.
- The NO_2 annual mean at this curbside monitoring location decreased by 3.37µg/m3 (a decrease of 10.33%) between 2020 and 2021 and remained below the NAQO in 2021 (29.29µg/m3) representing an AQ improvement in the short-term.
- The 2020-2021 NO_2 annual mean decrease is described as "moderately beneficial".
- The NO_2 annual mean downward trend in the last 5 years exhibited an AQ improvement in the long-term that is consistent with the previously reported 5-year trend.
- Gatcombe Park CAQMS, the NO_2 annual mean at this urban background monitoring location decreased by 2.28µg/m3 (a decrease of 13.13%) between 2020 and 2021 and remained below the NAQO in 2021 (15.09µg/m^3) representing an AQ improvement in the short-term.
- The 2020-2021 NO_2 annual mean decrease is described as "negligibly beneficial".
- The NO_2 annual mean downward trend in the last 5 years exhibited an AQ improvement in the long-term that is consistent with to the previously reported 5-year trend.
- Burrfields Road CAQMS, the NO_2 annual mean at this roadside monitoring location decreased by 3.83µg/m3 (a decrease of 14.36%) between 2020 and 2021 and remained below the NAQO in 2021 (22.87µg/m3) representing a continued AQ improvement in the short-term.
- The 2020-2021 NO_2 annual mean decrease is described as "slightly beneficial".
- The NO_2 annual mean downward trend in the last 5 years exhibited an AQ improvement in the long-term, that is consistent with the previously reported 5-year trend.

- Mile End Road CAQMS, the NO_2 annual mean at this curbside monitoring location increased by 8.25µg/m3 (an increase of 31.05%) between 2020 and 2021 but remained below the NAQO in 2020 (34.83µg/m3) representing an AQ deterioration in the short-term.

- The 2020-2021 NO_2 annual mean increase is described as "moderately adverse".

- The NO_2 annual mean downward trend in the last 5 years exhibited an AQ improvement in the long-term that is consistent with the previously reported 5-year trend.

- DEFRA's Anglesea Road CAQMS, the NO_2 annual mean at this roadside monitoring location increased by 0.01µg/m3 (an increase of 0.03%) between 2020 and 2021 to drop below the NAQO in 2021 (21.30µg/m3) representing an AQ deterioration in the short-term.

- The 2020-2021 NO_2 annual mean increase is described as "negligibly adverse".

- The NO_2 annual mean downward trend in the last 5 years exhibited an AQ improvement in the long-term that is consistent with the previously reported 5-year trend.

Table A.6 in Appendix A compares the ratified continuous monitoring NO_2 hourly mean concentrations for the past 5 years, with the NAQO of 200µg/m^3 (not to be exceeded more than 18 times per year).

Further illustration on the five-year trend of the long-term continuous monitoring location is presented in Appendix F.

Data collected at PCC CAQMSs did not register any exceedance of the NO_2 hourly mean NAQO.

In addition, none of CAQMS NO_2 annual mean exceeded 60µg/m^3 which indicates that an exceedance of the 1-hour mean NAQO is highly unlikely.

Continuous Nitrogen Dioxide Monitoring Conclusions

The 2021 NO_2 annual mean level increased at 2 out of 5 CAQMSs and still met the NO_2 annual mean NAQO at all CAQMSs.

The maximum-recorded concentration was at Mile End Road roadside CAQMS 34.83µg/m^3. The NO_2 annual mean meets the NAQO for the second year in a row, across all five continuous monitoring stations. The 5-year trend was downward at all Portsmouth based CAQMS. Hence an overall improvement in AQ over the past five years since 2017.

Data collected at PCC CAQMSs did not register any exceedance of the NO_2 hourly mean NAQO.

3.2.2 Particulate Matter (PM_{10})

3.2.2.1 CAQMS Particulate Matter (PM_{10}) Annual Mean

Table A.6 in Appendix A: Monitoring Results compares the ratified and adjusted monitored PM_{10} annual mean concentrations for the past five years, with the air quality objective of 40µg/m^3.

There has been no exceedance of the PM_{10} annual mean NAQO since 2017 at any of Portsmouth based CAQMSs. The highest registered annual mean since then was recorded in 2017 at Burrfield Road roadside CAQMS (19.96µg/m^3).

The highest PM_{10} annual mean recorded in 2021 was 17.99µg/m^3 at DEFRA's CAQMS located at Anglesea Road.

The 2021 PM_{10} monitoring concluded:

- London Road CAQMS, the PM_{10} annual mean remained considerably below the NAQO in the last 5 years.
    - The PM_{10} annual mean increased by 1.37µg/m^3 (an increase of 9.22%) between 2020 and 2021 remaining below the NAQO in 2021 (16.23µg/m^3) exhibiting an AQ deterioration in the short-term at this location.
    - The 2020-2021 PM_{10} annual mean change is described as being negligibly adverse.
    - The PM_{10} annual mean exhibits a downward trend in the last 5 years demonstrating an AQ improvement in the long-term, in line with the previously reported 5-year trend.
- Gatcombe Park CAQMS, the PM_{10} annual mean has remained considerably below the NAQO in the last 5 years.

- The PM_{10} annual mean at this urban-background monitoring location decreased by 2.40µg/m^3 (a decrease of 14.44%) between 2020 and 2021 and remains below the NAQO in 2021 (14.22µg/m^3). This small decrease however represents an AQ improvement in the short-term at this location and occurred first time in the last five years.

- The 2020-2021 PM_{10} annual mean change is slightly beneficial.

- The PM10 annual mean exhibits an upward trend in the last 5 years representing an AQ deterioration in the long-term.

- Mile End Road CAQMS, the PM_{10} annual mean has remained considerably below the NAQO in the last 5 years.

  - The PM_{10} annual mean at this roadside monitoring location decreased by 0.41µg/m^3 (a decrease of 2.75%) between 2020 and 2021 and remained below the NAQO in 2021 (14.49µg/m^3) representing an AQ improvement in the short-term.

  - The 2020-2021 PM_{10} annual mean change is negligibly beneficial.

  - The PM_{10} annual mean exhibits a downward trend in the last 5 years, demonstrating an AQ improvement in the long-term.

- DEFRA's Anglesea Road CAQMS, the PM_{10} annual mean has remained considerably below the NAQO in the last 5 years.

  - The PM_{10} annual mean at this roadside monitoring location decreased by 0.26µg/m^3 (a decrease of 1.42) between 2020 and 2021 and remained below the NAQO in 2021 (17.99µg/m^3) representing an AQ improvement in the short-term.
  - The 2020-2021 PM_{10} annual mean change is negligibly beneficial.
  - The PM_{10} annual average represents a downward trend in the last 3 years, demonstrating an AQ improvement in the long-term.

In summary, the 2021 PM_{10} annual mean remains below the NAQO at all CAQMSs with the highest annual mean level (17.99 µg/m^3) being recorded at DEFRA's Anglesea Road CAQMS.

PM_{10} levels are in decline across all PCC and DEFRA's owned CAQMSs in the long-term, except for London Road CAQMS. PM_{10} levels decreased across all Portsmouth based CAQMS in the short term, except for Portsmouth AURN when the annual mean increased by 1.37 µg/m^3.

Further illustration on the five-year trend of the long-term continuous monitoring location is presented in Appendix F from Figure 33 to Figure 36.

3.2.2.2 CAQMS Particulate Matter (PM_{10}) Daily Mean

Table A.7 in Appendix A compares the ratified continuous monitored PM_{10} daily mean concentrations for the past five years with the air quality objective of 50µg/m^3, not to be exceeded more than 35 times per year. A closer examination of the data reveals:

- London Road CAQMS 24 hours mean PM_{10}.
  - In 2021 the number of 24 hour mean levels in excess 50µg/m3 remained well below 35 occurrences permitted per annum representing no exceedance of the NAQO.
  - The number of the 24 hour mean levels in excess 50µg/m3 remained considerably below the NAQO in the last 5 years.
  - The number of 24 hour mean levels in excess 50µg/m3 increased by 2 occurrences between 2020 and 2021 representing an AQ deterioration in the short term.
  - The number of the 24 hour mean levels in excess 50µg/m3 exhibited a downward trend in the last 5 years representing an AQ improvement in the long-term.
- Gatcombe Park CAQMS 24 hour mean PM_{10}.
  - In 2021 the number of 24 hour mean of PM10 levels in excess 50µg/m3 remained well below 35 occurrences per annum representing no exceedance of the NAQO.
  - The number of the 24 hour mean levels in excess 50µg/m3 remained considerably below the NAQO in the last 5 years.
  - The number of 24 hour mean levels in excess 50µg/m3 remained nil occurrence between 2020 and 2021 representing an AQ improvement in the short term.

- The number of the 24 hour mean levels in excess 50µg/m3 exhibited a constant trend in the last 5 years representing an AQ stability in the long-term at this urban background location.

- Mile End Road CAQMS 24 hour mean PM_{10}.
  - In 2021 the number of 24 hour mean levels in excess 50µg/m3 remained well below 35 occurrences per annum representing no exceedance of the NAQO.
  - The number of the 24-Hour mean of PM10 levels in excess 50µg/m3 remained considerably below the NAQO in the last 5 years.
  - The number of 24-Hour mean of PM10 levels in excess 50µg/m3 increased by 1 occurrence between 2020 and 2021 representing an AQ deterioration in the short term.
  - The number of the 24-Hour mean of PM10 levels in excess 50µg/m3 exhibited a downward trend in the last 5 years representing an AQ improvement in the long-term at this roadside location.

- DEFRA Anglesea Road CAQMS PM_{10}:
  - In 2021 the number of 24 hour mean levels in excess 50µg/m3 remained well below 35 occurrences per annum representing no exceedance of the NAQO.
  - The number of the 24 hour mean levels in excess 50µg/m3 remains considerably below the NAQO in the last 3 years.
  - The number of 24 hour mean levels in excess 50µg/m3 decreased by one occurrence in 2021 exhibiting an AQ improvement in the short term.
  - The number of the 24 hour mean levels in excess 50µg/m3 exhibited a constant trend in the last 5 years representing an AQ stability in the long-term at this roadside location.

In 2021 the highest number of daily means in excess of 50 $\mu g/m^3$ reached three occurrences at DEFRA's CAQMSs. This does not amount to an exceedance of the daily NAQO.

In summary, the 2021 PM_{10} annual mean remained below the NAQO at all CAQMSs with the highest annual mean level (17.99 µg/m^3) being recorded at DEFRA's Anglesea Road CAQMS.

PM_{10} levels are in decline across all PCC and DEFRA's owned CAQMSs in the long-term. PM_{10} levels decreased across all Portsmouth based CAQMS in the short term except for London Road when the annual mean increased by 1.37 µg/m^3.

3.2.3 Particulate Matter ($PM_{2.5}$)

3.2.3.1 CAQMS Particulate Matter ($PM_{2.5}$) Annual Mean

Table A.8 in Appendix A presents the ratified and adjusted monitored $PM_{2.5}$ annual mean concentrations for the past five years.

PCC monitors $PM_{2.5}$ at the AURN CAQMS Gatcombe Park and commenced monitoring $PM_{2.5}$ from January 2017 at CAQMS London Road and CAQMS Mile End Road.

In 2021 $PM_{2.5}$ annual mean remains below the NAQO at all three CAQMSs with the highest annual mean level (10.5 µg/m^3) being recorded at London Road CAQMS.

In the short-term, with the exception of the AURN CAQMS the 2021 $PM_{2.5}$ annual mean decreased at 2 out of the 3 CAQMS representing a negligible AQ deterioration, however in the long-term exhibited a downward trend cross the three stations.

Historically, the highest $PM_{2.5}$ annual mean recorded in Portsmouth was 14.26µg/m^3 in 2014 at the AURN CAQMS. This level dropped in 2018 to 12.32µg/m^3, decreased further in 2019 to 8.9µg/m^3 and then started to increase since to reach 10.5µg/m^3 in 2021.

- Gatcombe Park CAQMS $PM_{2.5}$:
  - The $PM_{2.5}$ annual mean has remained considerably below the NAQO in the last 5 years.
  - In 2021 the $PM_{2.5}$ annual mean decreased by 1.12µg/m^3 (a decrease of 11.82%) between 2020 and 2021 remaining below the NAQO (8.33µg/m^3) representing an AQ improvement in the short-term.
  - The 2020-2021 $PM_{2.5}$ annual mean change is described as being negligibly beneficial.

  - The $PM_{2.5}$ annual mean exhibited a downward trend in the last 5 years resulting in an AQ improvement in the long-term for the fourth consecutive 5-year trend.

- London Road CAQMS $PM_{2.5}$:

  - The PM2.5 annual mean has remained considerably below the NAQO for the fifth consecutive year.

  - The PM2.5 annual average increased by 1.15µg/m3 (an increase of 12.30%) between 2020 and 2021 and remained below the NAQO in 2021 (10.5µg/m3) exhibiting an AQ deterioration in the short-term.

  - The 2020-2021 PM2.5 annual mean change is negligibly adverse.

  - The PM2.5 annual average exhibited a downward trend in the last 5 years, demonstrating an AQ improvement in the long-term.

- Mile End Road CAQMS $PM_{2.5}$:

  - The PM2.5 annual mean has remained considerably below the NAQO for the fifth consecutive year.

  - The PM2.5 annual mean increased this year by 0.02µg/m3 (an increase of 0.21%) between 2020 and 2021 and remains below the NAQO in 2021 (9.42µg/m3) exhibiting an AQ deterioration in the short-term.

  - The 2020-2021 PM2.5 annual mean change is described as being negligibly adverse.

  - However, the PM2.5 annual mean represented a downward trend in the last 5 years demonstrating an AQ improvement in the long-term.

In summary, the 2021 $PM_{2.5}$ annual mean remained below the NAQO at the AURN, London Road and Mile End Road CAQMSs. With the highest annual mean level (9.42 µg/m^3) being recorded at Mile End Road CAQMS (C7).

The 2021 $PM_{2.5}$ annual mean increased at both London Road and Mile End Road CAQMSs resulting in an AQ deterioration.

Further illustration on the five-year trend of the long-term continuous monitoring location is presented in Appendix F.

It is not always possible to categorically state why the NO_2, $PM_{2.5}$ and PM_{10} levels changed in several areas across the city in 2021, given that a multitude of factors influence pollutant generation and their subsequent dispersion. Such influences are wide ranging and complex but are highly likely to include the impact of COVID-19 as referenced earlier within this ASR.

Sulphur Dioxide (SO_2)

PCC does not monitor for sulphur dioxide as it is not an AQ concern in Portsmouth.

Monitoring Conclusions

6.7.1. NDDT Monitoring

In the long-term a downward trend emerged at all 162 monitored locations in the last 5 years since 2017, like the monitored locations for the 5-year period commencing in 2016.

For the same monitored locations NO_2 annual mean levels were in excess of the annual mean NAQO in 2021, at the same two locations where the annual mean was breached in year 2020 at Alfred Road and Hope Street.

In summary, for the same 162 monitored locations to those of 2020, the 2021 change in NO_2 annual mean levels exhibited the following characteristics:

- 43 locations exhibited beneficial change in LAQ (26.56%).
    - Negligibly beneficial at 28 out of 162 locations (17.28%).
    - Slightly beneficial at 6 out of 162 locations (3.70%).
    - Moderately beneficial at 9 out of 162 locations (5.56%).
    - 119 locations exhibited adverse change in AQ (73.46%).
    - Negligibly adverse at 63 out of 162 locations (38.89%).
    - Slightly adverse at 34 out of 162 locations (20.99%).
    - Moderately adverse at 22 out of 162 locations (13.58%).

A closer examination of the newly added 73 NDDT monitored locations in 2021 revealed that two locations are likely to be in breach of NAQO. These are located at the top of the Eastern Road and in Fratton Road. NDDT data capture from these locations was less than 25% and was not subjected to any form of corrections. Monitoring at all 73 added locations since the beginning of 2021 continues.

6.7.2. Nitrogen Dioxide Continuous Monitoring

The 2021 NO_2 annual mean level increased at 2 out of 5 CAQMSs and still met the NO_2 annual mean NAQO at all CAQMSs.

The maximum recorded concentration was at Mile End Road roadside CAQMS 34.83µg/m^3. The NO_2 annual mean meets the NAQO for the second year in a row across all five continuous monitoring stations. The 5-year trend was downward at all Portsmouth based CAQMS. Hence an overall improvement in AQ over the past five years since 2017.

Appendix A compares the ratified continuous monitoring NO_2 hourly mean concentrations for the past 5 years, with the NAQO of 200µg/m^3 (not to be exceeded more than 18 times per year).

Data collected at PCC CAQMSs did not register any exceedance of the NO_2 hourly mean NAQO.

In addition, none of CAQMS NO_2 annual mean exceeded 60µg/m^3 which indicates that an exceedance of the 1-hour mean NAQO is unlikely.

6.7.3. Particulate Matter (PM_{10})

The 2021 PM_{10} annual mean remained below the NAQO at all CAQMSs with the highest annual mean level (17.99 µg/m^3) being recorded at DEFRA's Anglesea Road CAQMS.

PM_{10} levels are in decline across all PCC and DEFRA's owned CAQMSs in the long-term. PM_{10} levels decreased cross all Portsmouth based CAQMS in the short term except for London Road when the annual mean increased by 1.37 µg/m^3.

6.7.4. Particulate Matter ($PM_{2.5}$)

The 2021 $PM_{2.5}$ annual mean remained below the NAQO at the AURN, London Road and Mile End Road CAQMSs, with the highest annual mean level (9.42 µg/m^3) being recorded at Mile End Road CAQMS (C7).

The 2021 $PM_{2.5}$ annual mean increased at both London Road and Mile End Road CAQMSs resulting in an AQ deterioration.

It is not always possible to categorically state why the NO_2, $PM_{2.5}$ and PM_{10} levels changed in several areas across the city in 2021, given that a multitude of factors influence pollutant generation and their subsequent dispersion. Such influences are wide ranging and complex but are highly likely to include the impact of COVID-19 as referenced earlier within this ASR.

Appendix A: Monitoring Results

Table A.1 – Details of Automatic Monitoring Sites

Site ID	Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA?	Monitoring Technique	Distance to Relevant Exposure (m) (1)	Distance to kerb of nearest major road (m) (2)	Inlet Height (m)
C2	London Road	Curbside	464925	102129	NO_2 PM2.5 PM10	Y	Chemiluminescent, HORIBA's APDA-372	1.8m of the kerbside further to the south of the station	1m	1.8m
C4	Gatcombe Park Primary School (AURN)	Urban Background	465403	103952	NO_2 PM10 PM2.5 O3	N	Chemiluminescent, FDMS	0m Within the school perimeter	119 m	2.5m
C6	Burrfields Road	Roadside	466004	102348	NO_2	N	Chemiluminescent	0.5m	4.5m of Burrfields Road & 5.5m of Copnor Road	1.8m
C7	Mile End Road	Roadside	464397	101270	NO_2 PM2.5 PM10	Y	Chemiluminescent, HORIBA's APDA-372	2m	6.5m	1.8m

Site ID	Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA?	Monitoring Technique	Distance to Relevant Exposure (m) (1)	Distance to kerb of nearest major road (m) (2)	Inlet Height (m)
C8	Anglesea Road (DEFRA)	Roadside	463835	100259	NO_2 PM10	Y	Chemiluminescent, FDMS	5m	2.5m	1.8m

Notes:

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

(2) N/A if not applicable.

Table A.2 – Details of Non-Automatic Monitoring Sites

Diffusion Tube ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	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)
1	Lord Montgomery Way (LMW-FST)	Roadside	463872	99874	NO_2	Close		3.7m	No	2m
2	12 Chadderton Gardens (CG-12)	Urban background	463705	99371	NO_2	N		N/A	No	2m
3	High Street (HS-121A)	Roadside	463408	99460	NO_2	N		3.1m	No	2m
4	Queen Street (QS-Col 30)	Roadside	463190	100390	NO_2	Y	N/A	3m	No	2m
5	119 Whale Island Way (WIW-119)	Roadside	464230	102194	NO_2	Close		16.23m	No	2m
6	88 Stanley Road (SR-88)	Roadside	464331	102197	NO_2	Close		9.88m	No	2m
7	138 Lower Derby Road (LDR-138)	Urban background	464291	102279	NO_2	N		37.57m	No	2m
8	492 Hawthorn Crescent (HC-492)	Urban background	466690	104355	NO_2	N		34m	No	2m
9	6 Northern Road (NR-6)	Roadside	465621	105528	NO_2	N		5.43m	No	2m
10	20 Stroudley Avenue (SA-20)	Urban background	467107	104850	NO_2	N		N/A	No	2m

Diffusion Tube ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	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)
11	Anchorage Road (AR-Col6)	Roadside	466869	103457	NO_2	N	11.76M	6.56m	No	2m
14	4 Merlyn Drive (MD-4)	Roadside	466109	103736	NO_2	N		11.26m	No	2m
15	29 Milton Road (MR-29)	Roadside	466120	101324	NO_2	N		7.04m	No	2m
16	Parade Court, London Road (LR-PC)	Roadside	465474	104205	NO_2	N	5.32m	5.15m	No	2m
18	4 Milton Road (MR-4)	Roadside	466097	101332	NO_2	N		6.13m	No	2m
19	7 Velder Avenue (VA-7)	Roadside	466392	100226	NO_2	Y		4.44m	No	2m
20	136 Eastney Rd (ER-136)	Roadside	466712	99415	NO_2	N		6.23m	No	2m
21	118 Albert Road (AR-116)	Roadside	465209	98964	NO_2	N		2.36m	No	2m
22	2 Victoria Road North (VRN-2)	Roadside	464778	99306	NO_2	N		5.53m	No	2m
23	106 Victoria Road North (VRN-106) Column19	Roadside	464974	99766	NO_2	N	2.37m	2.42m	No	2m
24	221 Fratton Road (FR-221)	Roadside	465111	100737	NO_2	Y		4.21m	No	2m
25	117 Kingston Rd (KR-117)	Roadside	465036	101547	NO_2	Y		2.46m	No	2m

Diffusion Tube ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	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)
26	The Tap London Road (LR-Tap)	Curbside	464900	101976	NO_2	Y		1.91m	No	2m
30	Market Tavern (Mile End Rd) (MER-MT)	Roadside	464478	101457	NO_2	Y		12.73m	No	2.12m
34	Sovereign Gate, Commercial Rd (ComR-UF)	Roadside	464425	100893	NO_2	Y		4.40m	No	2m
35	Hampshire Terrace (HT-AM)	Roadside	463837	99759	NO_2	Close		4.9m to 10.74m	No	2m
36	Elm Grove (EG-103)	Roadside	464501	99329	NO_2	N		2.26m	No	2m
37	London Road CAQMS-R1	Curbside	464925	102129	NO_2	Y				2m
38	Gatcombe Park Primary School CAQMS-AURN	Urban Background	465403	103952	NO_2	N				2m
39	Burrfields Road CAQMS-R4	Roadside	466004	102348	NO_2	N				2m
40	Mile End Road CAQMS-R5	Roadside	464397	101270	NO_2	Y				2m
42	Kingston Crescent-Admiral Drake PH- (KC-ADPH)	Roadside	464552	101940	NO_2	N			No	2m

Diffusion Tube ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	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)
43	Kingston Crescent-Vanguard House (KC-VH)	Urban background	464774	101922	NO_2	N			No	2m
44	Opposite 6 Market Way, MW-(opp 6)	Roadside	464336	100833	NO_2	Close			No	2m
45	5 Market Way (MW-4)	Roadside	464344	100808	NO_2	Close	N/A		No	2m
46	Mile End Road-Col5(MW-Col5)	Roadside	464339	101273	NO_2	Y		3.35m	No	2.3m
47	1 Stamshaw Road West (SR-W1)	Roadside	464586	102125	NO_2	N			No	2m
48	28 Stamshaw Road East (SR-E28)	Urban background	464597	102119	NO_2	N			No	2m
49	Half Moon Street-The Ship and Castle(PH) (HMS-S&CPH)	Urban background	463042	100315	NO_2	Y			No	2m
50	47 Queen Street (QS-47)	Roadside	463388	100398	NO_2	Y			No	2m
51	57 Queen Street (QS-57)	Urban background	463333	100395	NO_2	Y			No	2m

Diffusion Tube ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	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)
52	Column 29 Queen Street (QS-Col29)	Roadside	463235	100412	NO_2	Y	11.76M		No	2m
53	Anglesea Road CAQMS-DEFRA	Roadside	463835	100259	NO_2	N				2m
55	Gunwharf Road, Column 12 (GWR-Col12)	Roadside	463224	99590	NO_2	N		1.5 m	No	2m
56	Gunwharf Road, Column 4 (GWR-Col4)	Roadside	463261	99782	NO_2	N		1.5 m	No	2m
58	9 St Georges Road (St GS-9)	Roadside	463487	99659	NO_2	N	N/A	6	No	2m
59	Milton Road, Column 41 (MR-Col41)	Roadside	466263	100334	NO_2	N		1.5 m	No	2m
60	Column 42 Milton Road (MR-Col42)	Roadside	466201	100478	NO_2	N	5.32m		No	2m
61	1/10 Southwick House Milton Road on the fence (MR- SH)	Roadside	466136	100610	NO_2	N			No	2m
62	12 Hambrook House Milton Road (MR-HH)	Roadside	466165	100573	NO_2	N			No	2m

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63	209 Milton Road (MR-209)	Roadside	466354	100172	NO_2	Y			No	2m
64	Summerson Lodge Milton Road (MR-SL)	Roadside	466326	100165	NO_2	Y			No	2m
65	Moorings Way-12 (MW-12)	Roadside	466681	100373	NO_2	Close	11.76M	1.5 m	No	2m
66	1 Velder Avenue (VA-1)	Roadside	466267	100216	NO_2	Y			No	2m
67	23 Velder Avenue (VA-23)	Roadside	466457	100253	NO_2	Y	2.37m		No	2m
68	36 Velder Avenue (VA-36)	Roadside	466501	100277	NO_2	Y			No	2m
69	Column 4 Velder Avenue (VA-Col4)	Roadside	466396	100248	NO_2	Y			No	2m
70	Milton Primary School (ER-DS)	Roadside	466667	99546	NO_2	N			No	2m
71	19 Havant Road (HR-19)	Curbside	465711	105624	NO_2	N			No	2m
72	60 Northern Road (NR-60)	Roadside	465657	105577	NO_2	N			No	2m
73	52 Northern Road (NR-52-54)	Roadside	465653	105544	NO_2	N			No	2m
74	Column 38 Northern Road (NR-Col38)	Roadside	465610	105383	NO_2	N			No	2m

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75	1-6 Chipstead House Southampton Road (SR-CH)	Roadside	465618	105619	NO_2	N			No	2m
76	142 Copnor Road (CR-142)	Roadside	466002	102053	NO_2	N			No	2m
77	Copnor School Playground Copnor Road (CR-School)	Roadside	466008	102097	NO_2	N			No	2m
78	3 Goldsmith Avenue (GA-3)	Roadside	466523	99599	NO_2	N			No	2m
80	147 Albert Road (AR-147)	Urban background	465204	98978	NO_2	N			No	2m
81	Column 22 Albert Road (AR-Col22)	Roadside	465278	98968	NO_2	N	0.5 M		No	2m
82	106-108 Albert Road (On Waverley Road) (AR-WR)	Roadside	465178	98945	NO_2	N	2m		No	2m
83	141 Albert Road (AR-141)	Roadside	465166	98982	NO_2	N			No	2m
84	145 Albert Road (On Lawrence Road) (AR-145)	Roadside	465198	98996	NO_2	N			No	2m

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85	98-100 Albert Road (AR-98/100)	Urban background	465150	98968	NO_2	N	5		No	2m
86	91 Fawcett Road (FR-91)	Roadside	465201	99734	NO_2	N	N/A		No	2m
87	Priory School Fawcett Road (FR-PSc)	Roadside	465183	99904	NO_2	N			No	2m
88	1-8 Brandon House Lawrence Road (LR-BH)	Urban background	465186	98996	NO_2	N			No	2m
89	110A Albert Road (On Waverley Road)	Urban background	465190	98946	NO_2	N			No	2m
90	18 Baffins Road (BR-18)	Urban background	466095	100813	NO_2	N			No	2m
91	3 Baffins Road (BR-3)	Urban background	466070	100819	NO_2	N			No	2m
92	Locksway Road-13 (LR-13)	Roadside	466525	99736	NO_2	N		2.5 m,	No	2m

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93	40 Victoria Road North (Back of nursery) (VRN-40)	Roadside	464826	99500	NO_2	N			No	2m
95	189 Collins Place Fratton (CP-189)	Roadside	465109	100005	NO_2	Close			No	2m
96	Mary Rose Centre Albert Road (AR-MRC)	Urban background	465465	98937	NO_2	N			No	2m
97	29 Rowan Court, Goldsmith Avenue (GA-29)	Roadside	465896	99852	NO_2	N	5.32m		No	2m
98	13-29 Eastern Road (ER-13/29)	Roadside	466700	100591	NO_2	Close			No	2m
99	64-80 Eastern Road (ER-64/80)	Roadside	466727	100572	NO_2	Close			No	2m
100	340 Havant Road (HR-340)	Roadside	467783	105677	NO_2	N			No	2m
101	Column 52 Havant Road (HR-Col52)	Roadside	467693	105687	NO_2	N			No	2m
102	Hillside & Wymering Centre Service Road (SR-HWC)	Roadside	464585	105714	NO_2	N			No	2m
103	UTC Portsmouth (UTC)	Roadside	465556	103968	NO_2	N	2.37m		No	2m

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108	137 London Road (LR-137)	Roadside	464951	102418	NO_2	Close			No	2m
109	122/124 London Road (LR-122/124)	Roadside	464961	102383	NO_2	Close			No	2m
110	2a/2b Gladys Avenue (GA-2a/2b)	Roadside	464913	102419	NO_2	Close			No	2m
111	Column 3 Gladys Avenue (GA-Col3)	Roadside	464898	102414	NO_2	Close			No	2m
117	Alfred Road Column 9 (AR-Col 9)	Roadside	463901	100508	NO_2	Close			No	2m
118	Alfred Road Column 12 (AR-Col 12)	Roadside	463951	100531	NO_2	Close			No	2m
119	Market Way-left of St Agatha's bus shelter (MW-StABS)	Curbside	464098	100748	NO_2	Close			No	2m
120	Market Way Opposite MW-StABS (MW-OppStABS)	Roadside	464086	100765	NO_2	Close			No	2m
121	46 London Road (LR-46)	Roadside	464930	102071	NO_2	Y			No	2m

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122	47 London Road (LR-47)	Roadside	464918	102090	NO_2	Y			No	2m
124	Hillsley Road Column 23 (HR-Col23)	Roadside	462491	106553	NO_2	N			No	2m
125	7 Tudor Crescent (TC-7)	Roadside	465624	104626	NO_2	N			No	2m
126	Column 32 Port Way (PW-Col32)	Roadside	463756	105253	NO_2	N			No	2m
127	133 Southampton Road (SR-133)	Roadside	463536	105652	NO_2	N			No	2m
128	47 Derby Road (DR-47)	Roadside	464710	102222	NO_2	Close			No	2m
129	50 Derby Road (DR-50)	Roadside	464711	102239	NO_2	Close			No	2m
130	120 London Road (On Stubbington Avenue Bus Stop) (SA-BS)	Curbside	464986	102344	NO_2	Close			No	2m
131	16 London Road on Chichester Road (CR-PP)	Roadside	464925	101969	NO_2	Close			No	2m
132	Column 50 Milton Road (MR-Col50)	Roadside	466344	100139	NO_2	Close			No	2m
133	Labour Party Club Holbrook Road (HR-LPC)	Roadside	464882	100475	NO_2	N			No	2m

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135	Southampton Road - North (SR-N)	Curbside	464526	105665	NO_2	N			No	2m
136	Southampton Road - North (SR-S)	Roadside	464512	105641	NO_2	N			No	2m
137	Column 96 Southampton Road (SR-Col96)	Roadside	464082	105658	NO_2	N			No	2m
138	Column 97 Southampton Road (SR-Col97)	Curbside	464067	105633	NO_2	N			No	2m
139	Column79 Southampton Road (SR-Col79)	Roadside	463938	105638	NO_2	N			No	2m
142	23 St Nicholas Street (StNS-23)	Roadside	463476	99345	NO_2	N			No	2m
143	8 Old London Road (OLR-8)	Roadside	465686	103868	NO_2	N			No	2m
144	Column 3 Old London Road (OLR-Col3)	Curbside	465665	103832	NO_2	N			No	2m
145	Cross from Hope Street Column4	Curbside	464259	100965	NO_2	Close			No	2m
146	Column 1 Sevenoaks Road (SOR-Col1)	Roadside	465265	105807	NO_2	N			No	2m

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147	Column 4 Sevenoaks Road (SOR-Col4)	Roadside	465303	105817	NO_2	N			No	2m
148	Column 146 Southampton Road (SR-Col146)	Roadside	464670	105713	NO_2	N			No	2m
149	Column 147 Southampton Road (SR-Col147)	Roadside	464665	105737	NO_2	N			No	2m
150	Column 154 Southampton Road (SR-Col154)	Roadside	464791	105775	NO_2	N			No	2m
151	Column 155 Southampton Road (SR-Col155)	Roadside	464806	105751	NO_2	N			No	2m
152	Column 171 Southampton Road (SR-Col171)	Roadside	465169	105763	NO_2	N			No	2m
153	Column 172 Southampton Road (SR-Col172)	Curbside	465173	105784	NO_2	N			No	2m

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154	Column 177 Southampton Road (SR-Col177)	Roadside	465337	105726	NO_2	N			No	2m
155	Column 178 Southampton Road (SR-Col178)	Roadside	465350	105748	NO_2	N			No	2m
156	Column 78 Southampton Road (SR-Col78)	Roadside	463936	105617	NO_2	N			No	2m
157	Opposite Column2 Church Street (Cs-OCol2)	Curbside	464471	101099	NO_2	Close			No	2m
158	Column 106 Eastern Road (ER-Col106)	Roadside	467322	103333	NO_2	N			No	2m
159	Column107 Eastern Road (ER-Col107)	Roadside	467357	103337	NO_2	N			No	2m
160	Column 116 Eastern Road (ER-Col116)	Roadside	467378	103247	NO_2	N			No	2m
161	Column117 Eastern Road (ER-Col117)	Roadside	467343	103240	NO_2	N			No	2m
162	Column51 Eastern Road (ER-Col51)	Roadside	467441	104208	NO_2	N			No	2m

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163	Column52 Eastern Road (ER-Col52)	Roadside	467423	104211	NO_2	N			No	2m
164	Column 2 Allaway Avenue (AA-Col2)	Curbside	464707	105787	NO_2	N			No	2m
165	Column 3 Allaway Avenue (AA-Col3)	Roadside	464716	105817	NO_2	N			No	2m
166	Column 2 Anchorage Road (AR-Col2)	Roadside	467269	103292	NO_2	N			No	2m
167	Column 11 Church Street (CS-Col11)	Roadside	464589	100962	NO_2	N			No	2m
168	Column 15 Copnor Road (CR-Col15)	Curbside	465798	103856	NO_2	N			No	2m
169	Column 16 Copnor Road (CR-Col16)	Curbside	465809	103870	NO_2	N			No	2m
170	Column 3 Commercial Road (ComR-Col3)	Roadside	464454	101044	NO_2	Y			No	2m
171	Column 4 Commercial Road (ComR-Col4)	Roadside	464423	101047	NO_2	Y			No	2m
172	Column 11 Hope Street (HS-Col11)	Roadside	464365	101038	NO_2	N			No	2m

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173	Column 5 Fratton Road (FR-Col5)	Roadside	465161	100081	NO_2	Y			No	2m
174	Column 12 Church Street (CS-Col12)	Roadside	464606	100961	NO_2	N			No	2m
175	Column 2 Church Street (CS-Col2)	Roadside	464478	101110	NO_2	Close			No	2m
176	Column 3 Anchorage Road (AR-Col3)	Roadside	467269	103275	NO_2	N			No	2m
178	Copnor Road-Column3 Opposite Walbrant Building (CR-Col3(OPWB)	Curbside	465679	103987	NO_2	N			No	2m
179	Building on Eastside of Junction Southampton Road/ Alloway Avenue Junction (AAOB)	Roadside	464735	105784	NO_2	N			No	2m
180	Hope Street South Flat House Road (HS- Col Not Numbered)	Curbside	464261	100967	NO_2	Close			No	2m

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181	Trafalgar Gate Column 3 (TG-Col3)	Curbside	464299	101324	NO_2	Y			No	2m
182	Trafalgar Gate Column 4 (TG-Col4)	Curbside	464289	101338	NO_2	Y			No	2m
183	Flathouse Road Column2 (FR-Col2)	Curbside	464222	101346	NO_2	Close			No	2m
184	Flathouse Road Opposite Column2 (FR-OCol2)	Roadside	464211	101346	NO_2	Close			No	2m
185	42 Tudor Crescent (TC-42)	Roadside	465976	104576	NO_2	Close			No	2m
188	Kettering Terrace-Normans House Column5 (KT-NHCol5)	Curbside	464390	101510	NO_2	N			No	2m
189	Kettering Terrace-Normans House Column10 (KT-NHCol10)	Curbside	464386	101532	NO_2	Close			No	2m

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190	Prospect Road Column2 (PR-Col2)	Roadside	464292	101382	NO_2	Close			No	2m
191	Prospect Road Column3 (PR-Col3)	Roadside	464267	101401	NO_2	Close			No	2m
192	58 Kingston Road Shirin Kebab (KR-SK)	Roadside	465114	101370	NO_2	Y	On the Façade		No	2m
193	Goldsmith Avenue- Front Garden (GA-FG)	Roadside	465297	100005	NO_2	N			No	2m
194	48 New Road (NR-48)	Roadside	465138	101343	NO_2	Close	On the Façade		No	2m
213	Kingston Road Column 4 (KR-Col4)	Curbside	465104	101319	NO_2	Y			No	2m
214	Anglesea Road-Opp DEFRA station	Curbside	463808	100232	NO_2	N				2m
216	Alfred Road CAQMS-R6	Roadside	463933	100509	NO_2	N				2m
217	Arundel Street-Column 18 (AS-Col18)	Curbside	465089	100462	NO_2	N				2m

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218	Arundel Street-Opposite Column 18 (AS-OpCol18)	Curbside	465091	100452	NO_2	N				2m
220	Continental Ferry Port- Column 2 (CFP-Col2)	Curbside	464404	101962	NO_2	Y				2m
221	Continental Ferry Port- Column 3 (CFP-Col3)	Roadside	464419	101931	NO_2	Y				2m
222	Column 10, Cross from United Friendly Commercial Road.	Roadside	464409	100929	NO_2					2m
223	Chichester Road-Column2 (CR-Col2)	Roadside	464970	101970	NO_2	N				2m
224	Chichester Road-Column3 (CR-Col3)	Roadside	464992	101983	NO_2	N				2m
225	Elm Grove-Column 6 (EG-Col6)	Curbside	464407	99352	NO_2	N				2m
226	Elm Grove-Column 7 (EG-Col7)	Curbside	464384	99347	NO_2	N				2m
227	Eastern Road-Column 118 (ER-Col118)	Curbside	467389	103185	NO_2	N				2m

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228	Eastern Road-Column 119 (ER-Col119)	Curbside	467358	103189	NO_2	N				2m
229	Eastern Road-Column 59 (ER-Col59)	Roadside	467429	104140	NO_2	N				2m
230	Eastern Road-Column 60 (ER-Col60)	Roadside	467411	104143	NO_2	N				2m
231	Fratton Road-Column 18 (FR-Col18)	Roadside	465129	100404	NO_2	Y				2m
232	Fratton Road-Column 23 (FR-Col23)	Curbside	465114	100529	NO_2	Y				2m
233	Fratton Road - Column31 (FR-Col31)	Roadside	465113	100745	NO_2	Y				2m
234	Fratton Road - Column32 (FR-Col32)	Roadside	465131	100771	NO_2	Y				2m
235	Fratton Road - Column 6 (FR-Col6)	Curbside	465148	100107	NO_2	Y				2m
236	Fratton Road-Opposite Column 18 (FR-OpCol18)	Curbside	465143	100404	NO_2	Y				2m

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237	Fratton Road-Opposite Column 23 (FR-OpCol23)	Curbside	465127	100526	NO_2	Y				2m
238	Goldsmith Avenue-Column 20 (GA-Col20)	Curbside	466060	99826	NO_2	N				2m
239	Goldsmith Avenue-Column 21 (GA-Col21)	Curbside	466056	99838	NO_2	N				2m
240	Gladys Avenue-Column 4 (GA-Col4)	Roadside	464906	102439	NO_2	N				2m
241	Goldsmith Avenue-Column 6 (GA-Col6)	Roadside	466467	99627	NO_2	N				2m
242	Goldsmith Avenue-Column 7 (GA-Col7)	Roadside	466453	99649	NO_2	N				2m
243	Gunwarf Road Column 11 (GwR-Col11)	Roadside	463205	99608	NO_2	N				2m
244	Gunwarf Road-Opposite Column 4 (GwR-OpCol4)	Curbside	463266	99799	NO_2	N				2m

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245	Half Moon Street-Bustop (by The Ship and Castle(PH) (HMS-BS)	Curbside	463047	100329	NO_2	Y				2m
246	Half Moon Street-Column 39 - Cross from The Ship and Castle(PH) (HMS-Col39)	Curbside	463053	100361	NO_2	Y				2m
247	Holbrook Road-Column 42 (HR-Col42)	Roadside	464929	100133	NO_2	N				2m
248	Holbrook Road-Column 44 (HR-Col44)	Roadside	464929	100066	NO_2	N				2m
249	Holbrook Road-Column 20 (HR-Col20)	Roadside	464858	100537	NO_2	N				2m
250	Holbrook Road-Opposite Column 20 (HR-OpCol20)	Roadside	464850	100523	NO_2	N				2m
251	Column 10 Hope Street (HS-Col10)	Roadside	464345	101022	NO_2	N				2m
252	Hope Street-Column 3	Curbside	464192	100895	NO_2	N				2m

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253	High Street-Column 6 (HS-Col6)	Curbside	463482	99523	NO_2	N				2m
254	High Street-Column 7 (HS-Col7)	Curbside	463478	99506	NO_2	N				2m
255	Cross from Hope Street Column 10	Roadside	464311	101021	NO_2	N				2m
256	Hampshire Terrace- Column 6 (HT-Col6)	Curbside	463832	99761	NO_2	N				2m
257	Hampshire Terrace-Opposite Column 6 (HT-OpCol6)	Curbside	463819	99763	NO_2	N				2m
258	Kingston Crescent-Column 12 (KC-Col12)	Curbside	464970	101961	NO_2	N				2m
259	Kingston Crescent-Column 13 (KC-Col13)	Curbside	464559	101941	NO_2	N				2m
260	Kingston Crescent-Column 4 Cross from Vanguard House (KC-Col4)	Curbside	464784	101939	NO_2	N				2m

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261	Kingston Crescent-Front off Vanguard House (KC-FVH)	Roadside	464772	101924	NO_2	N				2m
262	Kingston Road-Column11 (KR-Col11)	Curbside	465049	101552	NO_2	Y				2m
263	Kingston Road-Opposite Column11 (KR-OpCol11)	Curbside	465046	101536	NO_2	Y				2m
264	Lord Montgomery Way-Column1 (LMW-Col1)	Curbside	463860	99861	NO_2	N				2m
265	Lord Montgomery Way-Opposite Column1 (LMW-OpCol1)	Curbside	463855	99871	NO_2	Y				2m
266	London Road-Column 23 at Bustop (LR-OpCol23)	Curbside	464966	102417	NO_2	Y				2m
267	London Road-Opposite Column 23 at Bustop (LR-OpCol23)	Curbside	464968	102420	NO_2	Y				2m

Diffusion Tube ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	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)
268	Mile End Rd - Market Tavern Column 66A (MER-MT Col 66A)	Roadside	464465	101452	NO_2	Y				2m
269	Museum Road-Camera Column (MR-CCol)	Curbside	463750	99507	NO_2	N				2m
270	Museum Road-Column 3 (MR-Col3)	Curbside	463753	99522	NO_2	N				2m
271	Column 2 Market Way (MW-Col2)	Curbside	464337	100810	NO_2	N				2m
272	Opposite Column 2 Market Way, MW-Opp Col2	Curbside	464324	100830	NO_2	N				2m
273	Old London Road- Column 2 (OLR-Col2)	Curbside	465691	103860	NO_2	N				2m
277	Stubbington Avenue-Column 2 (SA-Col2)	Curbside	465013	102342	NO_2	N				2m
278	Stubbington Avenue-Opposite Column 2 (SA-OpCol2)	Curbside	465025	102353	NO_2	N				2m

Diffusion Tube ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	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)
279	Saint George Road-Column 4 (StG-Col4)	Curbside	463477	99670	NO_2	N				2m
280	Saint George Road-Column 5 (StG-Col5)	Curbside	463491	99681	NO_2	N				2m
281	Twyford Avenue-Cross from Stamshaw Road-Bustop (TA-OS)	Curbside	464540	102065	NO_2	N				2m
282	Velder Avenue-Column 5 (VA-Col5)	Curbside	466444	100251	NO_2	Y				2m
283	Velder Avenue-Column 6 (VA-Col6)	Curbside	466439	100266	NO_2	Y				2m
284	Victoria Road North-Column 28 (VRN-Col28)	Curbside	464861	99519	NO_2	N				2m
285	Victoria Road North-Column 29 (VRN-Col29)	Roadside	464839	99523	NO_2	N				2m
286	Victoria Road North- Column 36 (VRN-Col36)	Roadside	464759	99308	NO_2	N				2m
287	Victoria Road North-North (VRN-N)	Roadside	465082	99963	NO_2	N				2m

Diffusion Tube ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	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)
288	Victoria Road North-Opposite Column 19 (VRN-OpCol19)	Curbside	464961	99772	NO_2	N				2m
289	Victoria Road North-South (VRN-S)	Curbside	465064	99934	NO_2	N				2m
290	Winston Churchill Avenue- North (WCA-N)	Curbside	464835	99901	NO_2	N				2m
291	Winston Churchill Avenue- South (WCA-S)	Roadside	464832	99885	NO_2	N				2m
292	Stamshaw Road-Bustop (SR-BS)	Curbside	464554	102051	NO_2	N				2m

Notes:

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

(2) N/A if not applicable.

Table A.3 – Annual Mean NO_2 Monitoring Results: Automatic Monitoring (µg/m^3)

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2021 (%) (2)	2017	2018	2019	2020	2021
37	464925	102129	Curbside		99.00%	**44.6**	**40.57**	**40.46**	32.66	29.29
38	465403	103952	Urban background		14.74%	19.41	18.68	17.47	17.37	16.3
39	466004	102348	Roadside		99.46%	35.22	34	31.12	26.7	22.87
40	464397	101270	Roadside		99.79%	33.54	33.95	32.44	26.57	34.83
53	463835	100259	Roadside		98.91%		30.52	27.8	21.29	21.3

☒ **Annualisation has been conducted where data capture is <75% and >25% in line with LAQM.TG16**

☒ **Reported concentrations are those at the location of the monitoring site (annualised, as required), i.e., prior to any fall-off with distance correction.**

Notes:

The annual mean concentrations are presented as µg/m^3.

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

All means have been "annualised" as per LAQM.TG16 if valid data capture for the full calendar year is less than 75%. See Appendix C for details.

Concentrations are those at the location of monitoring and not those following any fall-off with distance adjustment.

(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 – Annual Mean NO_2 Monitoring Results: Non-Automatic Monitoring (µg/m^3)

Diffusion Tube ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2021 (%) (2)	2017	2018	2019	2020	2021
1	463872	99874	Roadside		83.33%	38.8	**42.9**	36.9	29.67	31.64
2	463705	99371	Urban background		100.00%	16.4	17.1	15	12.95	14.3
3	463408	99460	Roadside		100.00%	23.7	24.1	21	18.29	18.8
4	463190	100390	Roadside		100.00%	34.2	34	31.2	27.15	27.67
5	464230	102194	Roadside		100.00%	24.4	28.1	24.9	22.28	22.34
6	464331	102197	Roadside		91.67%	32.1	30.9	30.2	21.85	23.31
7	464291	102279	Urban background		100.00%	27.3	27.7	23.3	22.73	22
8	466690	104355	Urban background		100.00%	26.8	26	23.2	21.74	21.2
9	465621	105528	Roadside		91.67%	37.1	36.7	33.6	29.72	29.98
10	467107	104850	Urban background		100.00%	17.6	17.2	15.1	14.39	13.54
11	466869	103457	Roadside		91.67%	23.5	22.9	20.7	18.8	20.99

Diffusion Tube ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) [1]	Valid Data Capture 2021 (%) [2]	2017	2018	2019	2020	2021
14	466109	103736	Roadside		100.00%	21.3	21.7	19.5	17	17.53
15	466120	101324	Roadside		91.67%	29	27.6	24.9	21.16	24.46
16	465474	104205	Roadside		83.33%	35.4	29.6	25.4	20.94	23.1
18	466097	101332	Roadside		100.00%	29.6	26	24.3	22.77	22.27
19	466392	100226	Roadside		100.00%	34.7	37.7	33.4	28.59	29.92
20	466712	99415	Roadside		100.00%	29.7	28.4	24	21.79	22.71
21	465209	98964	Roadside		100.00%	38.4	36.5	33.4	28.44	29.03
22	464778	99306	Roadside		100.00%	26.5	29.3	24.5	21.96	23.08
23	464974	99766	Roadside		100.00%	34	34.6	32.2	27.3	31.6
24	465111	100737	Roadside		100.00%	38.3	36.8	31.3	28.7	30.65
25	465036	101547	Roadside		100.00%	**44.3**	38.2	37.6	30.62	31.84
26	464900	101976	Curbside		100.00%	**43.1**	**46**	**40.4**	36.51	36.3
30	464478	101457	Roadside		91.67%	38.5	39.2	34.3	28.2	29.24

Diffusion Tube ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2021 (%) (2)	2017	2018	2019	2020	2021
34	464425	100893	Roadside		91.67%	36.2	33.3	31	25.26	25.19
35	463837	99759	Roadside		100.00%	30.1	30.1	26.9	21.36	23.64
36	464501	99329	Roadside		91.67%	29.7	31.5	27	20.88	25.16
37	464925	102129	Curbside		100.00%		38.1	32.5	28.41	33.75
38	465403	103952	Urban Background		100.00%		32.5	30.3	27.7	15.8
39	466004	102348	Roadside		100.00%		**40.4**	32.4	27.49	25.79
40	464397	101270	Roadside		100.00%		**42**	31.8	27.61	25.02
42	464552	101940	Roadside		100.00%		**44.5**	33.9	28.86	28.56
43	464774	101922	Urban background		100.00%		36.8	31.1	27.87	28.27
44	464336	100833	Roadside		100.00%		30.5	25.3	29.29	26.74
45	464344	100808	Roadside		100.00%		34.6	29.1	22.17	28.64
46	464339	101273	Roadside		100.00%		**40.4**	34.1	24.7	31.18
47	464586	102125	Roadside		100.00%		33.2	28.9	23.12	29.86

Diffusion Tube ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) [1]	Valid Data Capture 2021 (%) [2]	2017	2018	2019	2020	2021
48	464597	102119	Urban background		100.00%		32.3	27.8	23.5	24.81
49	463042	100315	Urban background		100.00%	30.4	25.4	26.2	19.57	23.9
50	463388	100398	Roadside		100.00%	36.2	35.1	30.4	24.78	28.29
51	463333	100395	Urban background		91.67%	33.8	29.3	26.9	20.74	24.53
52	463235	100412	Roadside		100.00%		38.2	37.1	31.53	25.22
53	463835	100259	Roadside		100.00%		29.8	25.2	23.81	24.7
55	463224	99590	Roadside		100.00%		33.7	30.3	23.76	23.3
56	463261	99782	Roadside		91.67%		22	17.6	16.78	28.36
58	463487	99659	Roadside		91.67%		34.2	29.4	23.83	22.21
59	466263	100334	Roadside		91.67%		37.9	30.3	26.43	36.46
60	466201	100478	Roadside		100.00%	27.6	28.2	24.4	20.79	22.44
61	466136	100610	Roadside		100.00%		31.9	27.6	23.33	27.08
62	466165	100573	Roadside		91.67%		36.7	31.4	25.54	16.48

Diffusion Tube ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) [1]	Valid Data Capture 2021 (%) [2]	2017	2018	2019	2020	2021
63	466354	100172	Roadside		100.00%		36.9	29.3	24.71	26.26
64	466326	100165	Roadside		100.00%		31.1	25	23.68	28.76
65	466681	100373	Roadside		100.00%	23.7	25.1	21.6	19.59	25.48
66	466267	100216	Roadside		100.00%		27.8	25.2	21.97	25.56
67	466457	100253	Roadside		100.00%		26.5	23.3	19.33	28.94
68	466501	100277	Roadside		100.00%		27.4	23.8	20.24	28.45
69	466396	100248	Roadside		83.33%		37.3	30.3	30.72	26.55
70	466667	99546	Roadside		83.33%		25.7	21.3	20.19	24.08
71	465711	105624	Curbside		100.00%		31.3	28.9	23.55	23.08
72	465657	105577	Roadside		83.33%		21.2	18.5	19.01	20.73
73	465653	105544	Roadside		100.00%		25	19.9	17.88	22.04
74	465610	105383	Roadside		100.00%		38.4	32.4	23.99	27.28
75	465618	105619	Roadside		91.67%		35.2	30.7	22.31	20.43

Diffusion Tube ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) [1]	Valid Data Capture 2021 (%) [2]	2017	2018	2019	2020	2021
76	466002	102053	Roadside		100.00%		30.8	26.6	22.15	25.14
77	466008	102097	Roadside		100.00%		32.4	28.5	21.13	17.79
78	466523	99599	Roadside		91.67%		**42.8**	30.4	23.81	21.3
80	465204	98978	Urban background		100.00%		**40.4**	31.5	25.06	28.29
81	465278	98968	Roadside		100.00%		28.9	24	24.33	25.73
82	465178	98945	Roadside		100.00%		27.3	24.8	20.23	24.84
83	465166	98982	Roadside		91.67%		35.4	28.4	27.25	25.04
84	465198	98996	Roadside		100.00%		30.9	26	20.54	29.03
85	465150	98968	Urban background		100.00%		24	22.1	18.23	28.11
86	465201	99734	Roadside		91.67%		26.7	23.8	21.54	22.8
87	465183	99904	Roadside		100.00%	28.7	27.3	25.7	19.26	21.6
88	465186	98996	Urban background		100.00%		35	34.8	30.46	28.95

Diffusion Tube ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) [1]	Valid Data Capture 2021 (%) [2]	2017	2018	2019	2020	2021
89	465190	98946	Urban background		100.00%		29.3	26.1	22.57	24.91
90	466095	100813	Urban background		100.00%		23.5	21.5	18.9	18.92
91	466070	100819	Urban background		100.00%		25.8	22.6	17.86	21.68
92	466525	99736	Roadside		91.67%		22.5	18.2	17.1	21.11
93	464826	99500	Roadside		100.00%		23.6	20.3	18.98	27.68
95	465109	100005	Roadside		41.67%		22.1	19.9	15.19	21.56
96	465465	98937	Urban background		66.67%		28.2	25	22.21	19.62
97	465896	99852	Roadside		91.67%		28.7	23.7	21.86	20.39
98	466700	100591	Roadside		100.00%		24.7	23	18.16	17.19
99	466727	100572	Roadside		100.00%		**44.2**	32.5	31.38	18.94
100	467783	105677	Roadside		66.67%		35.8	30.1	26	19.57
101	467693	105687	Roadside		91.67%		27.7	22.2	22.35	23.58

Diffusion Tube ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) [1]	Valid Data Capture 2021 (%) [2]	2017	2018	2019	2020	2021
102	464585	105714	Roadside		91.67%		28.7	24.6	21.53	24.34
103	465556	103968	Roadside		100.00%		50.4	48	**41.04**	18.59
108	464951	102418	Roadside		100.00%		**50.4**	**52.5**	38.76	30.59
109	464961	102383	Roadside		91.67%		32	30.7	24.69	26.84
110	464913	102419	Roadside		100.00%		**47.5**	**46.9**	36.3	21.73
111	464898	102414	Roadside		91.67%		37.3	38.6	32.49	21.45
117	463901	100508	Roadside		100.00%		37.7	36.8	30.77	**42.97**
118	463951	100531	Roadside		100.00%		28.6	26.1	23.83	**41.66**
119	464098	100748	Curbside		100.00%		39.6	27.9	30.05	28.06
120	464086	100765	Roadside		91.67%		37.5	38.7	27.03	35.31
121	464930	102071	Roadside		100.00%		36.1	28.4	23.96	34.34
122	464918	102090	Roadside		100.00%			23.4	21.54	32.2
124	462491	106553	Roadside		100.00%			23.2	21.11	24.18

Diffusion Tube ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) [1]	Valid Data Capture 2021 (%) [2]	2017	2018	2019	2020	2021
125	465624	104626	Roadside		100.00%			35.8	36.15	23.16
126	463756	105253	Roadside		100.00%		39.6	33.2	27.28	26.74
127	463536	105652	Roadside		100.00%		36.9	39.4	31.62	25.23
128	464710	102222	Roadside		100.00%		**43.1**	35.7	30.65	21.72
129	464711	102239	Roadside		100.00%		25.4	25	19.51	22.3
130	464986	102344	Curbside		100.00%			25.7	23.62	28.6
131	464925	101969	Roadside		100.00%		**42**	26.7	25.35	30.45
132	466344	100139	Roadside		100.00%			35.4	30.67	33.83
133	464882	100475	Roadside		100.00%			38.3	25.68	36
135	464526	105665	Curbside		100.00%			33.7	26.2	24.92
136	464512	105641	Roadside		100.00%			24.6	22.74	27.48
137	464082	105658	Roadside		91.67%			17.7	12.11	36.11
138	464067	105633	Curbside		91.67%			33.4	22.92	27.63

Diffusion Tube ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) [1]	Valid Data Capture 2021 (%) [2]	2017	2018	2019	2020	2021
139	463938	105638	Roadside		91.67%			40.8	29.88	28.19
142	463476	99345	Roadside		75.00%			**53.9**	**43.59**	14.54
143	465686	103868	Roadside		100.00%			26.7	19.73	26.59
144	465665	103832	Curbside		100.00%			26.2	22.51	32.96
145	464259	100965	Curbside		91.67%			24.2	21.25	**44.63**
146	465265	105807	Roadside		100.00%			33.9	27.93	19.01
147	465303	105817	Roadside		91.67%			37.5	30.57	20.27
148	464670	105713	Roadside		100.00%			31.8	24.81	26.51
149	464665	105737	Roadside		100.00%			**42**	35.79	27.53
150	464791	105775	Roadside		100.00%			36.3	27.23	32.08
151	464806	105751	Roadside		100.00%			**43**	32.1	24.81
152	465169	105763	Roadside		100.00%			35.8	27.42	32.64
153	465173	105784	Curbside		91.67%			35.8	25.5	27.64

Diffusion Tube ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) [1]	Valid Data Capture 2021 (%) [2]	2017	2018	2019	2020	2021
154	465337	105726	Roadside		100.00%			37.3	28.03	31.94
155	465350	105748	Roadside		100.00%			34	27.8	29.99
156	463936	105617	Roadside		100.00%			39.2	34.23	28.11
157	464471	101099	Curbside		108.33%			**40.9**	31.69	27.99
158	467322	103333	Roadside		100.00%			28.5	25.09	32.09
159	467357	103337	Roadside		100.00%			**45.3**	32.68	33.93
160	467378	103247	Roadside		83.33%			38.6	30.45	33.41
161	467343	103240	Roadside		83.33%			34.6	26.7	28.3
162	467441	104208	Roadside		83.33%			30.3	26.97	39.7
163	467423	104211	Roadside		100.00%			34.7	29.47	35.07
164	464707	105787	Curbside		100.00%			29	27.63	28.54
165	464716	105817	Roadside		100.00%			27.6	22.53	26.87
166	467269	103292	Roadside		91.67%			32.7	32.35	28.11

Diffusion Tube ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) [1]	Valid Data Capture 2021 (%) [2]	2017	2018	2019	2020	2021
167	464589	100962	Roadside		100.00%			**41.5**	30.72	27.66
168	465798	103856	Curbside		91.67%			31.3	23.07	27.82
169	465809	103870	Curbside		100.00%			38.8	27.9	33.72
170	464454	101044	Roadside		100.00%			**41.9**	33.17	27.91
171	464423	101047	Roadside		100.00%			31.3	25.71	24.18
172	464365	101038	Roadside		100.00%			37.6	32.42	27.69
173	465161	100081	Roadside		83.33%			29.4	25.5	36.49
174	464606	100961	Roadside		100.00%	**44.6**	**40.6**	40.5	32.3	24.64
175	464478	101110	Roadside		100.00%	19.4	18.7	17.5	17.4	32.32
176	467269	103275	Roadside		83.33%	35.2	34	31.1	26.6	28.72
178	465679	103987	Curbside		91.67%	33.5	34	32.4	26.6	32.33
179	464735	105784	Roadside		100.00%		30.5	27.8	21.3	26.23
180	464261	100967	Curbside		75.00%				29.98	36.31

Diffusion Tube ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) [1]	Valid Data Capture 2021 (%) [2]	2017	2018	2019	2020	2021
181	464299	101324	Curbside		100.00%				24.21	24.6
182	464289	101338	Curbside		100.00%				37.55	30.28
183	464222	101346	Curbside		100.00%				24.33	24.72
184	464211	101346	Roadside		100.00%				30.04	24.71
185	465976	104576	Roadside		100.00%				26.44	20.15
188	464390	101510	Curbside		91.67%				24.23	25.75
189	464386	101532	Curbside		100.00%				20.92	25.27
190	464292	101382	Roadside		100.00%				27.4	25.69
191	464267	101401	Roadside		100.00%				28.49	24.87
192	465114	101370	Roadside		100.00%				27.73	33.9
193	465297	100005	Roadside		100.00%				27.23	30.3
194	465138	101343	Roadside		100.00%				27.61	33.36
213	465104	101319	Curbside		100.00%				25.18	38.41

Diffusion Tube ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2021 (%) (2)	2017	2018	2019	2020	2021
214	463808	100232	Curbside		25.00%				26.66	33.53
216	463933	100509	Roadside		33.33%					37.43
217	465089	100462	Curbside		16.67%					30.41
218	465091	100452	Curbside		16.67%					34.82
220	464404	101962	Curbside		16.67%					34.52
221	464419	101931	Roadside		16.67%					30.39
222	464409	100929	Roadside		25.00%					27.47
223	464970	101970	Roadside		16.67%					29.64
224	464992	101983	Roadside		16.67%					28.04
225	464407	99352	Curbside		16.67%					29.13
226	464384	99347	Curbside		16.67%					26.44
227	467389	103185	Curbside		16.67%					38.29
228	467358	103189	Curbside		16.67%					28.36

Diffusion Tube ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) [1]	Valid Data Capture 2021 (%) [2]	2017	2018	2019	2020	2021
229	467429	104140	Roadside		16.67%					41.8
230	467411	104143	Roadside		16.67%					33.41
231	465129	100404	Roadside		16.67%					30.5
232	465114	100529	Curbside		16.67%					40.77
233	465113	100745	Roadside		16.67%					39.3
234	465131	100771	Roadside		16.67%					26.42
235	465148	100107	Curbside		8.33%					30.97
236	465143	100404	Curbside		16.67%					33.37
237	465127	100526	Curbside		16.67%					29.08
238	466060	99826	Curbside		16.67%					26.17
239	466056	99838	Curbside		16.67%					28.08
240	464906	102439	Roadside		16.67%					23.92
241	466467	99627	Roadside		16.67%					25.27

Diffusion Tube ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) [1]	Valid Data Capture 2021 (%) [2]	2017	2018	2019	2020	2021
242	466453	99649	Roadside		16.67%					22.58
243	463205	99608	Roadside		16.67%					22.08
244	463266	99799	Curbside		16.67%					24.48
245	463047	100329	Curbside		16.67%					26.88
246	463053	100361	Curbside		16.67%					30.8
247	464929	100133	Roadside		50.00%					31.76
248	464929	100066	Roadside		50.00%					31.02
249	464858	100537	Roadside		16.67%					30.22
250	464850	100523	Roadside		16.67%					23.65
251	464345	101022	Roadside		25.00%					30.18
252	464192	100895	Curbside		25.00%					29.33
253	463482	99523	Curbside		16.67%					22.55
254	463478	99506	Curbside		16.67%					23.85

Diffusion Tube ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) [1]	Valid Data Capture 2021 (%) [2]	2017	2018	2019	2020	2021
255	464311	101021	Roadside		25.00%					29.75
256	463832	99761	Curbside		16.67%					28.2
257	463819	99763	Curbside		16.67%					24.47
258	464970	101961	Curbside		16.67%					32.84
259	464559	101941	Curbside		16.67%					35.75
260	464784	101939	Curbside		16.67%					34.85
261	464772	101924	Roadside		16.67%					31.65
262	465049	101552	Curbside		16.67%					37
263	465046	101536	Curbside		16.67%					34.49
264	463860	99861	Curbside		16.67%					34.06
265	463855	99871	Curbside		16.67%					25.23
266	464966	102417	Curbside		16.67%					28.72
267	464968	102420	Curbside		16.67%					38.86

Diffusion Tube ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) [1]	Valid Data Capture 2021 (%) [2]	2017	2018	2019	2020	2021
268	464465	101452	Roadside		16.67%					38.11
269	463750	99507	Curbside		16.67%					22.44
270	463753	99522	Curbside		16.67%					22.79
271	464337	100810	Curbside		25.00%					25.75
272	464324	100830	Curbside		25.00%					31.43
273	465691	103860	Curbside		16.67%					38.5
277	465013	102342	Curbside		16.67%					32.17
278	465025	102353	Curbside		16.67%					29.73
279	463477	99670	Curbside		16.67%					25.42
280	463491	99681	Curbside		16.67%					25.63
281	464540	102065	Curbside		16.67%					27.31
282	466444	100251	Curbside		16.67%					37.09
283	466439	100266	Curbside		16.67%					29.67

Diffusion Tube ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2021 (%) (2)	2017	2018	2019	2020	2021
284	464861	99519	Curbside		16.67%					27.56
285	464839	99523	Roadside		16.67%					31.79
286	464759	99308	Roadside		16.67%					33.25
287	465082	99963	Roadside		16.67%					21.35
288	464961	99772	Curbside		16.67%					31.71
289	465064	99934	Curbside		8.33%					29.04
290	464835	99901	Curbside		16.67%					22.83
291	464832	99885	Roadside		16.67%					22.37
292	464554	102051	Curbside		100.00%					28.31

☒ **Annualisation has been conducted where data capture is <75% and >25% in line with LAQM.TG16 .**

☒ **Diffusion tube data has been bias adjusted.**

☒ **Reported concentrations are those at the location of the monitoring site (bias adjusted and annualised, as required), i.e., prior to any fall-off with distance correction.**

Notes:

The annual mean concentrations are presented as µg/m^3.

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

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

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

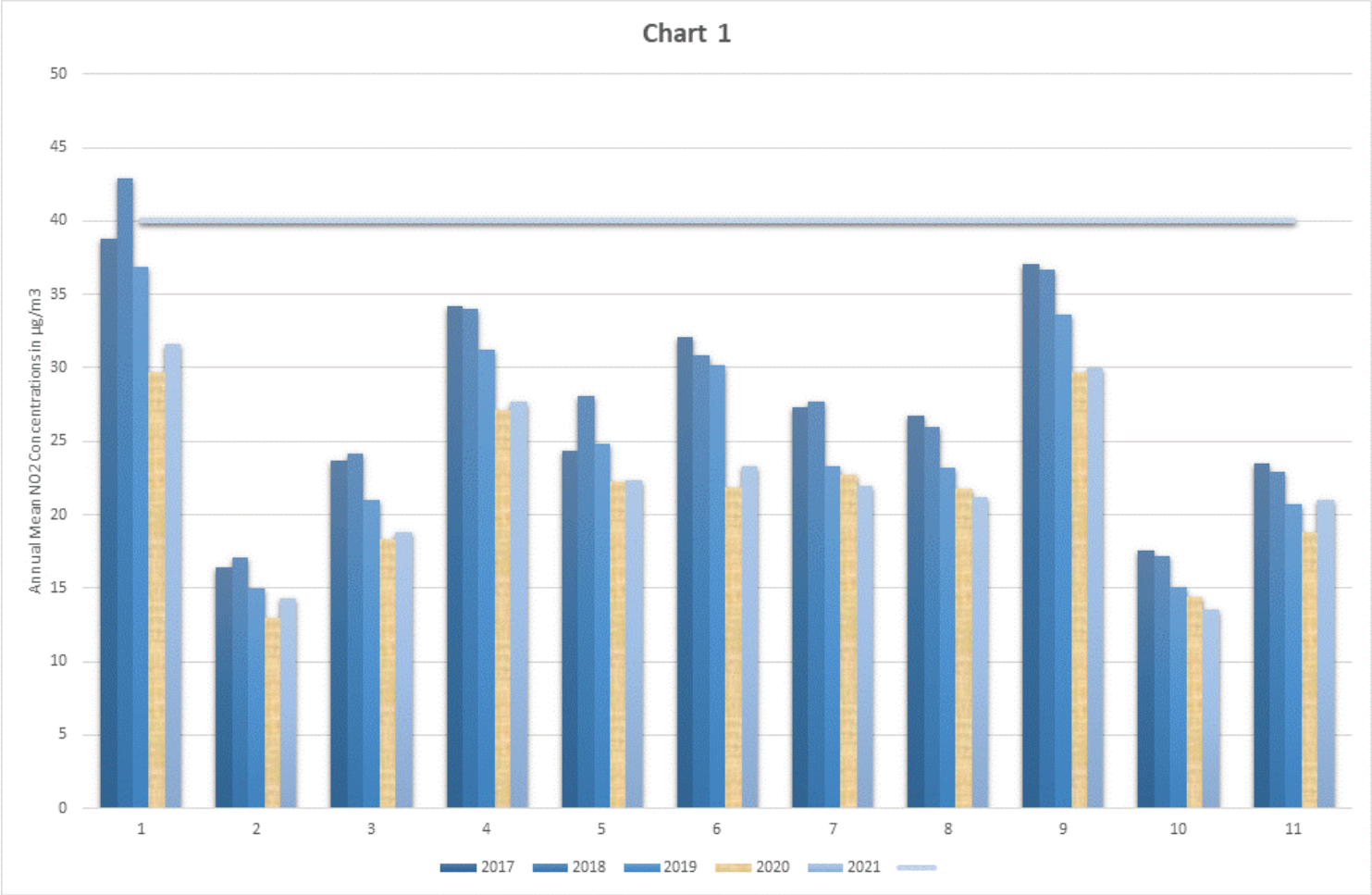
Concentrations are those at the location of monitoring and not those following any fall-off with distance adjustment.

(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 – Trends in Annual Mean NO_2 Concentrations in µg/m^3

Column results are representative of the locations of diffusion tubes as set out in Table A.2. Site identification details can be found in Table A.2. **The main impactive Covid year 2020 is highlighted in Orange.**



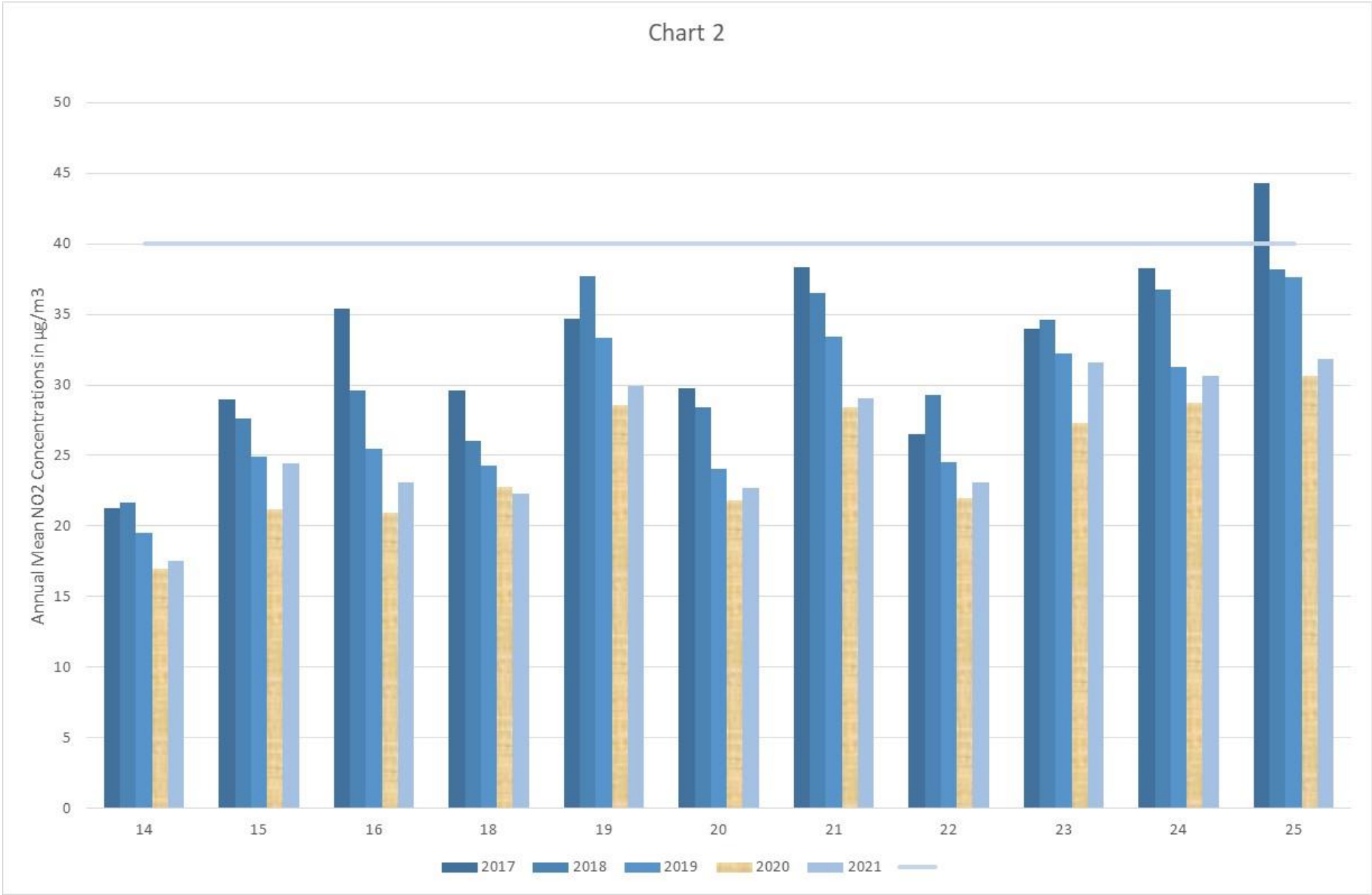


Chart 2
Annual Mean NO2 Concentrations in µg/m3
50
45
40
35
30
25
20
15
10
5
0
14
15
16
18
19
20
21
22
23
24
25
2017
2018
2019
2020
2021

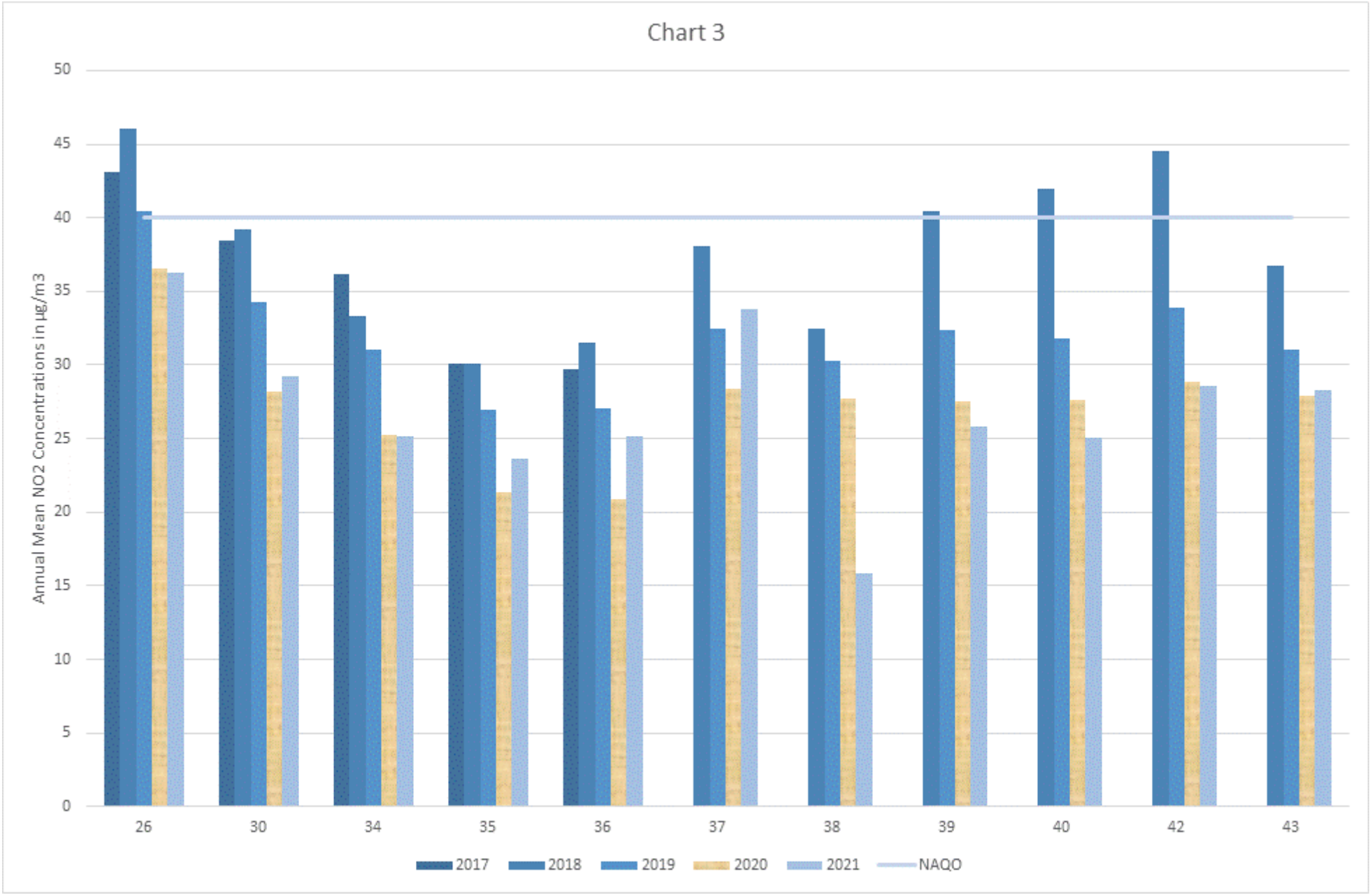


Chart 3
Annual Mean NO2 Concentrations in µg/m3
50
45
40
35
30
25
20
15
10
5
0
26
30
34
35
36
37
38
39
40
42
43
2017
2018
2019
2020
2021
NAQO

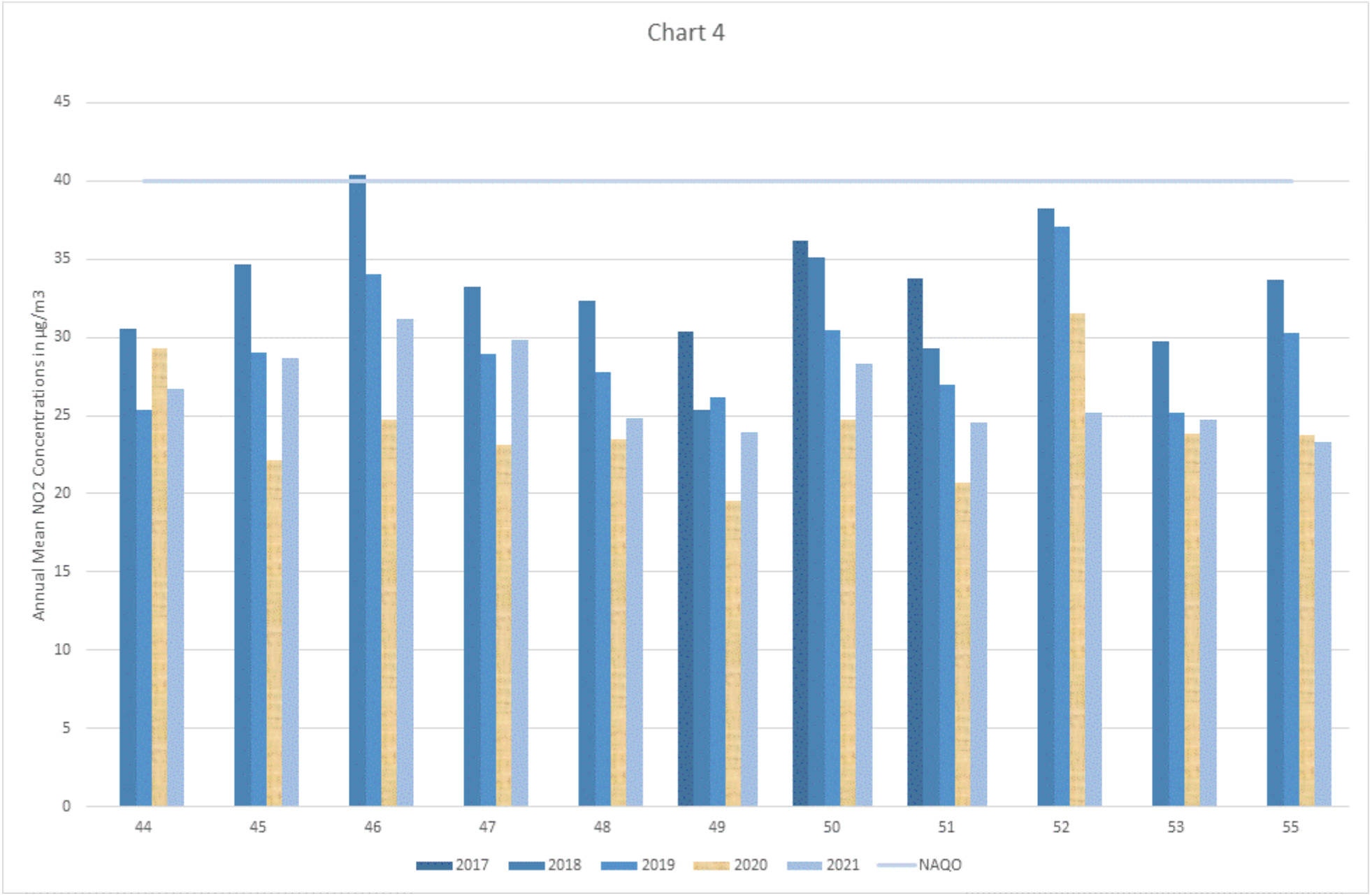


Chart 4
Annual Mean NO2 Concentrations in µg/m3
45
40
35
30
25
20
15
10
5
0
44
45
46
47
48
49
50
51
52
53
55
2017
2018
2019
2020
2021
NAQO

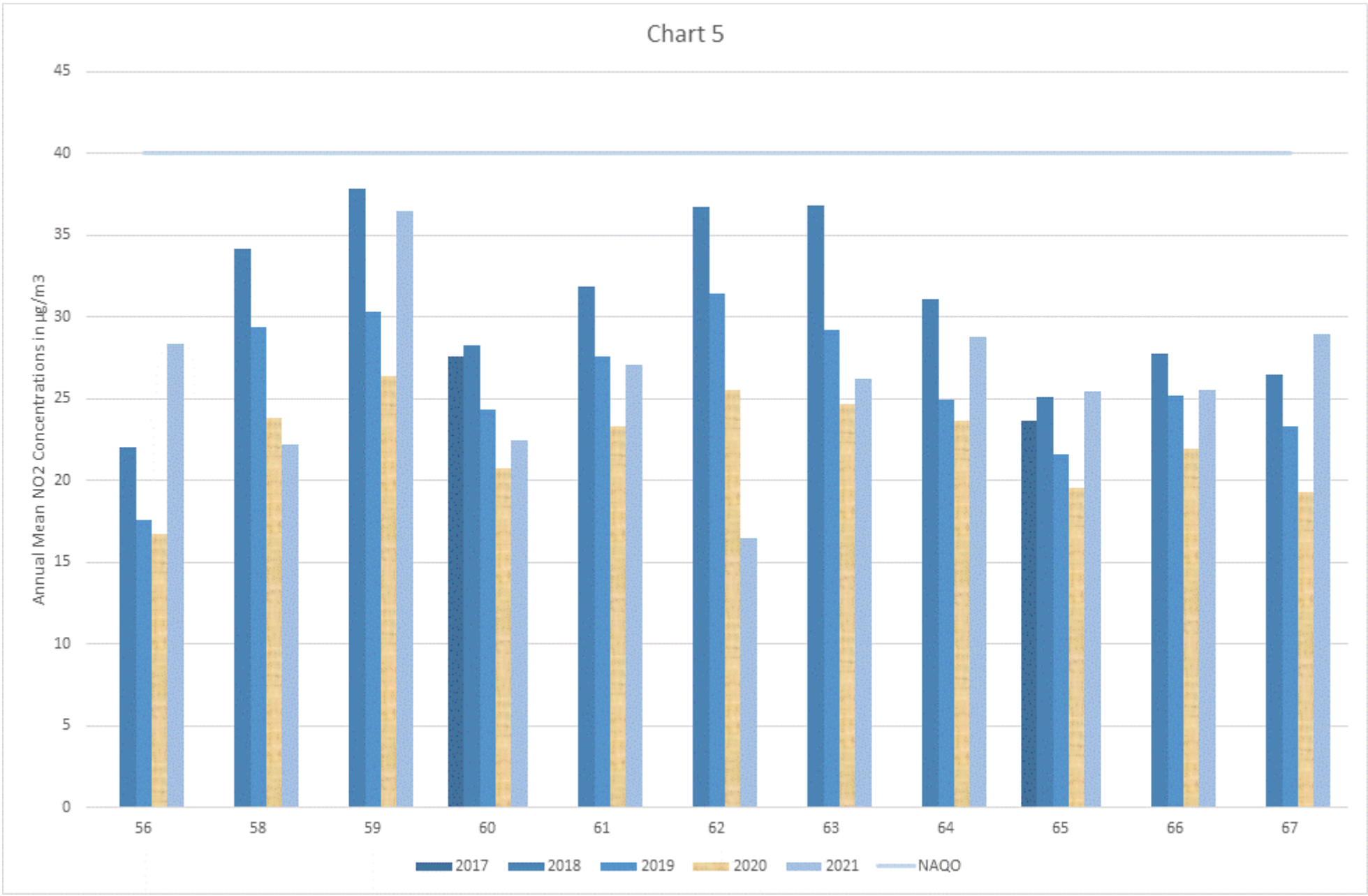


Chart 5
Annual Mean NO2 Concentrations in µg/m3
45
40
35
30
25
20
15
10
5
0
56
58
59
60
61
62
63
64
65
66
67
2017
2018
2019
2020
2021
NAQO

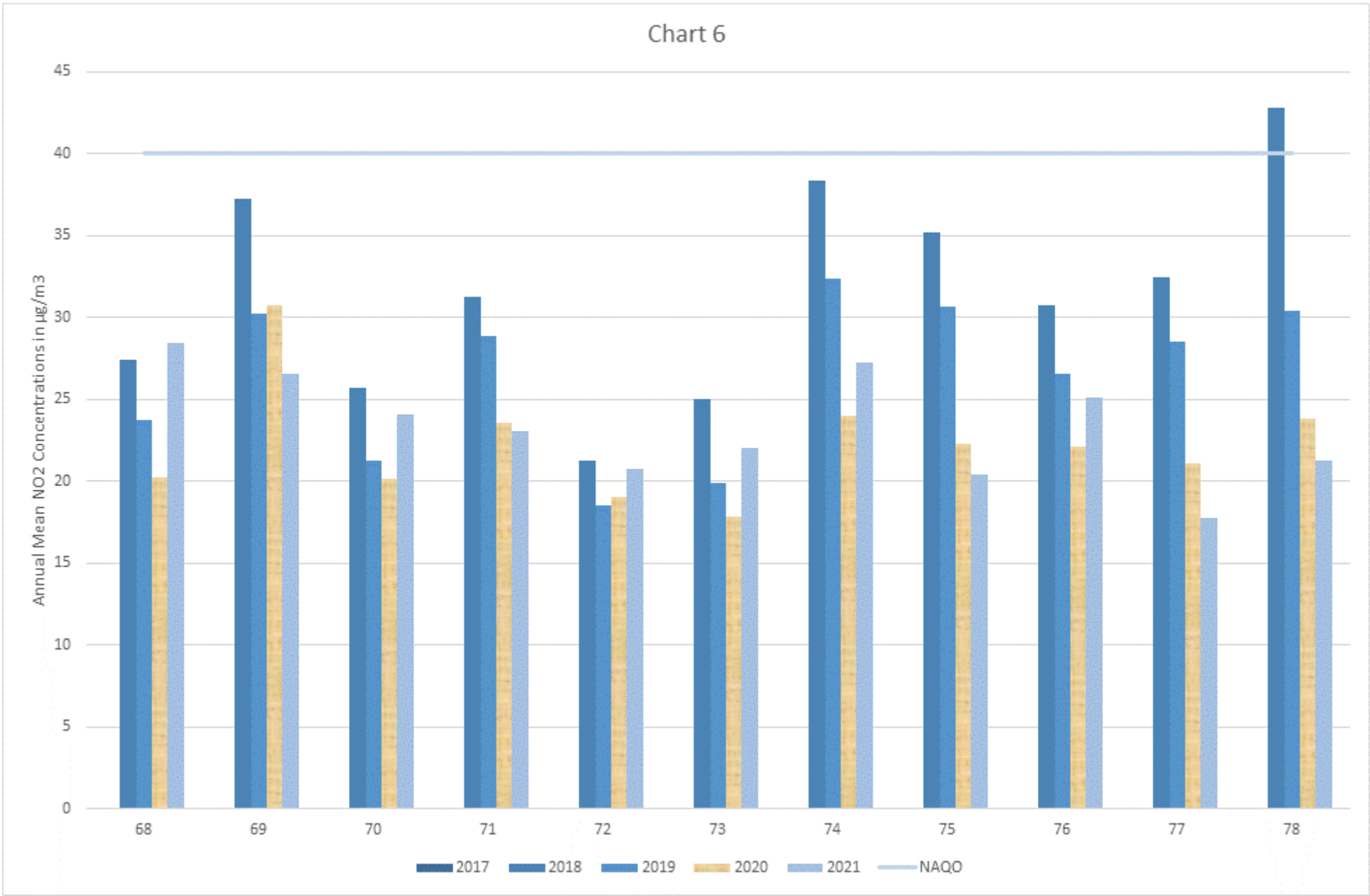


Chart 6
Annual Mean NO2 Concentrations in µg/m3
45
40
35
30
25
20
15
10
5
0
68
69
70
71
72
73
74
75
76
77
78
2017
2018
2019
2020
2021
NAQO

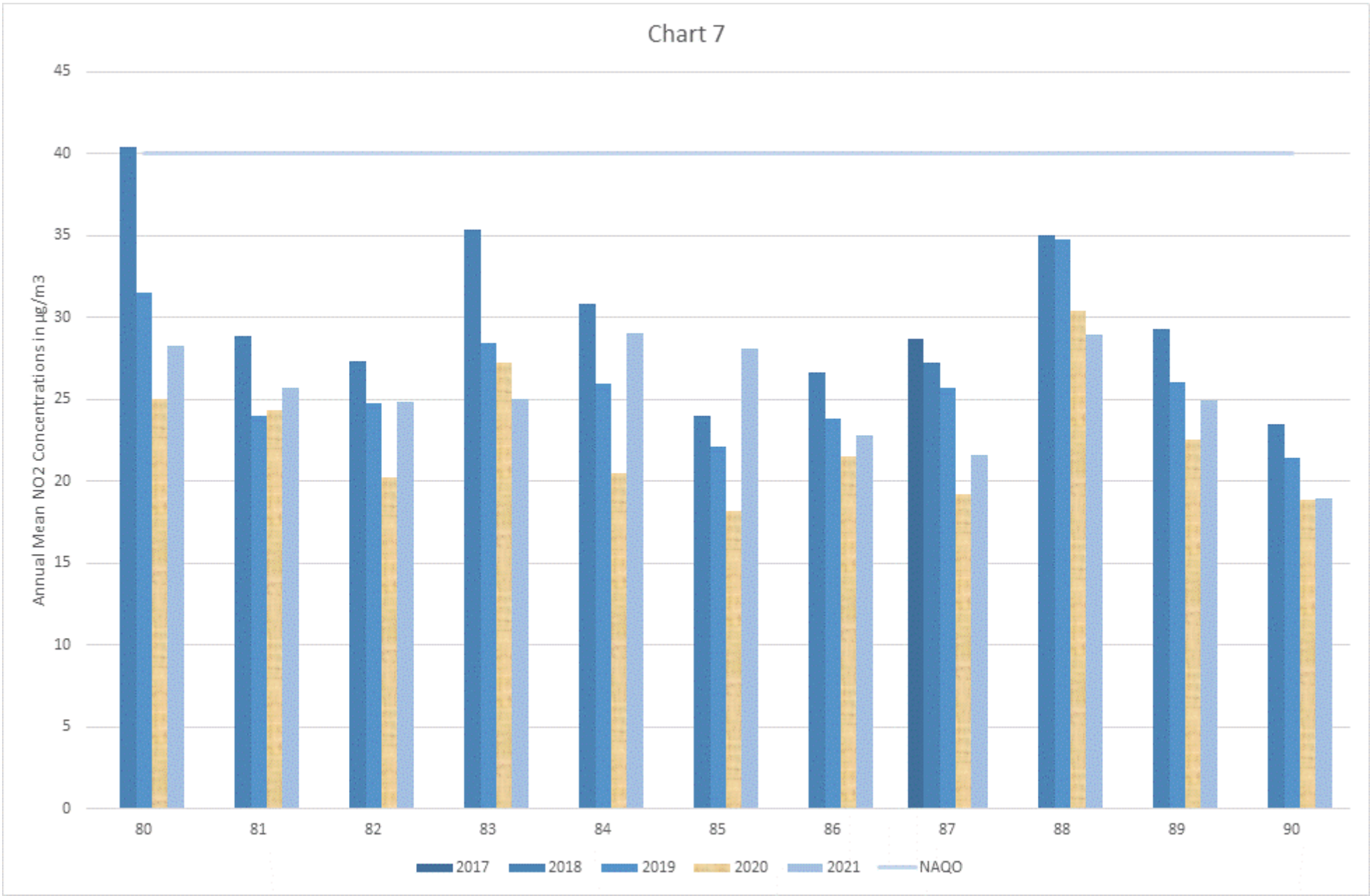


Chart 7
Annual Mean NO2 Concentrations in µg/m3
45
40
35
30
25
20
15
10
5
0
80
81
82
83
84
85
86
87
88
89
90
2017
2018
2019
2020
2021
NAQO

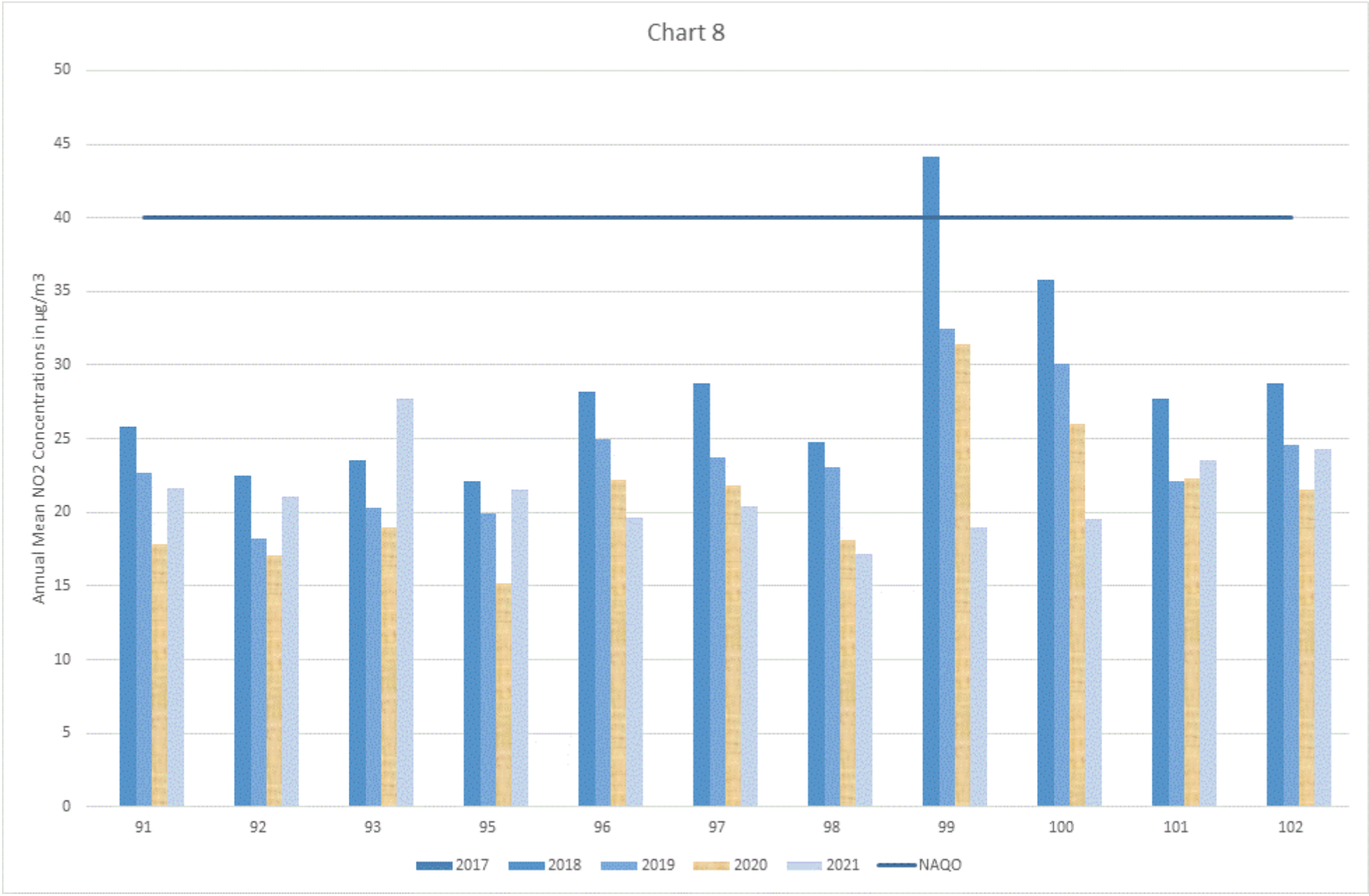


Chart 8
Annual Mean NO2 Concentrations in µg/m3
50
45
40
35
30
25
20
15
10
5
0
91
92
93
95
96
97
98
99
100
101
102
2017
2018
2019
2020
2021
NAQO

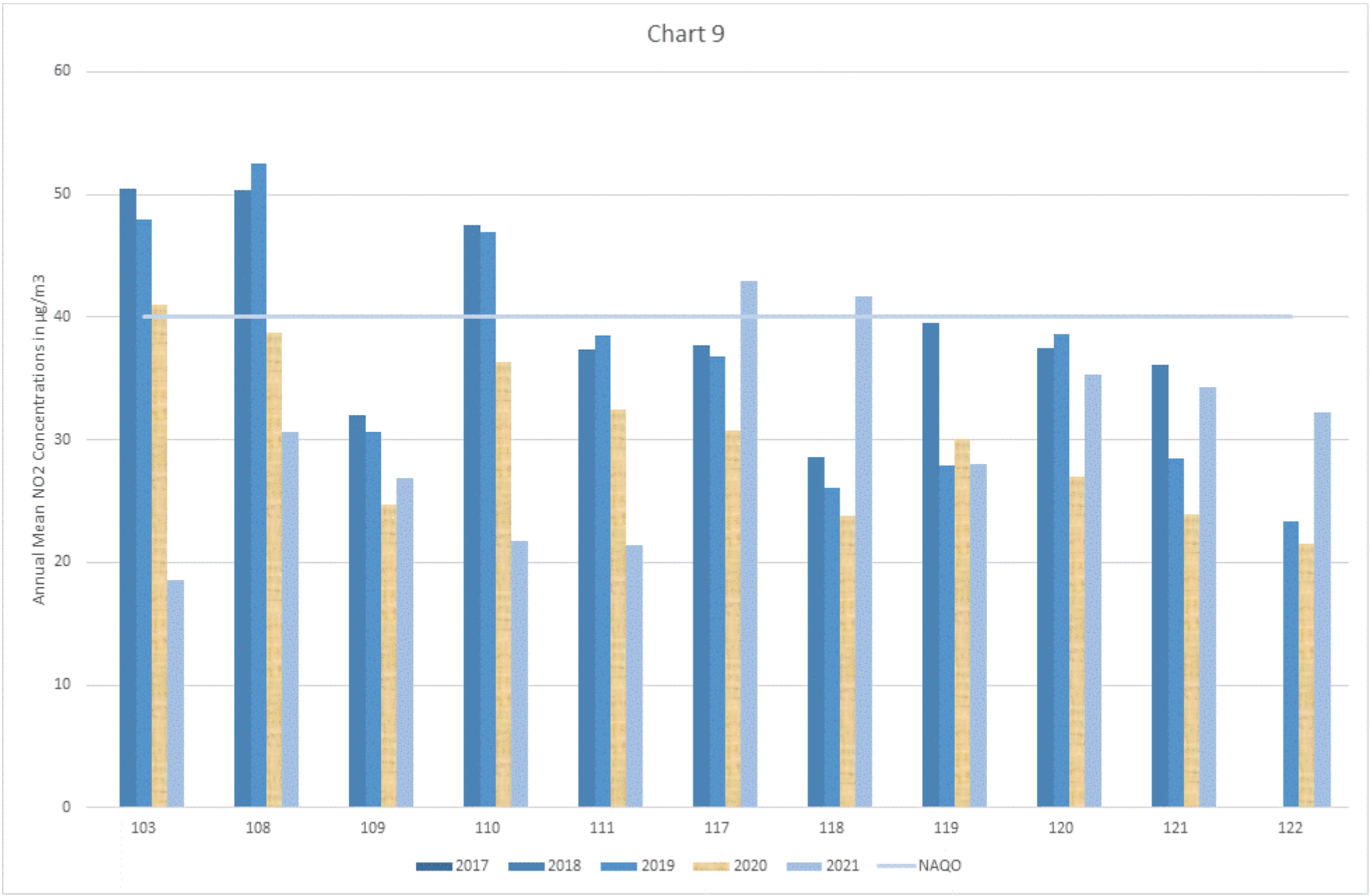


Chart 9
Annual Mean NO2 Concentrations in µg/m3
60
50
40
30
20
10
0
103
108
109
110
111
117
118
119
120
121
122
2017
2018
2019
2020
2021
NAQO

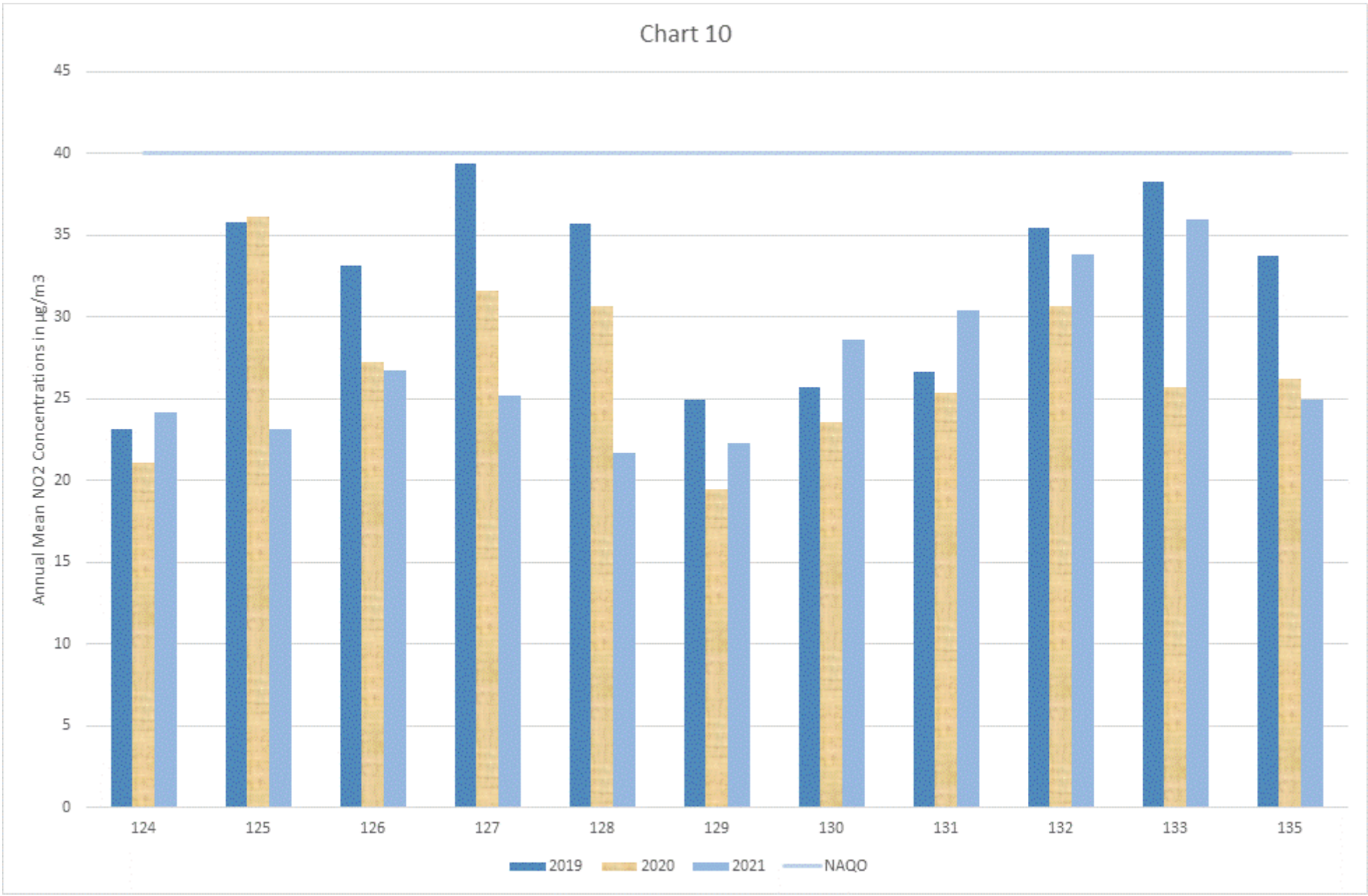


Chart 10
Annual Mean NO2 Concentrations in µg/m3
45
40
35
30
25
20
15
10
5
0
124
125
126
127
128
129
130
131
132
133
135
2019
2020
2021
NAQO

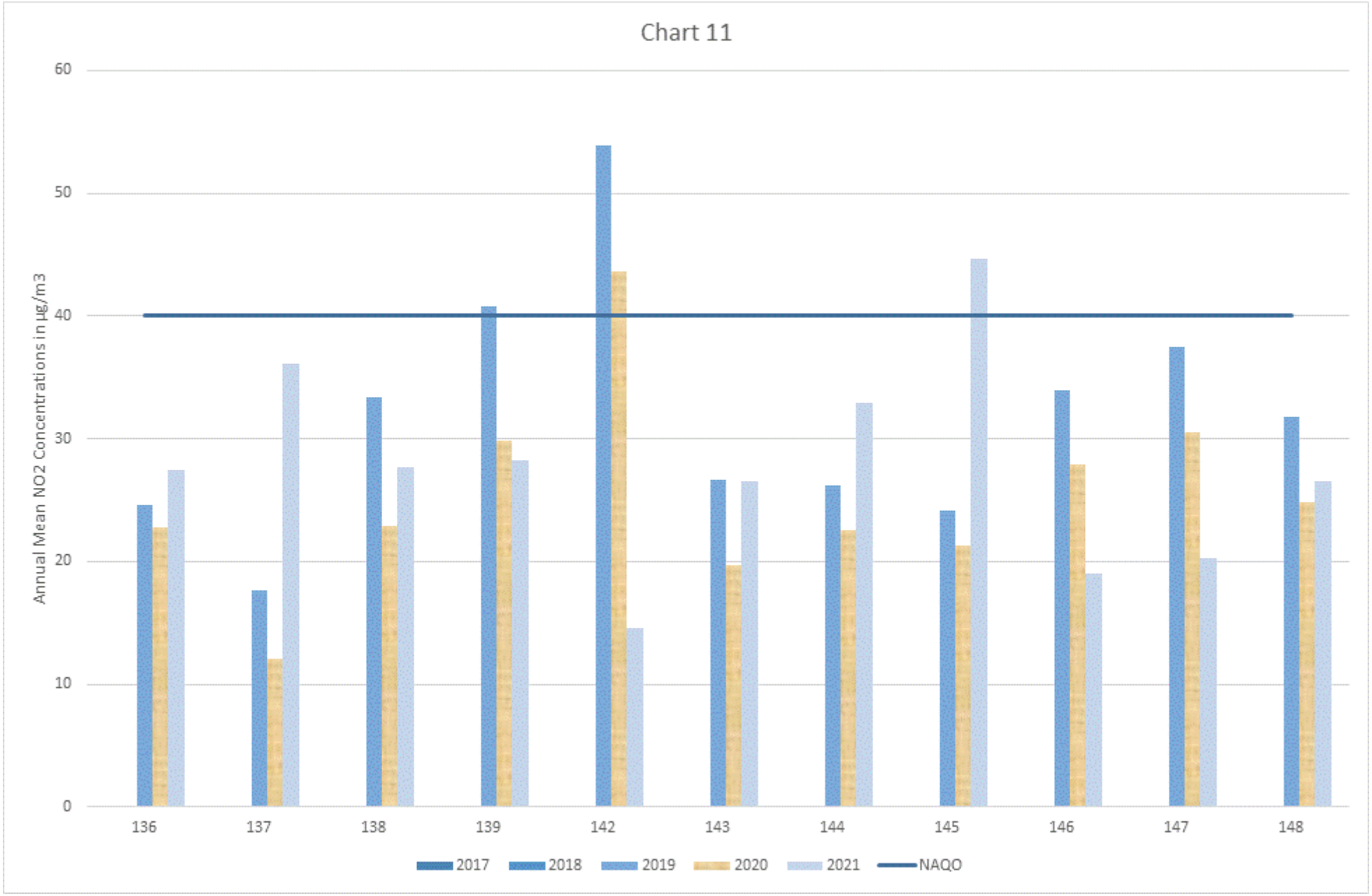


Chart 11
Annual Mean NO2 Concentrations in µg/m3
60
50
40
30
20
10
0
136
137
138
139
142
143
144
145
146
147
148
2017
2018
2019
2020
2021
NAQO

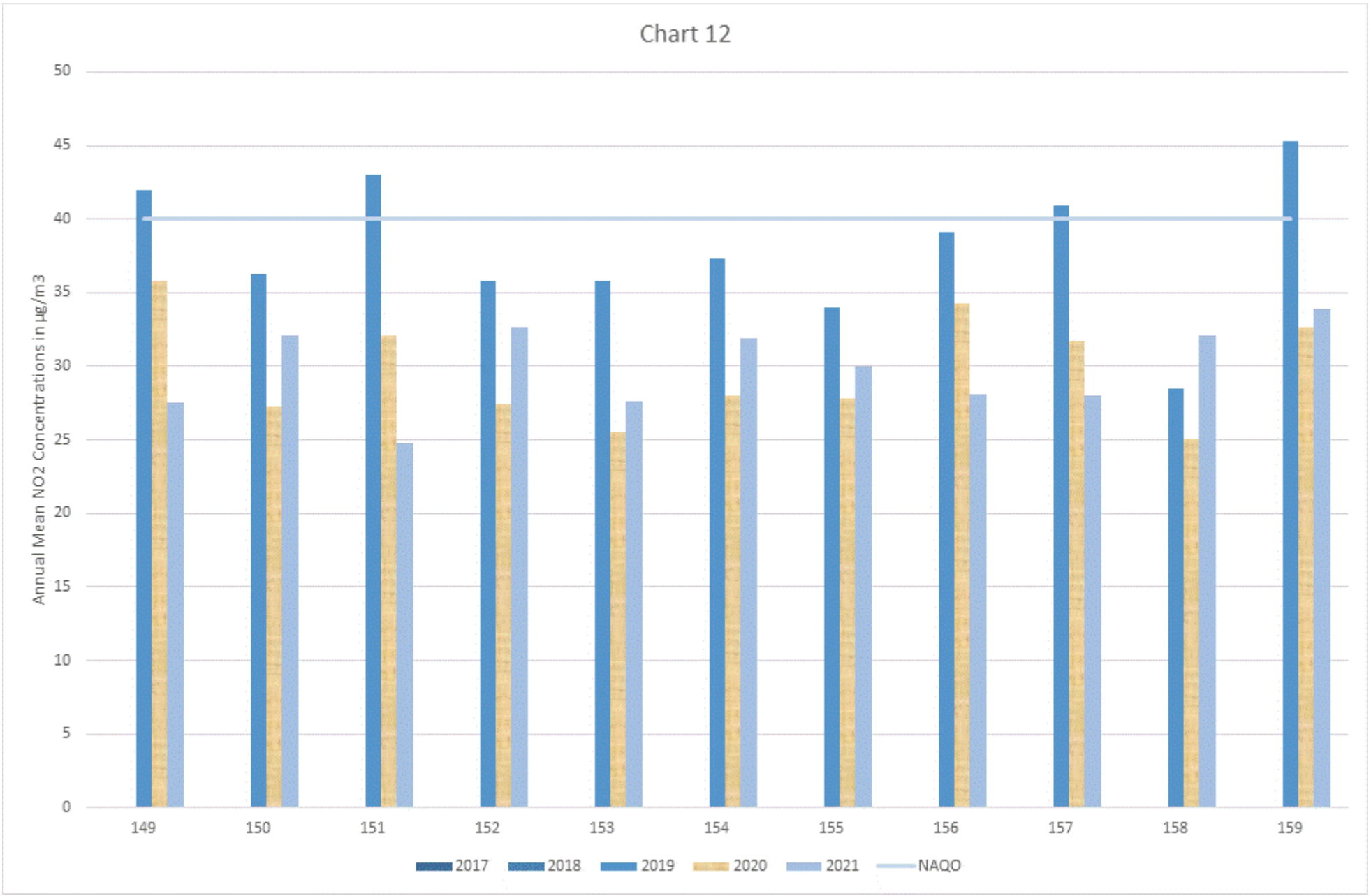


Chart 12
Annual Mean NO2 Concentrations in µg/m3
50
45
40
35
30
25
20
15
10
5
0
149
150
151
152
153
154
155
156
157
158
159
2017
2018
2019
2020
2021
NAQO

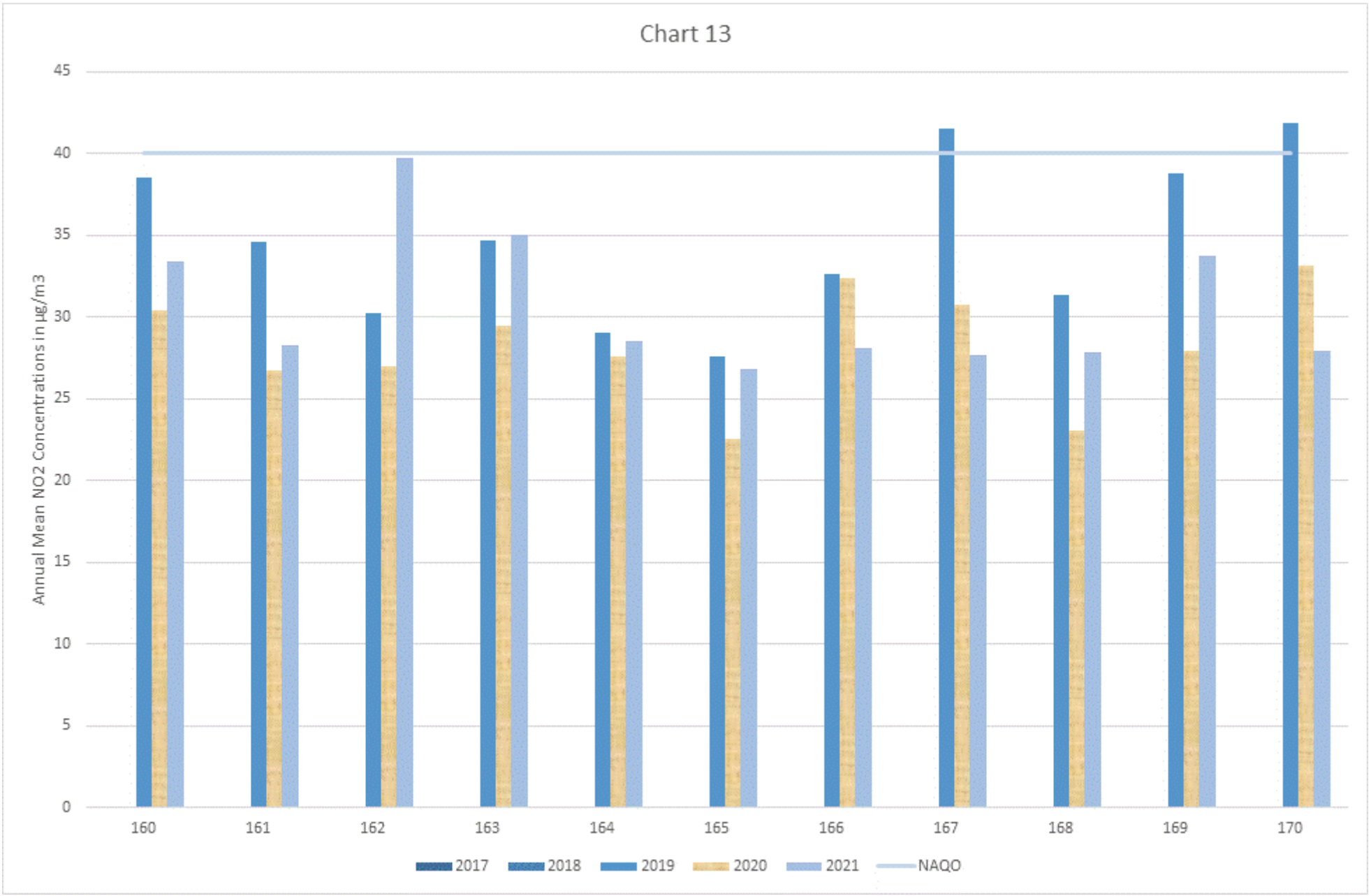


Chart 13
Annual Mean NO2 Concentrations in µg/m3
45
40
35
30
25
20
15
10
5
0
160
161
162
163
164
165
166
167
168
169
170
2017
2018
2019
2020
2021
NAQO

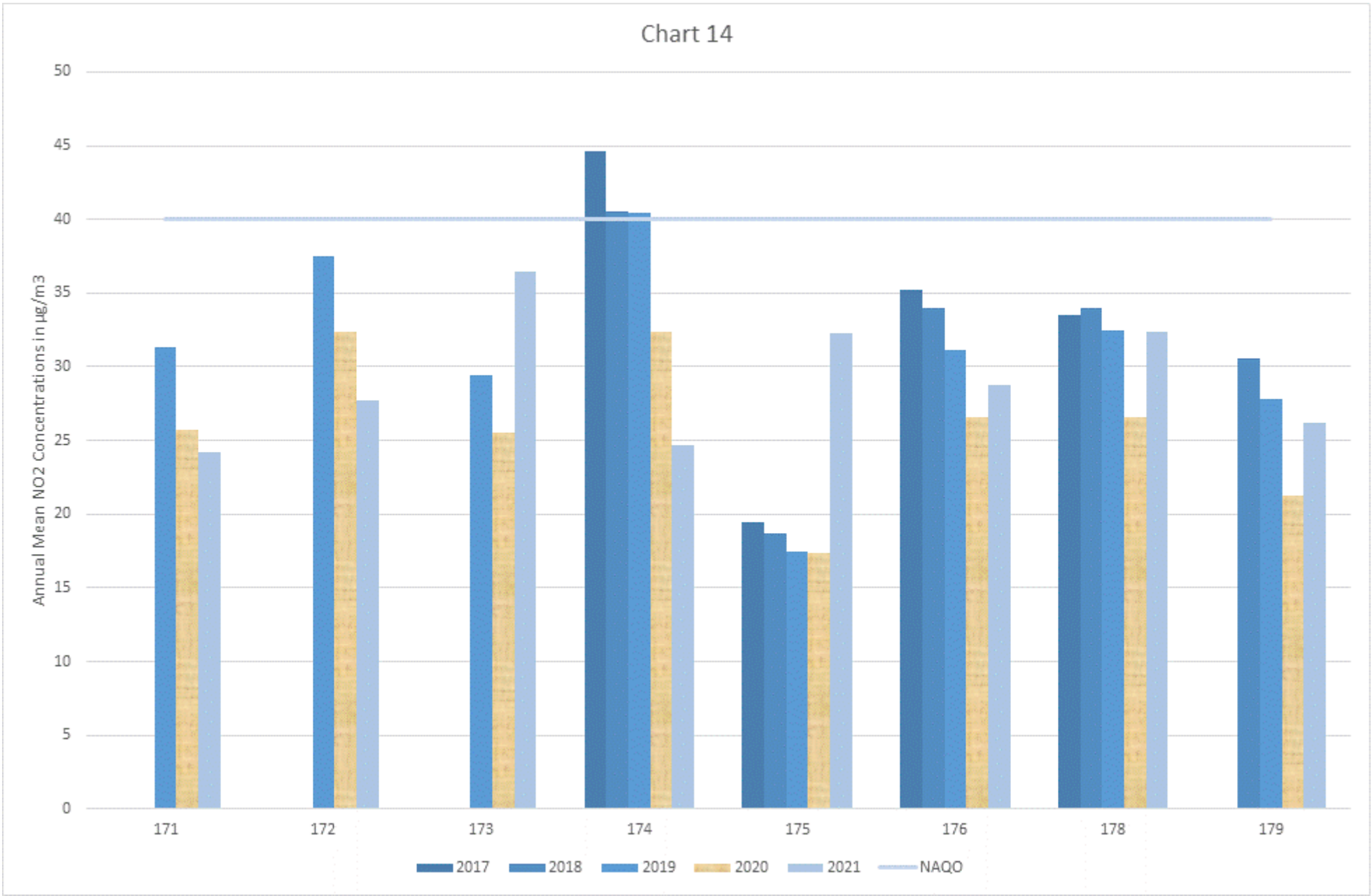


Chart 14
Annual Mean NO2 Concentrations in µg/m3
50
45
40
35
30
25
20
15
10
5
0
171
172
173
174
175
176
178
179
2017
2018
2019
2020
2021
NAQO

Table A.5 – 1-Hour Mean NO_2 Monitoring Results, Number of 1-Hour Means > 200µg/m$^{3.}$

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2021 (%) (2)	2017	2018	2019	2020	2021
C2	464925	102129	Curbside		99.61%	0	0	0	0	0
C4	465403	103952	Urban Background		65.39%	0	0	0	0	0
C6	466004	102348	Roadside		98.95%	0	0	0	0	0
C7	464397	101270	Roadside		99.12%	0	0	0	1	0
C8	463835	100259	Roadside		99.14%		1	0	0	0

Notes:

Results are presented as the number of 1-hour periods where concentrations greater than 200µg/m^3 have been recorded.

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

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.2 – Trends in Number of NO_2 1-Hour Means > 200µg/m^3

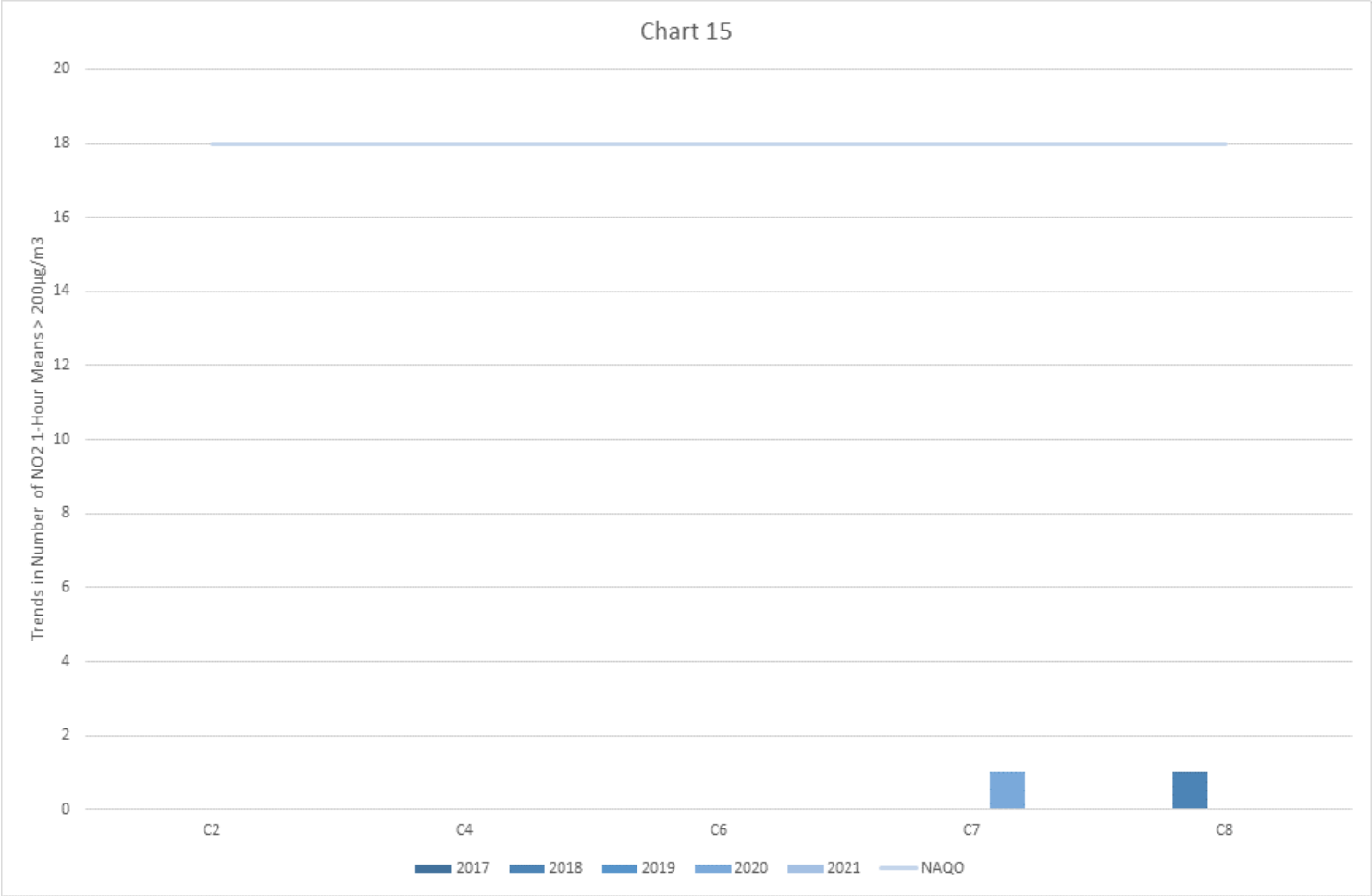


Table A.6 – Annual Mean PM_{10} Monitoring Results (µg/m^3)

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2021 (%) (2)	2017	2018	2019	2020	2021
C2	464925	102129	Curbside		99.91	19.71	17.72	17.79	14.86	16.23
C4	465403	103952	Urban Background		63.45	14.65	14.67	15.08	16.62	14.22
C6	466004	102348	Roadside		96.47	19.96	21.69			14.52
C7	464397	101270	Roadside		97.97	16.11	16.78	14.74	14.9	14.49
C8	463835	100259	Roadside		93.64		19.3	19.49	18.25	17.99

☒ **Annualisation has been conducted where data capture is <75% and >25% in line with LAQM.TG16**

Notes:

The annual mean concentrations are presented as µg/m^3.

Exceedances of the PM_{10} annual mean objective of 40µg/m^3 are shown in **bold**.

All means have been "annualised" as per LAQM.TG16 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%).

Figure A.3 – Trends in Annual Mean PM_{10} Concentrations

The main impactive Covid year is highlighted in Orange.

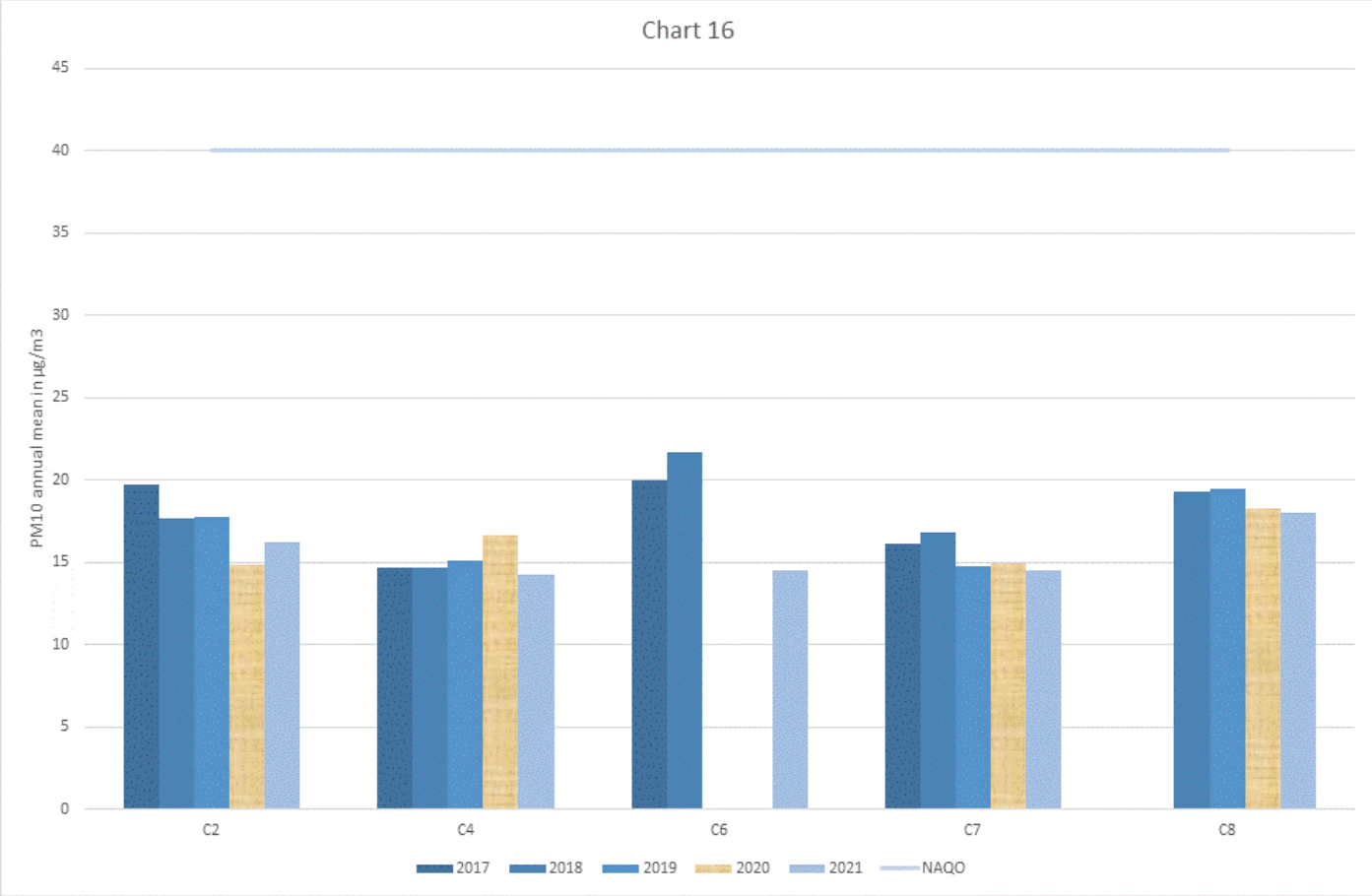


Table A.7 – 24-Hour Mean PM_{10} Monitoring Results, Number of PM_{10} 24-Hour Means > 50µg/m^3

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2021 (%) (2)	2017	2018	2019	2020	2021
C2	464925	102129	Curbside		82.45	4	5	0	1	3
C4	465403	103952	Urban Background		15.35	0	0	1	0	0
C6	466004	102348	Roadside			1	3			1
C7	464397	101270	Roadside		78.93	1	5	0	1	2
C8	463835	100259	Roadside		90.96		1	2	2	1

Notes:

Results are presented as the number of 24-hour periods where daily mean concentrations greater than 50µg/m^3 have been recorded.

Exceedances of the PM_{10} 24-hour mean objective (50µg/m^3 not to be exceeded more than 35 times/year) are shown in **bold**.

If the period of valid data is less than 85%, the 90.4th percentile of 24-hour means is provided in brackets.

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

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

Figure A.4 – Trends in Number of 24-Hour Mean PM_{10} Results >50µg/m^3

The main impactive Covid year is highlighted in Orange.

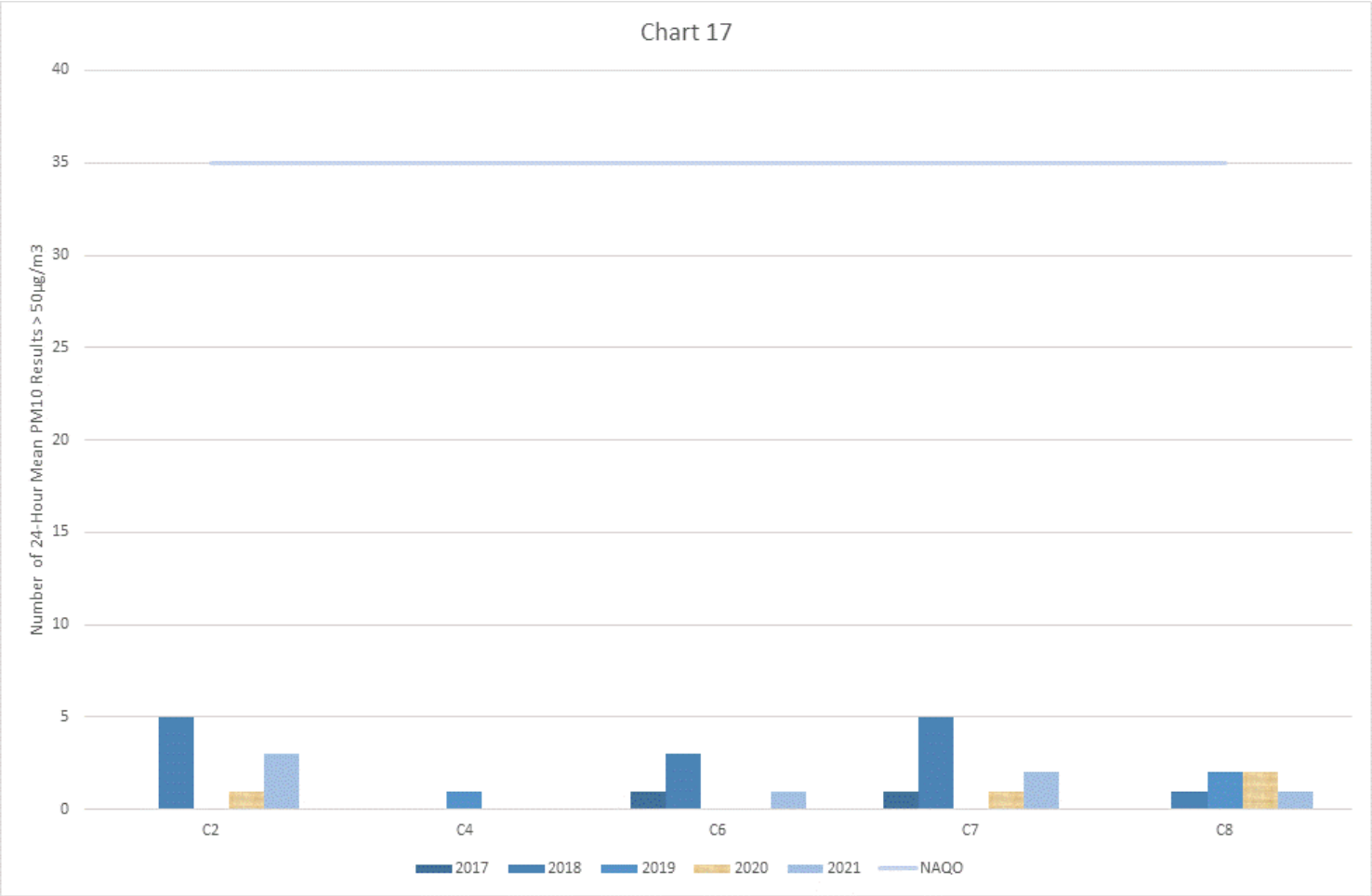


Table A.8 – Annual Mean $PM_{2.5}$ Monitoring Results (µg/m^3)

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2021 (%) (2)	2017	2018	2019	2020	2021
C2	464925	102129	Curbside		99.91	12.28	11.28	11.19	9.35	10.50
C4	465403	103952	Urban Background		63.45	11.17	12.32	8.90	9.45	8.33
C6	466004	102348	Roadside		96.47					9.30
C7	464397	101270	Roadside		97.97	10.54	10.81	9.79	9.40	9.42

☒ **Annualisation has been conducted where data capture is <75% and >25% in line with LAQM.TG16.**

Notes:

The annual mean concentrations are presented as µg/m^3.

All means have been “annualised” as per LAQM.TG16 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%).

Figure A.5 – Trends in Annual Mean $PM_{2.5}$ Concentrations

The main impactive Covid year is highlighted in Orange.

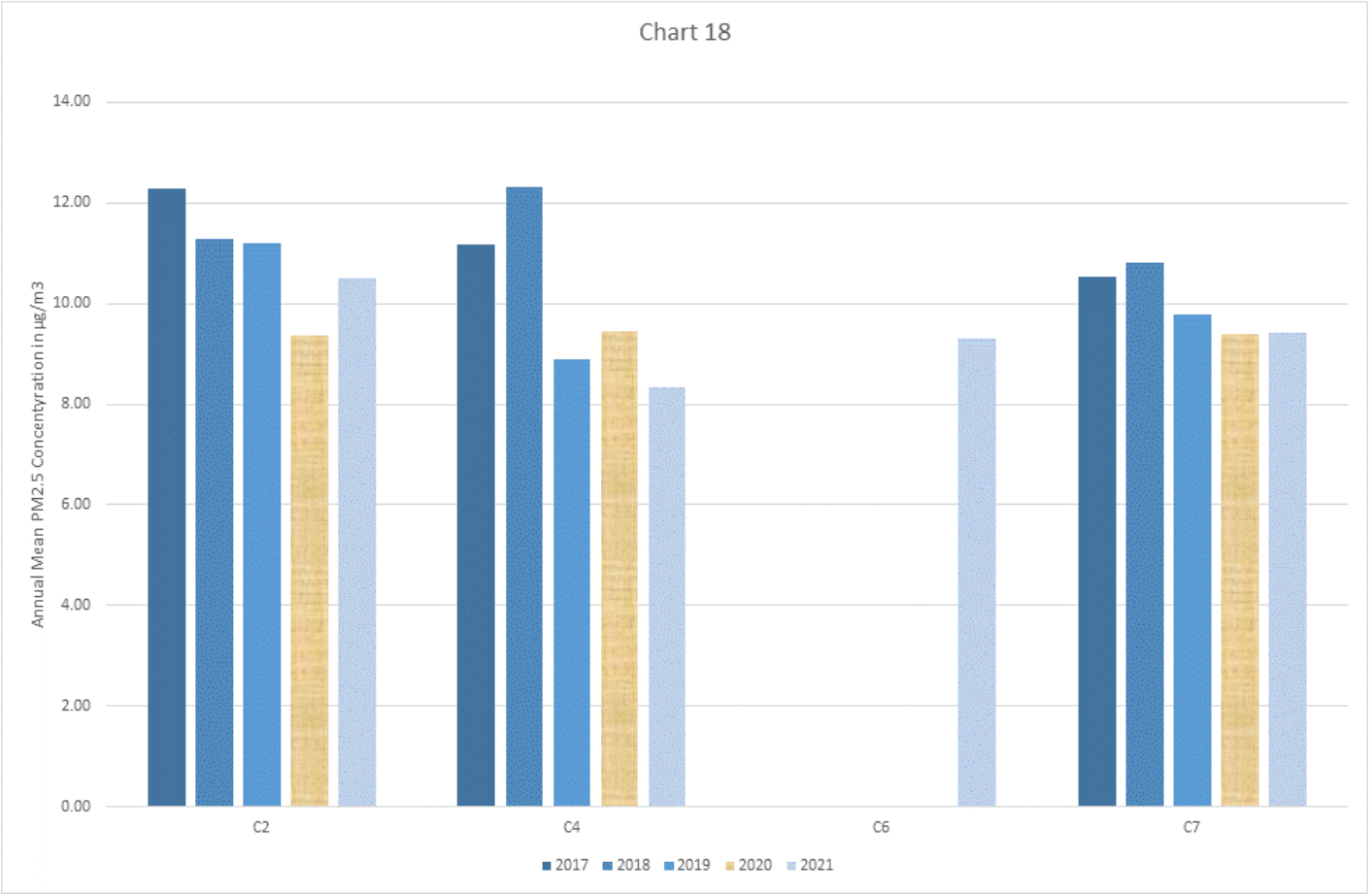


Table A.9 – SO_2 2021 Monitoring Results, Number of Relevant Instances

No SO_2 monitoring is carried out by PCC.

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2021 (%) (2)	Number of 15-minute Means > 266µg/m^3	Number of 1-hour Means > 350µg/m^3	Number of 24-hour Means > 125µg/m^3

Notes:

Results are presented as the number of instances where monitored concentrations are greater than the objective concentration.

Exceedances of the SO_2 objectives are shown in **bold** (15-min mean = 35 allowed a year, 1-hour mean = 24 allowed a year, 24-hour mean = 3 allowed a year).

If the period of valid data is less than 85%, the relevant percentiles are 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%).

Appendix B: Full Monthly Diffusion Tube Results for 2021

Table B.1 – NO_2 2021 Diffusion Tube Results ($\mu g/m^3$).

Site identification details can be found in Table A.2.

T ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean: Raw Data	Annual Mean: Annualised and Bias Adjusted (0.845)	Annual Mean: Distance Corrected to Nearest Exposure	Comment
1	463872	99874	31.80	34.07	38.89	37.49	37.00		40.30		44.81	37.40	40.93	31.74	37.44	31.64	31.64	
2	463705	99371	19.82	18.98	21.67	14.87	11.82	16.89	15.35	13.35	16.03	15.57	22.76	15.92	16.92	14.30	14.30	
3	463408	99460	23.22	19.06	28.03	22.41	17.46	24.01	21.09	22.01	21.40	19.99	27.41	20.86	22.25	18.80	18.80	
4	463190	100390	38.07	33.38	35.31	24.79	25.32	32.65	32.48	33.02	33.45	30.04	39.07	35.32	32.74	27.67	27.67	
5	464230	102194	21.34	30.64	33.45	26.50	22.89	21.57	26.03	23.47	26.84	30.34	27.26	26.99	26.44	22.34	22.34	
6	464331	102197	24.54	29.45	33.69	22.48		22.92	29.16	24.37	27.21	33.45	25.57	30.57	27.58	23.31	23.31	
7	464291	102279	28.44	29.57	32.94	20.07	23.64	21.15	24.07	19.83	24.86	31.18	28.79	27.83	26.03	22.00	22.00	
8	466690	104355	23.12	32.61	29.11	23.91	24.44	26.32	26.75	20.17	25.66	21.49	28.35	19.15	25.09	21.20	21.20	
9	465621	105528	41.36	32.43	42.36	31.87	34.05	28.29	33.24	31.14	33.94		43.82	37.72	35.47	29.98	29.98	
10	467107	104850	17.90	19.31	19.20	13.63	13.31	13.04	13.63	10.72	15.37	17.81	20.49	17.87	16.02	13.54	13.54	
11	466869	103457	31.06	25.22	28.68	20.63	22.04	21.98	16.83		24.15	25.16	33.04	24.42	24.84	20.99	19.20	Distance Corrected
14	466109	103736	22.55	21.84	26.22	21.15	16.19	19.74	17.47	16.75	19.06	19.60	27.96	20.40	20.74	17.53	17.53	
15	466120	101324	29.11	24.39	31.67	26.62	24.67		48.06	20.09	30.26	26.41	31.09	26.00	28.94	24.46	24.46	
16	465474	104205	26.87	28.42	34.69	27.09	23.54	24.53	25.07	21.74	27.95		33.50		27.34	23.10	23.10	
18	466097	101332	30.17	27.42	29.87	22.57	22.46	26.01	22.06	20.51	25.42	28.47	36.14	25.19	26.36	22.27	22.27	
19	466392	100226	34.35	37.59	39.98	33.95	32.95	37.75	36.46	28.09	39.44	33.68	39.01	31.67	35.41	29.92	29.92	
20	466712	99415	27.57	28.02	31.08	28.27	23.43	30.58	27.49	17.96	29.81	24.02	30.96	23.40	26.88	22.71	22.71	
21	465209	98964	33.48	34.72	41.63	29.93	35.32	36.39	31.98	28.82	35.57	33.09	40.71	30.70	34.36	29.03	29.03	
22	464778	99306	28.25	26.39	32.49	29.72	24.66	30.15	24.96	23.53	27.73	27.58	26.67	25.66	27.32	23.08	23.08	
23	464974	99766	41.79	41.38	46.35	37.64	32.94	30.41	33.35	29.80	37.70	40.20	40.30	36.97	37.40	31.60	29.20	Distance Corrected
24	465111	100737	35.29	33.24	40.84	33.75	31.71	36.09	35.58	32.97	38.50	37.90	44.04	35.36	36.27	30.65	30.65	
25	465036	101547	35.74	33.12	43.95	34.69	36.03	37.61	39.29	29.87	39.57	38.78	41.62	41.83	37.68	31.84	31.84	
26	464900	101976	42.19	38.85	49.24	42.10	39.73	45.09	43.58	38.55	44.02	45.72	46.92	39.46	42.95	36.30	36.30	
30	464478	101457	34.90	32.86	39.47	28.97	29.94	34.96	31.30	35.33	33.16		45.25	34.45	34.60	29.24	29.24	
34	464425	100893	26.93	27.09	32.79	30.16	26.46	30.45	31.96		25.56	31.67	35.40	29.44	29.81	25.19	25.19	
35	463837	99759	24.37	27.64	32.00	27.94	25.04	30.31	28.84	25.60	32.52	25.33	31.50	24.57	27.97	23.64	23.64	
36	464501	99329	30.07	29.72	37.77	28.66		31.72	26.92	23.97	31.08	24.99	36.71	25.95	29.78	25.16	25.16	
37	464925	102129	41.28	39.53	49.12	36.10	36.33	38.04	39.10	35.73	38.49	43.94	42.16	39.51	39.94	33.75	33.75	
38	465403	103952	22.34	20.68	24.83	17.56	13.64	14.93	14.88	12.54	18.01	18.45	24.54	21.94	18.69	15.80	15.80	
39	466004	102348	34.91	31.70	33.96	26.83	28.57	28.02	27.67	24.24	31.44	31.70	36.02	31.16	30.52	25.79	25.79	
40	464397	101270	34.32	26.79	34.74	25.89	24.41	29.93	27.32	29.56	27.61	28.98	36.76	29.02	29.61	25.02	25.02	
42	464552	101940	33.24	30.15	38.87	28.32	22.41	31.41	32.77	34.64	35.10	39.68	46.37	32.58	33.80	28.56	28.56	

T ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean: Raw Data	Annual Mean: Annualised and Bias Adjusted (0.845)	Annual Mean: Distance Corrected to Nearest Exposure	Comment
43	464774	101922	31.71	32.80	42.76	27.98	31.50	29.28	33.83	28.33	31.65	37.07	37.17	37.37	33.45	28.27	28.27	
44	464336	100833	35.04	24.95	38.11	28.26	28.38	29.58	30.93	27.49	33.09	33.56	36.96	33.43	31.65	26.74	26.74	
45	464344	100808	25.96	30.66	36.50	26.89	28.62	35.71	35.46	33.18	36.95	36.50	46.00	34.36	33.90	28.64	28.64	
46	464339	101273	36.59	34.48	39.32	34.83	28.31	37.51	34.19	32.33	42.50	37.98	46.45	38.24	36.89	31.18	31.18	
47	464586	102125	38.87	30.82	42.95	27.63	30.50	29.80	33.16	33.54	33.10	42.81	43.04	37.84	35.34	29.86	29.86	
48	464597	102119	30.03	30.19	36.96	25.88	26.61	25.34	26.88	24.74	30.00	33.05	30.63	32.02	29.36	24.81	24.81	
49	463042	100315	25.37	32.48	32.30	24.53	23.53	29.46	30.89	27.12	27.07	28.23	29.37	28.98	28.28	23.90	23.90	
50	463388	100398	32.85	31.06	35.33	28.26	33.43	32.75	33.15	33.00	35.80	35.29	36.88	33.96	33.48	28.29	28.29	
51	463333	100395	29.92	29.42	32.86	24.55	25.08		27.45	30.31	31.21	29.33	30.14	29.03	29.03	24.53	24.53	
52	463235	100412	34.14	31.79	32.62	19.93	23.14	29.37	27.60	31.38	31.32	29.17	36.83	30.88	29.85	25.22	25.22	
53	463835	100259	29.00	25.43	32.58	23.12	23.52	28.08	27.22	35.82	28.00	31.68	37.87	28.47	29.23	24.70	24.70	
55	463224	99590	37.23	29.28	30.48	22.39	23.65	27.43	28.34	23.01	26.97	27.14	30.46	24.52	27.57	23.30	23.30	
56	463261	99782	29.16	33.65	35.31		28.76	35.04	35.77	35.57	35.31	33.18	38.89	28.58	33.57	28.36	28.36	
58	463487	99659	28.50	24.33	27.53	24.99	22.59	24.62	27.49		28.40	26.28	30.40	24.01	26.28	22.21	22.21	
59	466263	100334	41.51	75.22	44.56	33.77	36.62	38.84		32.98	42.36	41.35	44.99	42.41	43.15	36.46	36.46	
60	466201	100478	26.26	26.32	31.72	21.72	23.28	29.21	24.23	21.83	26.82	24.95	35.35	26.93	26.55	22.44	22.44	
61	466136	100610	33.14	31.70	37.36	31.74	28.40	34.76	29.19	23.72	34.60	30.39	38.89	30.65	32.04	27.08	27.08	
62	466165	100573	17.08	22.53	24.28	18.25	16.59	18.54	17.21		19.99	17.05	22.90	20.07	19.50	16.48	16.48	
63	466354	100172	31.16	30.08	35.97	34.28	25.96	33.66	30.61	25.04	35.51	27.14	35.68	27.85	31.08	26.26	26.26	
64	466326	100165	37.58	30.59	37.28	29.19	30.22	32.16	33.49	30.05	36.18	36.53	43.36	31.72	34.03	28.76	28.76	
65	466681	100373	64.06	25.46	33.32	22.36	23.75	26.44	24.86	23.71	26.55	27.93	37.05	26.30	30.15	25.48	25.48	
66	466267	100216	33.61	27.44	36.19	27.56	25.29	30.55	28.43	25.04	34.24	28.78	36.57	29.20	30.24	25.56	25.56	
67	466457	100253	32.12	35.18	38.00	32.23	34.99	35.03	34.98	27.20	37.88	31.98	37.34	34.02	34.25	28.94	28.94	
68	466501	100277	31.45	35.02	38.47	33.09	31.89	35.01	33.08	27.18	35.89	32.79	37.22	32.90	33.67	28.45	28.45	
69	466396	100248	31.98	35.85	34.49	25.89		30.94	28.07		28.51	27.37	37.57	33.52	31.42	26.55	26.55	
70	466667	99546	26.82	25.01		51.17	19.36	25.67	21.31		42.32	18.17	33.62	21.48	28.49	24.08	24.08	
71	465711	105624	30.74	26.41	30.99	24.86	22.57	25.25	25.44	20.40	27.54	29.93	31.53	32.16	27.32	23.08	23.08	
72	465657	105577	26.69	26.59	30.04	23.59	19.47	22.36	21.21	18.72			31.13	25.57	24.54	20.73	20.73	
73	465653	105544	29.41	25.98	32.28	23.73	21.09	23.54	23.06	20.94	25.40	25.57	33.77	28.27	26.08	22.04	22.04	
74	465610	105383	35.69	33.21	38.28	31.78	28.24	30.46	29.99	25.89	34.58	31.75	35.54	31.97	32.28	27.28	27.28	
75	465618	105619	27.38	27.03	27.25	23.05	18.66	20.16	22.52	19.20	26.29		28.09	26.39	24.18	20.43	20.43	
76	466002	102053	31.55	31.45	34.55	29.62	26.87	30.61	27.80	24.15	32.71	28.15	31.44	28.14	29.75	25.14	25.14	
77	466008	102097	24.95	18.93	26.09	17.88	18.10	19.43	18.20	15.53	19.97	22.02	29.62	21.86	21.05	17.79	17.79	
78	466523	99599	26.35	24.37	28.98	21.35	20.26	23.54	22.37		37.12	21.79	27.72	23.45	25.21	21.30	21.30	
80	465204	98978	36.21	30.02	40.93	33.41	26.13	36.53	31.69	28.96	36.20	30.00	42.30	29.30	33.47	28.29	28.29	
81	465278	98968	30.77	34.53	36.43	29.77	28.21	32.40	28.85	23.12	31.27	27.92	34.27	27.79	30.45	25.73	25.73	
82	465178	98945	29.58	29.90	39.58	28.00	23.14	31.96	27.75	24.43	29.43	25.17	37.57	26.19	29.39	24.84	24.84	
83	465166	98982	27.13	26.85	30.98		22.18	30.85	28.43	27.69	30.51	30.20	41.13	29.96	29.63	25.04	25.04	
84	465198	98996	35.31	35.86	39.62	33.65	31.15	38.74	34.64	27.29	33.83	31.11	40.37	30.62	34.35	29.03	29.03	
85	465150	98968	32.39	34.35	40.93	30.72	32.64	39.15	33.74	28.35	23.52	34.58	36.71	32.12	33.27	28.11	28.11	
86	465201	99734	19.80	46.80	21.71	27.97	21.72	28.84		19.76	29.15	25.78	31.58	23.70	26.98	22.80	22.80	

T ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean: Raw Data	Annual Mean: Annualised and Bias Adjusted (0.845)	Annual Mean: Distance Corrected to Nearest Exposure	Comment
87	465183	99904	26.78	22.73	31.08	23.25	22.19	26.24	25.27	19.61	26.32	25.78	31.84	25.59	25.56	21.60	21.60	
88	465186	98996	38.57	33.86	42.08	27.21	28.30	36.32	31.29	27.65	32.49	35.44	46.38	31.50	34.26	28.95	28.95	
89	465190	98946	30.73	34.67	33.68	30.65	25.32	33.32	26.22	25.43	30.02	22.17	35.69	25.85	29.48	24.91	24.91	
90	466095	100813	26.41	23.50	26.97	21.66	18.77	21.11	19.79	17.67	22.40	22.64	24.57	23.26	22.40	18.92	18.92	
91	466070	100819	28.04	26.63	32.63	21.54	23.22	24.55	21.97	19.78	26.70	29.81	29.27	23.68	25.65	21.68	21.68	
92	466525	99736	27.45	23.84	31.48	23.42	19.93	23.74	23.25	19.52	23.88		33.97	24.31	24.98	21.11	21.11	
93	464826	99500	28.86	36.45	36.28	31.46	31.57	36.18	33.29	27.61	33.35	33.19	35.23	29.65	32.76	27.68	27.68	
95	465109	100005	29.64	18.51	33.80	26.47	23.78								26.44	21.56	21.56	
96	465465	98937	29.61	26.00			19.30	14.04		18.36	22.26		29.95	26.01	23.19	19.62	19.62	
97	465896	99852		27.74	24.45	28.82	20.67	19.73	25.68	22.60	19.39	23.00	32.61	20.68	24.13	20.39	20.39	
98	466700	100591	23.58	24.08	23.86	16.61	16.00	22.32	17.11	17.67	19.37	19.25	25.96	18.25	20.34	17.19	17.19	
99	466727	100572	25.02	23.82	28.11	20.07	19.34	20.75	19.86	18.11	22.78	21.21	24.64	25.31	22.42	18.94	18.94	
100	467783	105677	24.43	23.25	25.49	22.42	18.47		18.86	15.90	22.97	21.53	27.41	34.00	23.16	19.57	19.57	
101	467693	105687		30.49	33.82	25.92	23.06	19.35	42.44	20.04	25.25	22.82	30.21	33.58	27.91	23.58	23.58	
102	464585	105714		28.94	31.95	29.64	21.88	25.12	45.67	18.95	28.37	28.03	25.41	32.90	28.80	24.34	24.34	
103	465556	103968	26.26	25.01	30.68	18.59	19.37	18.83	18.84	16.51	23.07	22.90	23.36	20.56	22.00	18.59	18.59	
108	464951	102418	39.22	34.57	42.37	32.87	32.64	31.43	32.79	35.47	35.62	39.19	38.75	39.54	36.21	30.59	30.59	
109	464961	102383	29.37	32.75	38.16	29.54	30.44	31.06	30.69	27.51	33.02		31.49	35.34	31.76	26.84	26.84	
110	464913	102419	27.28	24.74	34.22	19.29	21.97	22.20	25.08	22.33	25.67	28.40	26.78	30.58	25.71	21.73	21.73	
111	464898	102414	28.63	30.33	27.82	22.37	23.99	22.34	21.64	23.03	26.17	24.96	28.45	28.14	25.38	21.45	21.45	
117	463901	100508	44.92	36.95	51.90	45.21	43.67	53.23	52.95	53.50	55.60	61.69	63.44	47.20	50.86	42.97	42.97	
118	463951	100531	40.10	39.90	52.00	49.04	45.35	51.38	52.66	42.36	59.38	55.78	56.22	47.52	49.31	41.66	41.66	
119	464098	100748	33.64	41.91	47.08	27.56	25.67	30.34	29.49	29.38	30.58	33.64	39.47	29.74	33.21	28.06	28.06	
120	464086	100765	44.40	25.76	34.75	41.22	44.82	51.41		45.24	51.46	55.91	14.68	49.98	41.78	35.31	35.31	
121	464930	102071	41.20	41.45	45.89	40.37	37.77	40.01	40.86	36.89	42.93	41.90	38.80	39.60	40.64	34.34	34.34	
122	464918	102090	35.59	36.21	46.23	33.49	32.69	36.36	36.47	33.10	37.36	44.11	42.34	43.29	38.10	32.20	32.20	
124	462491	106553	29.63	27.63	33.78	20.46	30.11	27.21	31.06	21.50	30.71	32.56	30.73	27.96	28.61	24.18	24.18	
125	465624	104626	26.60	25.37	30.88	22.51	23.40	24.12	24.73	19.91	39.04	32.32	31.58	28.43	27.41	23.16	23.16	
126	463756	105253	25.15	34.70	38.11	33.06	27.73	28.45	30.01	24.95	35.71	30.01	36.11	35.78	31.65	26.74	26.74	
127	463536	105652	29.25	30.61	32.20	26.40	27.66	26.65	29.44	25.01	33.54	33.99	34.49	29.08	29.86	25.23	25.23	
128	464710	102222	28.01	26.50	31.71	19.92	22.58	24.22	23.15	22.91	22.91	29.35	29.74	27.45	25.70	21.72	21.72	
129	464711	102239	26.85	27.95	44.87	19.86	23.17	17.85	24.95	22.51	24.57	26.22	30.52	27.35	26.39	22.30	22.30	
130	464986	102344	34.46	35.76	39.67	30.97	23.90	30.73	33.24	30.82	32.96	39.59	36.61	37.42	33.84	28.60	28.60	
131	464925	101969	37.94	33.47	37.98	30.71	38.82	34.38	36.78	32.14	37.06	39.19	38.81	35.15	36.04	30.45	30.45	
132	466344	100139	39.08	36.17	44.34	34.03	34.93	41.91	40.84	34.57	43.90	42.16	50.88	37.58	40.03	33.83	33.83	
133	464882	100475	37.97	33.62	39.39	33.43	35.76	43.24	44.33	43.42	50.64	50.12	56.67	42.63	42.60	36.00	36.00	
135	464526	105665	28.42	31.24	30.18	24.69	28.76	23.83	30.55	23.94	35.57	32.81	29.33	34.58	29.49	24.92	24.92	
136	464512	105641	38.92	31.67	36.83	31.47	28.76	28.44	28.75	23.09	35.39	33.51	38.35	35.10	32.52	27.48	27.48	
137	464082	105658	35.94	44.27	43.50	32.26	42.86	38.52	61.49	33.55	48.36	50.55		38.71	42.73	36.11	36.11	
138	464067	105633	31.33	32.54	36.32	28.32		31.02	31.55	26.09	38.96	37.02	35.22	31.34	32.70	27.63	27.63	
139	463938	105638	34.69	33.65	40.48	25.57	29.52		30.31	25.18	37.46	36.45	40.01	33.69	33.37	28.19	28.19	

T ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean: Raw Data	Annual Mean: Annualised and Bias Adjusted (0.845)	Annual Mean: Distance Corrected to Nearest Exposure	Comment
142	463476	99345	16.77	15.64	22.17	16.69	14.72	19.09	16.64	15.20	17.90				17.20	14.54	14.54	
143	465686	103868	31.47	27.55	34.79	29.75	28.83	33.59	31.07	24.04	38.15	32.60	37.30	28.47	31.47	26.59	26.59	
144	465665	103832	43.85	37.73	45.56	34.99	32.77	36.67	36.59	35.88	42.55	40.01	44.69	36.73	39.00	32.96	32.96	
145	464259	100965	49.51	43.98	53.06	43.89	47.34	58.39	57.27	53.31	62.75	61.96		49.52	52.82	44.63	**44.63**	
146	465265	105807	24.74	26.23	29.28	21.15	18.70	21.08	18.72	15.38	25.14	21.31	22.36	25.87	22.50	19.01	19.01	
147	465303	105817	27.30	23.74		21.32	20.00	23.29	23.27	20.46	25.18	21.92	32.03	25.33	23.99	20.27	20.27	
148	464670	105713	35.89	30.23	37.44	30.93	21.88	27.02	38.36	24.30	28.99	27.82	38.31	35.38	31.38	26.51	26.51	
149	464665	105737	29.16	34.62	34.29	32.88	29.33	32.97	15.56	27.64	36.47	38.89	36.93	42.25	32.58	27.53	27.53	
150	464791	105775	45.06	38.56	42.22	36.41	37.66	34.93	28.69	33.41	39.69	39.23	38.61	41.14	37.97	32.08	32.08	
151	464806	105751	28.69	26.47	34.15	24.00	29.11	27.17	37.14	22.19	28.66	28.70	34.90	31.16	29.36	24.81	24.81	
152	465169	105763	42.41	44.65	48.26	41.49	25.85	39.90	26.87	23.49	46.94	38.91	40.30	44.46	38.63	32.64	32.64	
153	465173	105784	37.39	29.30	37.48	28.20		28.13	41.78	34.57	29.90	28.52	36.28	28.31	32.71	27.64	27.64	
154	465337	105726	41.98	41.82	46.19	33.62	37.99	38.77	39.97	34.27	14.56	38.69	45.64	40.02	37.79	31.94	31.94	
155	465350	105748	30.72	33.18	45.54	38.51	33.19	34.67	34.10	29.51	39.18	33.90	37.68	35.68	35.49	29.99	29.99	
156	463936	105617	34.75	35.31	39.32	34.41	31.48	32.48	42.31	21.02	12.92	31.38	35.95	47.92	33.27	28.11	28.11	
157	464471	101099	37.41	28.59	36.04	30.01	25.19	35.81	32.59	32.28	35.67	30.58	41.30	29.95	33.12	27.99	27.99	
158	467322	103333	36.11	33.70	45.56	50.40	34.47	37.98	36.15	33.78	42.16	31.32	38.82	35.31	37.98	32.09	32.09	
159	467357	103337	49.29	34.65	47.03	28.99	37.51	35.97	41.16	33.74	37.50	44.49	51.92	39.65	40.16	33.93	33.93	
160	467378	103247	45.66	36.32	48.56	35.60	35.67	38.89	38.20	34.89	36.34	45.31			39.54	33.41	33.41	
161	467343	103240	30.80	35.25	39.47	42.22	26.45	35.21	31.32	29.27	37.88	27.06			33.49	28.30	28.30	
162	467441	104208			49.80	51.20	41.33	43.27	37.89	44.24	46.48	54.64	58.63	42.32	46.98	39.70	39.70	
163	467423	104211	40.29	45.62	48.53	33.00	43.02	43.45	36.89	37.47	50.64	35.18	42.27	41.68	41.50	35.07	35.07	
164	464707	105787	29.79	35.56	39.48	32.54	34.39	31.18	28.36	27.60	39.40	32.85	37.64	36.52	33.77	28.54	28.54	
165	464716	105817	33.70	32.77	38.20	25.12	29.39	28.98	36.09	21.29	30.71	33.65	35.17	36.49	31.80	26.87	26.87	
166	467269	103292	35.52	32.72	43.06	38.43		34.36	31.91	33.03	38.96	31.51	38.92	39.97	33.26	28.11	28.11	
167	464589	100962	41.29	31.33	39.36	27.49	27.46	31.04	28.84	28.03	31.31	33.09	41.61	31.90	32.73	27.66	27.66	
168	465798	103856	35.20	29.73	41.91	31.88	29.75	35.05		28.51	31.58	31.94	34.46	32.15	32.92	27.82	27.82	
169	465809	103870	39.72	41.65	39.71	35.04	36.79	39.63	38.43	31.35	47.45	50.14	42.64	36.32	39.91	33.72	33.72	
170	464454	101044	40.76	29.31	38.21	31.27	26.57	33.84	30.95	34.66	37.86	33.94	41.70	31.85	33.03	27.91	27.91	
171	464423	101047	30.16	27.47	32.09	28.64	23.53	28.12	28.01	24.23	28.56	24.74	37.60	28.96	28.62	24.18	24.18	
172	464365	101038	37.04	25.53	39.76	30.48	24.26	34.17	29.39	32.82	33.70	30.39	46.80	28.91	32.77	27.69	27.69	
173	465161	100081	41.88	39.66		46.54	35.16	41.33	40.14	35.69		75.62	41.04	34.82	43.19	36.49	36.49	
174	464606	100961	34.37	28.93	35.36	24.66	22.31	27.47	27.04	23.12	26.76	31.42	39.02	29.41	29.16	24.64	24.64	
175	464478	101110	42.85	31.03	43.46	29.05	35.63	39.86	40.40	27.44	37.63	42.21	46.86	38.44	38.25	32.32	32.32	
176	467269	103275	32.04	33.44	39.09	32.92	30.92	35.62	28.48	28.22	37.19	29.63	45.81	34.51	33.99	28.72	28.72	
178	465679	103987	43.73	43.29	41.95	30.51	32.56		35.37	27.80	42.74	40.97	43.13	38.86	38.26	32.33	32.33	
179	464735	105784	31.31	33.63	34.96	30.76	30.80	28.24	28.79	24.18	32.31	33.17	31.84	32.46	31.04	26.23	26.23	
180	464261	100967	40.03	36.13	46.07	41.64	40.05	39.20	45.55	44.85	53.21				42.97	36.31	36.31	
181	464299	101324	33.32	31.08	33.11	25.03	21.32	28.59	27.06	25.75	27.55	28.68	37.72	30.16	29.11	24.60	24.60	
182	464289	101338	47.37	39.04	42.85	27.59	29.00	32.68	30.09	29.93	34.21	37.37	39.67	40.22	35.83	30.28	30.28	
183	464222	101346	36.27	31.06	35.75	28.25	21.50	27.82	25.09	23.24	28.36	25.05	38.23	30.50	29.26	24.72	24.72	

T ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean: Raw Data	Annual Mean: Annualised and Bias Adjusted (0.845)	Annual Mean: Distance Corrected to Nearest Exposure	Comment
184	464211	101346	40.05	29.42	33.92	24.55	21.73	28.61	23.76	24.77	28.16	28.12	42.81	24.97	29.24	24.71	24.71	
185	465976	104576	22.58	24.18	26.33	20.09	20.71	20.07	20.26	15.95	28.03	28.63	31.94	27.38	23.85	20.15	20.15	
188	464390	101510	32.27	29.67	34.86	25.62	28.12	27.58	27.36		31.70	30.95	37.58	29.57	30.48	25.75	25.75	
189	464386	101532	30.94	35.01	20.33	25.75	26.71	26.82		26.36	32.05	32.23	38.97	32.22	29.90	25.27	25.27	
190	464292	101382	34.63	29.97	37.09	22.97	27.18	29.87	28.10	27.92	29.27	32.95	33.72	31.11	30.40	25.69	25.69	
191	464267	101401	37.43	33.07	39.85	27.20	19.80	26.82	22.32	23.43	25.65	28.07	41.55	28.02	29.44	24.87	24.87	
192	465114	101370	35.56	38.87	44.56	43.50	34.16	44.87	40.90	37.39	45.13	37.26	43.78	35.41	40.12	33.90	33.90	
193	465297	100005	35.42	37.07	38.74	32.16	37.79	36.22	39.20	27.76	37.00	40.17	37.66	31.13	35.86	30.30	30.30	
194	465138	101343	41.70	39.65	39.19	37.01	40.62	39.25	40.23	31.33	42.95	41.63	44.43	35.72	39.47	33.36	33.36	
213	465104	101319	48.47	39.80	39.31	40.47	40.19	46.46	40.23	40.10	51.12	53.56	62.58	43.24	45.46	38.41	38.41	
214	463808	100232										43.44	38.93	49.89	44.09	33.53	33.53	
216	463933	100509									52.83	50.30	49.75	43.98	49.22	37.43	37.43	
217	465089	100462											36.83	35.14	35.98	30.41	30.41	
218	465091	100452											42.47	39.95	41.21	34.82	34.82	
220	464404	101962										38.87		42.84	40.86	34.52	34.52	
221	464419	101931										35.85		36.07	35.96	30.39	30.39	
222	464409	100929										35.70	41.51	31.15	36.12	27.47	27.47	
223	464970	101970											34.33	35.82	35.08	29.64	29.64	
224	464992	101983											34.71	31.65	33.18	28.04	28.04	
225	464407	99352											39.16	29.80	34.48	29.13	29.13	
226	464384	99347											34.59	27.99	31.29	26.44	26.44	
227	467389	103185											51.80	38.84	45.32	38.29	38.29	
228	467358	103189											36.13	30.99	33.56	28.36	28.36	
229	467429	104140											59.41	39.52	49.46	41.80	**41.80**	
230	467411	104143											37.56	41.53	39.54	33.41	33.41	
231	465129	100404											41.99	30.20	36.10	30.50	30.50	
232	465114	100529											56.77	39.74	48.25	40.77	40.77	
233	465113	100745											52.85	40.16	46.50	39.30	39.30	
234	465131	100771											36.81	25.71	31.26	26.42	26.42	
235	465148	100107											36.65		36.65	30.97	30.97	
236	465143	100404											42.16	36.83	39.49	33.37	33.37	
237	465127	100526											39.13	29.71	34.42	29.08	29.08	
238	466060	99826											34.26	27.68	30.97	26.17	26.17	
239	466056	99838											38.73	27.73	33.23	28.08	28.08	
240	464906	102439											26.82	29.79	28.31	23.92	23.92	
241	466467	99627											33.87	25.93	29.90	25.27	25.27	
242	466453	99649											29.50	23.94	26.72	22.58	22.58	
243	463205	99608											24.32	27.94	26.13	22.08	22.08	
244	463266	99799											31.58	26.37	28.97	24.48	24.48	
245	463047	100329											32.22	31.41	31.81	26.88	26.88	
246	463053	100361											37.03	35.87	36.45	30.80	30.80	

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247	464929	100133											41.14	34.04	37.59	31.76	31.76	
248	464929	100066											39.21	34.21	36.71	31.02	31.02	
249	464858	100537											37.53	34.00	35.76	30.22	30.22	
250	464850	100523											28.49	27.48	27.99	23.65	23.65	
251	464345	101022										36.69	48.19	34.16	39.68	30.18	30.18	
252	464192	100895										33.30	39.07	31.75	34.71	29.33	29.33	
253	463482	99523											28.46	24.92	26.69	22.55	22.55	
254	463478	99506											32.64	23.81	28.22	23.85	23.85	
255	464311	101021										40.36	42.30	34.71	39.12	29.75	29.75	
256	463832	99761											38.30	28.43	33.37	28.20	28.20	
257	463819	99763											32.33	25.59	28.96	24.47	24.47	
258	464970	101961											40.24	37.47	38.86	32.84	32.84	
259	464559	101941											44.70	39.92	42.31	35.75	35.75	
260	464784	101939											43.07	39.41	41.24	34.85	34.85	
261	464772	101924											37.65	37.26	37.45	31.65	31.65	
262	465049	101552											51.66	35.91	43.78	37.00	37.00	
263	465046	101536											42.91	38.73	40.82	34.49	34.49	
264	463860	99861											45.56	35.06	40.31	34.06	34.06	
265	463855	99871											32.90	26.81	29.86	25.23	25.23	
266	464966	102417											32.58	35.40	33.99	28.72	28.72	
267	464968	102420											48.54	43.42	45.98	38.86	38.86	
268	464465	101452											49.66	40.55	45.10	38.11	38.11	
269	463750	99507											29.20	23.92	26.56	22.44	22.44	
270	463753	99522											30.74	23.21	26.97	22.79	22.79	
271	464337	100810										33.59	37.18	30.80	33.86	25.75	25.75	
272	464324	100830										41.54	43.78	38.68	41.33	31.43	31.43	
273	465691	103860											48.26	42.86	45.56	38.50	38.50	
277	465013	102342											38.88	37.27	38.07	32.17	32.17	
278	465025	102353											36.21	34.17	35.19	29.73	29.73	
279	463477	99670											33.56	26.60	30.08	25.42	25.42	
280	463491	99681											33.32	27.33	30.33	25.63	25.63	
281	464540	102065											31.31	33.32	32.31	27.31	27.31	
282	466444	100251											48.64	39.14	43.89	37.09	37.09	
283	466439	100266											36.90	33.31	35.11	29.67	29.67	
284	464861	99519											36.40	28.83	32.62	27.56	27.56	
285	464839	99523											40.75	34.50	37.62	31.79	31.79	
286	464759	99308											43.22	35.49	39.35	33.25	33.25	
287	465082	99963											27.60	22.94	25.27	21.35	21.35	
288	464961	99772											42.40	32.65	37.52	31.71	31.71	
289	465064	99934												34.36	34.36	29.04	29.04	
290	464835	99901											28.13	25.89	27.01	22.83	22.83	

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291	464832	99885											28.05	24.90	26.48	22.37	22.37	
292	464554	102051										33.51	43.77	41.36	33.50	28.31	28.31	

☒ **All erroneous data has been removed from the NO_2 diffusion tube dataset presented in Table B.1**

☒ **Annualisation has been conducted where data capture is <75% and >25% in line with LAQM.TG16**

☒ **Local bias adjustment factor used.**

☒ **National bias adjustment factor used.**

☒ **Where applicable, data has been distance corrected for relevant exposure in the final column.**

☒ **Portsmouth City Council confirm that all 2021 diffusion tube data has been uploaded to the Diffusion Tube Data Entry System**

Notes:

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

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

See Appendix C for details on bias adjustment and annualisation.

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

New or Changed Sources Identified Within Portsmouth 2021

Portsmouth City Council has not identified any material new sources relating to air quality within the reporting year of 2021.

Additional Air Quality Works Undertaken 2021

Portsmouth City Council has not completed any additional works within the reporting year of 2021 save for additional monitoring locations as previously set out.

QA/QC of Diffusion Tube Monitoring

The continuous NO_2 monitoring network is complemented by a secondary network of passive NO_2 tubes that are located in suspected air quality hot spots. In addition, tubes are located at the relevant continuous monitoring sites to enable data adjustment. At a selection of sites three tubes are exposed simultaneously and the data compared. Where the data is consistent, the results are averaged. Where the tubes results show significant differences, the data is discounted.

This method provides a cost-effective means of monitoring a wide range of monitoring locations. The accuracy of tubes however is variable depending on the tube handling procedures, the specific tube preparation, adsorbent mixture and the analysing laboratory. These tubes are supplied and analysed by Gradko International Ltd.

PCC's NO_2 diffusion tubes are prepared by the supplier using 50% Triethanolamine (TEA) in acetone. These tubes were exposed for one-month periods in accordance with LAQM.TG (16) guidance [5].

Tube Handling Procedures

Once received by post, NO_2 tubes are stored in cool location within the supplied packaging until use. The tube end caps are not removed until the tube has been placed at the monitoring location at the start of the monitoring period. The exposed tubes are recapped

at the end of the monitoring period and returned as quickly as possible to a clean cool storage environment then sent to GIL for analysis.

Laboratory QA / QC

GIL is a UKAS accredited company for the analysis of NO_2. GIL take part in the WASP scheme on a quarterly basis. An inter-comparison of results from other laboratories demonstrates that GIL's performance is good in terms of accuracy and precision.

Data Ratification

Once analysed, the NO_2 diffusion tubes results which were significantly within the documented limit of detection, were laboratory blank corrected.

The returned results are closely examined on a monthly basis to identify any spurious data (e.g., very high or very low data).

The data is subjected to a further series of corrections for the monitored period under consideration:

- Firstly, PCC use the data from the local co-location study of NO_2 diffusion tubes to calculate the bias following the approach prescribed in Box 6.4 of LAQM TG using the appropriate continuous monitoring data from the local air quality monitoring network for individual NO_2 monitored sites according to the site criteria.

- Secondly, the estimation of the NO_2 annual mean is deduced for individual NO_2 diffusion tube monitored locations following the approach prescribed in Box 6.5 of LAQM TG using data from both Portsmouth and Southampton AURN stations.

- The corrected results are then reported and used for comparison only, i.e., not for verification processes in the Further Assessment (Review and Assessment process).

Diffusion Tube Annualisation

Some diffusion tube monitoring locations within Portsmouth City Council recorded data capture of 75% therefore it was not required to annualise any monitoring data. In addition, some other sites with a data capture below 25% did not require annualisation. Further

details are provided within the table below. Site identification details can be found in Table A.2.

	AnR-Op DEFRACASQMS (214)	AR MRC (96)	CP-189 (95)	ComR-Col10 (222)	HS-Col10 (251)	HS-OppCol10 (255)	MW-Col2 (271)	MW-OppCol2 (272)
Annualisation Factor: Rp (ratio Am/Pm)								
Bournemouth Ratio **"Rb"**	0.93	1.00	0.90	0.93	0.93	0.93	0.93	0.93
Portsmouth DEFRA Ratio **"Rp"**	0.86	1.00	1.03	0.86	0.86	0.86	0.86	0.86
Annualisation Factor Average "Ra"	**0.90**	**1.00**	**0.96**	**0.90**	**0.90**	**0.90**	**0.90**	**0.90**
Measure Period Mean **"M"**	44.09	23.19	26.44	36.12	39.68	39.12	33.86	41.33
Annualised average" D1"	**39.67**	**23.22**	**25.51**	**32.50**	**35.71**	**35.20**	**30.46**	**37.19**

Diffusion Tube Bias Adjustment Factors

The diffusion tube data presented within the 2022 ASR have been corrected for bias using a local adjustment factor. Bias represents the overall tendency of the diffusion tubes to under or over-read relative to the reference chemiluminescence analyser. LAQM.TG16 provides guidance about the application of a bias adjustment factor to correct diffusion tube monitoring. Triplicate co-location studies can be used to determine a local bias factor based on the comparison of diffusion tube results with data taken from NO_x/NO_2 continuous analysers. Alternatively, the national database of diffusion tube co-location surveys provides bias factors for the relevant laboratory and preparation method.

Portsmouth City Council have applied a local bias adjustment factor of 0.845 to the 2021 monitoring data. A summary of bias adjustment factors used by Portsmouth City Council over the past three years is presented in Table C.1 in Appendix C, which presents data from the three Portsmouth based roadside stations.

The NDDT data that had data capture greater than 75% and the data that was subjected to annualisation only have been subjected to Bias Correction Factor using locally generated Bias Correction Factors from local co-location study involving the exposure of a triplicate NDDTs at each of Burrfields Road, Mile End Road stations and DEFRA's CAQMSs.

Bias Correction Factors were generated from the five long-term continuous monitoring stations in the city including DEFRA's following the approach prescribed within LAQM.TG, using DEFRAs calculating precision and accuracy spreadsheet provided by DEFRA.

The Five generated bias correction factors for individual stations are tabulated as follows:

CAQMSs	Criteria	Bias Factor A	Bias Factor B
Gatcombe Park (AURN)	Urban Background	0.87	0.15
London Road	Curbside	0.73	0.36
Burrfield Road	Roadside	0.75	0.33
Mile End Road	Roadside	1.17	-0.15
Anglesea Road (DEFRA)	Roadside	0.73	0.37
Average "Bias B"			0.183
(Average "Bias B")+1			1.183
Overall average "Bias Factor" (1/((Average "Bias B")+1)			**0.845**

However, in year 2021 due to poor data capture from AURN station (62.91%), and given that London Road station is sited at a Curbside station the averaged Bias Correction Factor was generated using Bias Correction Factors from only:

- Tubes exposed at Burrfields Road, and Mile End Road stations (both roadside stations) generated 0.75 and 1.17 respectively as the Bias Correction Factors

- Tubes exposed at DEFRA's station (roadside station) generated 0.73 as the Bias Correction Factor.

The Bias Correction Factors from all **but** London Road and AURN stations were averaged using the methodology prescribed in the LAQM.TG. The 2021 NDDT survey results have consequently been bias adjusted using 0.845.

Burrfield London Road station (R1)

Period	Start Date dd/mm/yyyy	End Date dd/mm/yyyy	Tube 1 µgm^{-3}	Tube 2 µgm^{-3}	Tube 3 µgm^{-3}	Triplicate Mean	Standard Deviation	Coefficient of Variation (CV)	95% CI of mean	Period Mean	Data Capture (% DC)	Tubes Precision Check	Automatic Monitor Data Capture Check
1	04/01/2021	########	34.04	35.95	34.76	34.91	0.96	3	2.4	29.65	100	Good	Good
2	01/02/2021	########	31.80	30.95	32.34	31.70	0.70	2	1.7	29.99	100	Good	Good
3	02/03/2021	########	35.44	34.15	32.29	33.96	1.59	5	3.9	22.72	100	Good	Good
4	31/03/2021	04/05/2021	27.75	29.47	23.28	26.83	3.20	12	7.9	23.11	100	Good	Good
5	04/05/2021	########	29.69	28.19	27.84	28.57	0.98	3	2.4	17.95	100	Good	Good
6	01/06/2021	########	29.04	25.49	29.52	28.02	2.20	8	5.5	18.46	100	Good	Good
7	02/07/2021	########	29.30	27.13	26.58	27.67	1.44	5	3.6	17.48	100	Good	Good
8	02/08/2021	########	23.42	23.79	25.50	24.24	1.11	5	2.7	14.10	100	Good	Good
9	01/09/2021	########	30.85	31.14	32.33	31.44	0.78	2	1.9	20.61	100	Good	Good
10	01/10/2021	########	32.52	29.34	33.22	31.70	2.07	7	5.1	23.98	100	Good	Good
11	01/11/2021	########	37.18	34.55	36.34	36.02	1.34	4	3.3	30.06	100	Good	Good
12	02/12/2021	########	31.08	32.01	30.40	31	0.8	3	2.0	26.69	100	Good	Good
13													

It is necessary to have results for at least two tubes in order to calculate the precision of the measurements

Overall survey --> Good precision | Good Overall DC

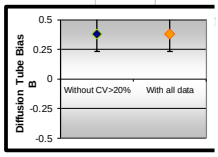
(Check average CV & DC from Accuracy calculations)

Site Name/ ID:

Precision 12 out of 12 periods have a CV smaller than 20%

Accuracy (with 95% confidence interval) without periods with CV larger than 20%
Bias calculated using 12 periods of data
Bias factor A 0.75 (0.68 - 0.84)
Bias B 33% (19% - 47%)
Diffusion Tubes Mean: 31 µgm^{-3}
Mean CV (Precision): 5
Automatic Mean: 23 µgm^{-3}
Data Capture for periods used: 100%
Adjusted Tubes Mean: 23 (21 - 26) µgm^{-3}

Accuracy (with 95% confidence interval) WITH ALL DATA
Bias calculated using 12 periods of data
Bias factor A 0.75 (0.68 - 0.84)
Bias B 33% (19% - 47%)
Diffusion Tubes Mean: 31 µgm^{-3}
Mean CV (Precision): 5
Automatic Mean: 23 µgm^{-3}
Data Capture for periods used: 100%
Adjusted Tubes Mean: 23 (21 - 26) µgm^{-3}



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Mile End station (R5)

Period	Start Date dd/mm/yyyy	End Date dd/mm/yyyy	Tube 1 µgm^{-3}	Tube 2 µgm^{-3}	Tube 3 µgm^{-3}	Triplicate Mean	Standard Deviation	Coefficient of Variation (CV)	95% CI of mean	Period Mean	Data Capture (% DC)	Tubes Precision Check	Automatic Monitor Data Capture Check
1	########	01/02/2021	32.91	34.40	35.65	34.32	1.37	4	3.4	30.87	100	Good	Good
2	########	02/03/2021	27.55	26.10	26.73	26.79	0.72	3	1.8	32.51	100	Good	Good
3	########	31/03/2021	34.78	36.24	33.19	34.74	1.53	4	3.8	51.58	100	Good	Good
4	########	04/05/2021	26.84	23.95	26.89	25.89	1.68	6	4.2	51.07	100	Good	Good
5	04/05/2021	01/06/2021	23.78	25.61	23.84	24.41	1.04	4	2.6	41.49	100	Good	Good
6	########	02/07/2021	29.51	29.67	30.60	29.93	0.59	2	1.5	45.19	100	Good	Good
7	########	02/08/2021	29.33	26.67	25.95	27.32	1.78	7	4.4	34.28	100	Good	Good
8	########	01/09/2021	30.28	28.68	29.72	29.56	0.81	3	2.0	20.90	100	Good	Good
9	########	01/10/2021	26.69	27.52	28.63	27.61	0.97	4	2.4	21.43	100	Good	Good
10	########	01/11/2021	29.56	29.10	28.29	28.98	0.64	2	1.6	23.82	97	Good	Good
11	########	02/12/2021	38.32	37.15	34.80	36.76	1.79	5	4.5	36.12	100	Good	Good
12	########	31/12/2021	28.19	29.88	29.00	29	0.8	3	2.1	28.12	100	Good	Good
13													

It is necessary to have results for at least two tubes in order to calculate the precision of the measurements

Overall survey --> Good precision | Good Overall DC

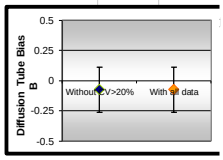
(Check average CV & DC from Accuracy calculations)

Site Name/ ID:

Precision 12 out of 12 periods have a CV smaller than 20%

Accuracy (with 95% confidence interval) without periods with CV larger than 20%
Bias calculated using 12 periods of data
Bias factor A 1.17 (0.96 - 1.51)
Bias B -15% (-34% - 4%)
Diffusion Tubes Mean: 30 µgm^{-3}
Mean CV (Precision): 4
Automatic Mean: 35 µgm^{-3}
Data Capture for periods used: 100%
Adjusted Tubes Mean: 35 (28 - 45) µgm^{-3}

Accuracy (with 95% confidence interval) WITH ALL DATA
Bias calculated using 12 periods of data
Bias factor A 1.17 (0.96 - 1.51)
Bias B -15% (-34% - 4%)
Diffusion Tubes Mean: 30 µgm^{-3}
Mean CV (Precision): 4
Automatic Mean: 35 µgm^{-3}
Data Capture for periods used: 100%
Adjusted Tubes Mean: 35 (28 - 45) µgm^{-3}



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DEFRA (Anglesea Road) station

Period	Start Date dd/mm/yyyy	End Date dd/mm/yyyy	Tube 1 µgm^{-3}	Tube 2 µgm^{-3}	Tube 3 µgm^{-3}	Triplicate Mean	Standard Deviation	Coefficient of Variation (CV)	95% CI of mean	Period Mean	Data Capture (% DC)	Tubes Precision Check	Automatic Monitor Data Capture Check
1	04/01/2021	05/02/2021	30.77	29.26	26.96	29.00	1.9	7	4.8	21.09	100	Good	Good
2	05/02/2021	02/03/2021	24.44	26.21	25.64	25.43	0.9	4	2.2	22.83	96	Good	Good
3	02/03/2021	31/03/2021	31.88	31.76	34.10	32.58	1.3	4	3.3	26.44	100	Good	Good
4	31/03/2021	04/05/2021	23.84	23.00	22.51	23.12	0.7	3	1.7	23.01	100	Good	Good
5	04/05/2021	01/06/2021	22.59	24.36	23.61	23.52	0.9	4	2.2	14.40	100	Good	Good
6	01/06/2021	02/07/2021	27.70	28.23	28.33	28.08	0.3	1	0.8	19.80	100	Good	Good
7	02/07/2021	02/08/2021	28.62	24.67	28.36	27.22	2.2	8	5.5	17.52	100	Good	Good
8	02/08/2021	01/09/2021	47.60	28.81	31.04	35.82	10.3	29	25.5	19.60	97	Poor Precisi	Good
9	01/09/2021	01/10/2021	28.19	28.23	27.58	28.00	0.4	1	0.9	18.66	100	Good	Good
10	01/10/2021	02/11/2021	31.97	30.50	32.58	31.68	1.1	3	2.7	19.44	100	Good	Good
11	02/11/2021	02/12/2021	37.75	37.73	38.13	37.87	0.2	1	0.6	29.21	100	Good	Good
12	02/12/2021	31/12/2021	28.72	28.89	27.81	28.47	0.6	2	1.4	23.76	100	Good	Good
13													

It is necessary to have results for at least two tubes in order to calculate the precision of the measurements

Overall survey --> Good precision | Good Overall DC

(Check average CV & DC from Accuracy calculations)

Site Name/ ID:

Precision 11 out of 12 periods have a CV smaller than 20%

Accuracy (with 95% confidence interval)
without periods with CV larger than 20%
Bias calculated using 11 periods of data
Bias factor A 0.75 (0.68 - 0.84)
Bias B 33% (19% - 47%)
Diffusion Tubes Mean: 29 µgm^{-3}
Mean CV (Precision): 3
Automatic Mean: 21 µgm^{-3}
Data Capture for periods used: 100%
Adjusted Tubes Mean: 21 (19 - 24) µgm^{-3}

Accuracy (with 95% confidence interval)
WITH ALL DATA
Bias calculated using 12 periods of data
Bias factor A 0.73 (0.65 - 0.82)
Bias B 37% (22% - 53%)
Diffusion Tubes Mean: 29 µgm^{-3}
Mean CV (Precision): 6
Automatic Mean: 21 µgm^{-3}
Data Capture for periods used: 99%
Adjusted Tubes Mean: 21 (19 - 24) µgm^{-3}

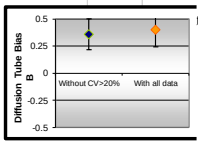

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Table C.2 – Bias Adjustment Factor

Monitoring Year	Local or National	If National, Version of National Spreadsheet	Adjustment Factor
2021	Local	N/A	0.845
2020	Local	N/A	0.822
2019	Local	N/A	0.84

NO_2 Fall-off with Distance from the Road

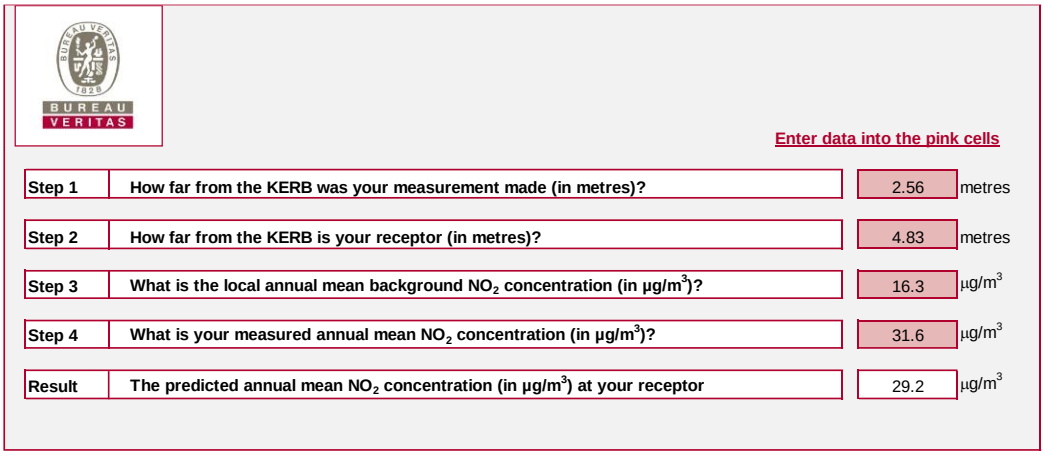
Wherever possible, monitoring locations are representative of exposure. However, where this is not possible, the NO_2 concentration at the nearest location relevant for exposure has been estimated using the Diffusion Tube Data Processing Tool/NO_2 fall-off with distance calculator available on the LAQM Support website. Where appropriate, non-automatic annual mean NO_2 concentrations corrected for distance are presented in Table B.1.

Where a NNDT is located at some distance from the receptor a distance correction is deployed to predict the level of the pollutant at the façade of the sensitive premises. This has been carried out using the calculator made available via 'Air Quality Consultants'. This tool is provided to LA to predict the annual mean NO_2 concentration for a receptor location that is close to a monitoring site, but nearer or further to the kerb than the monitor.

Two diffusion tube NO_2 monitoring locations within Portsmouth City Council required distance correction during 2021.

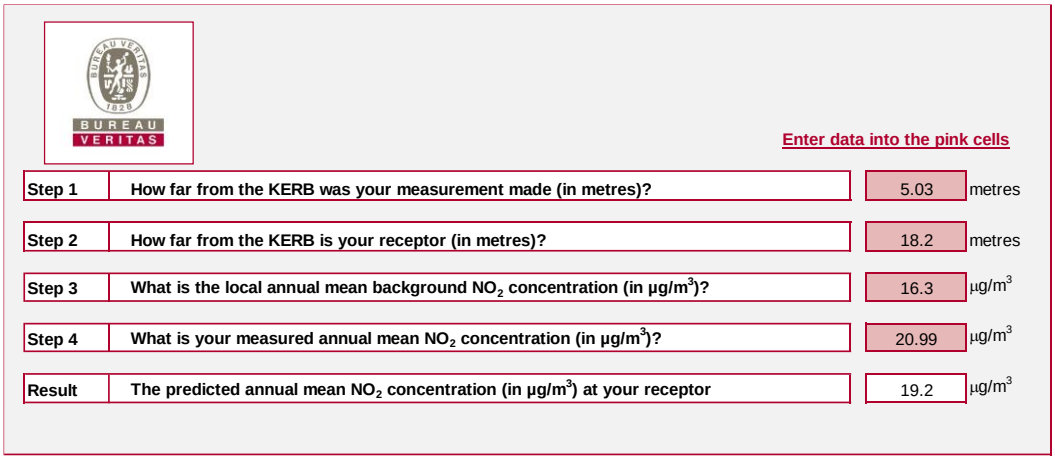
2 NDDT locations were however subjected to a further adjustment as the monitoring points at these locations are distant from the façade of the nearest relevant exposure.

The two locations are:106 Victoria Road North



		Enter data into the pink cells	
Step 1	How far from the KERB was your measurement made (in metres)?	2.56	metres
Step 2	How far from the KERB is your receptor (in metres)?	4.83	metres
Step 3	What is the local annual mean background NO_2 concentration (in $\mu g/m^3$)?	16.3	$\mu g/m^3$
Step 4	What is your measured annual mean NO_2 concentration (in $\mu g/m^3$)?	31.6	$\mu g/m^3$
Result	The predicted annual mean NO_2 concentration (in $\mu g/m^3$) at your receptor	29.2	$\mu g/m^3$

- Anchorage Road



		Enter data into the pink cells	
Step 1	How far from the KERB was your measurement made (in metres)?	5.03	metres
Step 2	How far from the KERB is your receptor (in metres)?	18.2	metres
Step 3	What is the local annual mean background NO_2 concentration (in $\mu g/m^3$)?	16.3	$\mu g/m^3$
Step 4	What is your measured annual mean NO_2 concentration (in $\mu g/m^3$)?	20.99	$\mu g/m^3$
Result	The predicted annual mean NO_2 concentration (in $\mu g/m^3$) at your receptor	19.2	$\mu g/m^3$

QA/QC of Automatic Monitoring

QA / QC of automatic monitoring

Continuous Air Quality Monitoring, Quality Assurance and Quality Control

PCC manages four air quality-monitoring stations. These are all fully equipped with PCC DEFRA / NETCEN approved real-time automatic continuous monitoring analysers. These

are sophisticated automatic monitoring systems housed in purpose built air-conditioned enclosures. These analysers measure and record in real-time a combination of NO_2, PM_{10} and $PM_{2.5}$.

PCC compiled continuous air quality monitoring data for the Further Assessment using Horiba's APNA-370, NO_2 based on the chemiluminescent analysis method.

Routine site operations

PCC employs a dedicated staff member to operate the network of continuous air quality monitoring stations. He is trained in all aspects of the monitoring processes including routine site operations, field calibrations and data ratification. He is also the NETCEN trained Local Site Operator (LSO) for the local affiliated AURN station. This is to ensure that both a high-level of accurate data and an acceptable percentage of data capture are obtained.

All automatic monitoring equipment has both routine remote calibration checks and routine (fortnightly) on-site checks. They also have maintenance visits, which follow documented procedures that stem from equipment manuals, manufacturer instructions and the UK Automatic Network Site Operators Manual.

Routine visits include:

- visual inspection of the station
- regular inlet-filter changes
- regular sampling head-cleaning and airflow
- a two-point calibration of the NO_2 analyser using a zero-air scrubber and a Nitric Oxide (NO) gas on-site
- AIR LIQUIDE supplies the NO_x span gas with the concentration certificate. This gas is traceable to national standards

All equipment fitted within each station's enclosure (e.g., sample meteorological sensors, pumps, air conditioning units, modem etc.) is subject to independent routine maintenance and support via a service contract with Horiba. This includes:

- 6-monthly minor service and equipment check visits by the manufacturer for Horiba's analysers and approved engineers covering all non-Horiba equipment following national protocols and traceable QA/QC procedures. Horiba is ISO 9001 accredited and carries out similar or identical support work for a number of AURN network stations across the UK

- 6-monthly major service where a full multi-point calibration is carried out on the NO_2 analyser, using zero-air, NO and NO_22 span gas (again traceable to national standards) meaning the analyser data slope and offset factors are reset. In addition to multi-point calibration the following checks are carried out:

  - linearity

  - noise

  - response time, leaks and flow

  - converter efficiency

  - stability of the on-site gas calibration cylinder.

The local AURN station is also subject to external audit. Site Inter-calibration checks are carried out by National Environmental Technology Centre Network engineers prior to each of Horiba's major services.

Horiba also carries out non-routine site visits in response to equipment failure to the same standards. Contract arrangements ensure that visits are carried out within two to three days of the notification of call-out in order to minimise data loss.

All routine and non-routine site visits are fully documented, and detail all works carried out, including any adjustments, modifications and repairs completed.

Calibration check methods

The calibration procedure for NO_x for sites C2, C4, C6 and C7 is based on a 2 point zero / span calibration check being performed at intervals of two weeks. The calibration procedure for the NO_x analyser of the C4 AURN network was based on three points, the third being span NO_2 to check the NO_2 Converter. However, this was changed to two point

calibration check. The methodology for the calibration procedure is followed according to the manufacturers' instruction handbooks:

- pre-calibration check - the site condition and status of the analyser is recorded prior to the zero / span check being conducted.

- zero check – the response of the analyser to the absence of the gas being monitored. The stations were fitted with an integrated scrubber system incorporating a set of scrubbers, Hopcalite, activated charcoal, Purafil and Drierite, to generate a dried gas with none of the monitored pollutants. All were changed at least every six months, but Hopcalite is changed more frequently due to the high levels of humidity in Portsmouth. These were changed to be fitted with synthetic air cylinders supplied by Air Liquide UK Ltd

- span check – the response of the analyser to the presence of the gas of a known concentration. Traceable gases are used for calibration checks supplied as part of the maintenance contract

- post calibration check - the site condition and status of the analyser upon completion of all checks

- all Horiba's APNA-370 analysers have their own built in data storage facility. They are built in a multi-drop set up. The calibration checks are done directly through the front panel. Each analyser zero / span check is fully documented with records being kept centrally.

Automatic data handling

All the stations are remotely accessible from a desktop computer at the civic offices via a telemetry linkage by either landline or GSM system. The telemetry linkage software used is 'Data Communication Server'. It is set on a daily auto-dial collection mode for data retrieval. It is also set to run calibration checks every three days.

Once the connection is established, the 'Data Communication Server' software retrieves the overnight auto-calibration first and stores it in a temporary database and a calibration factor is generated according to the following steps:

- instrument span, F = C/(Vs-Vz) and

- pollutant concentration (ppb) = Fx(Va-Vz) where:
    - C is the set gas value on the gas certificate
    - Vs span value
    - Vz zero span value
    - Va is the sample value as recorded by the analyser.

Raw measured data retrieved from the station data logger(s) is then subject to the calculated correction factors and stored in the final database as corrected. The latter is then made readily available to be queried via the 'IDAZRW Central Station', database access software.

Instrument status and internal auto-calibration data can be viewed in addition to the corrected collected measured monitoring data.

The air quality data ratification is carried out manually from this station.

Manual data handling

All collected data is screened or validated by visual examination to see if there are any unusual measurements. The affected data is then flagged in the database. Any further remaining suspicious data, such as large spikes, 'flat-lines' and excessive negative data is flagged for more detailed investigation. 'IDAZRW Central Station' is capable to trace back any change made at all times with the administrator's name. An original raw dataset is always kept in the data processing software.

When data ratification has been completed the data is then made available for further statistical and critical examination for reporting purposes.

Air quality monitoring data can be imported manually into a Microsoft Excel spreadsheet. This scaled data (where values are above the lower detectable limit is considered to be valuable data) is then further converted to generate data in the National Air Quality Objective format to enable direct comparison to the standards. A file of raw data is always kept for reference in the database.

PM_{10} and $PM_{2.5}$ Monitoring Adjustment

The type of PM_{10}/$PM_{2.5}$ monitor(s) utilised within Portsmouth City Council do not require the application of a correction factor.

Automatic Monitoring Annualisation

All automatic monitoring locations within Portsmouth City Council recorded data capture of greater than 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.

Due to low data capture from both Portsmouth AURN and DEFRA's stations data was annualised as shown below.

	AR-CAQMSR6	AURN
Annualisation Factor: **Rp** (ratio Am/Pm)		
Bournmouth Ratio **"Rb"**	0.93	1.15
Portsmouth DEFRA Ratio **"Rp"**	0.86	1.01
Annualisation Factor Average **"Ra"**	0.90	1.08
Measure Period Mean **"M"**	49.22	15.09
Annualised average" D1"	44.28	16.30

NO_2 Fall-off with Distance from the Road

Wherever possible, monitoring locations are representative of exposure. However, where this is not possible, the NO_2 concentration at the nearest location relevant for exposure has been estimated using the NO_2 fall-off with distance calculator available on the LAQM Support website. Where appropriate, non-automatic annual mean NO_2 concentrations corrected for distance are presented in Table B.1.

No automatic NO_2 monitoring locations within Portsmouth City Council required distance correction during 2021.

Table C.3 – Annualisation Summary (concentrations presented in µg/m^3)

Site ID	Annualisation Factor Bournemouth	Annualisation Factor Portsmouth-DEFRA	Annualisation Factor Site 3 Name	Annualisation Factor Site 4 Name	Average Annualisation Factor	Raw Data Annual Mean	Annualised Annual Mean	Comments
214	0.86	0.9	N/A	N/A	0.9	44.09	39.67	
96	1	1	N/A	N/A	1	23.19	23.22	
95	1.03	0.96	N/A	N/A	0.96	26.44	25.51	
222	0.86	0.9	N/A	N/A	0.9	36.12	32.5	
251	0.86	0.9	N/A	N/A	0.9	39.68	35.71	
255	0.86	0.9	N/A	N/A	0.9	39.12	35.2	
271	0.86	0.9	N/A	N/A	0.9	33.86	30.46	
272	0.86	0.9	N/A	N/A	0.9	41.33	37.19	

Table C.4 – Local Bias Adjustment Calculation

	Local Bias Adjustment Input 1	Local Bias Adjustment Input 2	Local Bias Adjustment Input 3
Periods used to calculate bias	12	12	11
Bias Factor A	0.75(0.68 –0.84)	1.17(0.96-1.51)	0.73 (0.65- 0.82)
Bias Factor B	33% (19% -47%)	-15% (-34% - 4%)	37% (22% - 53%)
Diffusion Tube Mean (µg/m^3)	31	30	29
Mean CV (Precision)	5	4	6
Automatic Mean (µg/m^3)	23	35	21
Data Capture	100%	100%	99%
Adjusted Tube Mean (µg/m^3)	23 (21 –26)	35 (28 - 45)	21 (19 - 24)

Notes:

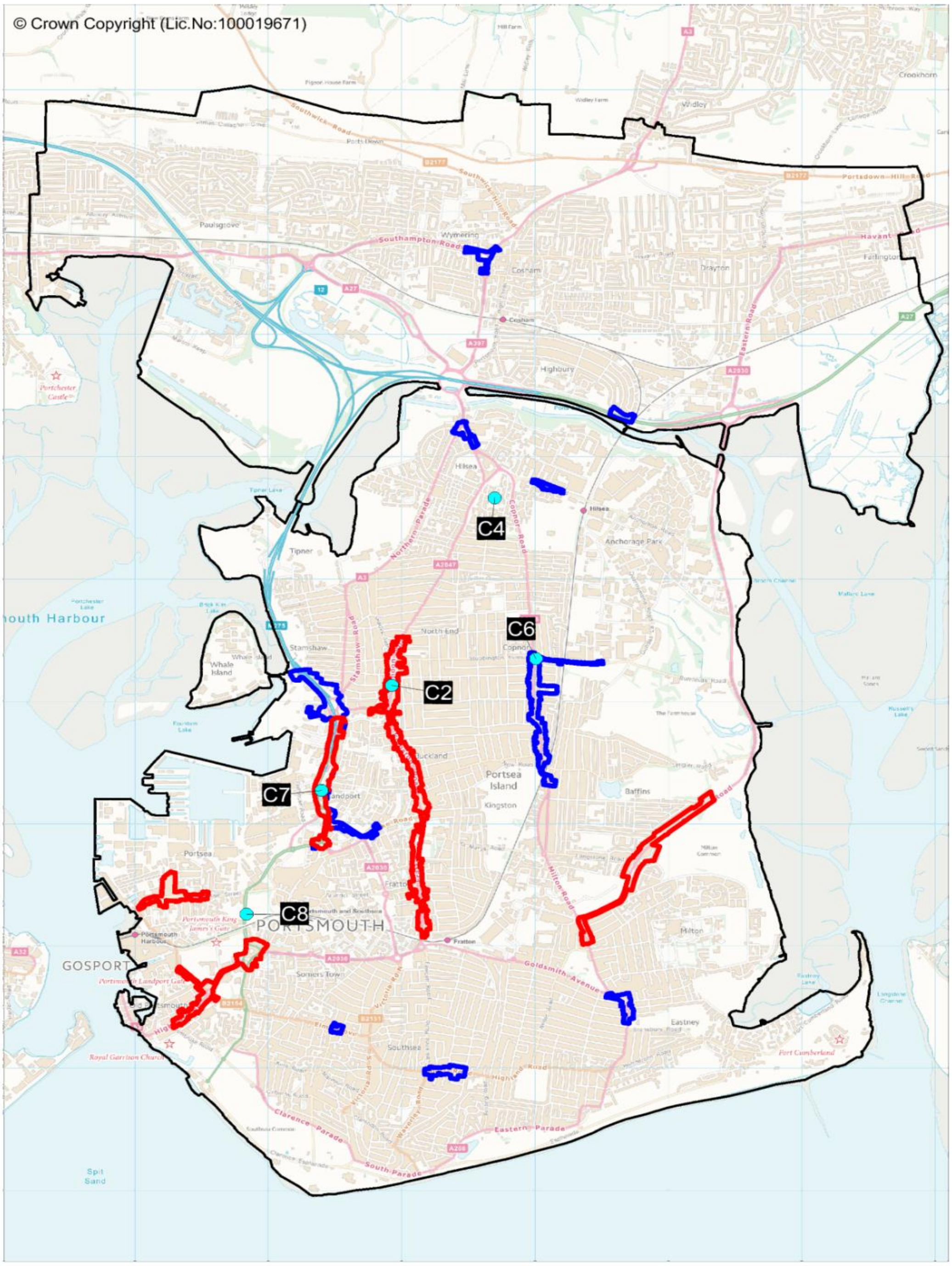
A combined local bias adjustment factor of 0.845 has been used to bias adjust the 2021 diffusion tube results.

Table C.5 – NO_2 Fall off With Distance Calculations (concentrations presented in µg/m^3)

Site ID	Distance (m): Monitoring Site to Kerb	Distance (m): Receptor to Kerb	Monitored Concentration (Annualised and Bias Adjusted	Background Concentration	Concentration Predicted at Receptor	Comments
23	2.56	4.83	31.6	16.3	29.2	
11	5.03	18.2	20.99	16.3	19.2	

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

Map 1 – Locations of PCC's (C2, C4, C6, and C7) and DEFRA's (C8) CAQMS

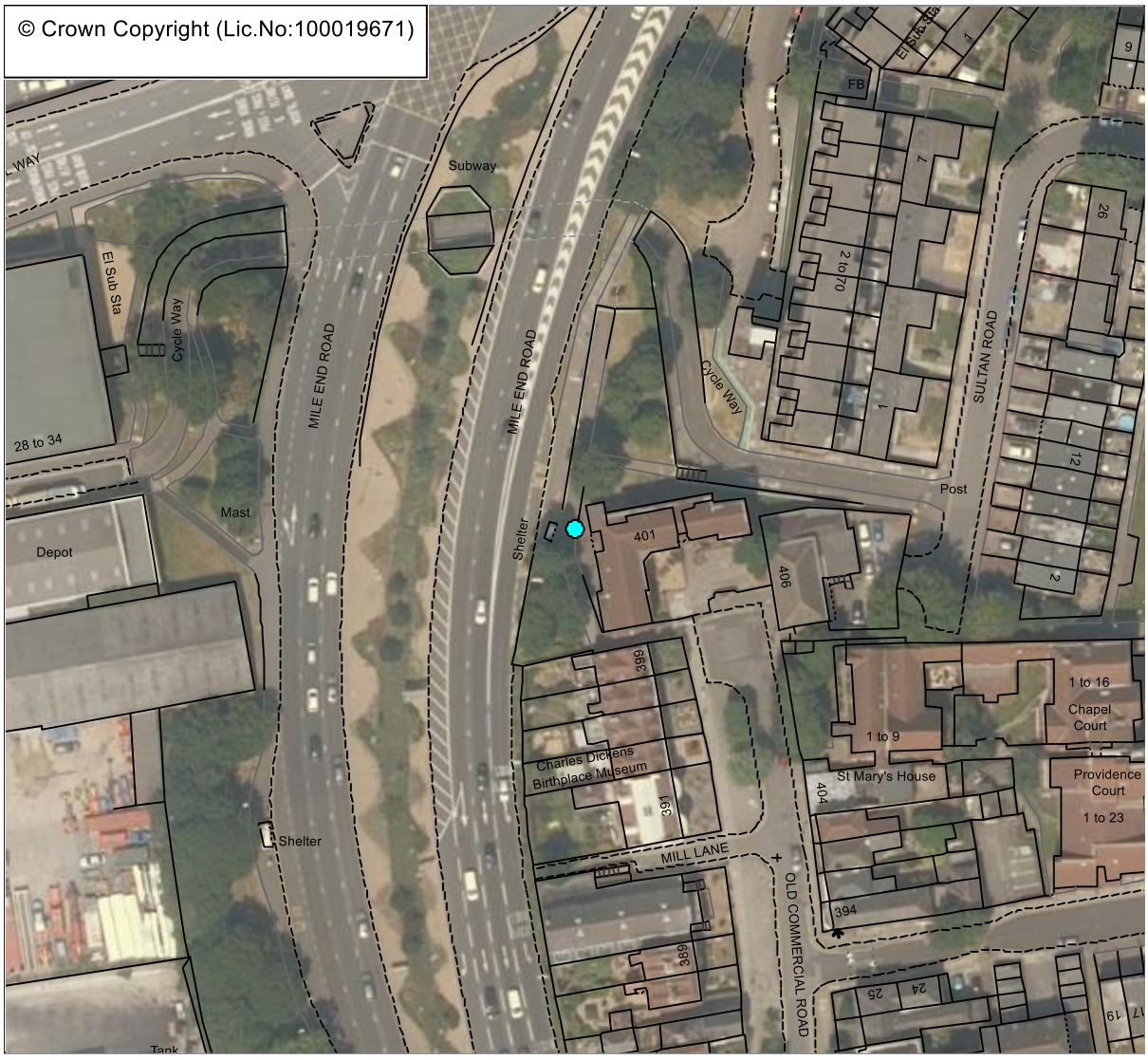


Map 2 – PCC's Curbside CAQMS: Location (C2) London Road, North End

Map 3 – PCC's AURN CAQMS: Location (C4) Gatcombe Park Primary School, Hilsea

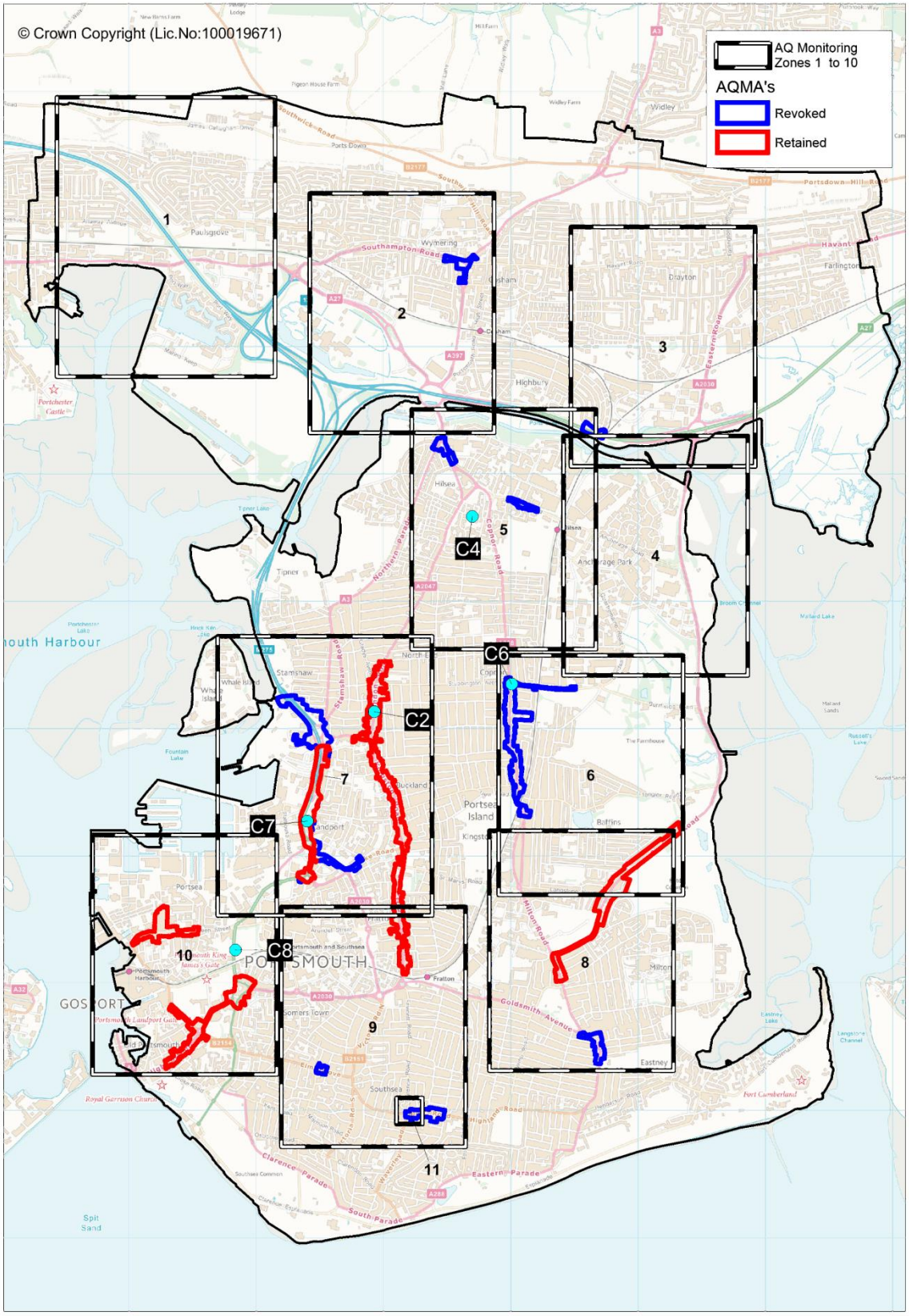
Map 4 – PCC's Roadside CAQMS: Location (C6) Burrfields Road, Baffins

Map 5 – PCC's Roadside CAQMS: Location (C7) Mile End Road, Buckland

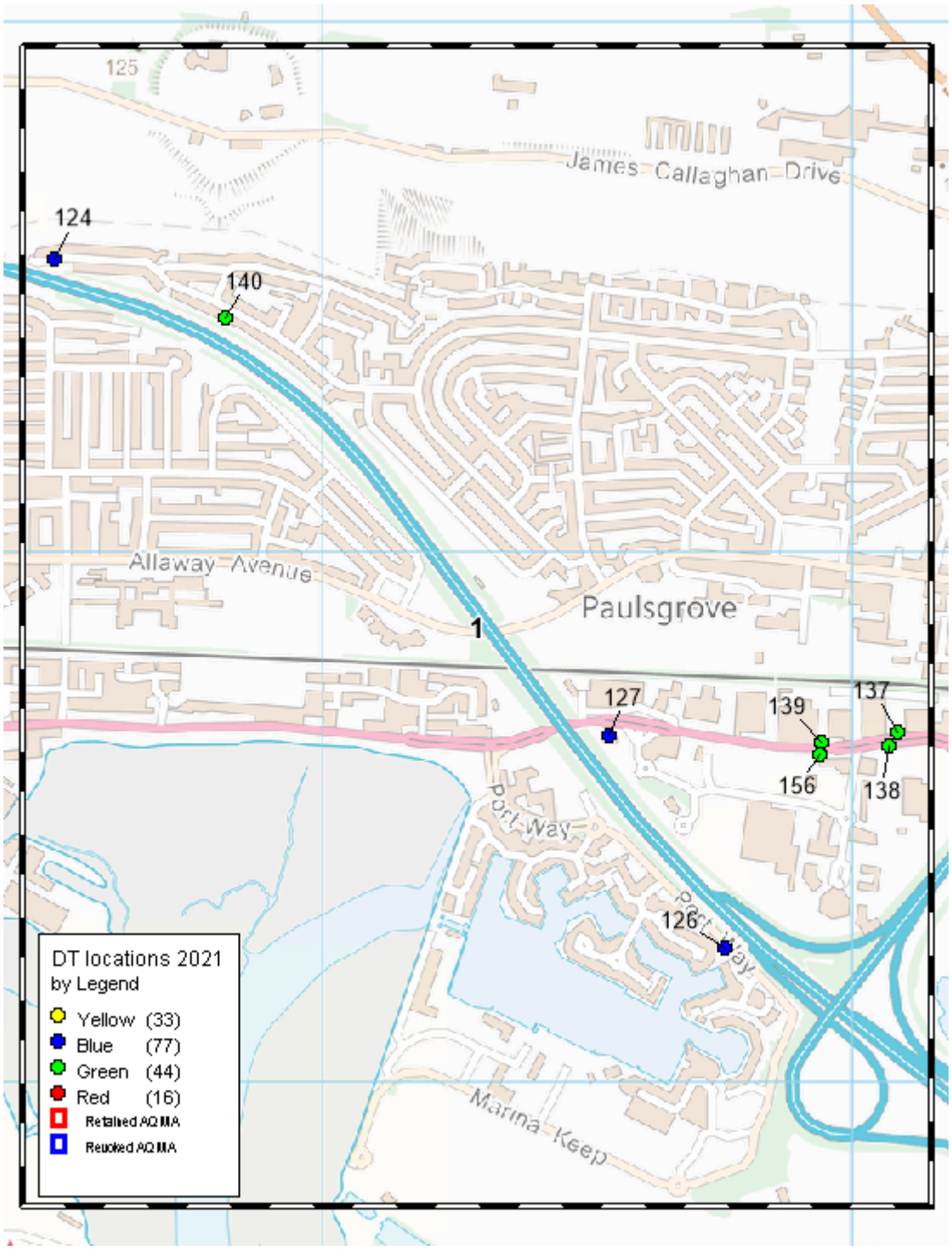


Map 6 – DEFRA's Roadside CAQMS: Location (C8) Anglesea Road, Southsea

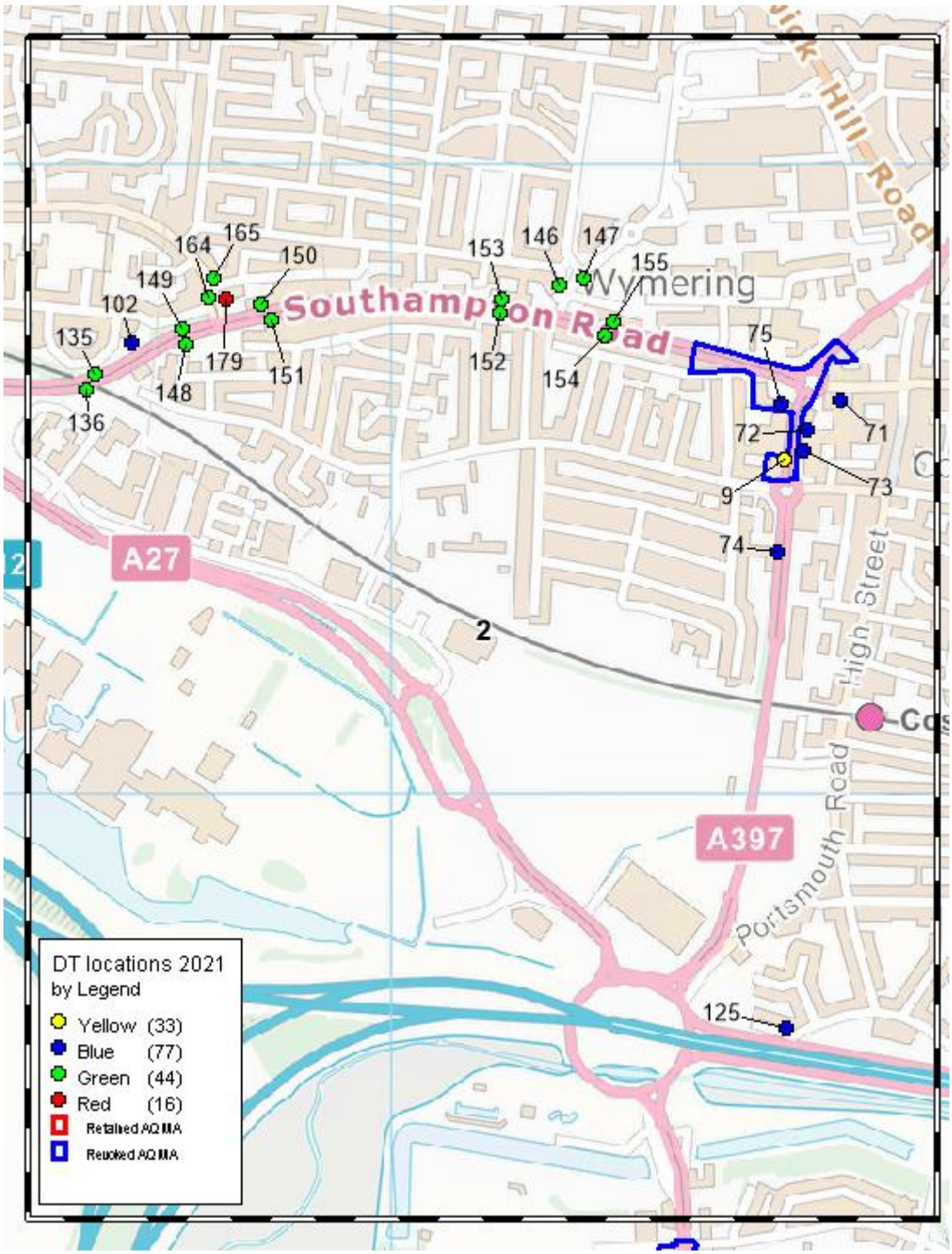
Map 7 – PCC's AQMAs and NDDT Monitoring Location Zones



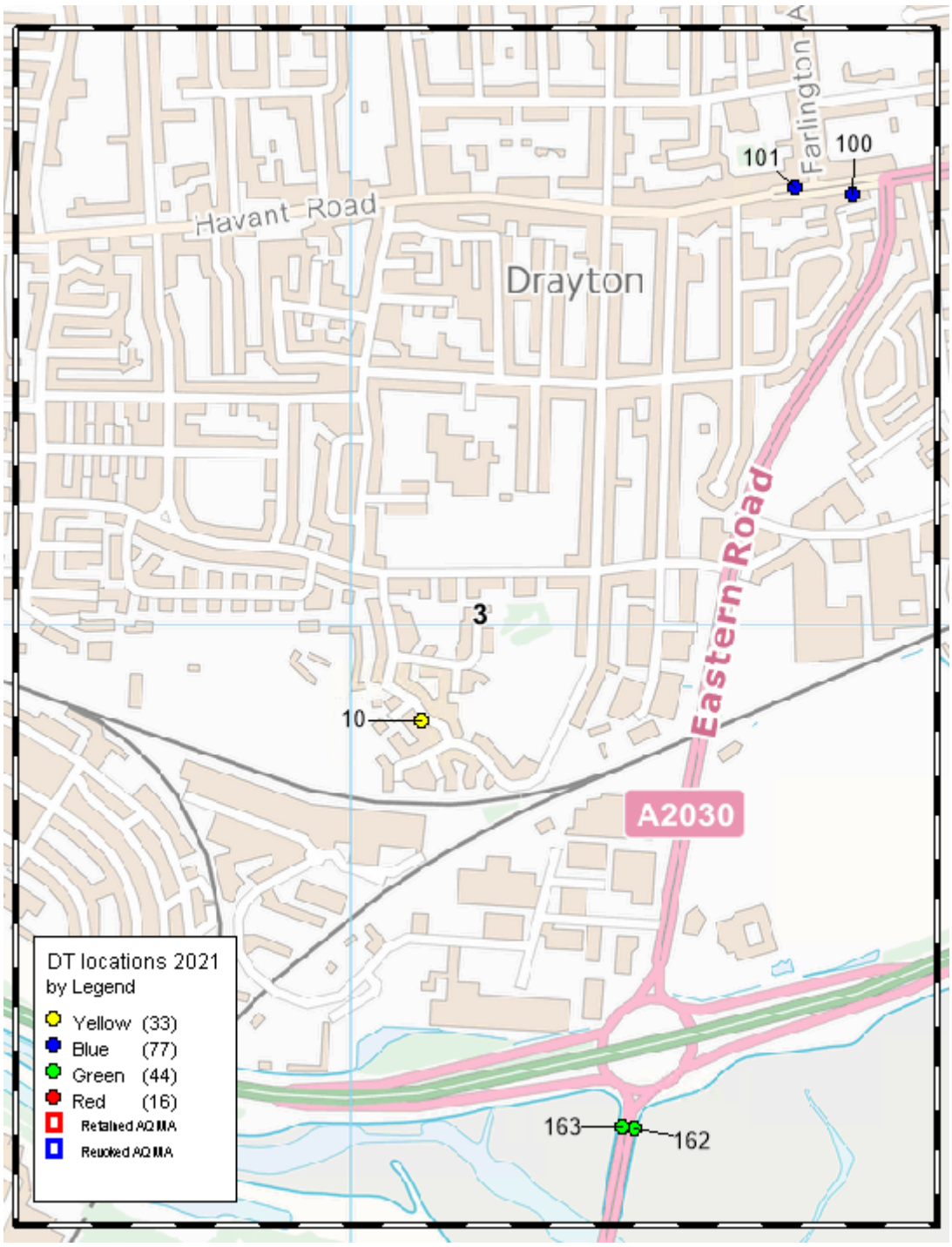
Map 8 – PCC's NDDT monitoring locations (Zone 1)



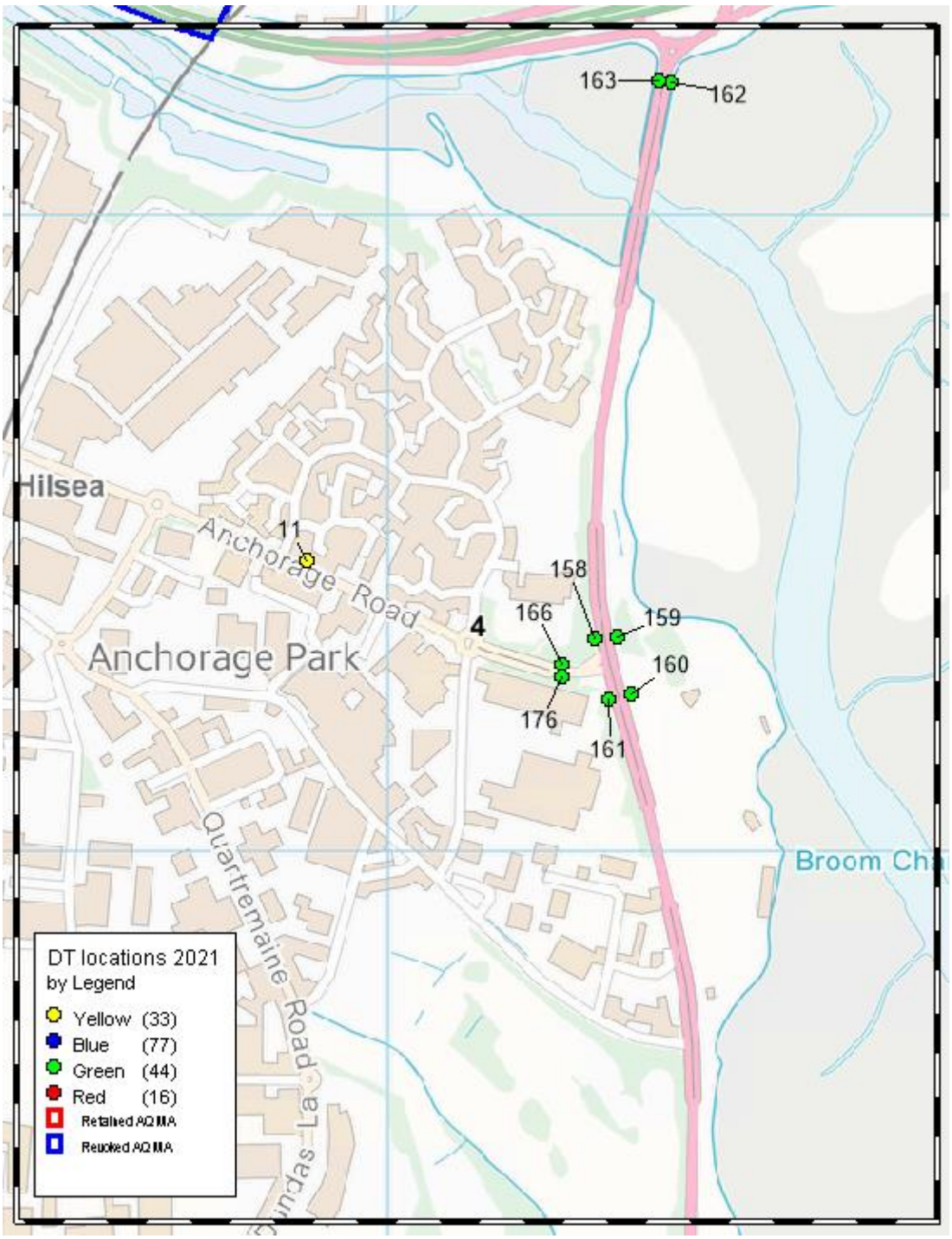
Map 9 – PCC's NDDT monitoring locations (Zone 2)



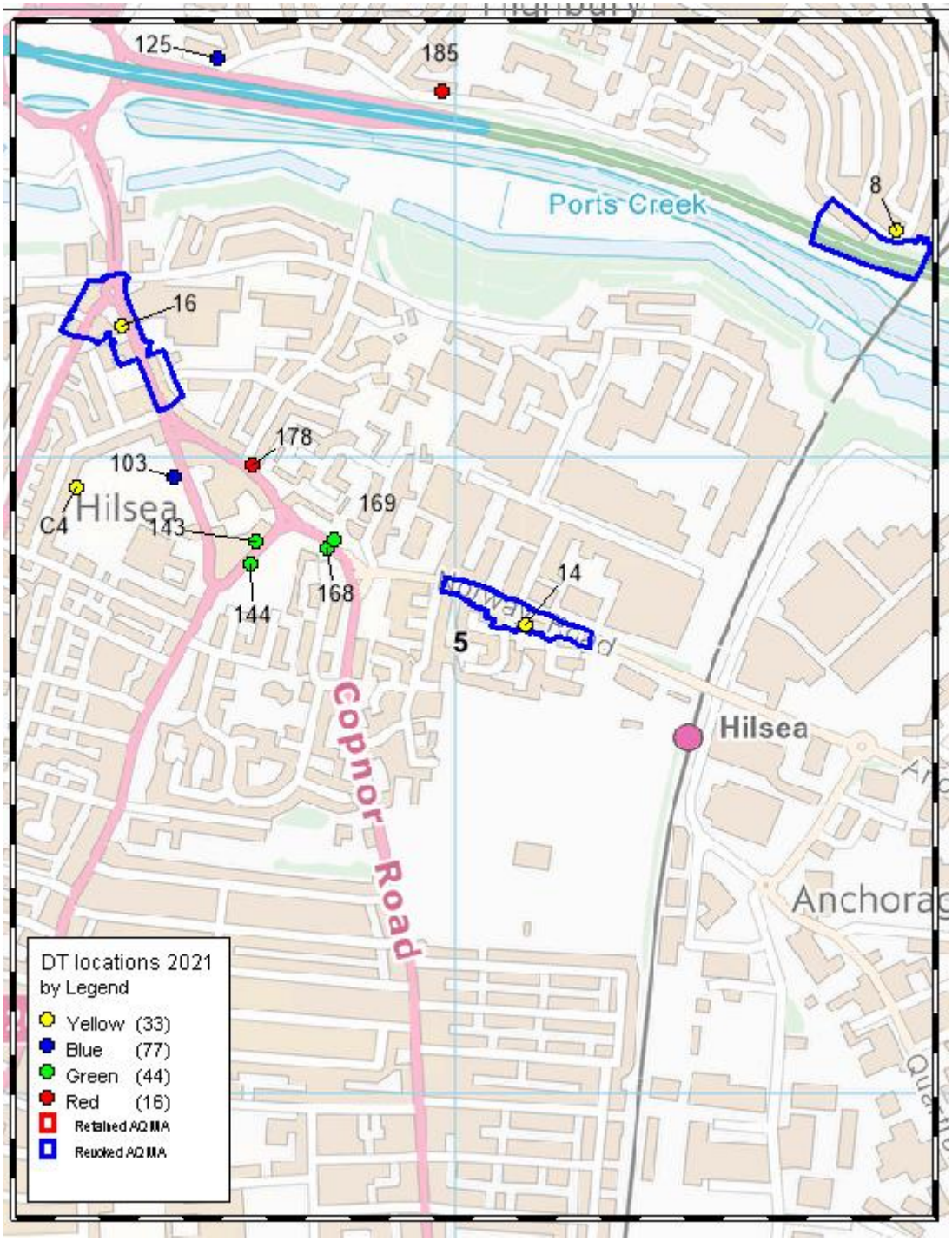
Map 10 – PCC's NDDT monitoring locations (Zone 3)



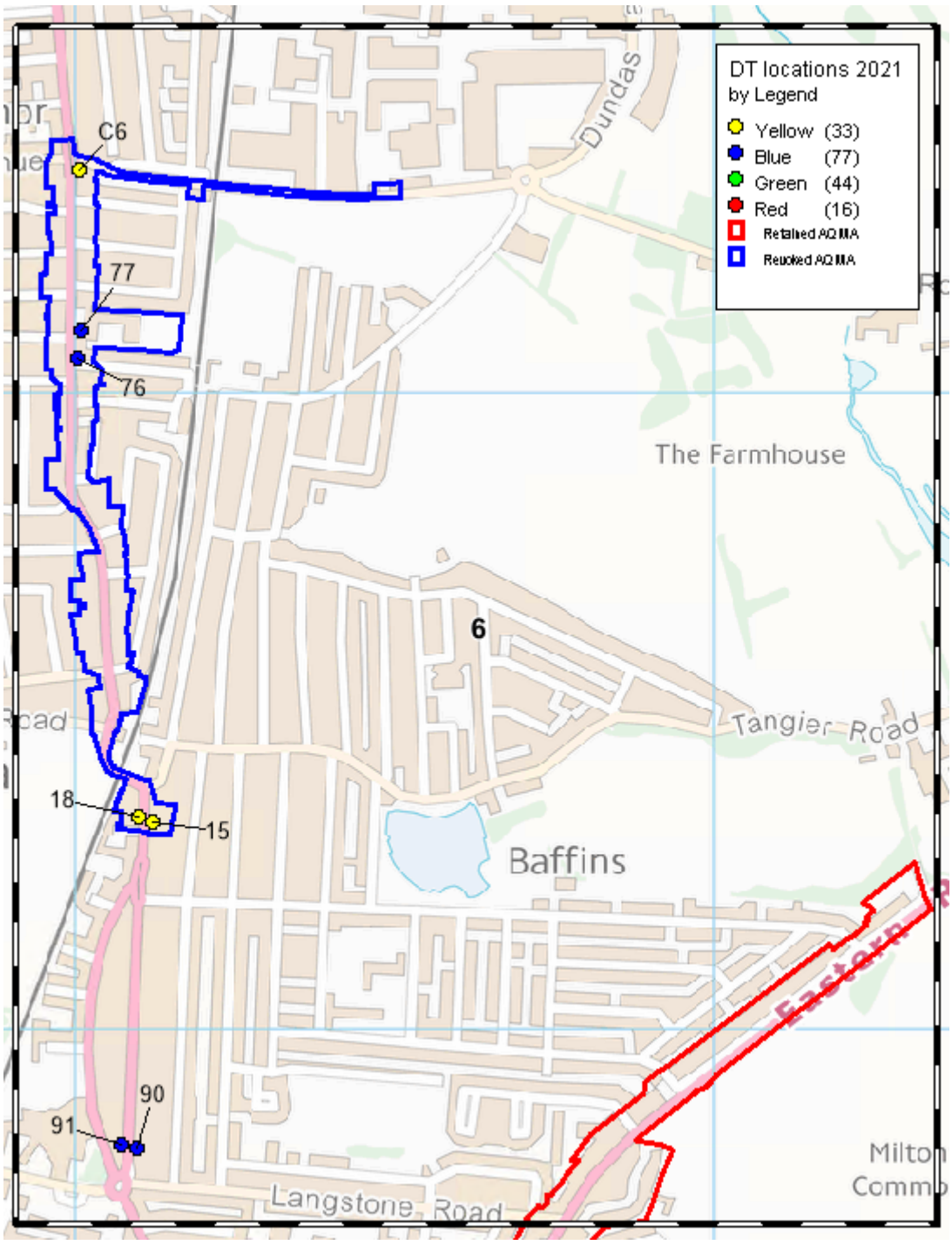
Map 11 – PCC's NDDT monitoring locations (Zone 4)



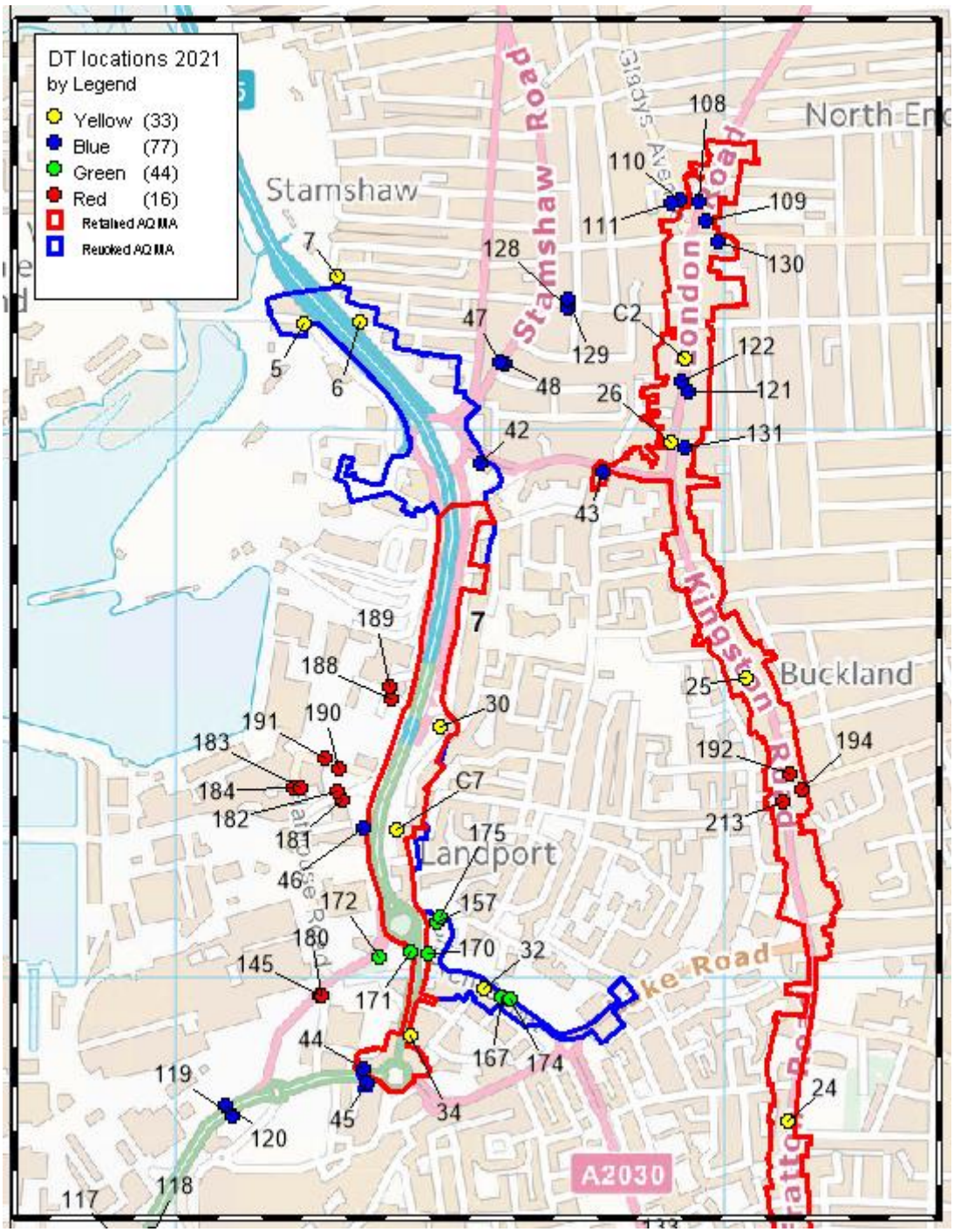
Map 12 – PCC's NDDT monitoring locations (Zone 5)



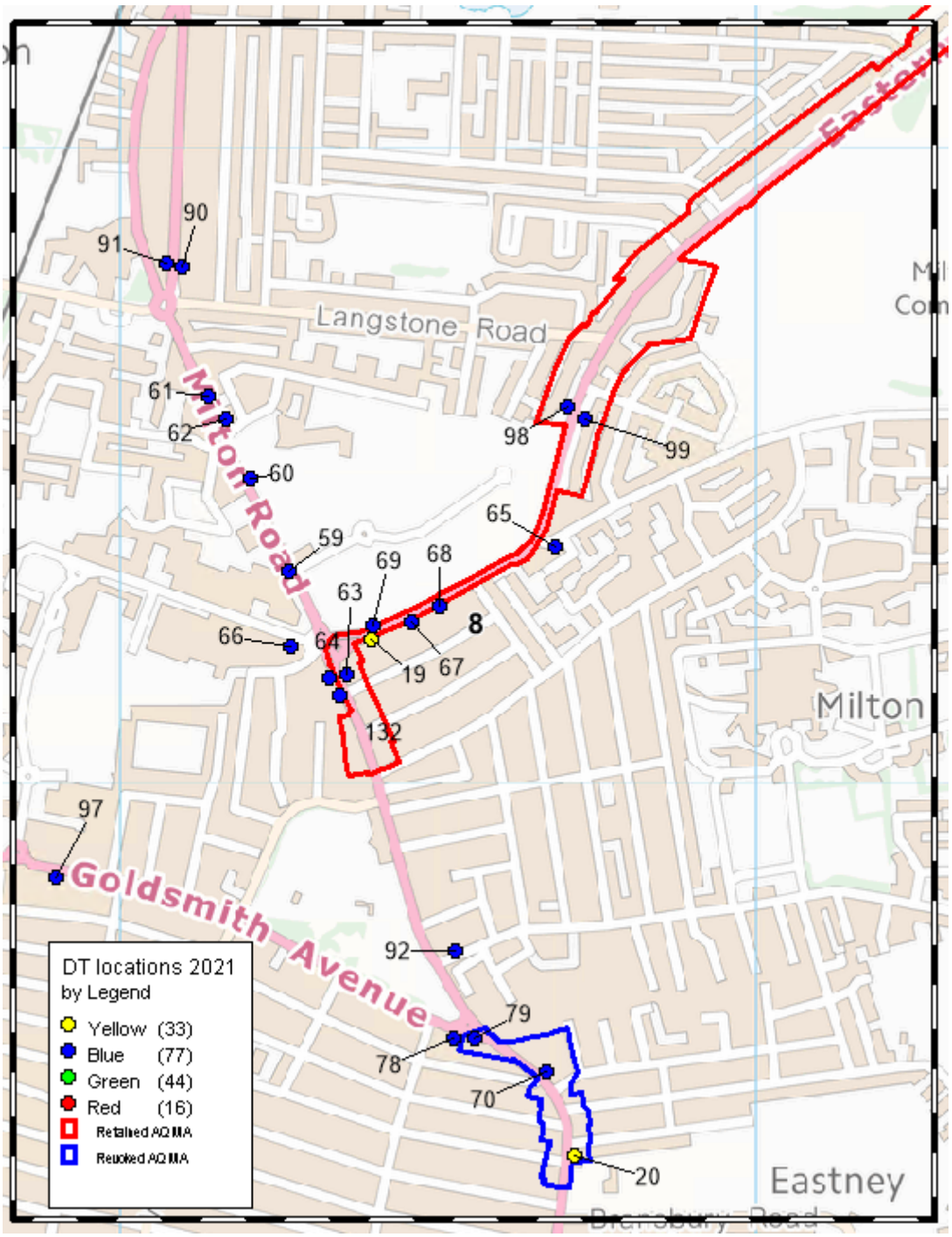
Map 13 – PCC's NDDT monitoring locations (Zone 6)



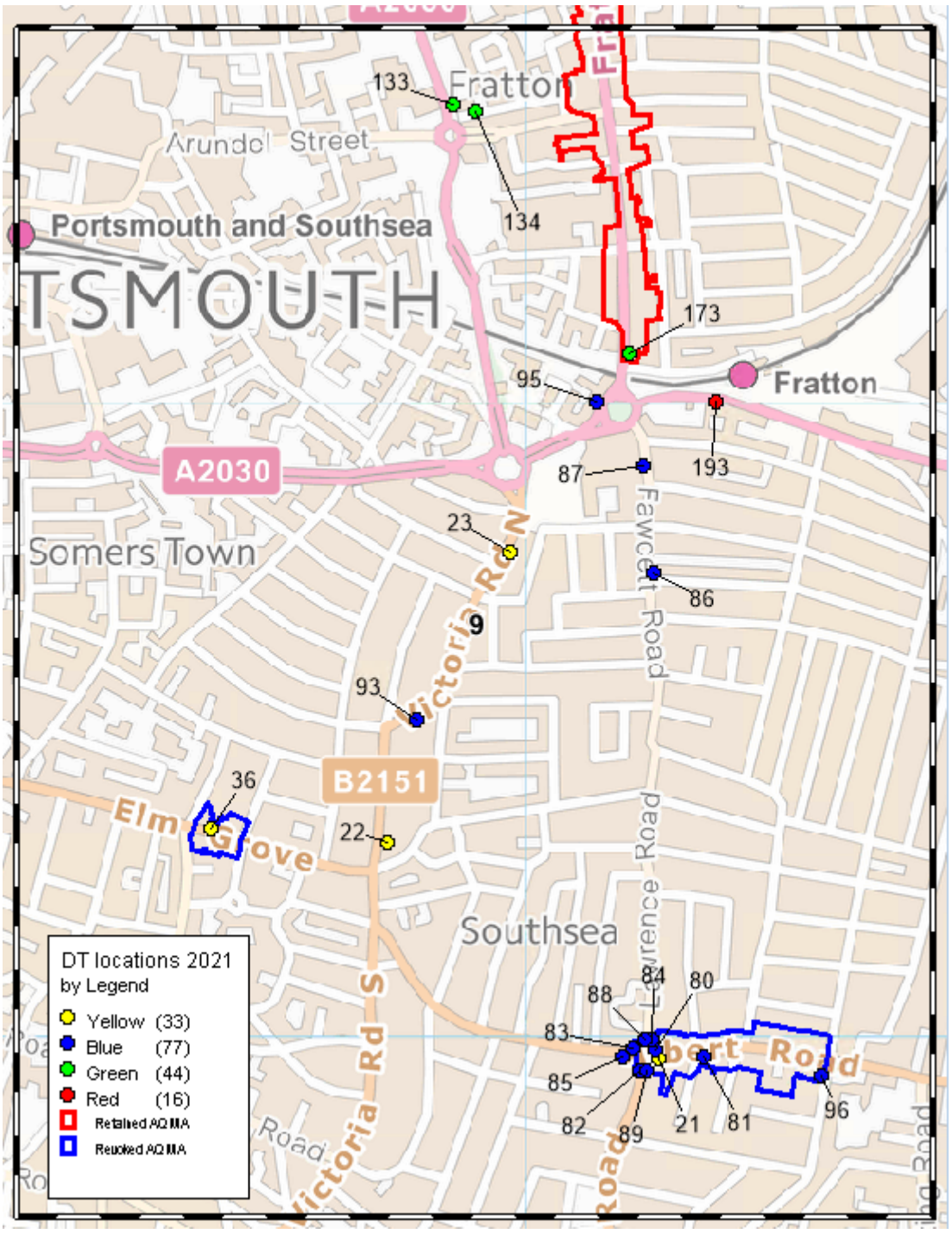
Map 14 – PCC's NDDT monitoring locations (Zone 7)



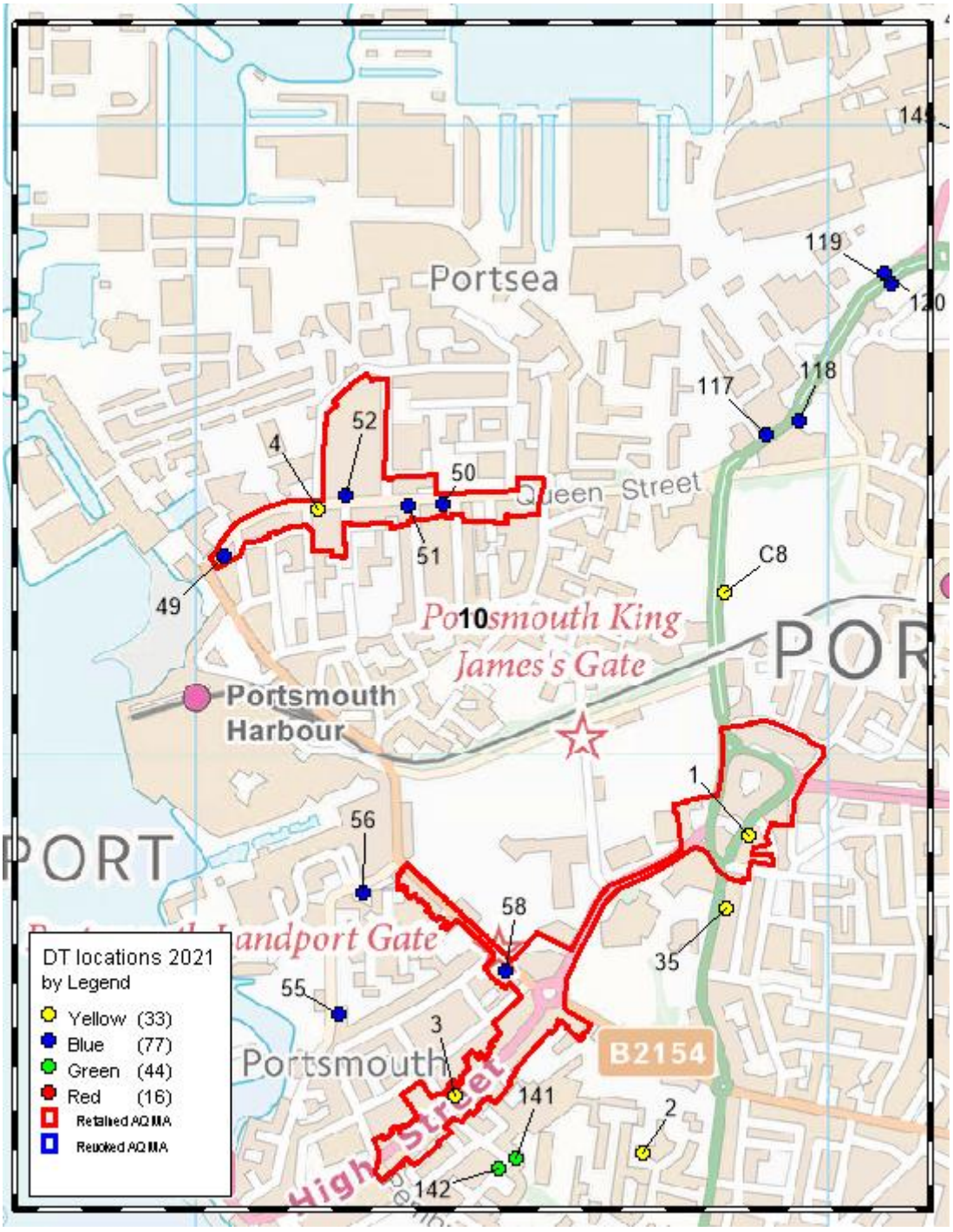
Map 15 – PCC's NDDT monitoring locations (Zone 8)



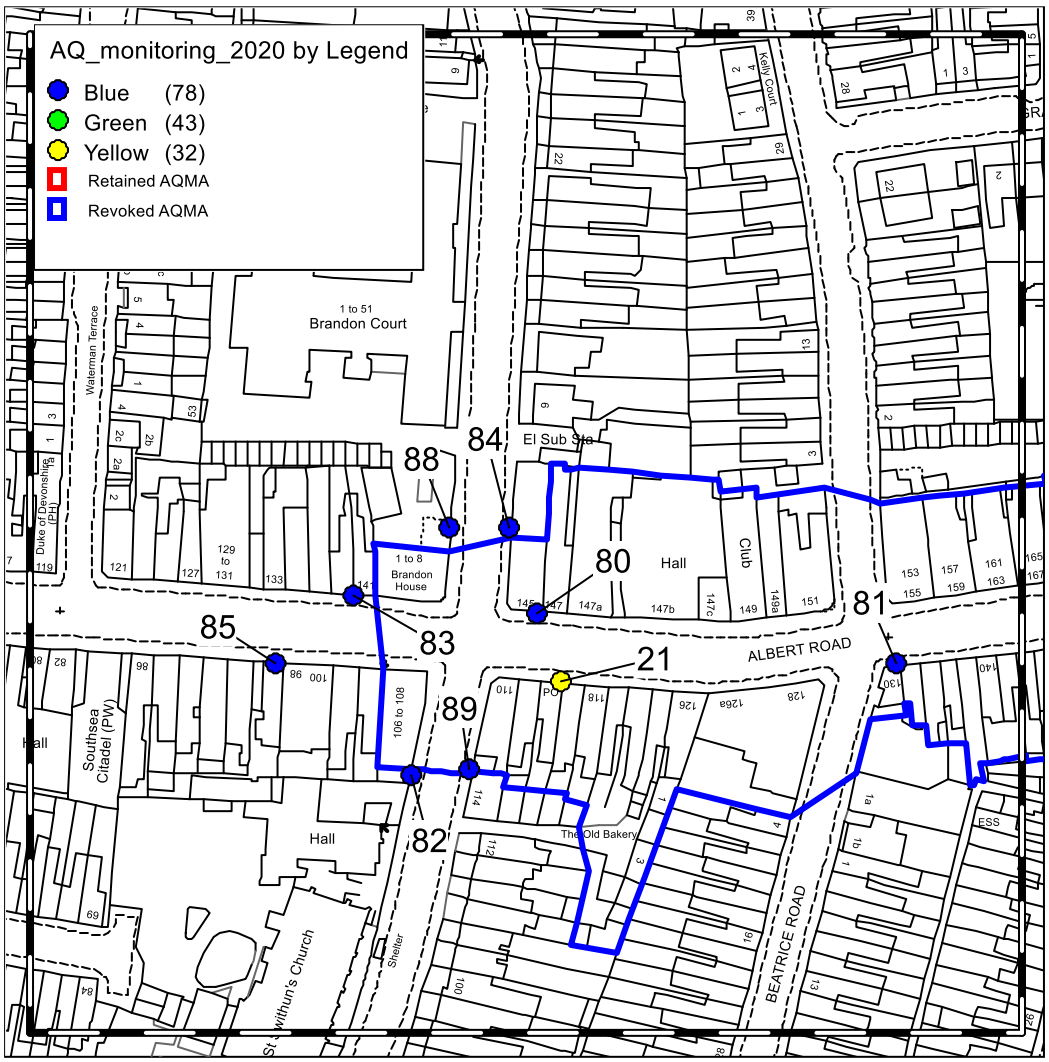
Map 16 – PCC's NDDT monitoring locations (Zone 9)



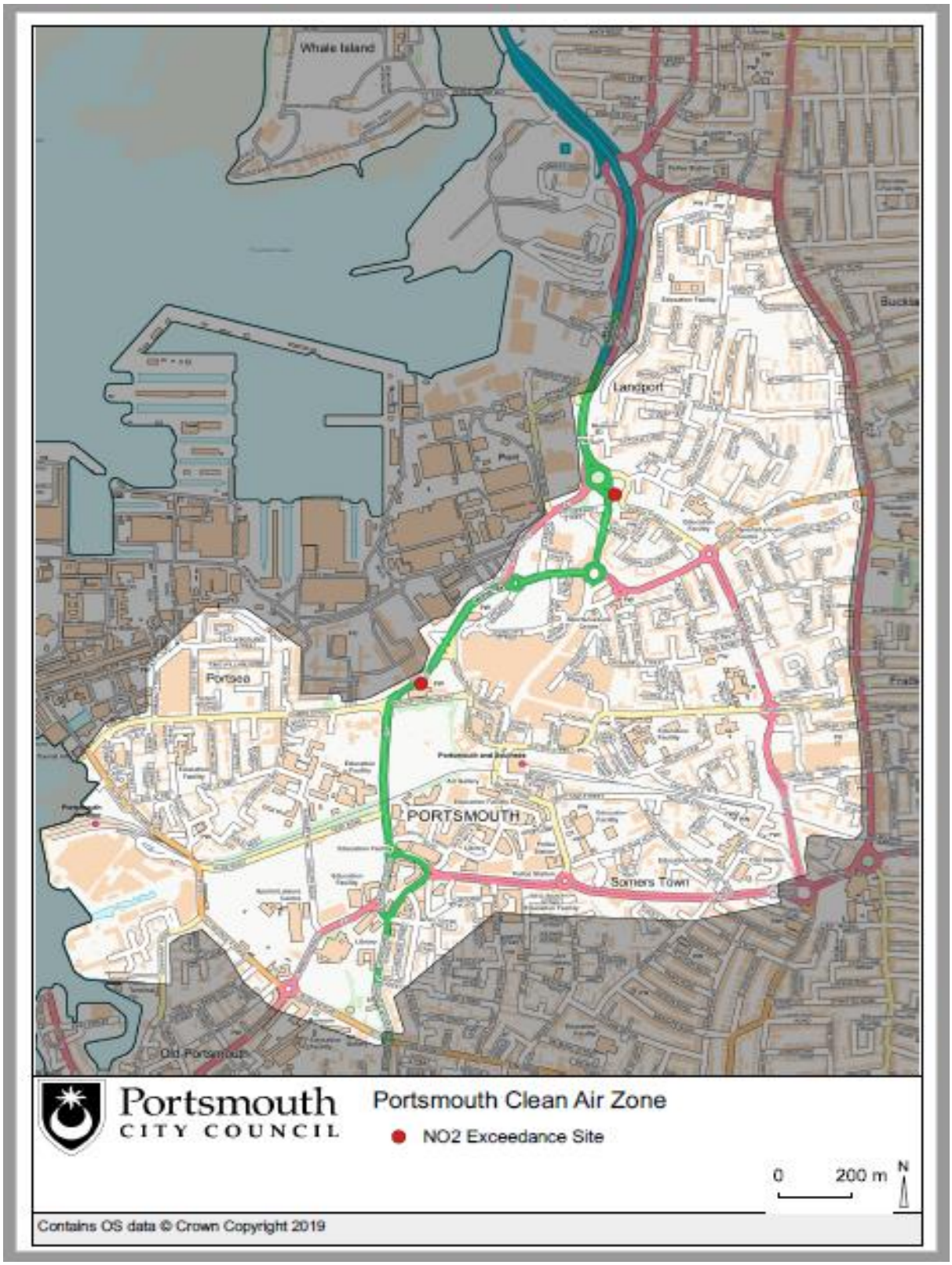
Map 17 – PCC's NDDT monitoring locations (Zone 10)



Map 18 – PCC's NDDT monitoring locations (Zone 11)



Appendix E: Concentrated CAZ



Appendix E: Summary of Air Quality Objectives in England

Table E.1 – Air Quality Objectives in England[4]

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

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

Significance of local air quality change

Table E.2: Air Quality Impact descriptors for annual mean pollutant concentrations:

Annual mean concentration at receptor in assessment year (as % of AQAL)	PM_{10} Annual mean concentration (µg/m^3) (3)				
	0	1	2 – 5	6 – 10	>10
≤75%	Negligible	Negligible	Negligible	Slight	Moderate
76% - 94%	Negligible	Negligible	Slight	Moderate	Moderate
95% - 102%	Negligible	Slight	Moderate	Moderate	Substantial
103% - 109%	Negligible	Moderate	Moderate	Substantial	Substantial
≥110%	Negligible	Moderate	Substantial	Substantial	Substantial

The assessment and description of change in nitrogen dioxide annual average has been carried out according to guidance on land-use planning and development control AQ impact descriptors, for annual mean pollutant concentrations.

The air quality change from year on year can be considered significant if it leads to significant impacts at existing sensitive receptors. In this assessment similar approaches have been adopted as presented in guidance on land-use planning and development control. This guidance suggests that a two-stage approach should be adopted to determine whether or not a change in air quality is considered as significant.

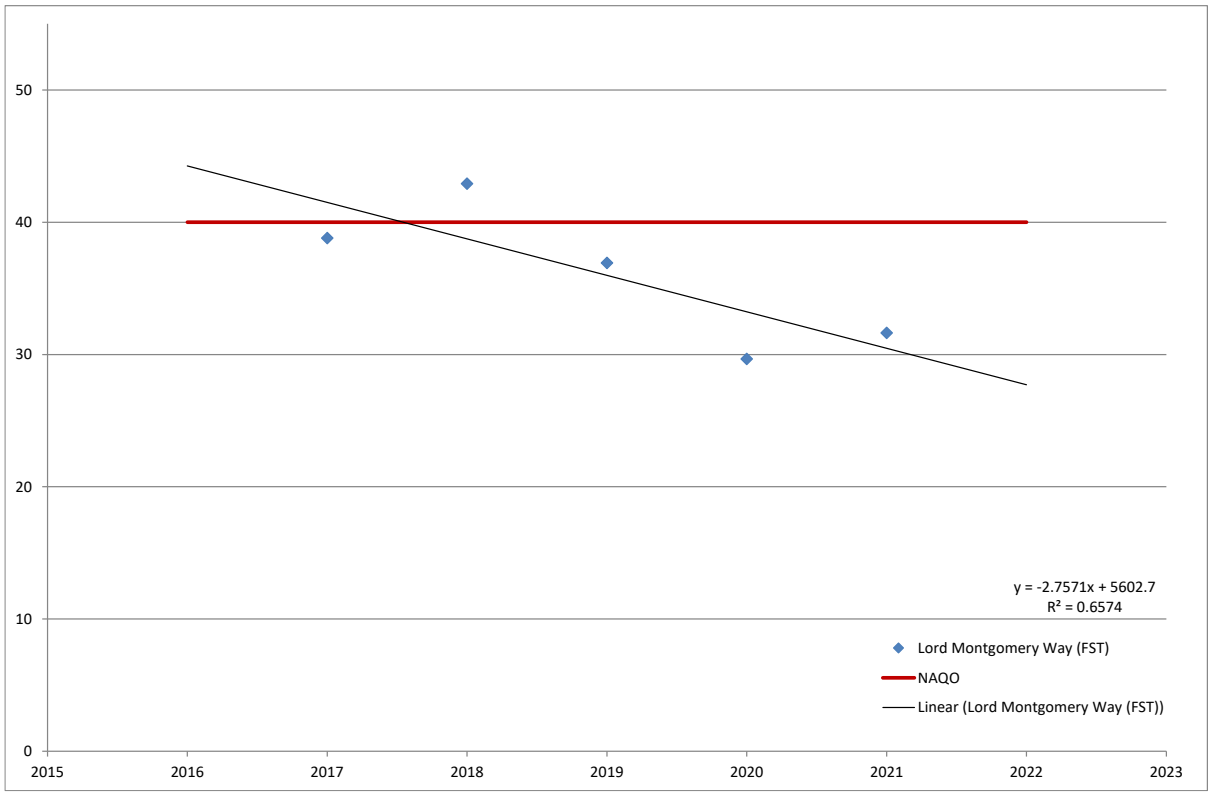
In order to assess the potential change in local air quality, a description of the change is given based on the magnitude of change as a percentage of a relevant Air Quality Assessment Level. Account must also be taken of the latest monitoring pollutant concentrations and their relationship to the NAQO for the pollutants of concern.

A summary of the impact descriptors for annual mean pollutant concentrations is tabulated above. The impact descriptors may be adverse or beneficial, depending upon whether monitored concentrations increase or decrease.

Appendix F: Five-year trends for nitrogen dioxide and particulate matter

In this section the trends in annual mean NO_2 concentrations are illustrated for the 27 long term NDDT data from Figure F1 to F27 and CAQMS data from Figure F28 to F31.

Figure F.1: Lord Montgomery Way (LMW-FST)



Summary

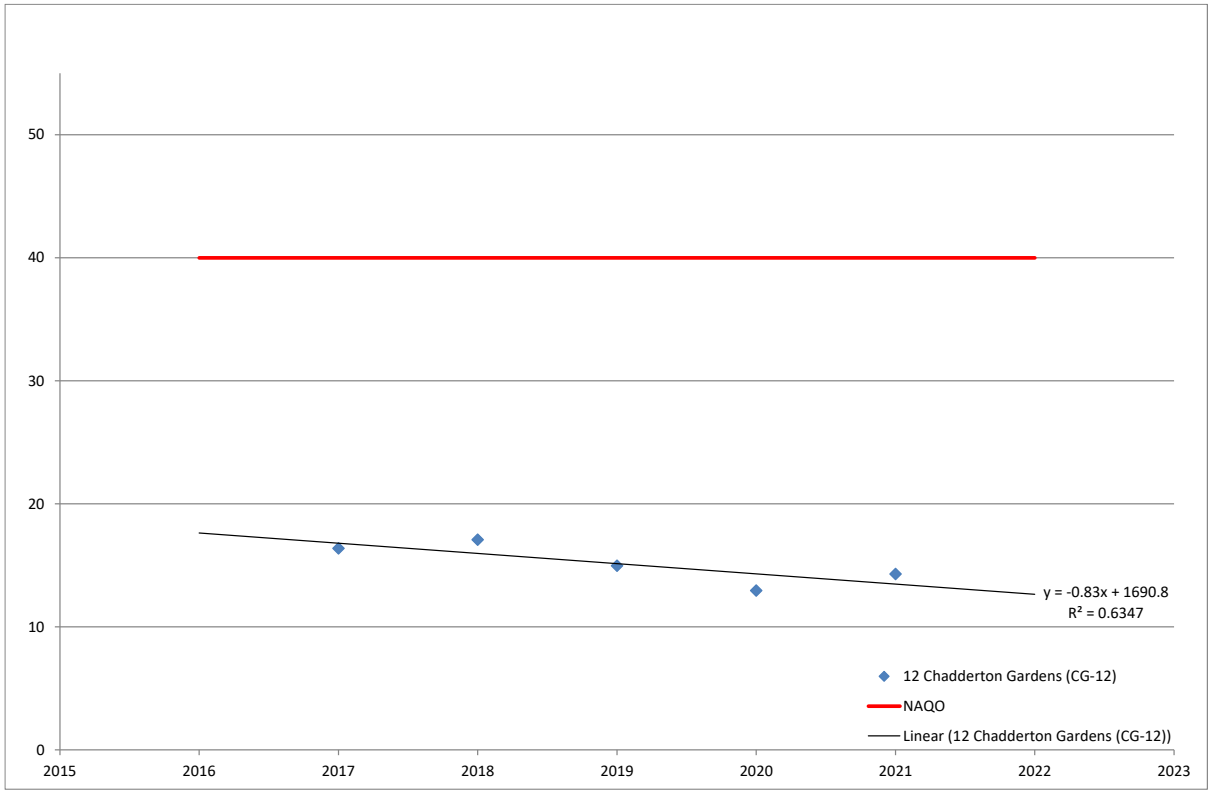
No exceedance/ short-term "negligibly adverse"/ long-term downwards

1. The NO_2 annual mean at this roadside monitoring location increased by 1.97µg/m^3 (an increase of 6.63%) between 2020 and 2021 but remained below the NAQO in 2021 (31.64µg/m^3) representing an AQ deterioration in the short-term.

2. The 2020-2021 NO_2 annual mean increase is described as "negligibly adverse".

3. The NO_2 annual mean downward trend in the last 5 years exhibited an AQ improvement in the long-term, that is consistent with the previously reported 5-year trend.

Figure F.2: 12 Chadderton Gardens (CG-12)



Summary

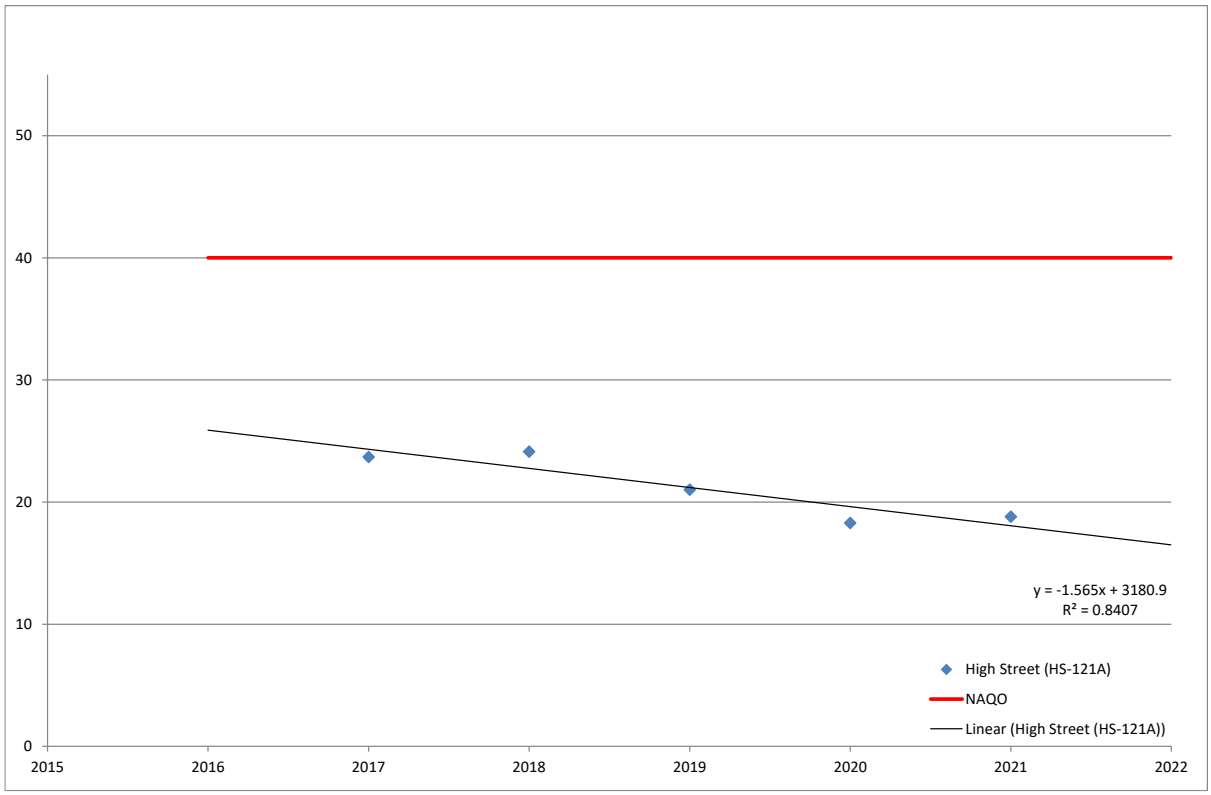
No exceedance/ short-term "negligibly adverse"/ long-term downwards

1. The NO_2 annual mean at this urban background monitoring location increased by 1.34µg/m^3 (an increase of 10.37%) between 2020 and 2021 but remained below the NAQO in 2021 (14.30µg/m^3) representing an AQ deterioration in the short-term.

2. The 2020-2021 NO_2 annual mean increase is described as "negligibly adverse".

3. The NO_2 annual average downward trend in the last 5 years exhibited an AQ improvement in the long-term that is consistent with the previously reported 5-year trend.

Figure F.3: 121A High Street (HS-121A)



Summary

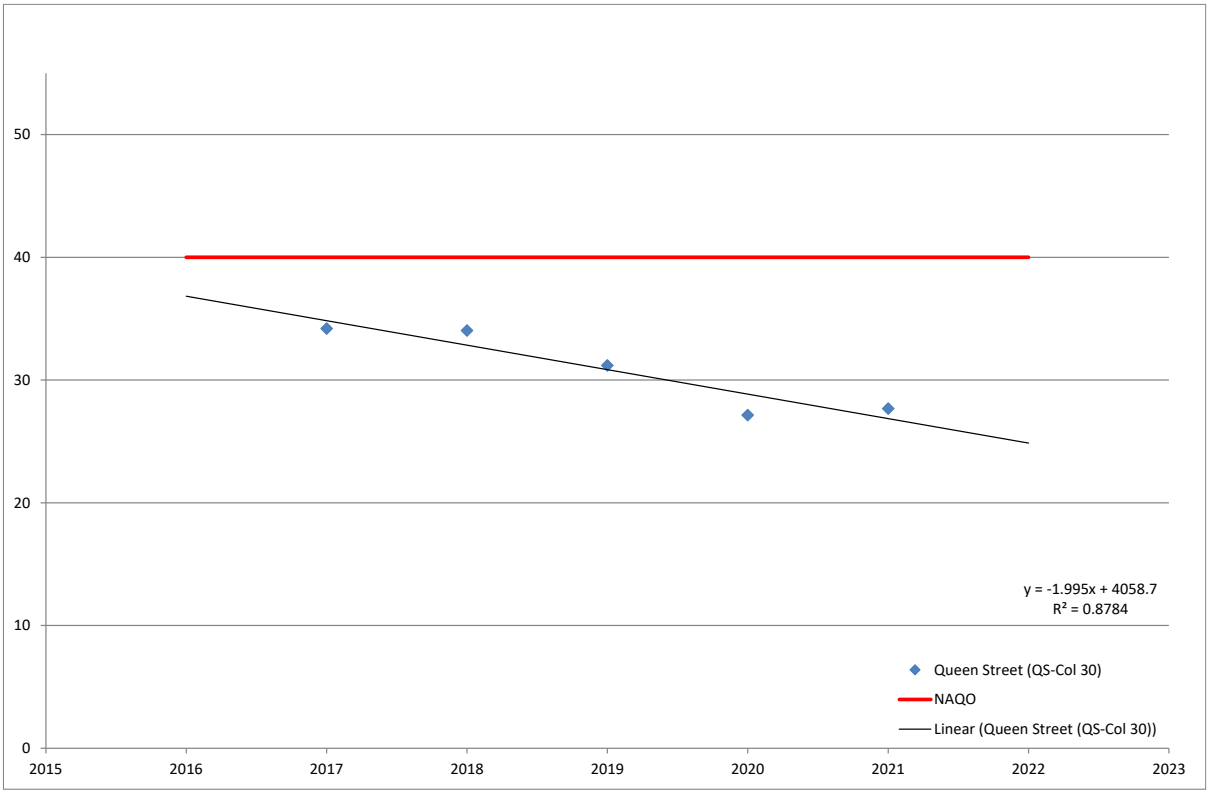
No exceedance, short-term "negligibly adverse", long-term downwards

1. The NO_2 annual mean at this roadside monitoring location increased by 0.51µg/m^3 (an increase of 2.78%) between 2020 and 2021 but remained below the NAQO in 2021 (18.80µg/m^3) representing an AQ deterioration in the short-term.

2. The 2019-2020 NO_2 annual mean increase is described as "negligibly adverse".

3. The NO_2 annual mean downward trend in the last 5 years exhibited an AQ improvement in the long-term that is consistent with the previously reported 5-year trend.

Figure F.4: Queen Street, Column 30 (QS-Col30)



Summary

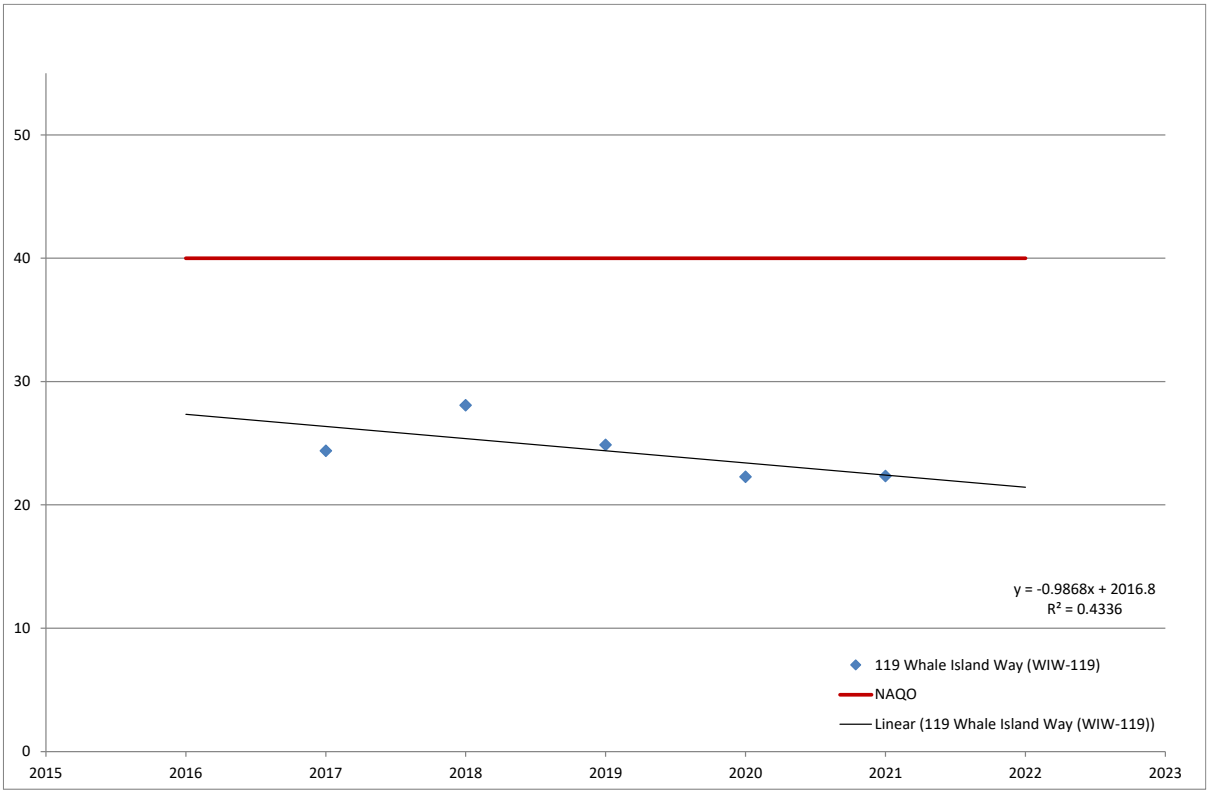
No exceedance, short-term "negligibly adverse", long-term downwards

1. The NO_2 annual mean at this roadside monitoring location increased by 0.52µg/m^3 (an increase of 1.91%) between 2020 and 2021 but remained below the NAQO in 2021 (27.67µg/m^3) representing an AQ deterioration in the short-term.

2. The 2020-2021 NO_2 annual mean increase is described as "negligibly adverse".

3. The NO_2 annual mean downward trend in the last 5 years exhibited an AQ improvement in the long-term that is consistent with the previously reported 5-year trend.

Figure F.5: 119 Whale Island Way (WIW-119)



Summary

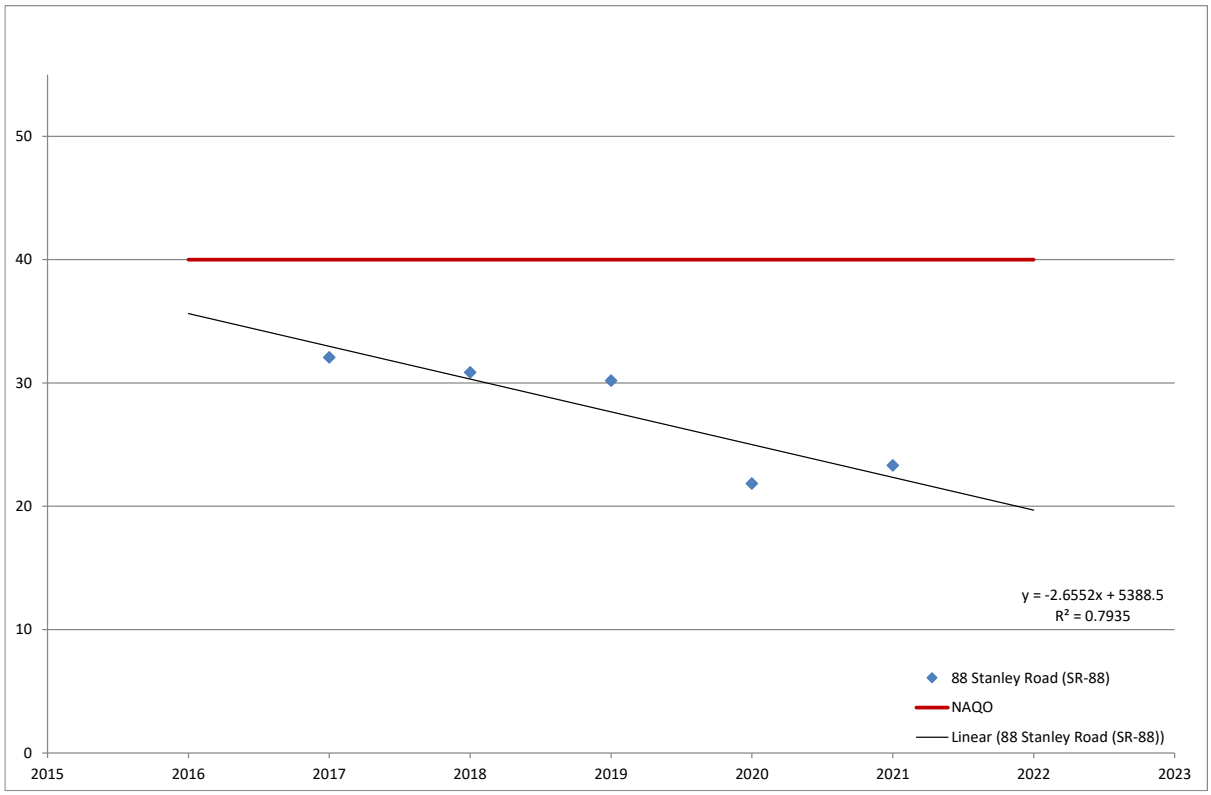
No exceedance, short-term "negligibly adverse", long-term downwards

1. The NO_2 annual mean at this roadside monitoring location increased by 0.06µg/m^3 (an increase of 0.28%) between 2020 and 2021 but remained below the NAQO in 2021 (22.34µg/m^3) representing an AQ deterioration in the short-term.

2. The 2020-2021 NO_2 annual mean increase is described as "negligibly adverse".

3. The NO_2 annual mean downward trend in the last 5 years exhibited an AQ improvement in the long-term that is consistent with the previously reported 5-year trend.

Figure F.6: 88 Stanley Road (SR-88)



Summary

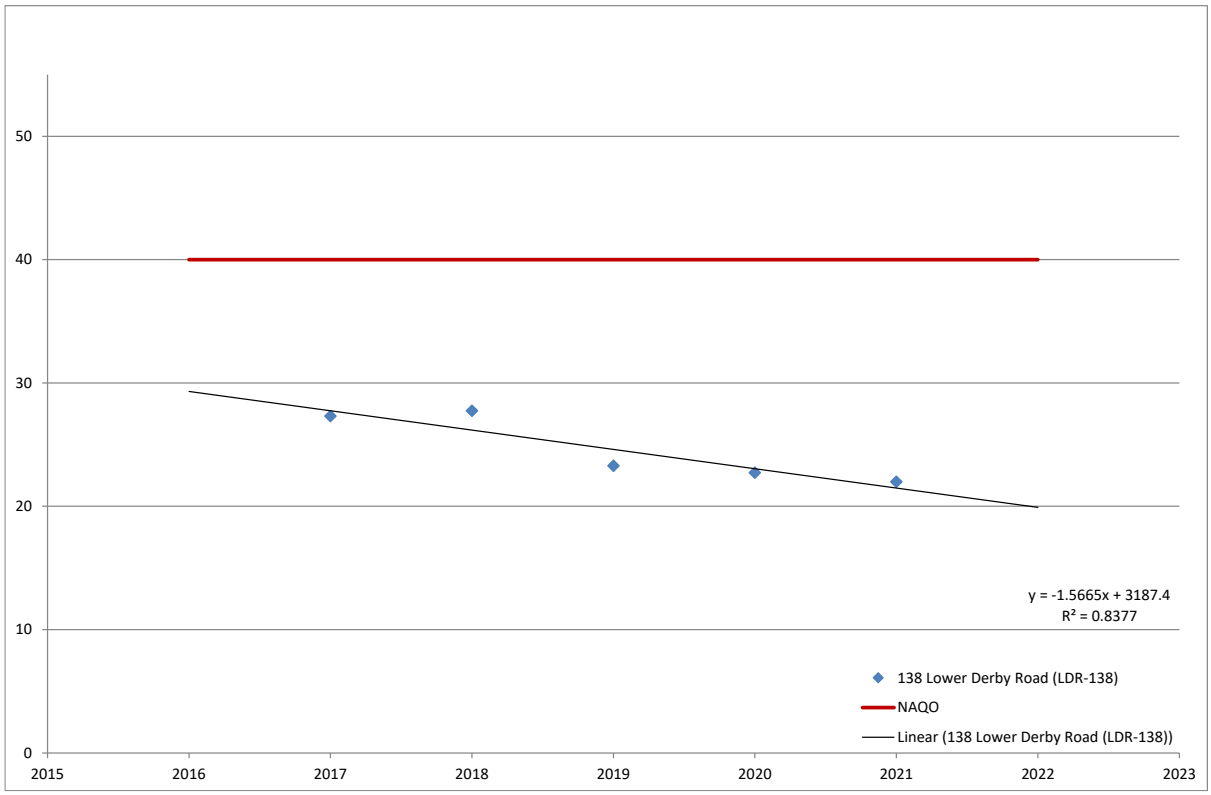
No exceedance, short-term "negligibly adverse", long-term downwards

1. The NO_2 annual mean at this roadside monitoring location increased by 1.46µg/m^3 (an increase of 6.68%) between 2020 and 2021 and remained below the NAQO in 2021 (23.31µg/m^3) representing an AQ deterioration in the short-term.

2. The 2020-2021 NO_2 annual mean increase is described as "negligibly adverse".

3. The NO_2 annual mean downward trend in the last 5 years exhibited an AQ improvement in the long-term that is consistent with the previously reported 5-year trend.

Figure F.7: 138 Lower Derby Road (LDR-138)



Summary

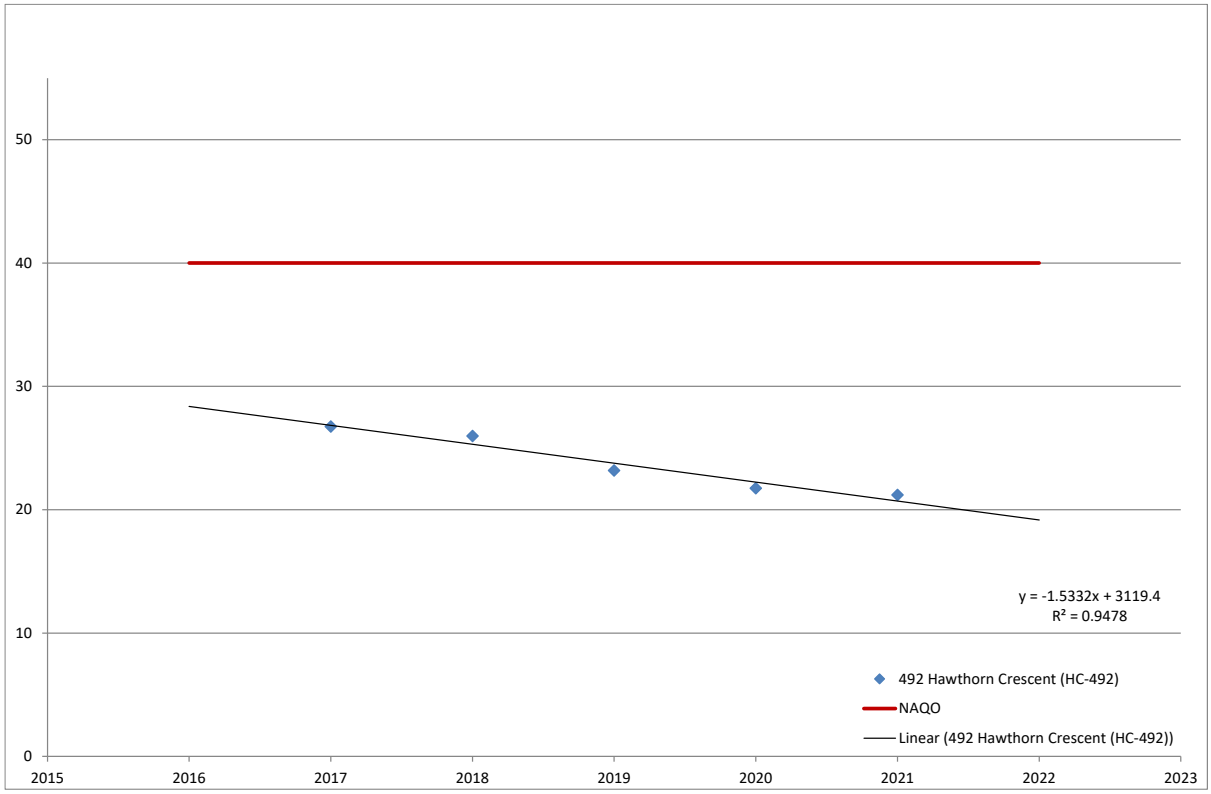
No exceedance, short-term "negligibly beneficial", long-term downwards

1. The NO_2 annual mean at this urban background monitoring location decreased by 0.73µg/m^3 (a decrease of 3.21%) between 2020 and 2021 to remain below the NAQO in 2021 (22.00µg/m^3) representing a continued AQ improvement in the short-term.

2. The 2020-2021 NO_2 annual mean decrease is described as "negligibly beneficial".

3. The NO_2 annual mean downward trend in the last 5 years exhibited an AQ improvement in the long-term that is consistent with the previously reported 5-year trend.

Figure F.8: 492 Hawthorn Crescent (HC-492)



Summary

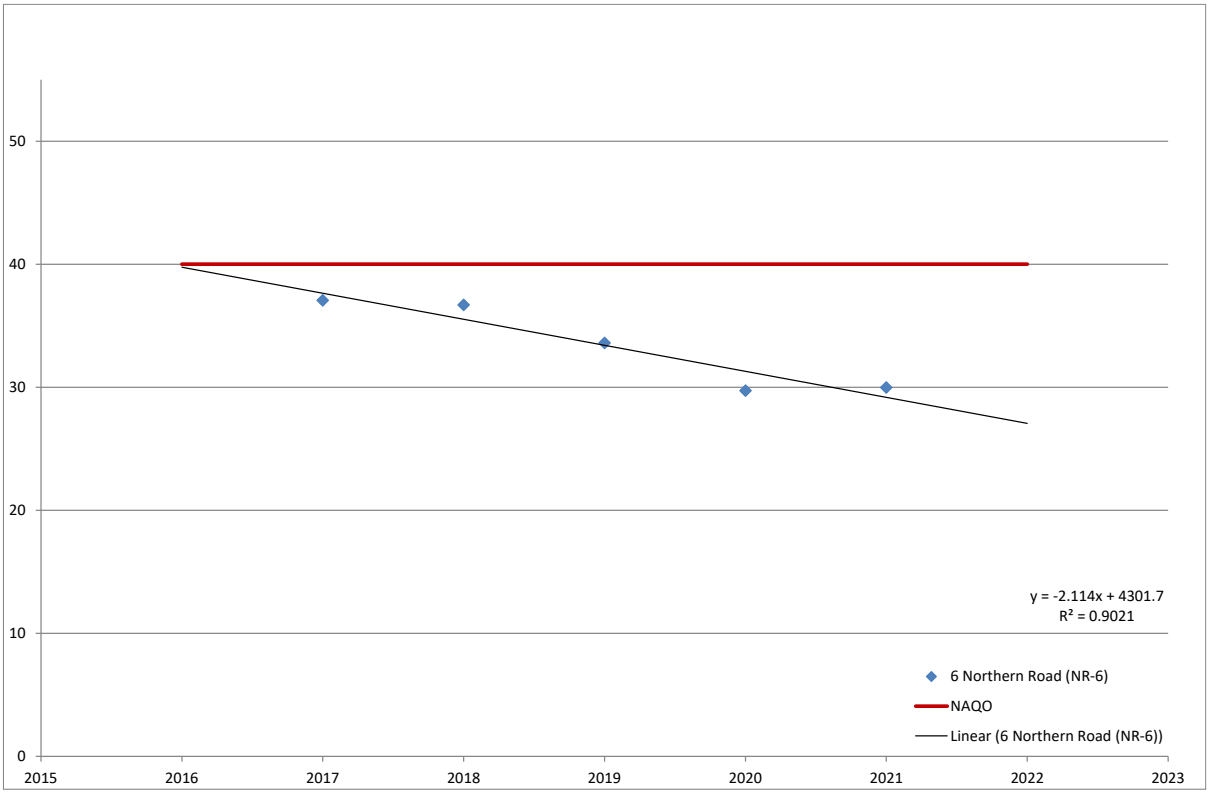
No exceedance, short-term "negligibly beneficial", long-term downwards

1. The NO_2 annual mean at this urban background monitoring location decreased by 0.54µg/m^3 (a decrease of 2.48%) between 2020 and 2021 to remain below the NAQO in 2021 (21.20µg/m^3) representing a continued AQ improvement in the short-term.

2. The 2020-2021 NO_2 annual mean decrease is described as "negligibly beneficial".

3. The NO_2 annual mean downward trend in the last 5 years exhibited an AQ improvement in the long-term that is consistent with the previously reported 5-year trend**.**

Figure F.9: 6 Northern Road (NR-6)



Summary

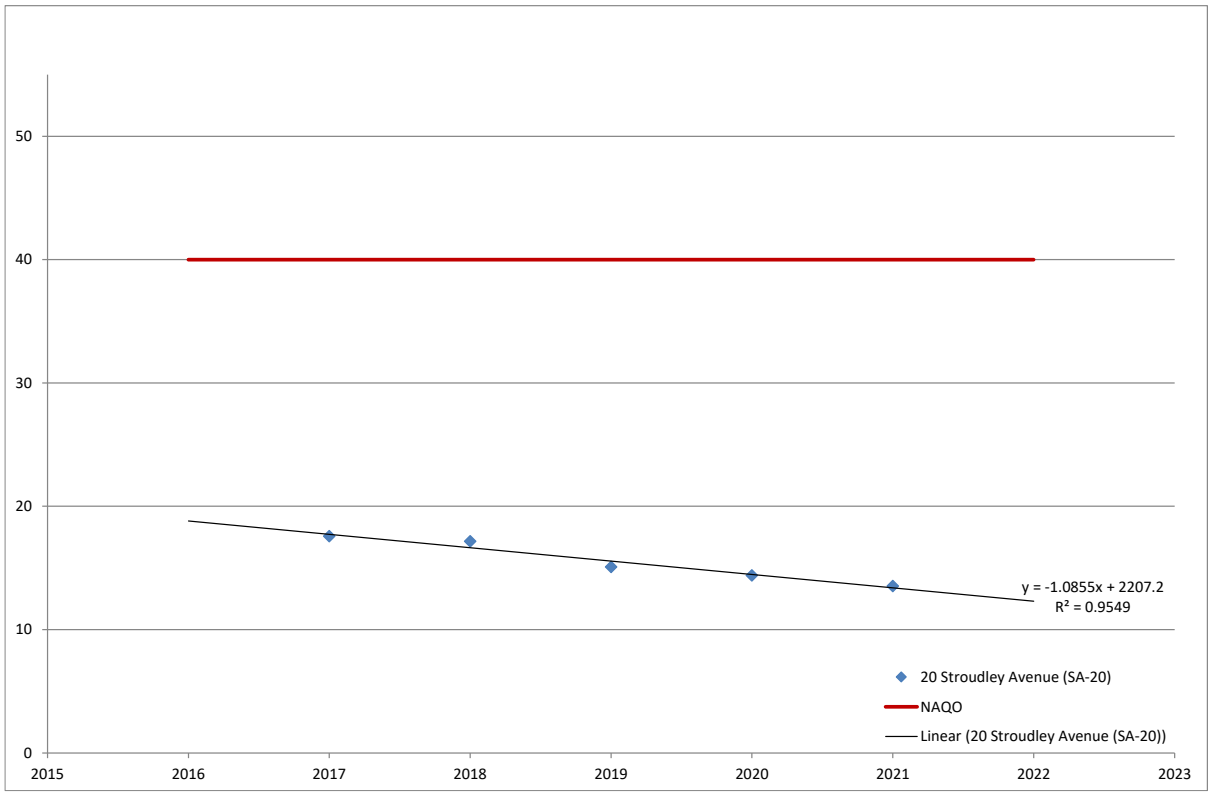
No exceedance, short-term "negligibly adverse", long-term downwards

1. The NO_2 annual mean at this roadside monitoring location increased by 0.25µg/m^3 (an increase of 0.85%) between 2020 and 2021 but remained below the NAQO in 2021 (29.98µg/m^3) representing an AQ deterioration in the short-term.

2. The 2020-2021 NO_2 annual mean increase is described as "negligibly adverse".

3. The NO_2 annual mean downward trend in the last 5 years exhibited an AQ improvement in the long-term that is consistent with the previously reported 5-year trend.

Figure F.10: 20 Stroudley Avenue (SA-20)



Summary

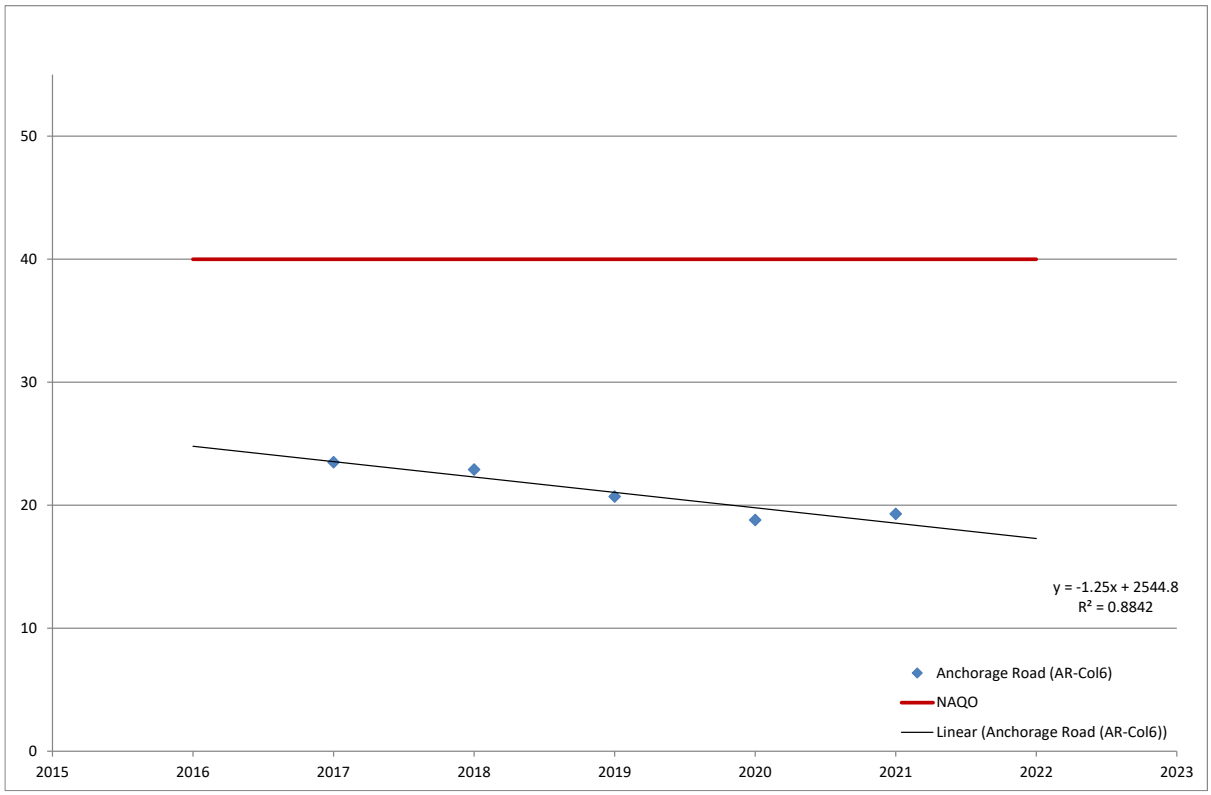
No exceedance, short-term "negligibly beneficial", long-term downwards

1. The NO_2 annual mean at this urban background monitoring location decreased by 0.85µg/m^3 (a decrease of 5.92%) between 2020 and 2021 to remain below the NAQO in 2021 (13.54µg/m^3) representing a continued AQ improvement in the short-term.

2. The 2020-2021 NO_2 annual mean decrease is described as "negligibly beneficial".

3. The NO_2 annual mean downward trend in the last 5 years exhibited an AQ improvement in the long-term that is consistent with the previously reported 5-year trend**.**

Figure F.11: Anchorage Road, Column 6 (AR-Col6)



Summary

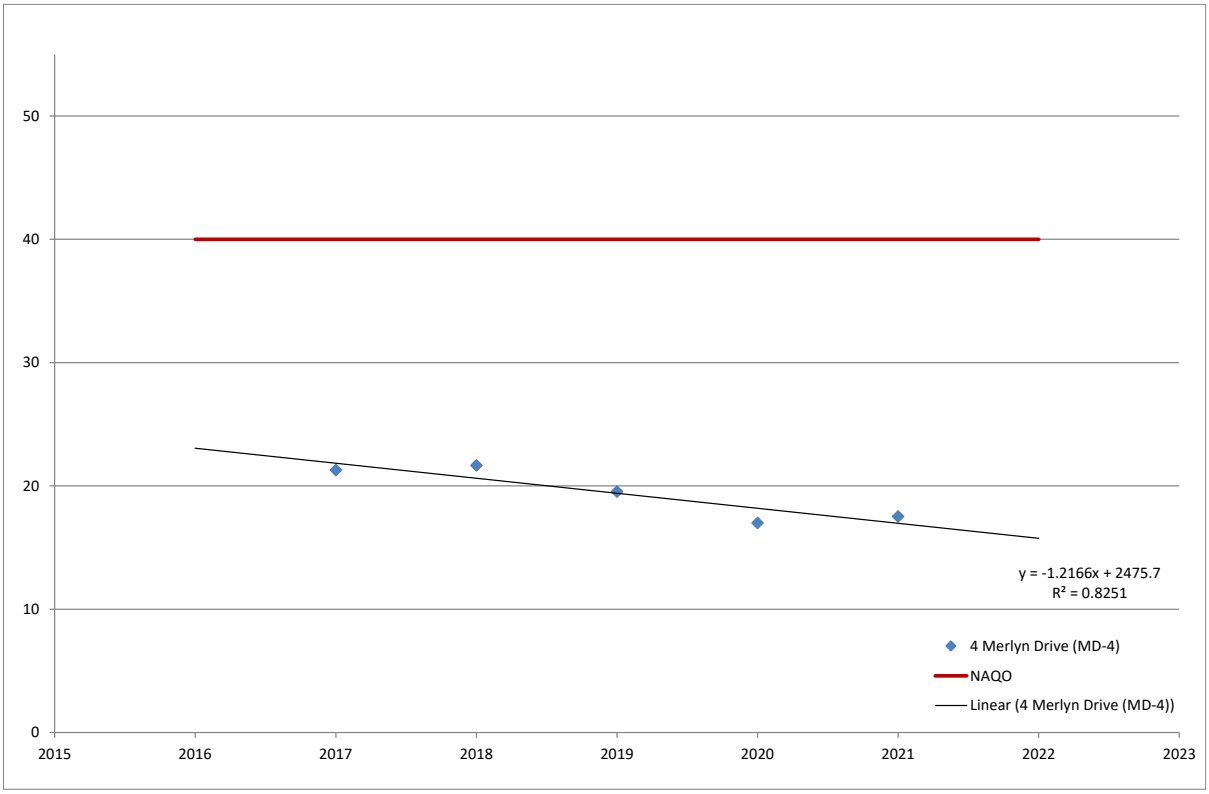
No exceedance, short-term "negligibly adverse", long-term downwards

1. The NO_2 annual mean at this roadside monitoring location increased by 0.50µg/m^3 (an increase of 2.66%) between 2020 and 2021 and remained below the NAQO in 2021 (19.30µg/m^3) representing an AQ deterioration in the short-term.

2. The 2020-2021 NO_2 annual average decrease is described as "negligibly adverse".

3. The NO_2 annual mean downward trend in the last 5 years exhibited an AQ improvement in the long-term that is consistent with the previously reported 5-year trend.

Figure F.12: 4 Merlyn Drive (MD-4)



Summary

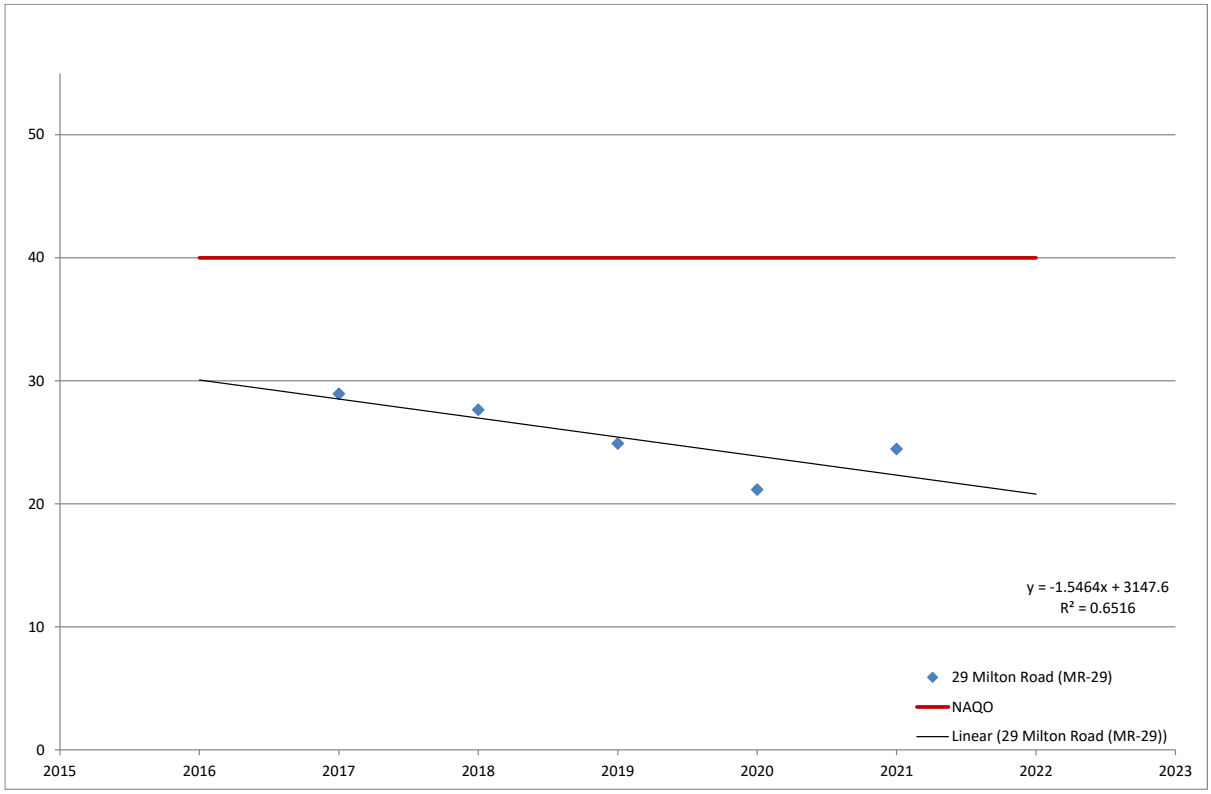
No exceedance, short-term "negligible adverse", long-term downwards

1. The NO_2 annual mean at this roadside monitoring location increased by 0.53µg/m^3 (an increase of 3.12%) between 2020 and 2021 and remained below the NAQO in 2021 (17.53µg/m^3) representing an AQ deterioration in the short-term.

2. The 2020-2021 NO_2 mean increase is described as "negligibly adverse".

3. The NO_2 annual mean downward trend in the last 5 years exhibited an AQ improvement in the long-term that is consistent with the previously reported 5-year trend.

Figure F.13: 29 Milton Road (MR-29)



Summary

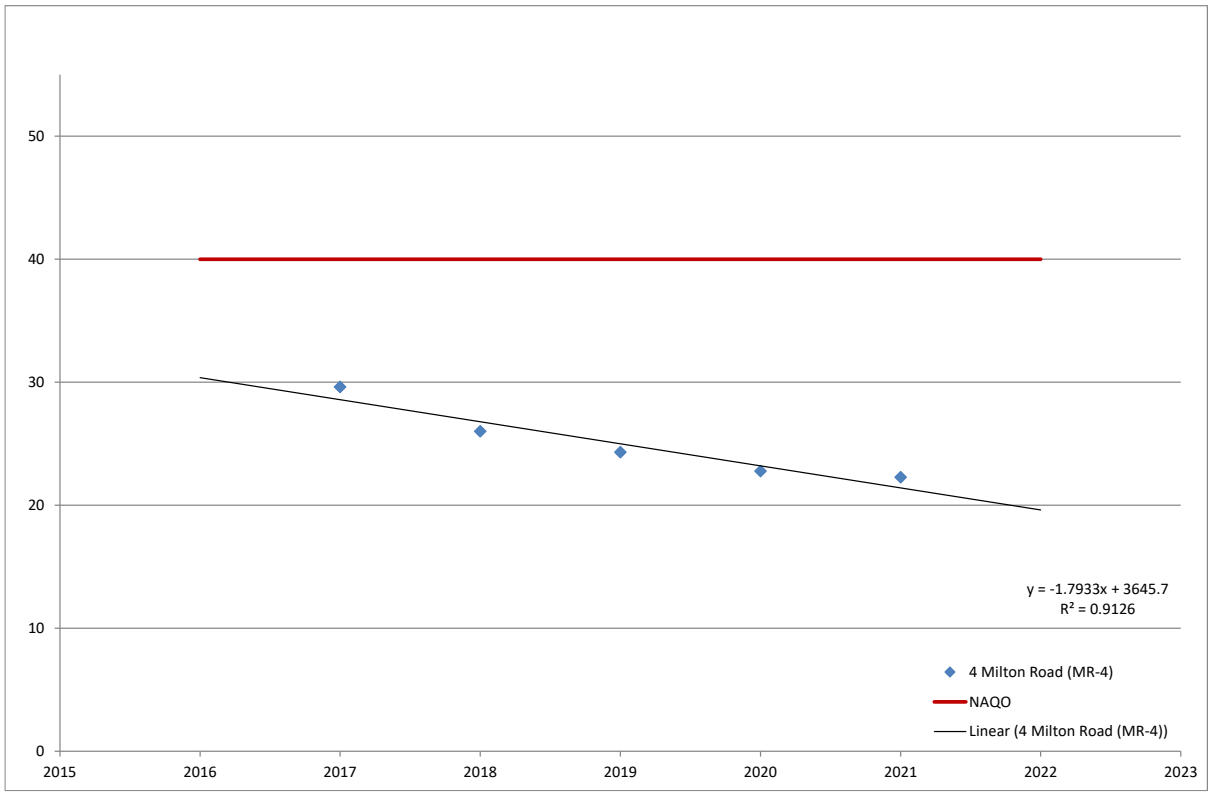
No exceedance, short-term "slightly adverse", long-term downwards

1. The NO_2 annual mean at this roadside monitoring location increased by 3.29µg/m^3 (an increase of 15.57%) between 2020 and 2021 but remained below the NAQO in 2021 (24.46µg/m^3) representing an AQ deterioration in the short-term.

2. The 2020-2021 NO_2 annual mean increase is described as "slightly adverse".

3. The NO_2 annual mean downward trend in the last 5 years exhibited an AQ improvement in the long-term that is consistent with the previously reported 5-year trend.

Figure F.14: 4 Milton Road (MR-4)



Summary

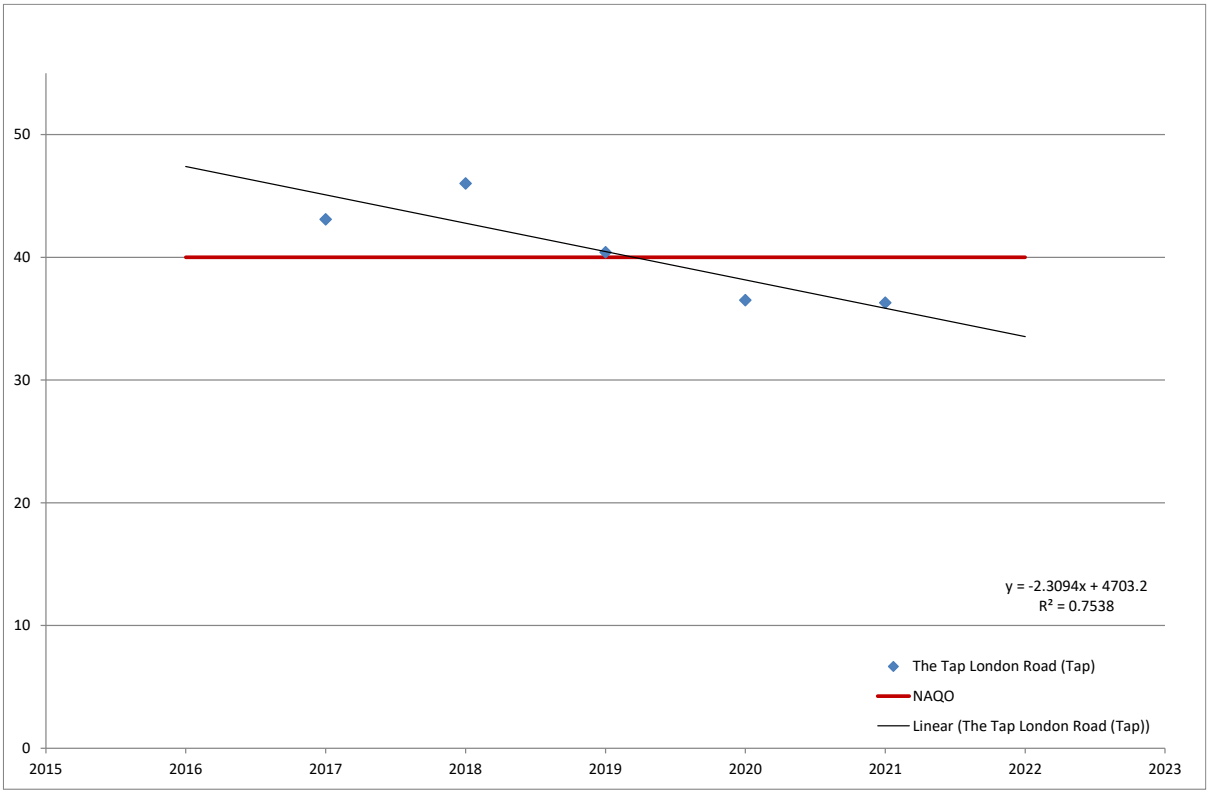
No exceedance, short-term "negligibly beneficial", long-term downwards

1. The NO_2 annual mean at this roadside monitoring location decreased by 0.50µg/m^3 (a decrease of 2.18%) between 2020 and 2021 and remained below the NAQO in 2021 (22.27µg/m^3) representing an AQ improvement in the short-term.

2. The 2020-2021 NO_2 annual mean decrease is described as "negligibly beneficial".

3. The NO_2 annual mean downward trend in the last 5 years exhibited an AQ improvement in the long-term that is consistent with the previously reported 5-year trend.

Figure F.15: The Tap Public House London Road (LR-TAP(PH))



Summary

No exceedance, short-term "negligibly beneficial", long-term downwards

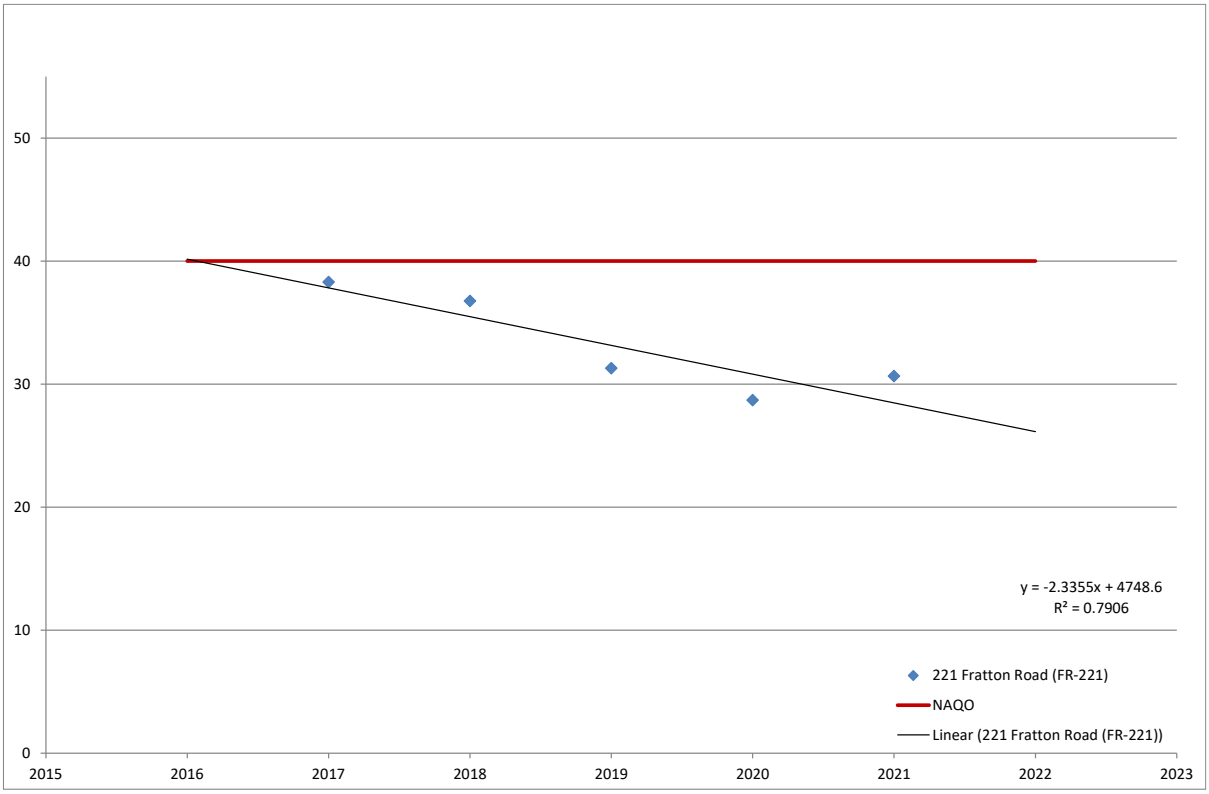
1. The NO_2 annual mean decreased further below the NAQO for the second time in the last 5 years.

2. The NO_2 annual mean at this Curbside monitoring location decreased by 0.22µg/m^3 (a decrease of 0.60%) between 2020 and 2021 to remain below the NAQO in 2021 (36.30µg/m^3) representing a continued AQ improvement in the short-term.

3. The 2020-2021 NO_2 mean decrease is described as "negligibly beneficial".

4. The NO_2 annual mean downward trend in the last 5 years exhibited an AQ improvement in the long-term that is consistent with the previously reported 5-year trend.

Figure F.16: 221 Fratton Road (FR-221)



Summary

No exceedance, short-term "negligibly adverse", long-term downwards

1. The NO_2 annual mean at this roadside monitoring location increased by 1.95µg/m^3 (an increase of 6.79%) between 2020 and 2021 and remained below the NAQO in 2021 (30.65µg/m^3) representing an AQ deterioration in the short-term.

2. The 2020-2021 NO_2 annual mean increase is described as "negligibly adverse".

3. The NO_2 annual mean downward trend in the last 5 years exhibited an AQ improvement in the long-term that is consistent with the previously reported 5-year trend.

Figure F.17: 117 Kingston Road (KR-117)

Summary

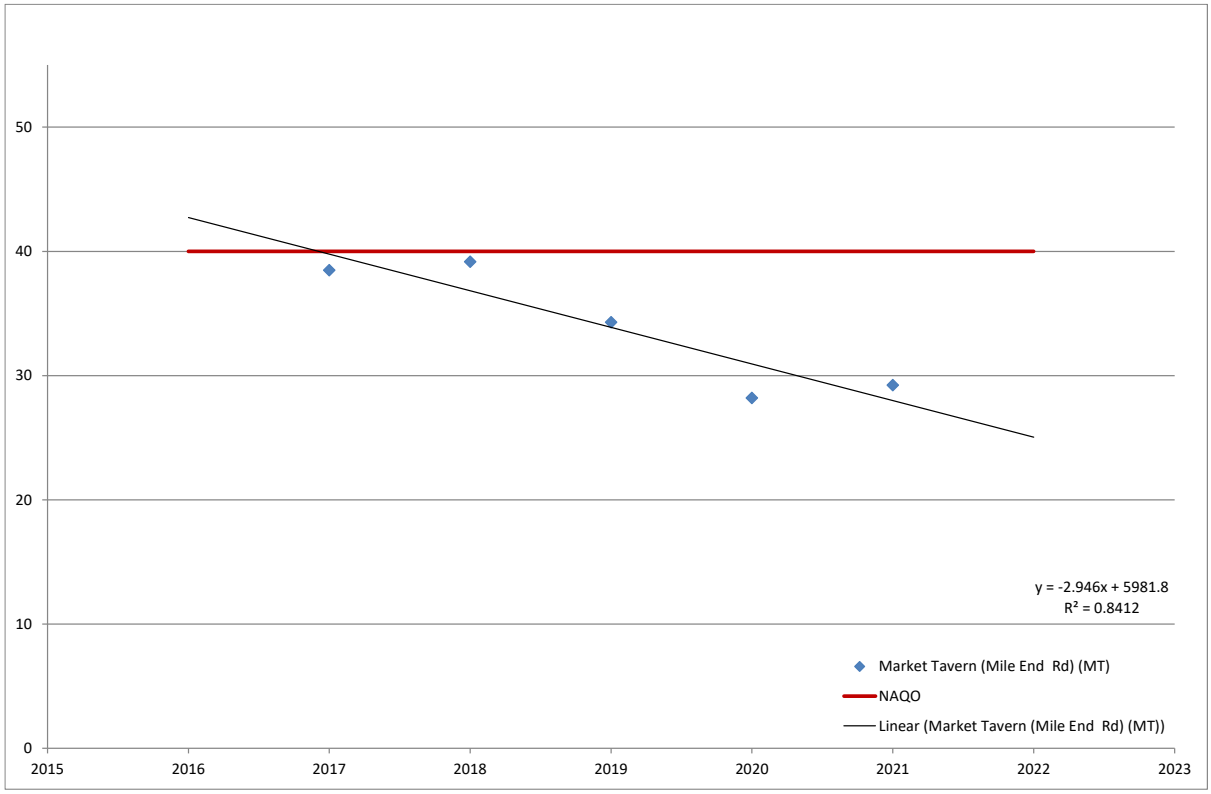
No exceedance, short-term "slightly adverse", long-term downwards

1. The NO_2 annual mean at this roadside monitoring location increased by 1.21µg/m^3 (an increase of 3.97%) between 2020 and 2021 and remained below the NAQO in 2021 (31.84µg/m^3) representing an AQ deterioration in the short-term.

2. The 2020-2021 NO_2 annual mean increase is described as "slightly adverse".

3. The NO_2 annual mean downward trend in the last 5 years exhibited an AQ improvement in the long-term that is consistent with to the previously reported 5-year trend.

Figure F.18: Market Tavern Public House, Mile End Road (MER-MT)



Summary

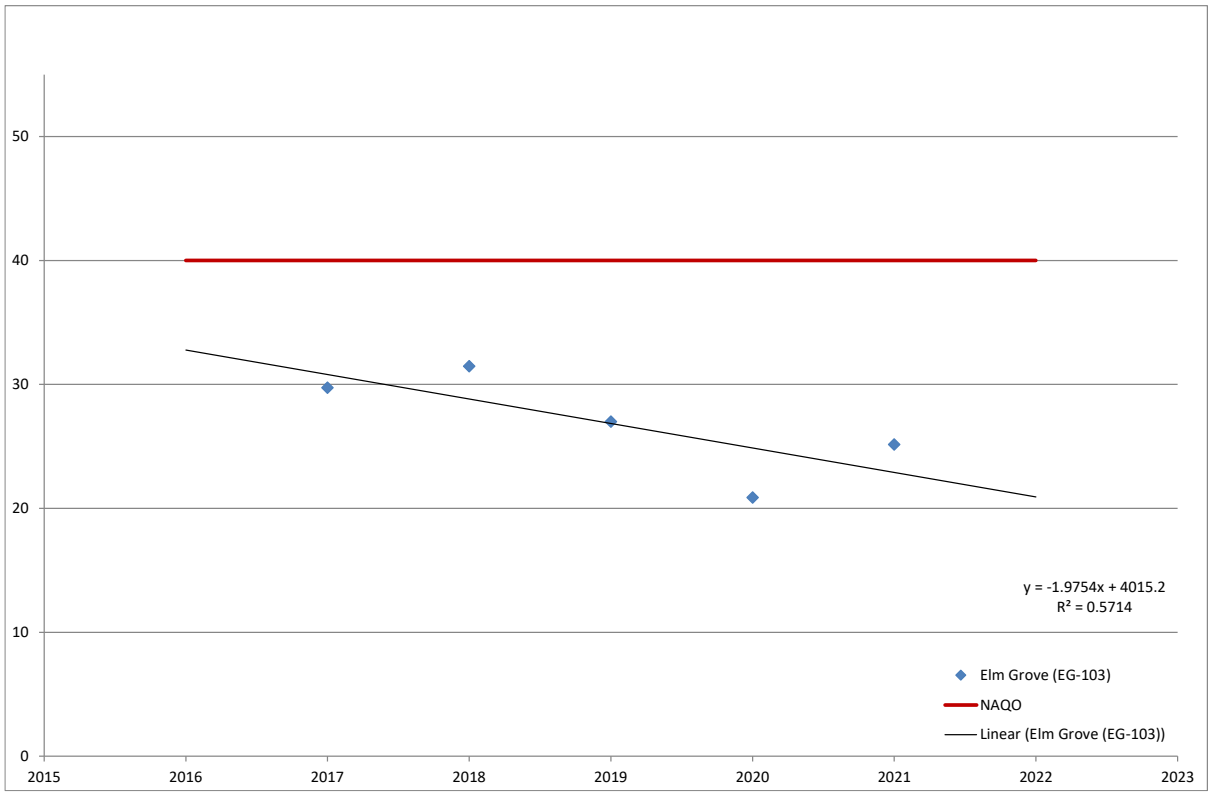
No exceedance, short-term "negligibly adverse", long-term downwards

1. The NO_2 annual mean at this roadside monitoring location increased by 1.04µg/m^3 (an increase of 3.68%) between 2020 and 2021 but remained below the NAQO in 2021 (29.24µg/m^3) representing an AQ deterioration in the short-term.

2. The 2020-2021 NO_2 annual mean increase is described as "negligibly adverse".

3. The NO_2 annual mean downward trend in the last 5 years exhibited an AQ improvement in the long-term that is consistent with to the previously reported 5-year trend.

Figure F.19: 103 Elm Grove (EG-103)



Summary

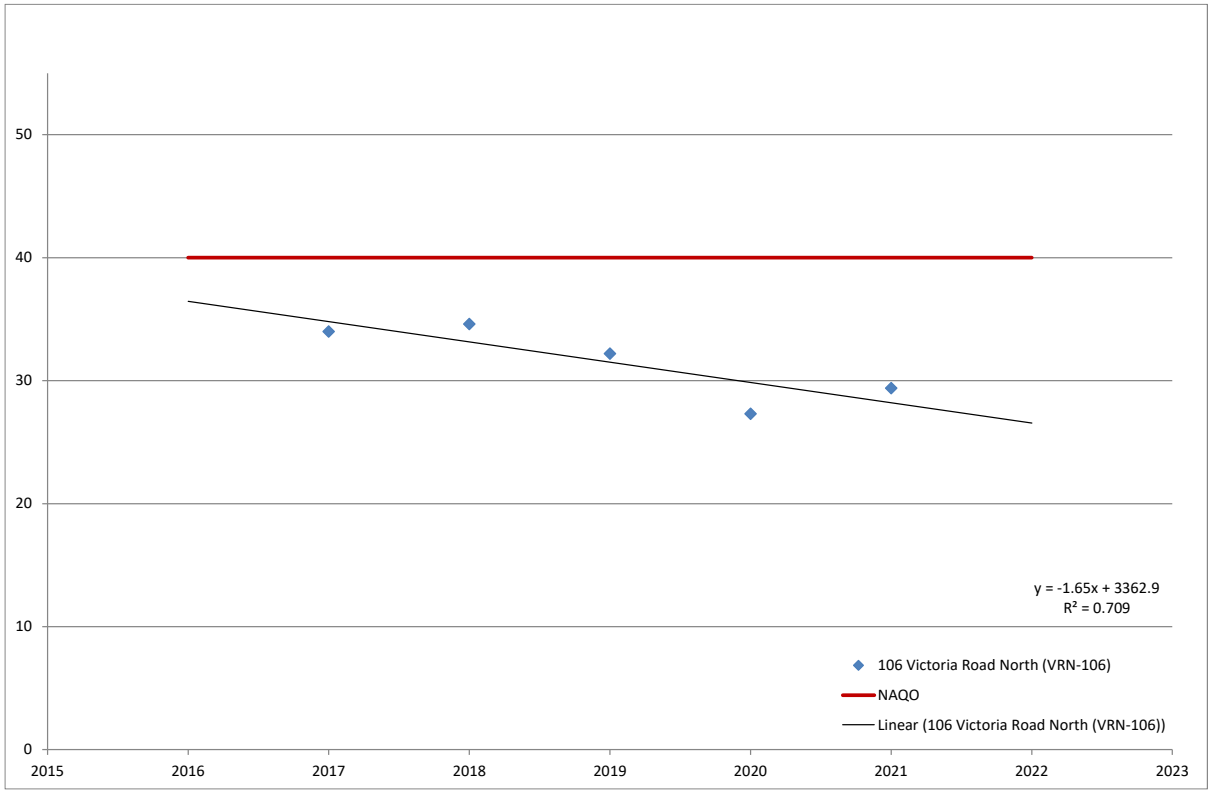
No exceedance, short-term "moderately adverse", long-term downwards

1. The NO_2 annual mean at this roadside monitoring location increased by 4.28µg/m^3 (an increase of 20.52%) between 2020 and 2021 and remained below the NAQO in 2021 (25.16µg/m^3) representing an AQ deterioration in the short-term.

2. The 2020-2021 NO_2 annual mean increase is described as "moderately adverse".

3. The NO_2 annual mean downward trend in the last 5 years exhibited an AQ improvement in the long-term that is consistent with to the previously reported 5-year trend.

Figure F.20: 106 Victoria Road North (VRN-106)



Summary

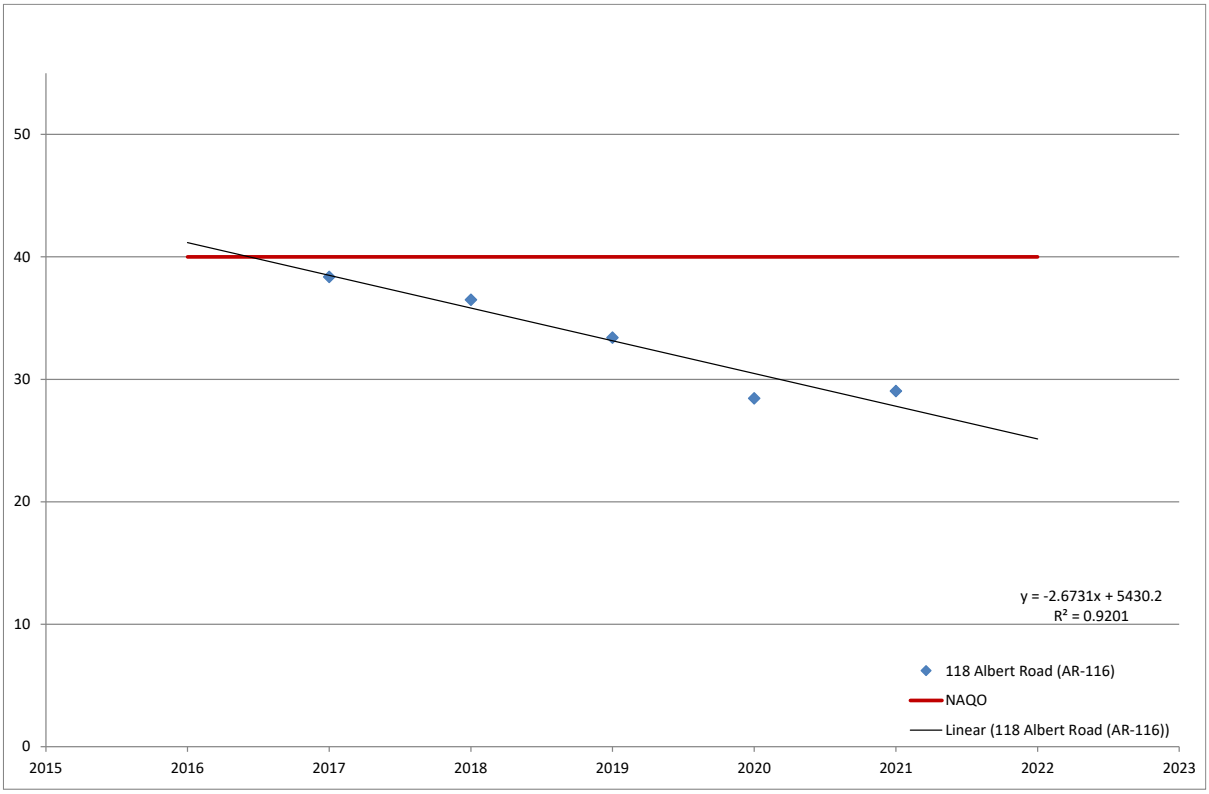
No exceedance, short-term "negligibly adverse", long-term downwards

1. The NO_2 annual mean at this roadside monitoring location increased by 2.10µg/m^3 (an increase of 7.69%) between 2020 and 2021 and remained below the NAQO in 2021 (29.40µg/m^3) representing an AQ deterioration in the short-term.

2. The 2020-2021 NO_2 annual mean increase is described as "negligibly adverse".

3. The NO_2 annual mean downward trend in the last 5 years exhibited an AQ improvement in the long-term that is consistent with to the previously reported 5-year trend.

Figure F.21: 116 Albert Road (AR-116)



Summary

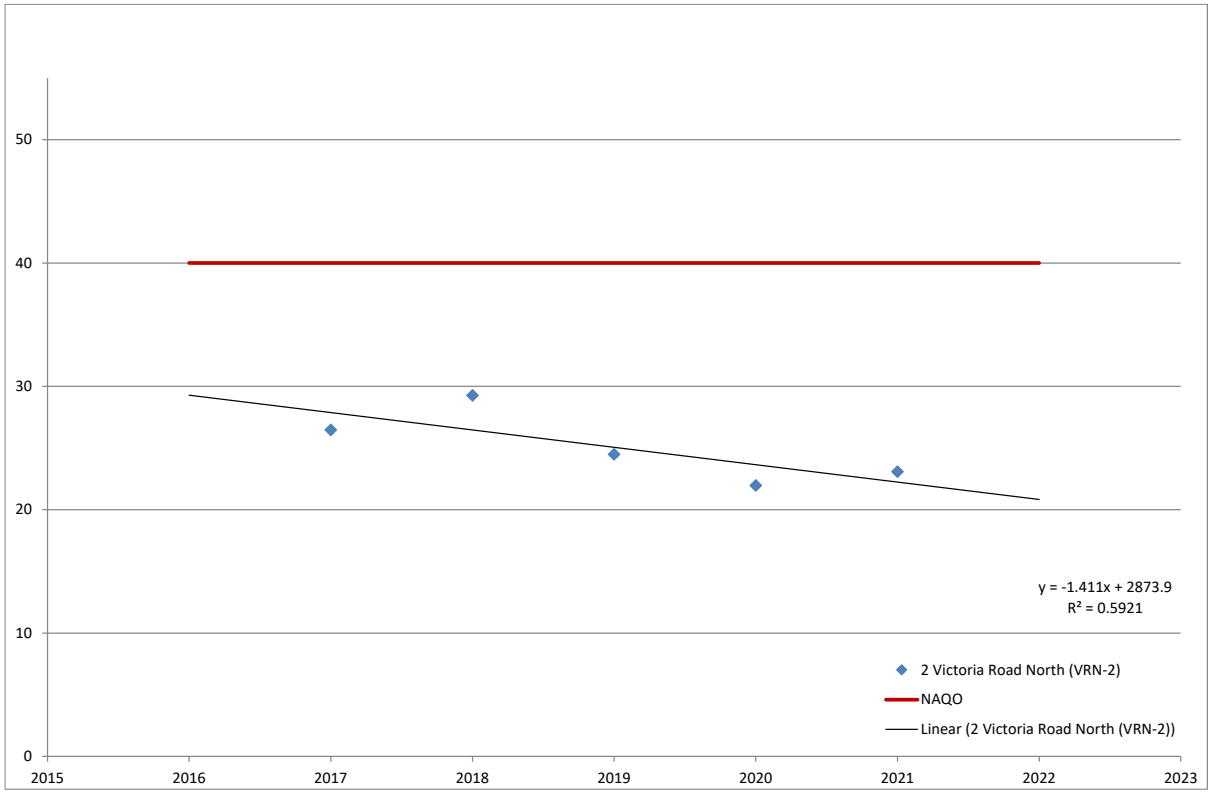
No exceedance, short-term "negligibly adverse", long-term downwards

1. The NO_2 annual mean at this roadside monitoring location increased by 0.59µg/m^3 (an increase of 2.09%) between 2020 and 2021 and remained below the NAQO in 2021 (29.03µg/m^3) representing an AQ deterioration in the short-term.

2. The 2020-2021 NO_2 annual mean increase is described as "negligibly adverse".

3. The NO_2 annual mean downward trend in the last 5 years exhibited an AQ improvement in the long-term that is consistent with to the previously reported 5-year trend.

Figure F.22: 2 Victoria Road North (VRN-2)



Summary

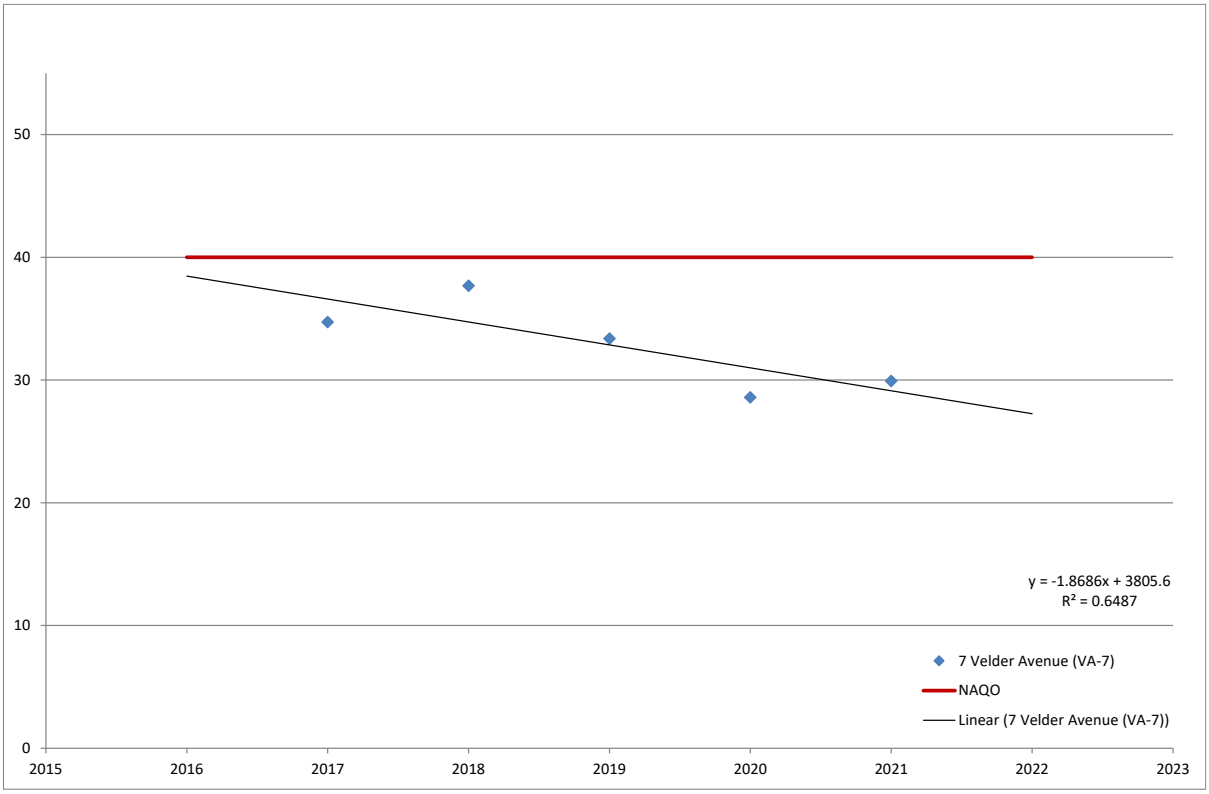
No exceedance, short-term "negligibly adverse", long-term downwards

1. The NO_2 annual mean at this roadside monitoring location increased by 1.12µg/m^3 (an increase of 5.09%) between 2020 and 2021 and remained below the NAQO in 2021 (23.08µg/m^3) representing an AQ deterioration in the short-term.

2. The 2020-2021 NO_2 annual mean decrease is described as "negligibly adverse".

3. The NO_2 annual mean downward trend in the last 5 years exhibited an AQ improvement in the long-term that is consistent with to the previously reported 5-year trend.

Figure F.23: 7 Velder Avenue (VA-7)



Summary

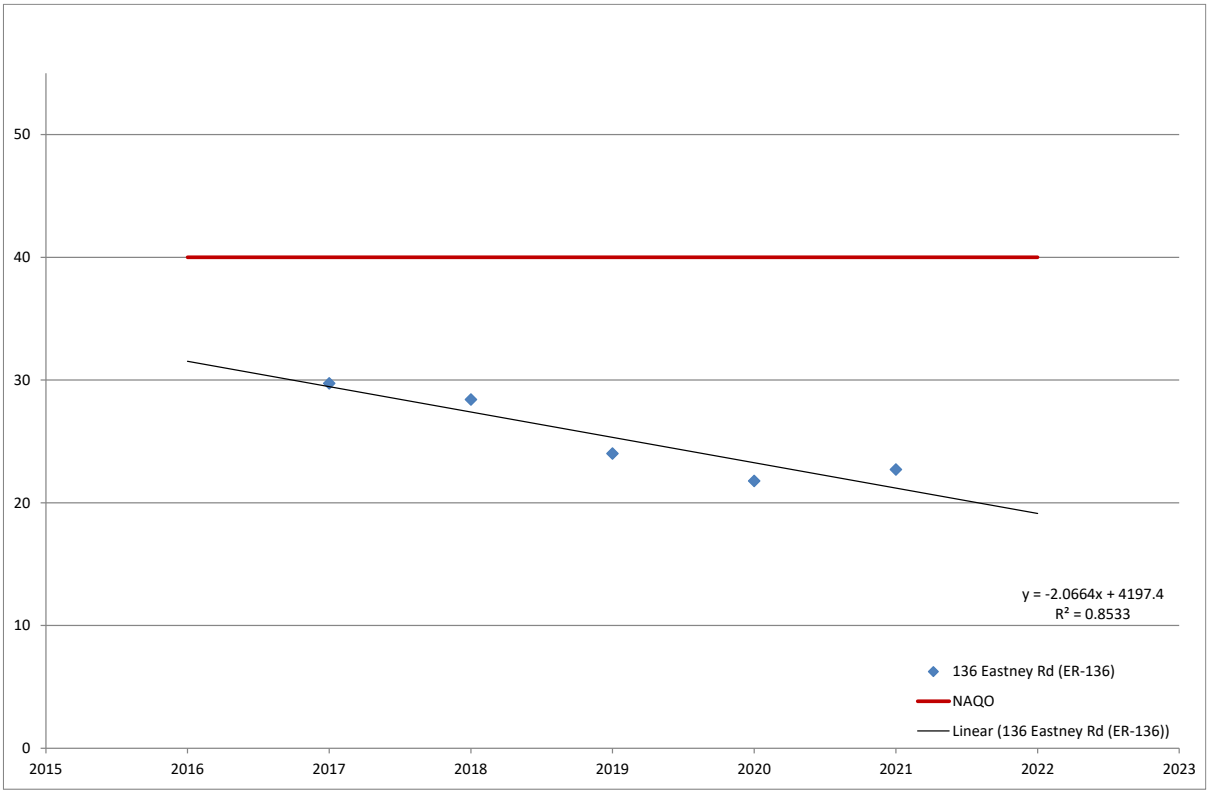
No exceedance, short-term "negligible adverse", long-term downwards

1. The NO_2 annual mean at this roadside monitoring location increased by 1.33µg/m^3 (an increase of 4.64%) between 2020 and 2021 and remained below the NAQO in 2021 (29.92µg/m^3) representing an AQ deterioration in the short-term.

2. The 2020-2021 NO_2 annual mean increase is described as "negligibly adverse".

3. The NO_2 annual mean downward trend in the last 5 years exhibited an AQ improvement in the long-term that is consistent with to the previously reported 5-year trend.

Figure F.24: 136 Eastney Road (ER-136)



Summary

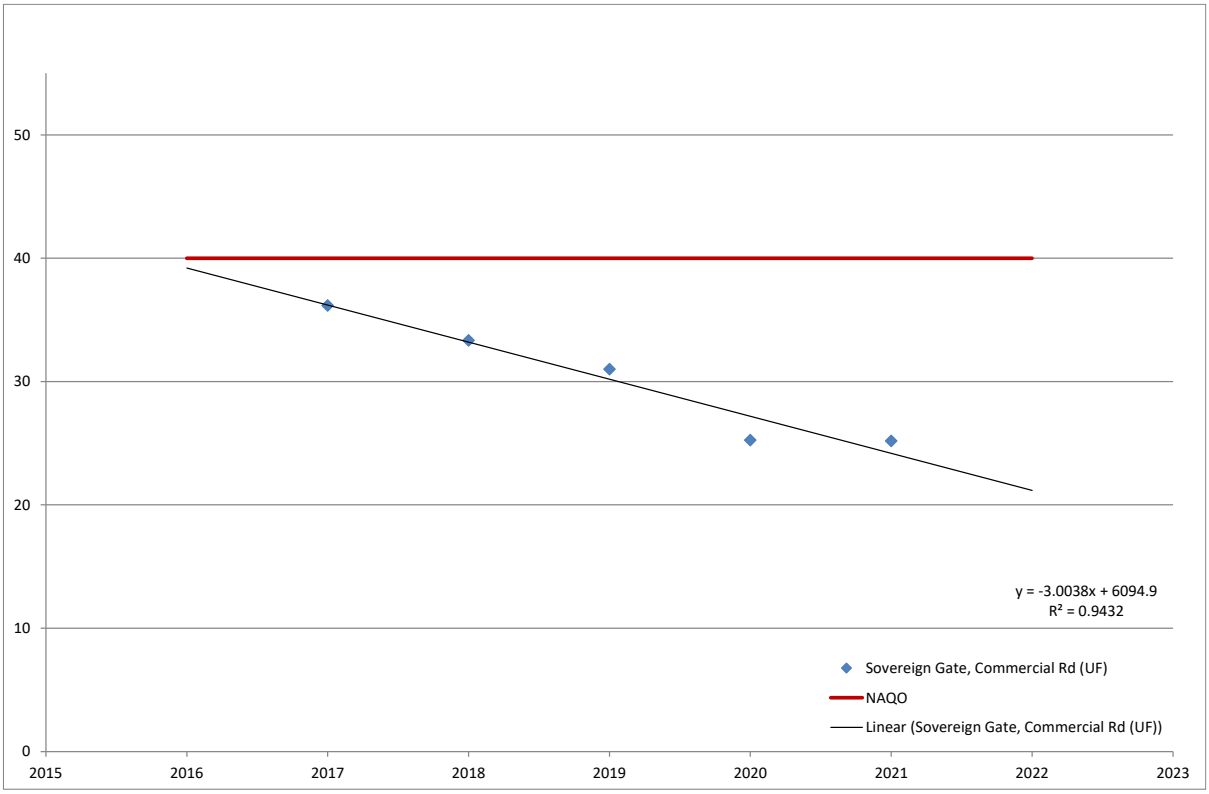
No exceedance, short-term "negatively adverse", long-term downwards

1. The NO_2 annual mean at this roadside monitoring location increased by 0.93µg/m^3 (an increase of 4.26%) between 2020 and 2021 and remained below the NAQO in 2021 (22.71µg/m^3) representing an AQ deterioration in the short-term.

2. The 2020-2021 NO_2 annual mean decrease is described as "negligibly adverse".

3. The NO_2 annual mean downward trend in the last 5 years exhibited an AQ improvement in the long-term that is consistent with to the previously reported 5-year trend.

Figure F.25: Sovereign Gate, Commercial Road (CR- UF)



Summary

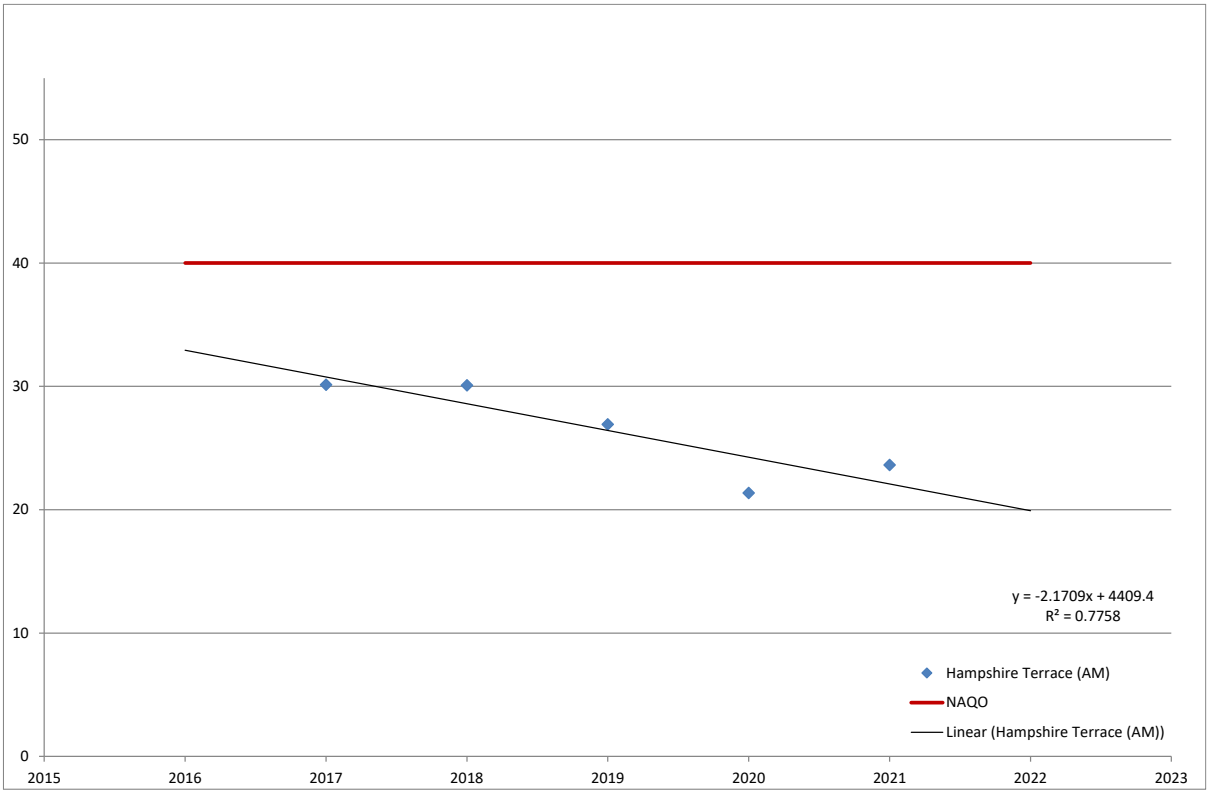
No exceedance, short-term "negligibly beneficial", long-term downwards

1. The NO_2 annual mean at this roadside monitoring location decreased by 0.07µg/m^3 (a decrease of 0.26%) between 2020 and 2021and remained below the NAQO in 2021 (25.19µg/m^3) representing a continued AQ improvement in the short-term.

2. The 2020-2021 NO_2 annual mean decrease is described as "negligibly beneficial".

3. The NO_2 annual mean downward trend in the last 5 years exhibited an AQ improvement in the long-term that is consistent with to the previously reported 5-year trend.

Figure F.26: 11/12 Hampshire Terrace (HT-AM)



Summary

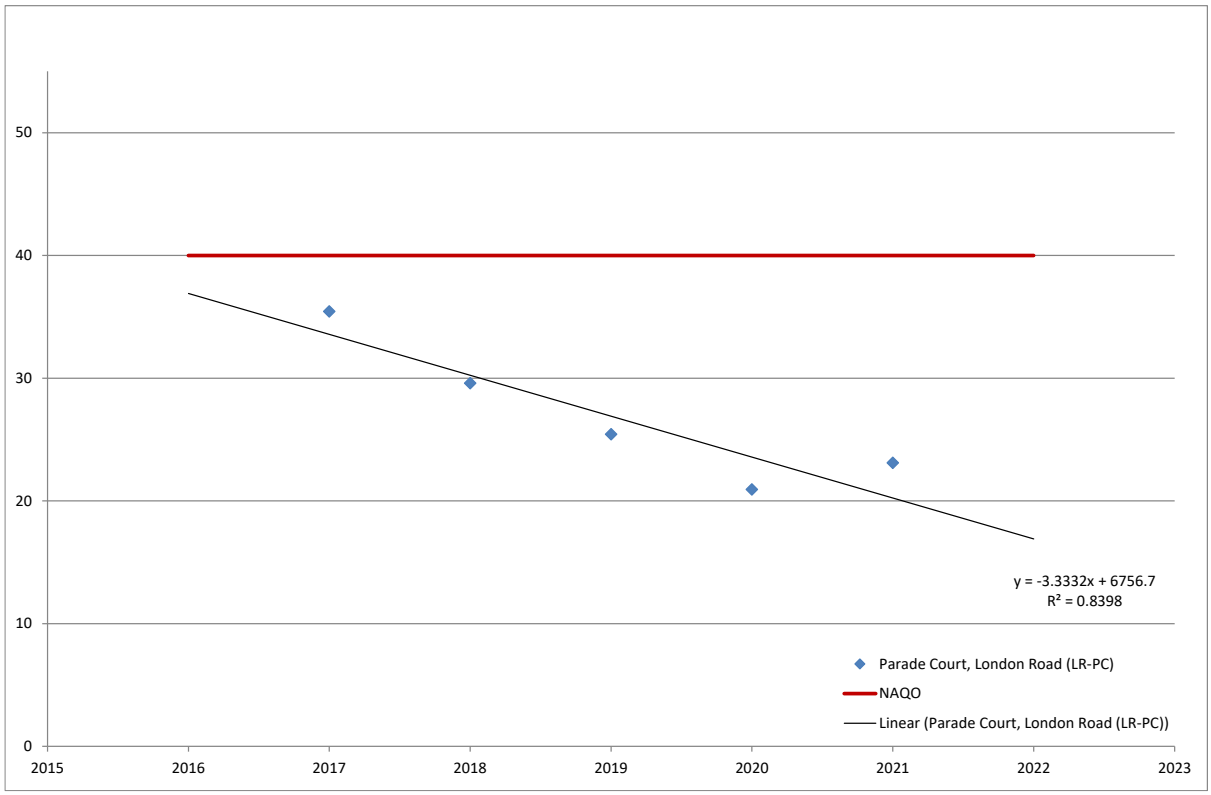
No exceedance, short-term "slightly adverse", long-term downwards

1. The NO_2 annual mean at this roadside monitoring location increased by 2.27µg/m^3 (an increase of 10.63%) between 2020 and 2021 and remained below the NAQO in 2021 (23.64µg/m^3) representing an AQ deterioration in the short-term.

2. The 2020-2021 NO_2 annual mean increase is described as "slightly adverse".

3. The NO_2 annual mean downward trend in the last 5 years exhibited an AQ improvement in the long-term that is consistent with to the previously reported 5-year trend.

Figure F.27: Parade Court, London Road (LR-PC)



Summary

No exceedance, short-term "negligibly adverse", long-term downwards

1. The NO_2 annual mean at this roadside monitoring location increased by 2.17µg/m^3 (an increase of 10.34%) between 2020 and 2021 and remained below the NAQO in 2021 (23.10µg/m^3) representing an AQ deterioration in the short-term.

2. The 2020-2021 NO_2 annual mean increase is described as "negligibly adverse".

3. The NO_2 annual mean downward trend in the last 5 years exhibited an AQ improvement in the long-term that is consistent with to the previously reported 5-year trend.

Figure F.28: London Road CAQMS (LR-C2)

Summary

No exceedance, short-term "moderately beneficial", long-term downwards

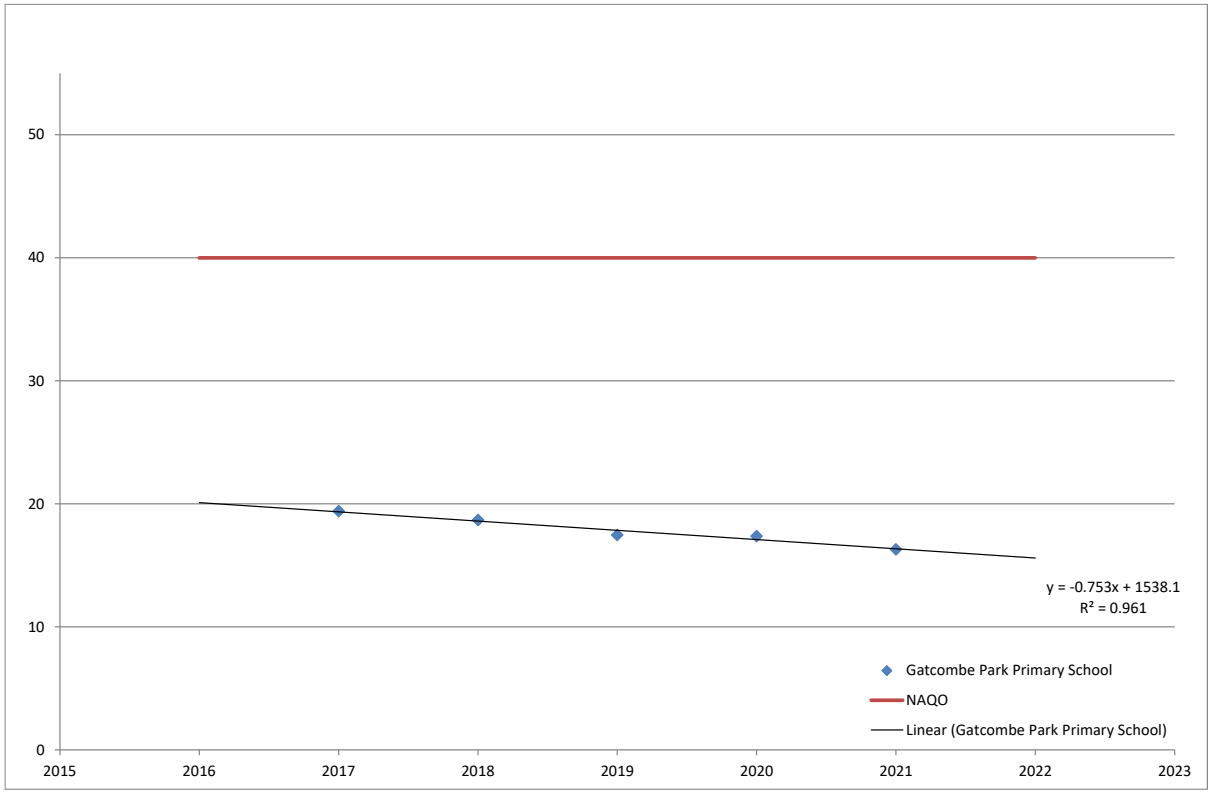
1. The NO_2 annual mean decreased below the NAQO for the second time in the last five years.

2. The NO_2 annual mean at this Curbside monitoring location decreased by 3.37µg/m^3 (a decrease of 10.33%) between 2020 and 2021 and remained below the NAQO in 2021 (29.29µg/m^3) representing an AQ improvement in the short-term.

3. The 2020-2021 NO_2 annual mean decrease is described as "moderately beneficial".

4. The NO_2 annual mean downward trend in the last 5 years exhibited an AQ improvement in the long-term that is consistent with to the previously reported 5-year trend.

Figure F.29: Gatcombe AURN CAQMS (AURN-C4)



Summary

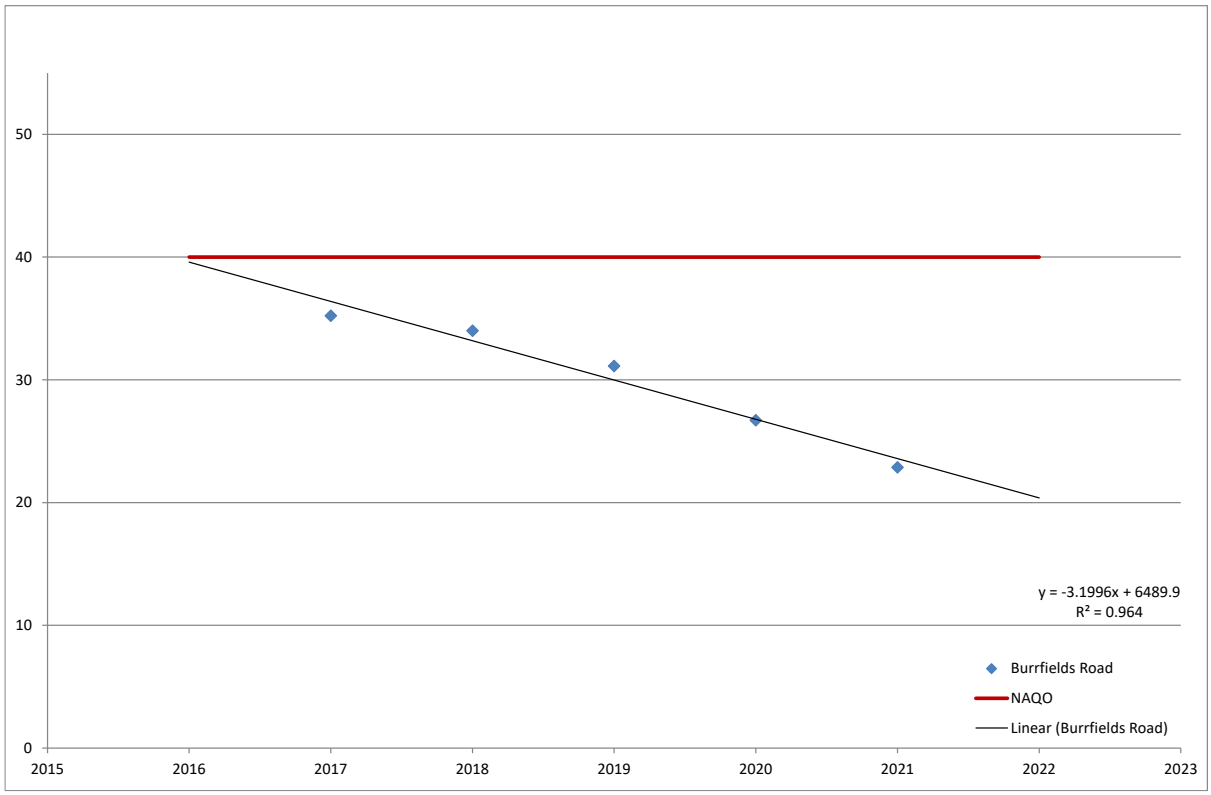
No exceedance, short-term "negligibly beneficial", long-term downwards

1. The NO_2 annual mean at this urban background monitoring location decreased by 2.28µg/m^3 (a decrease of 13,13%) between 2020 and 2021 and remained below the NAQO in 2021 (15.09µg/m^3) representing an AQ improvement in the short-term.

2. The 2020-2021 NO_2 annual mean decrease is described as "negligibly beneficial".

3. The NO_2 annual mean downward trend in the last 5 years exhibited an AQ improvement in the long-term that is consistent with to the previously reported 5-year trend.

Figure F.30: Burrfields Road, CAQMS (BR-C6)



Summary

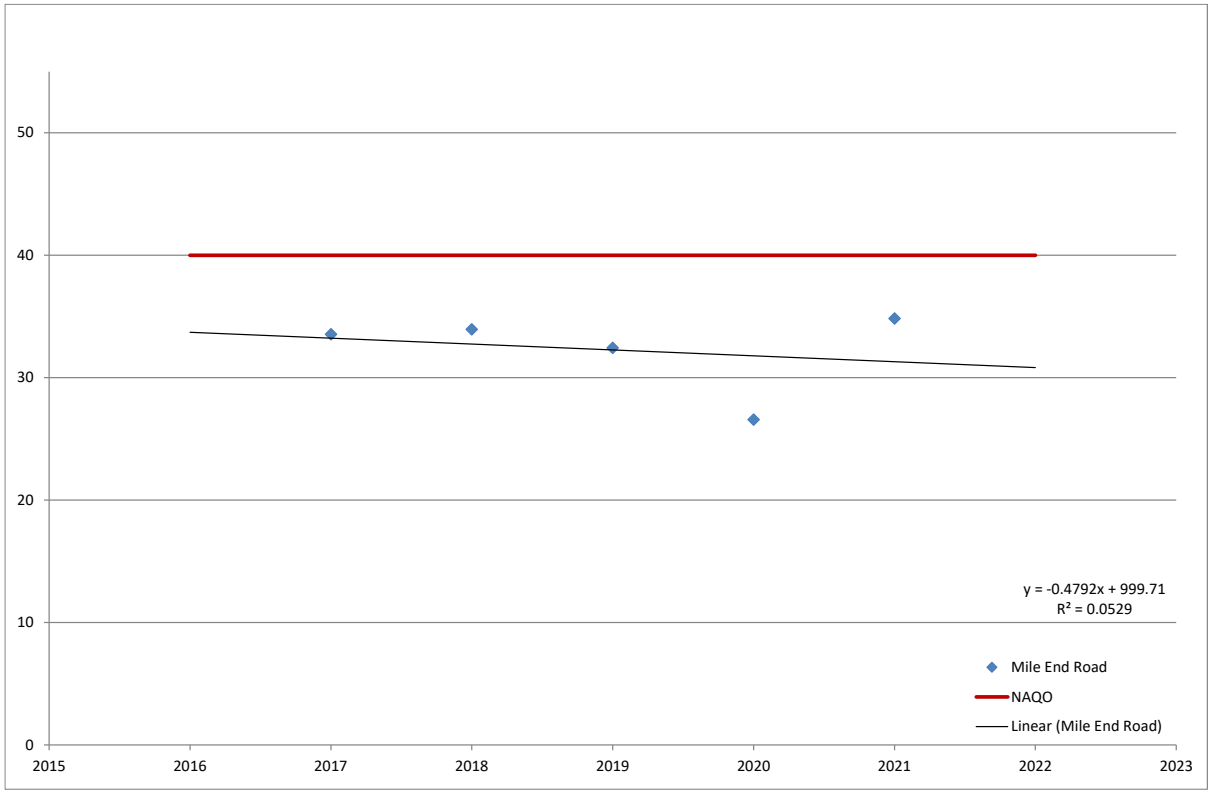
No exceedance, short-term "slightly beneficial", long-term downwards

1. The NO_2 annual mean at this roadside monitoring location decreased by 3.83µg/m^3 (a decrease of 14.36%) between 2020 and 2021 and remained below the NAQO in 2021 (22.87µg/m^3) representing a continued AQ improvement in the short-term.

2. The 2020-2021 NO_2 annual mean decrease is described as "slightly beneficial".

3. The NO_2 annual mean downward trend in the last 5 years exhibited an AQ improvement in the long-term that is consistent with to the previously reported 5-year trend.

Figure F.31: Mile End Road, CAQMS (MER-C7)



Summary

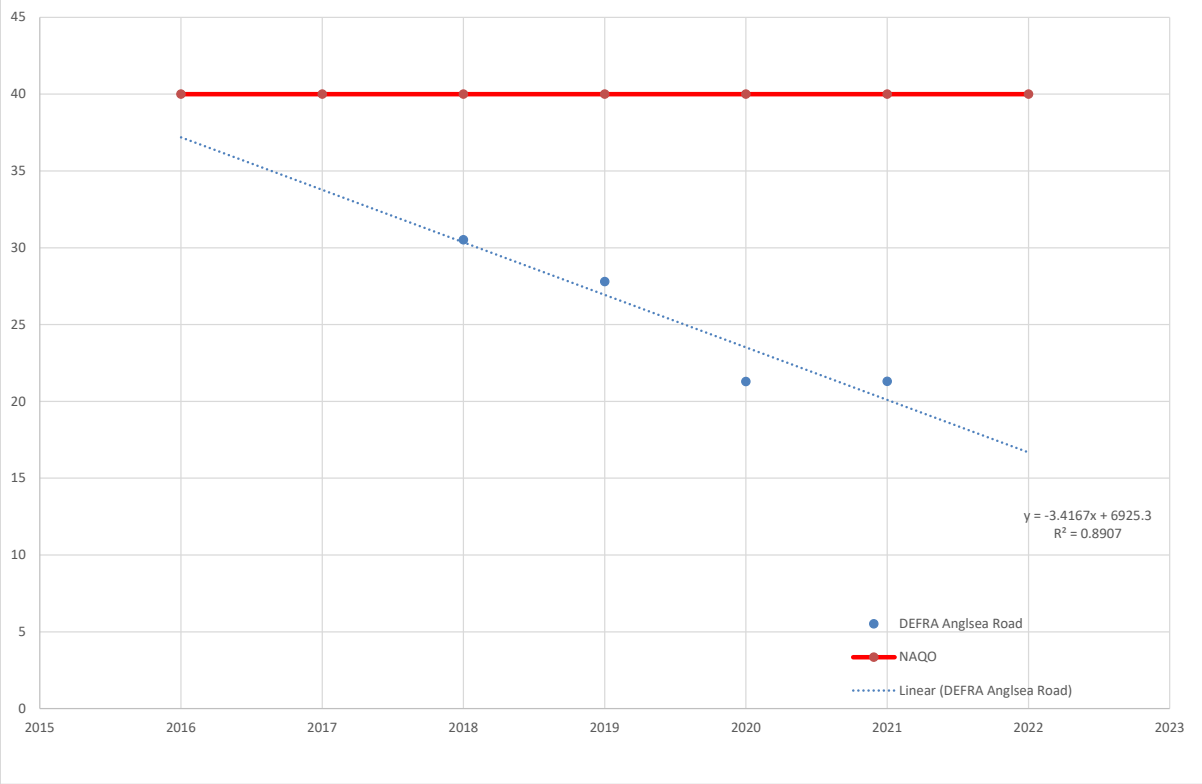
No exceedance, short-term "moderately adverse, long-term downwards

1. The NO_2 annual mean at this Curbside monitoring location increased by 8.26µg/m^3 (an increase of 31.05%) between 2020 and 2021 but remained below the NAQO in 2020 (34.83µg/m^3) representing an AQ deterioration in the short-term.

2. The 2020-2021 NO_2 annual mean increase is described as "moderately adverse".

3. The NO_2 annual mean downward trend in the last 5 years exhibited an AQ improvement in the long-term that is consistent with to the previously reported 5-year trend.

Figure F.32: DEFRA's Anglesea Road CAQMS (DEFRA-C8)



Summary

No exceedance, short-term "negligibly adverse", long-term downwards

1. The NO_2 annual mean at this roadside monitoring location increased by 0.01µg/m^3 (an increase of 0.03%) between 2020 and 2021 to drop below the NAQO in 2021 (21.30µg/m^3) representing an AQ deterioration in the short-term.

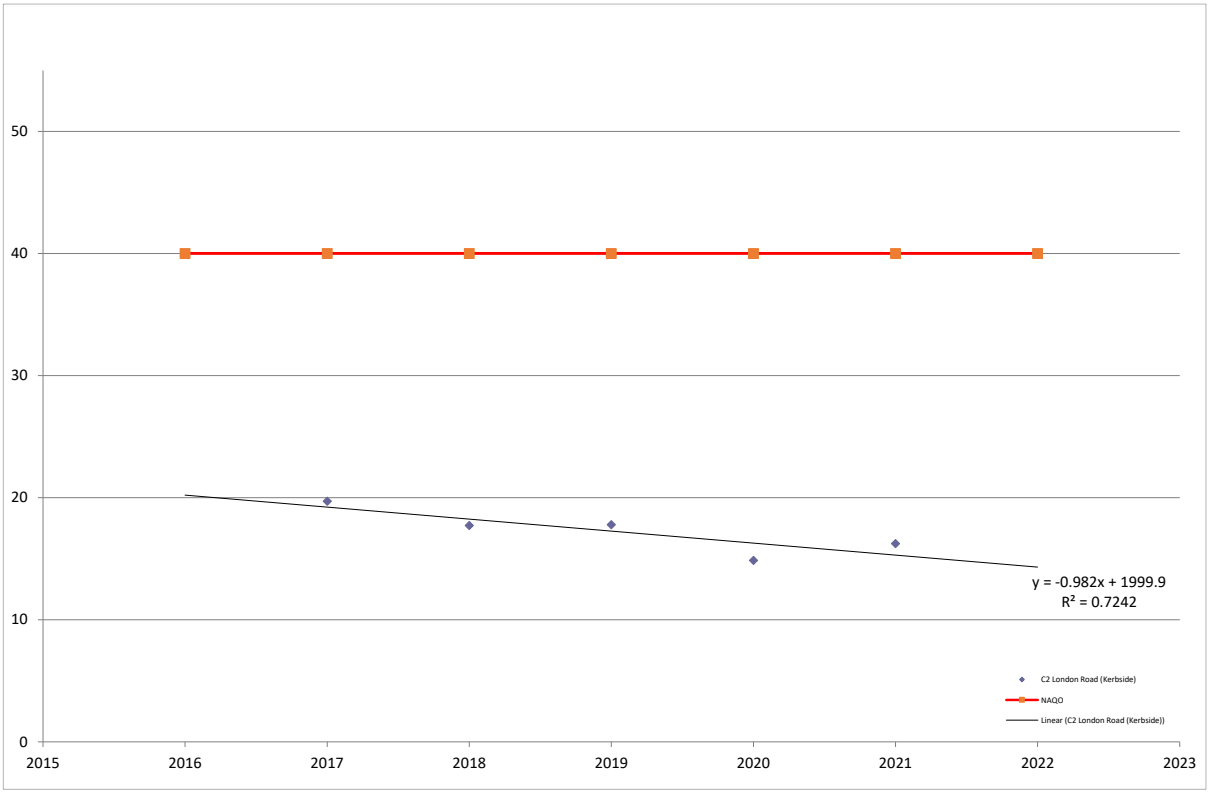
2. The 2020-2021 NO_2 annual mean increase is described as "negligibly adverse".

3. The NO_2 annual mean downward trend in the last 5 years exhibited an AQ improvement in the long-term that is consistent with to the previously reported 5-year trend.

Trends in Annual Mean PM_{10} Concentrations

In this section the trends in annual mean PM_{10} concentrations are illustrated for 4 long term continuous monitoring stations data from Figure F33 to F36.

Figure F.33: London Road CAQMS (LR-C2)



Summary

No exceedance, short-term "negligibly adverse", long-term downward.

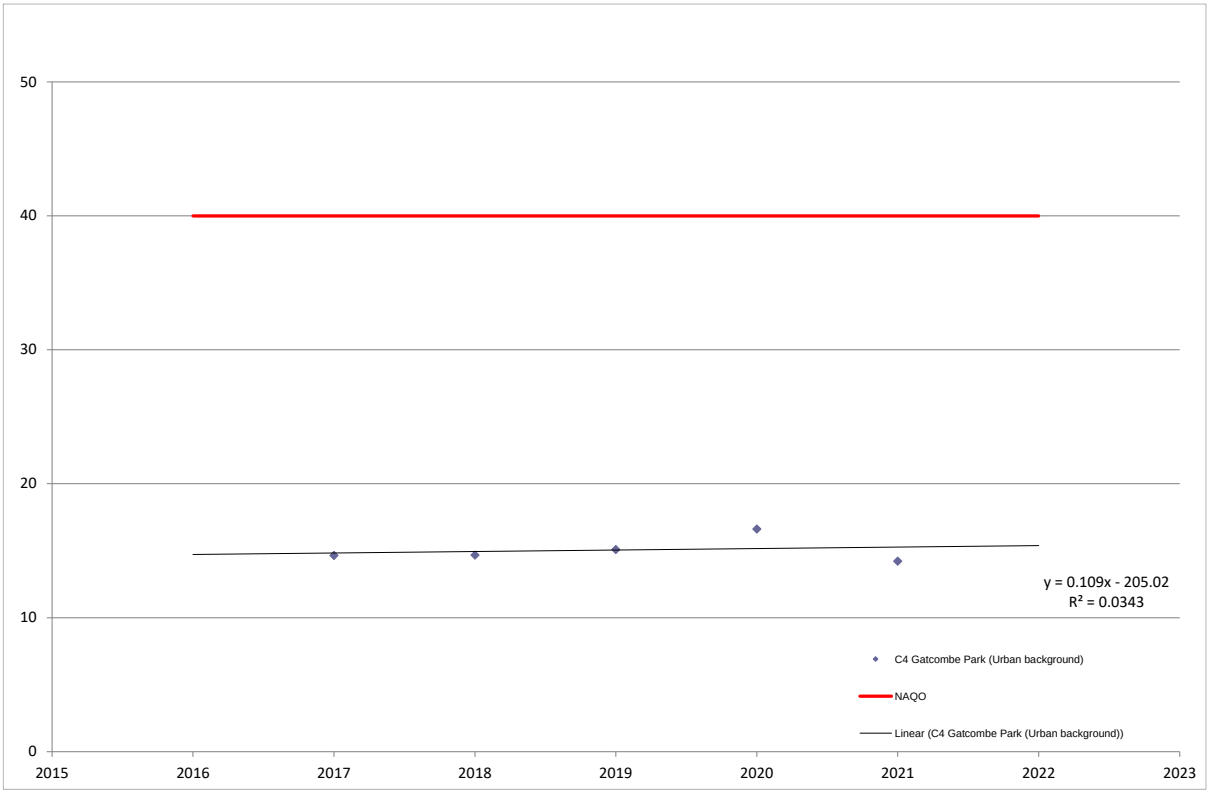
1. The PM_{10} annual mean remained considerably below the NAQO in the last 5 years.

2. The PM_{10} annual mean increased by 1.37µg/m^3 (an increase of 9.22%) between 2020 and 2021 remaining below the NAQO in 2021 (16.23µg/m^3) exhibiting an AQ deterioration in the short-term at this location.

3. The 2020-2021 PM_{10} annual mean change is described as being "negligibly adverse".

4. The PM_{10} annual mean exhibits a downward trend in the last 5 years demonstrating an AQ improvement in the long-term in line with the previously reported 5-year trend.

Figure F.34: Gatcombe Park CAQMS (AURN-C4)



Summary

No exceedance, short-term "slightly beneficial", long-term upward.

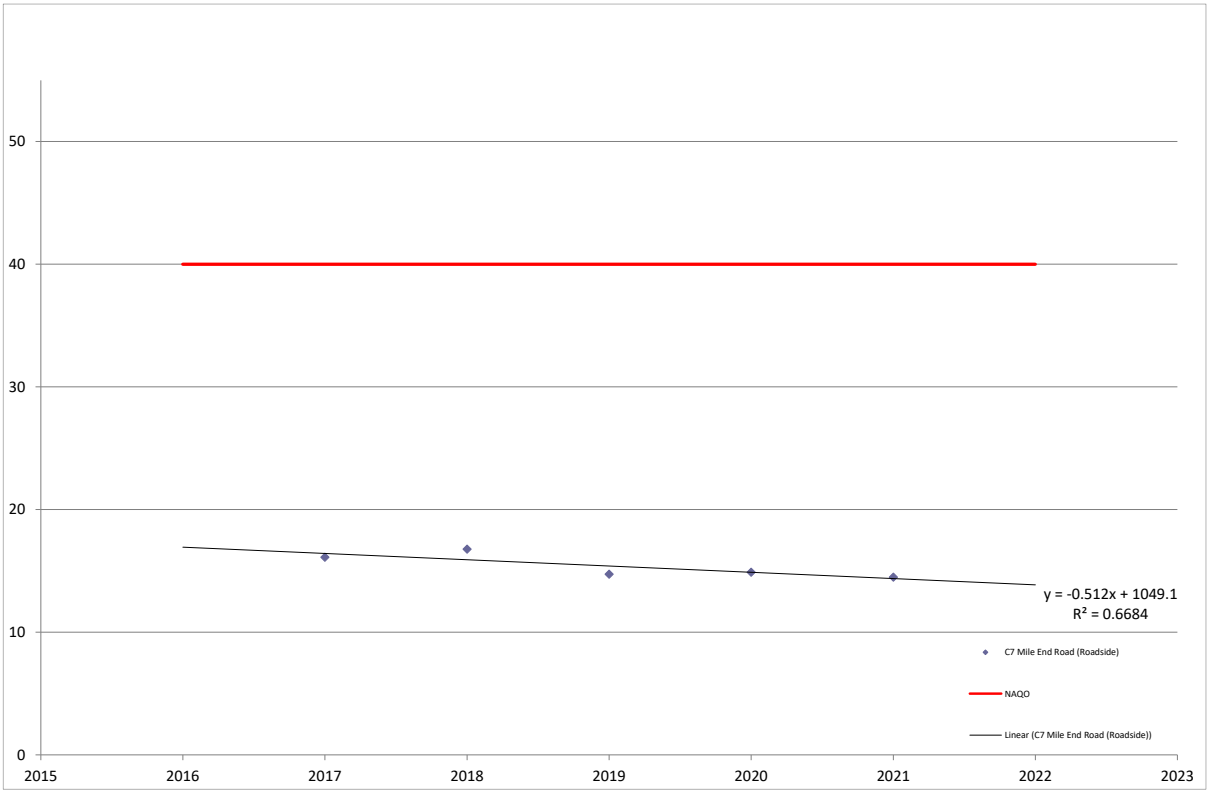
1. The PM_{10} annual mean has remained considerably below the NAQO in the last 5 years.

2. The PM_{10} annual mean at this urban-background monitoring location decreased by 2.40µg/m^3 (a decrease of 14.44%) between 2020 and 2021 and remains below the NAQO in 2021 (14.22µg/m^3). This small decrease however represents an AQ improvement in the short-term at this location and occurred first time in the last five years.

3. The 2020-2021 PM_{10} annual mean change is described as being "slightly beneficial".

4. The PM_{10} annual mean exhibits an upward trend in the last 5 years representing an AQ deterioration in the long-term.

Figure F.35: Mile End Road CAQMS (AURN-C7)



Summary

No exceedance, short-term "negligibly beneficial", long-term upward.

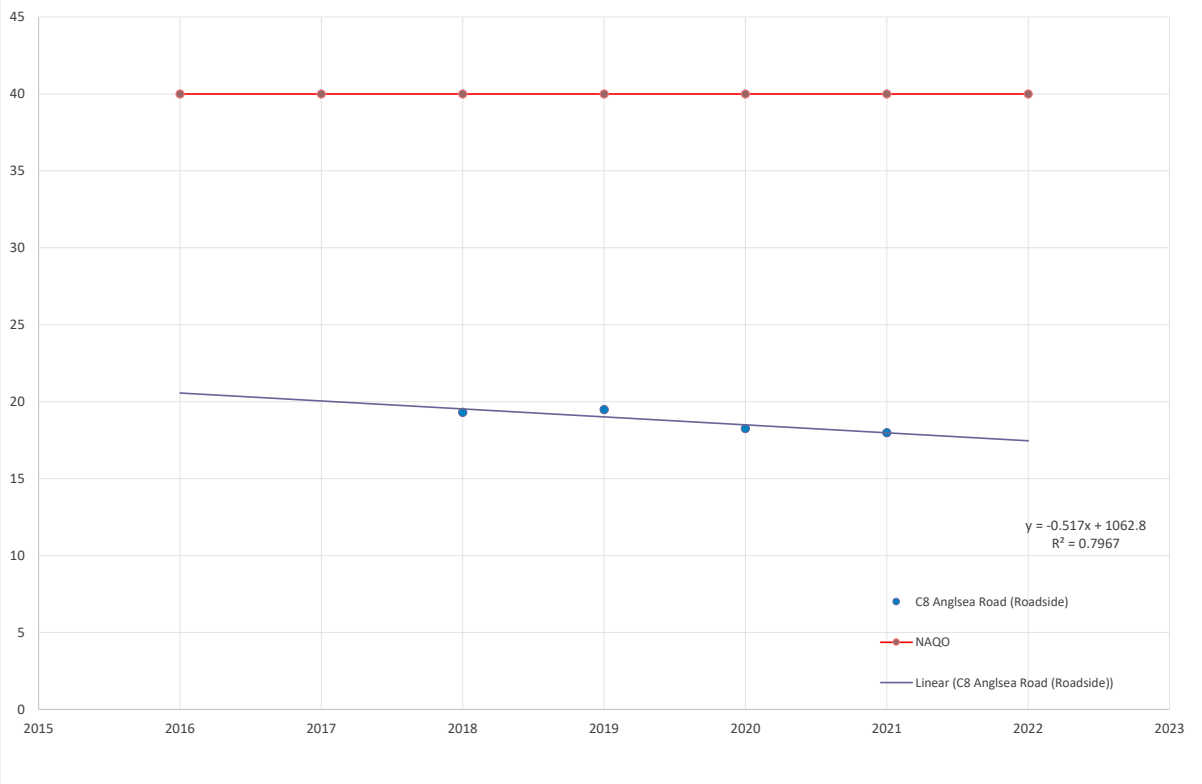
1. The PM_{10} annual mean has remained considerably below the NAQO in the last 5 years.

2. The PM_{10} annual mean at this roadside monitoring location decreased by 0.41µg/m^3 (a decrease of 2.75%) between 2020 and 2021 and remained below the NAQO in 2021 (14.49µg/m^3) representing an AQ improvement in the short-term.

3. The 2020-2021 PM_{10} annual mean change is "negligibly beneficial".

4. The PM_{10} annual mean exhibits a downward trend in the last 5 years, demonstrating an AQ improvement in the long-term.

Figure F.36: Anglesea Road CAQMS (DEFRA-C7)



Summary

No exceedance, short-term "negligibly beneficial", long-term downward.

1. The PM_{10} annual mean has remained considerably below the NAQO in the last 4 years.

2. The PM_{10} annual mean at this roadside monitoring location decreased by 0.26µg/m^3 (a decrease of 1.42%) between 2020 and 2021 and remained below the NAQO in 2021 (17.99µg/m^3) representing an AQ improvement in the short-term.

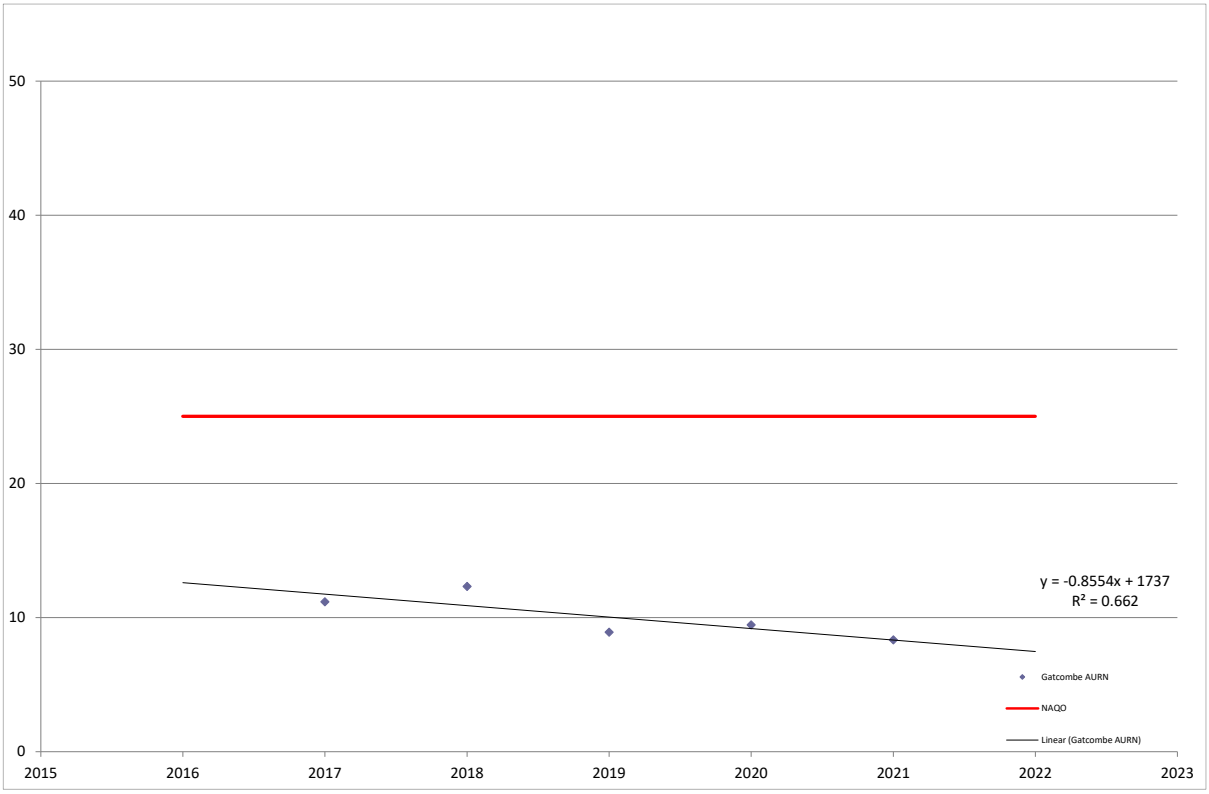
3. The 2020-2021 PM_{10} annual mean change is "negligibly beneficial".

4. The PM_{10} annual average represents a downward trend in the last 4 years, demonstrating an AQ improvement in the long-term.

Figure A.3. Trends in Annual Mean $PM_{2.5}$ Concentrations

In this section the trends in annual mean PM_{10} concentrations are illustrated for 4 long term continuous monitoring stations data from Figure F37 to F39.

Figure F.37: Gatcombe Park CAQMS (AURN-C4)



Summary

No exceedance, short-term "negligibly beneficial", long-term downward.

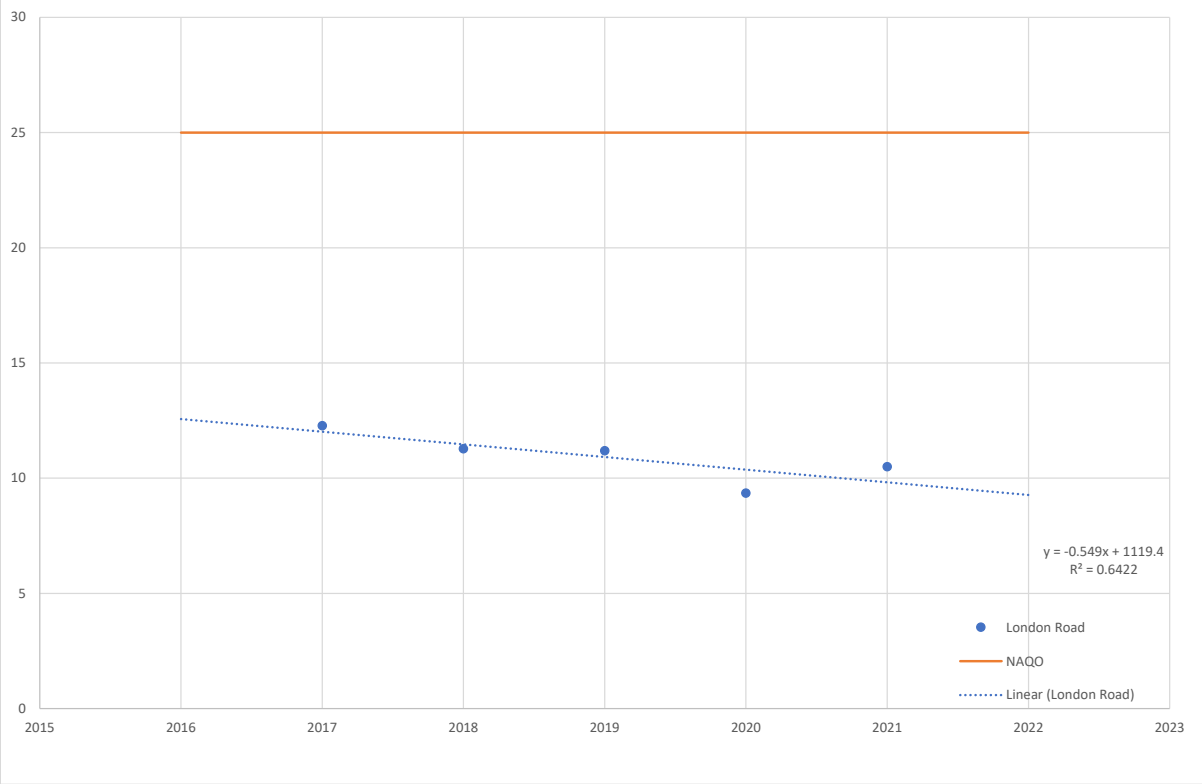
1. The $PM_{2.5}$ annual mean has remained considerably below the NAQO in the last 5 years.

2. In 2021 the $PM_{2.5}$ annual mean decreased by 1.12µg/m^3 (a decrease of 11.82%) between 2020 and 2021 remaining below the NAQO (8.33µg/m^3) representing an AQ improvement in the short-term.

3. The 2020-2021 $PM_{2.5}$ annual mean change is described as being "negligibly beneficial".

4. The $PM_{2.5}$ annual mean exhibited a downward trend in the last 5 years resulting in an AQ improvement in the long-term for the fourth consecutive 5-year trend.

Figure F.38: London Road CAQMS (DEFRA-C2)



Summary

No exceedance, short-term "negligibly adverse", long-term downward.

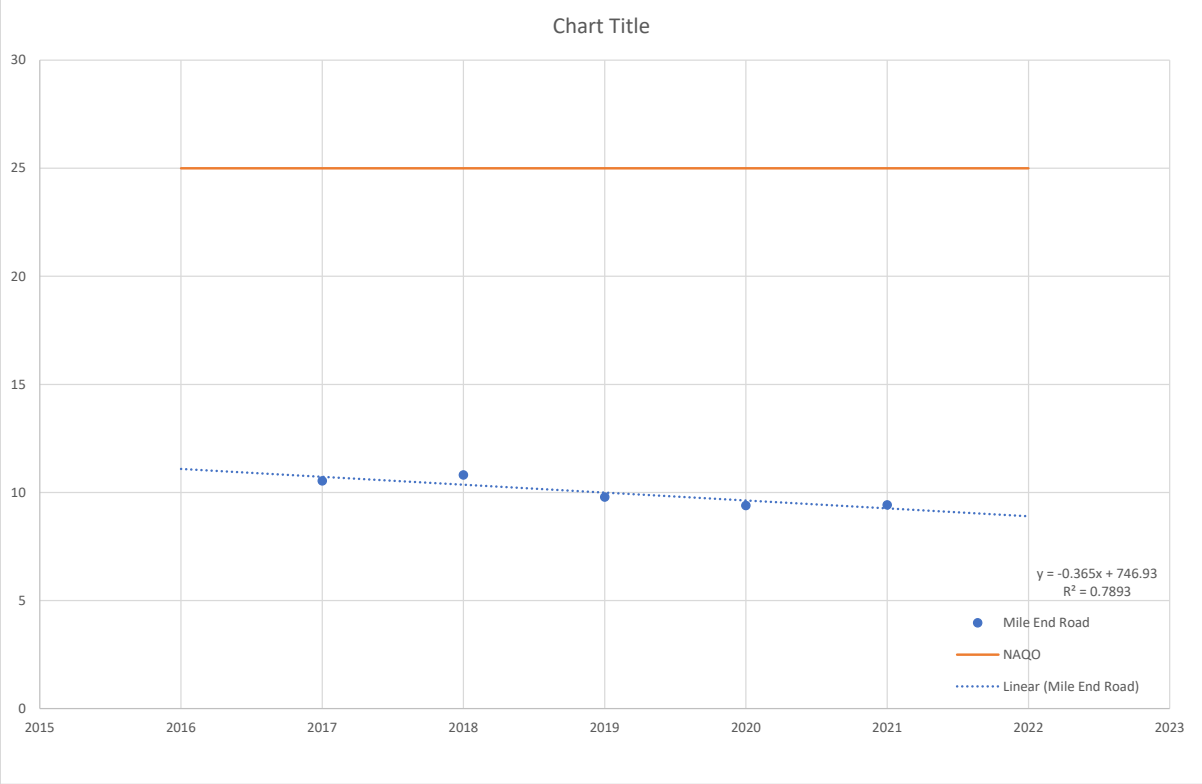
1. The $PM_{2.5}$ annual mean has remained considerably below the NAQO for the fifth consecutive year.

2. The $PM_{2.5}$ annual average increased by 1.15µg/m^3 (an increase of 12.30%) between 2020 and 2021 and remained below the NAQO in 2021 (10.5µg/m^3) exhibiting an AQ deterioration in the short-term.

3. The 2020-2021 $PM_{2.5}$ annual mean change is described as being "negligibly adverse".

4. The $PM_{2.5}$ annual average exhibited a downward trend in the last 5 years, demonstrating an AQ improvement in the long-term.

Figure F.39: Mile End Road CAQMS (MER-C7)



Summary

No exceedance, short-term "negligibly adverse", long-term downward.

1. The $PM_{2.5}$ annual mean has remained considerably below the NAQO for the fifth consecutive year.

2. The $PM_{2.5}$ annual mean increased this year by 0.02µg/m^3 (an increase of 0.21%) between 2020 and 2021 and remains below the NAQO in 2021 (9.42µg/m^3) exhibiting an AQ deterioration in the short-term.

3. The 2020-2021 $PM_{2.5}$ annual mean change is "negligibly adverse".

4. However, the $PM_{2.5}$ annual mean represented a downward trend in the last 5 years demonstrating an AQ improvement in the long-term.

Glossary of Terms

Abbreviation	Description
AAQD	Ambient Air Quality Directive
AP	Air Pollution
AQ	Air Quality
AQAP	Air Quality Action Plan
AQB	Air Quality Board
AQG	Air Quality Grant
AQMA (s)	Air Quality Management Area (a) – An area where air pollutant concentrations exceed / are likely to exceed the relevant air quality objectives. AQMAs are declared for specific pollutants and objectives
AQS	Air Quality Strategy
AQSG	Air quality Steering Group
ASR	Annual Status Report
AURN	Automatic Urban and Rural Network
CAQMS	Continuous Air Quality Monitoring Station
CAZ	Clean Air Zone
DEFRA	Department for Environment, Food and Rural Affairs
DMRB	Design Manual for Roads and Bridges – Air quality screening tool produced by Highways England
EU	European Union
EV	Electric Vehicle
FA	Further Assessment
FBS	Full Business Case
FDMS	Filter Dynamics Measurement System
JAQU	Joint Air Quality Unit
LA(s)	Local Authority (s)
LAQ	Local Air Quality
LAQAP	Local Authority Air Quality Action Plan
LAQM	Local Air Quality Management
LAQM.PG(16)	Local Air Quality Management. Policy Guidance (16)
LAQM.TG(16)	Local Air Quality Management. Technical Guidance (16)
LAQRA	Local Air Quality Review and Assessment
LAQS	Local Air Quality Strategy
MD	Ministerial Direction
MOVA	Microprocessor Optimised Vehicle Actuation
NAQO	National Air Quality Objective
NDDT	Nitrogen Dioxide Diffusion Tubes
NDDTS	Nitrogen Dioxide Diffusion Tubes Survey
NO_2	Nitrogen Dioxides
NO_x	Nitrogen Oxides
OBC	Outline Business Case
PAQS	Portsmouth Air Quality Strategy
PCAN	Portsmouth Clean Air Network

PCC	Portsmouth City Council
PCM	Pollution Climate Mapping
PHE	Public Health England
PM_{10}	Airborne particulate matter with an aerodynamic diameter of 10µm (micrometres or microns) or less
$PM_{2.5}$	Airborne particulate matter with an aerodynamic diameter of 2.5µm or less
QA / QC	Quality Assurance and Quality Control
RSW	Report Submission Website
SAS	Source Apportionment Study
SOC	Strategic Outline Case
SO_2	Sulphur Dioxide
TFS	Targeted Feasibility Study

References

- Local Air Quality Management Technical Guidance LAQM.TG16. April 2021. Published by Defra in partnership with the Scottish Government, Welsh Assembly Government and Department of the Environment Northern Ireland.
- Local Air Quality Management Policy Guidance LAQM.PG16. May 2016. Published by Defra in partnership with the Scottish Government, Welsh Assembly Government and Department of the Environment Northern Ireland.