



New Forest
DISTRICT COUNCIL

2021 Air Quality Annual Status Report (ASR)

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

Date: July 2021

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Report Reference Number	NF/01/21
Date	July 2021

Executive Summary: Air Quality in Our Area

Air Quality in New Forest District Council

Air pollution is associated with a number of adverse health impacts. It is recognised as a contributing factor in the onset of heart disease and cancer. Additionally, air pollution particularly affects the most vulnerable in society: children, the elderly, and those with existing heart and lung conditions. There is also often a strong correlation with equalities issues because areas with poor air quality are also often less affluent areas^{1,2}.

The mortality burden of air pollution within the UK is equivalent to 28,000 to 36,000 deaths at typical ages³, with a total estimated healthcare cost to the NHS and social care of £157 million in 2017⁴.

The New Forest District covers 75,100 hectares (290 sq. miles) and has a diverse environment, including the New Forest (and associated New Forest National Park) that covers approximately three quarters of the district comprising of mainly protected heathlands and forests, a coastline of 64km, areas of industry, towns and villages. Along Southampton Water much of the shoreline is influenced by urban and industrial development. The local landscape is dominated by a refinery, one of the largest in Europe, whilst other industrial processes include a number of energy recovery facilities and chemical installations. Furthermore, there are significant areas of sand and gravel extraction in the district to support local businesses.

The total population of the District is 176,800⁵ although the area also attracts local, national and international visitors throughout the year with over 13 million days visits made annually⁶. With 96% of visitors arriving into the New Forest in cars or coaches, in addition to the local industry, it is not surprising the New Forest district has some current or potential air quality issues relating to both traffic and industry.

¹ Public Health England. Air Quality: A Briefing for Directors of Public Health, 2017

² Defra. Air quality and social deprivation in the UK: an environmental inequalities analysis, 2006

³ Defra. Air quality appraisal: damage cost guidance, July 2020

⁴ Public Health England. Estimation of costs to the NHS and social care due to the health impacts of air pollution: summary report, May 2018

⁵ Environmental equity, air quality, socioeconomic status and respiratory health, 2010

⁶ New Forest National Park, Facts and Figures, 2007

The pollutants of concern in the New Forest district are nitrogen dioxide (NO₂), particulate matter (PM₁₀ and PM_{2.5}) and sulphur dioxide (SO₂). Traffic produces both NO₂ and particulate emissions, whilst the local industry may produce NO₂, particulate and SO₂ emissions.

As a result of identified local air quality issues, the New Forest currently has one declared Air Quality Management Area (AQMA) for the likely exceedance of the annual mean air quality objective for NO₂:

- **Lyndhurst** (High Street). Traffic related

Further information with regards to the AQMA can be found at:

<http://www.newforest.gov.uk/airquality>

In 2017 New Forest District Council was named in the UK Air Quality Plan⁷ as having one road which was predicted to persistently exceed nitrogen dioxide EU limit values after 2020. This road is a short stretch (approximately 1km) of the A35 over the Redbridge Causeway into Southampton and is a location where the public has access. Southampton had already been identified in 2015 as an area which also has a number of roads which persistently exceed the EU limit values for nitrogen dioxide and therefore Southampton City Council had already progressed action in understanding the issues and forwarding further measures to improve local air quality.

The area identified in the New Forest was seen as an extension of the Southampton issue therefore Southampton City Council and New Forest District Council worked in partnership to develop a Clean Air Zone (CAZ) within Southampton to ensure compliance with the EU limit value is met in the shortest time possible. Detailed and complex local air quality modelling⁸ was undertaken in the New Forest and determined that compliance would be met by 2019 in a business as usual scenario. Furthermore, it has been concluded that the introduction of additional measures will not bring forward compliance, therefore, New Forest District Council's preferred option was to continue with a business as usual scenario.

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https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/633270/air-quality-plan-detail.pdf

⁸ <https://democracy.newforest.gov.uk/documents/s10445/Annex%20A%20to%20Air%20Quality%20Plan.pdf>

Monitoring

New Forest District Council undertakes automatic and non-automatic monitoring of NO₂, PM₁₀ and SO₂ at locations throughout the district and compares the results to the UK Air Quality Objectives. Air Quality Objectives are set for different pollutants and may include a number of objectives covering a variety of time periods, for example NO₂ has two objectives: an annual mean and an hourly mean.

2020 was the sixth consecutive year since monitoring began in 2002 (using the current monitoring methods) that there were no monitored exceedances of any of the Air Quality Objectives.

Since the declaration of three AQMA's in 2005 in Fawley, Totton and Lyndhurst, New Forest District Council has worked hard to improve local air quality. Following monitored improvements in air quality, two of the declared AQMA's have subsequently been revoked (Fawley in 2013 and Totton in 2016), with Lyndhurst remaining. However, monitoring has continued throughout the District including those areas with revoked AQMA's.

Lyndhurst has monitored significant decreases in nitrogen dioxide concentrations of between 4-11µgm⁻³ over the last 8 or 9 years within part of the High Street (the annual mean objective for NO₂ is 40µgm⁻³), with no exceedances of the nitrogen dioxide annual mean objective being monitored in Lyndhurst over the past six years.

Confidence in the continued compliance supports a view to revoke the Lyndhurst AQMA if data continues its downward trend. 2020 data has been significantly impacted by Covid 19 and so the Council may consider revocation in 2022 once 2021 data has been assessed and it can be confirmed that levels have not returned to higher than expected concentrations.

A number of monitoring locations were also installed along the A35 in Totton to corroborate results of the detailed CAZ air quality modelling work. Nitrogen dioxide concentrations were shown not to exceed EU Limit Values but were sufficient close to suggest that monitoring should continue.

The data obtained from these tubes throughout 2020 is presented separately from the main data tables since its use was in conjunction with the Southampton CAZ work and not part of the LAQM process (see Appendix I).

Local Air Quality Management

New Forest District Council has a legal duty to continue to manage local air quality. The Council fulfils this duty by:

- following Local Air Quality Management guidance⁹ produced by Defra;
- continuously monitoring pollutants of interest at relevant sites including rural background, roadside and industrial locations;
- identifying new major sources of airborne pollution and assessing the impact on local air quality. It should be noted that no new major sources have been identified during 2020;
- working within other legislative parameters such as the planning regime and / or the permitting of industrial processes to assess the impact of development or industry on local air quality, and if appropriate, take measures to reduce the determined impact;
- providing training and updates concerning local air quality to colleagues within the local authority, Council Members, Town and Parish Councils and members of the public; and
- working with our partners such as Hampshire County Council, the Environment Agency, local industry, district and National Park colleagues, local Council Members, neighbouring local authorities and Town and Parish Councils.

Working with our partners is vital if air quality is to be recognised as an important local issue that requires consideration and action. Some partners are legal regulators, for example Hampshire County Council regulate roads and transport in our district and the Environment Agency regulate the large industrial processes and therefore their involvement could ensure works are undertaken and / or funding is available for particular schemes.

Ensuring all partners are aware of the local air quality issues is also important, therefore New Forest District Council makes the effort to train and update partners on local air

⁹ Defra. Technical Guidance LAQM.TG16

quality by attending District, Town and Parish Council meetings and committees.

Furthermore, Environmental Protection officer's work with other departments to ensure local air quality is discussed at the planning stages of a development or implementation of a scheme.

Air quality is not just a local issue because airborne pollution is not contained within district boundaries. Therefore, New Forest District Council also works with our five neighbouring local authorities when required to address air quality issues. This was of great importance during our collaborative working with Southampton City Council to progress the work on the Clean Air Zone to improve local air quality within the area as directed by Government.

Actions to Improve Air Quality

Whilst air quality has improved significantly in recent decades, and will continue to improve due to national policy decisions, there are some areas where local action is needed to improve air quality further.

The 2019 Clean Air Strategy¹⁰ sets out the case for action, with goals even more ambitious than EU requirements to reduce exposure to harmful pollutants. The Road to Zero¹¹ sets out the approach to reduce exhaust emissions from road transport through a number of mechanisms; this is extremely important given that the majority of Air Quality Management Areas (AQMAs) are designated due to elevated concentrations heavily influenced by transport emissions.

During 2019 New Forest District Council updated the original Air Quality Action Plan (2008) for Lyndhurst¹². This update outlines those options which have been implemented, those which were removed and outlines a number of 'softer' options to forward to hopefully maintain the improvements monitored in nitrogen dioxide concentrations. As part of the update, additional monitoring was installed in Emery Down (just outside Lyndhurst) in

¹⁰ Defra. Clean Air Strategy, 2019

¹¹ DfT. The Road to Zero: Next steps towards cleaner road transport and delivering our Industrial Strategy, July 2018

¹² <https://www.newforest.gov.uk/airquality>

2020 to assess whether increases in traffic in the local area has resulted in exceedances of the air quality objective in locations adjacent to Lyndhurst.

Overall monitoring in Lyndhurst has shown significant decreases in the annual mean objective for NO₂, with a 4-11µgm⁻³ decrease in NO₂ concentrations noted over an 8- year period to date within part of the High Street. There have been no exceedances of the annual mean objective for NO₂ monitored in Lyndhurst during 2020.

Working collaboratively with Southampton City Council on delivering the Southampton Clean Air Zone (CAZ)

As previously stated, New Forest District Council was named in 2017 within the UK Air Quality Plan¹³ as having a one road predicted to persistently exceed nitrogen dioxide EU limit values after 2020. This road is a short stretch (approximately 1km) of the A35 over the Redbridge Causeway into Southampton and is seen as an extension of issues identified in Southampton in 2015.

As such New Forest District Council and Southampton City Council have worked in partnership to deliver a Southampton Clean Air Zone to ensure compliance with the EU annual mean limit value for nitrogen dioxide on this road in the shortest possible time, and by 2020 at the latest. This requirement has been placed on the Council's by Government.

Detailed and complex local air quality modelling¹⁴ was undertaken in the New Forest and determined that compliance would be met by 2019 in a business as usual scenario.

Furthermore, it has been concluded that the introduction of additional measures will not bring forward compliance, therefore, New Forest District Council's preferred option was to continue with a business as usual scenario.

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https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/633270/air-quality-plan-detail.pdf

¹⁴ <https://democracy.newforest.gov.uk/documents/s10445/Annex%20A%20to%20Air%20Quality%20Plan.pdf>

Working with Hampshire County Council and local schools to promote air quality locally

During 2019 and 2020 New Forest District Council worked with Hampshire County Council and local schools to promote and improve local air quality. In summary the work completed includes:

St. Michael's and All Angels Infant School – Lyndhurst

Continuing to promote a Clean Walking Route to school avoiding the current AQMA by:

- o working with the school to promote the route, including officers attending school assembly and presenting certificates to children walking the Clean Walking route;



- promoting anti-idling within Lyndhurst High Street including the use of a banner designed by local school children in 2017



Eling Infants School

New Forest District Council worked with Eling Infants School and installed a mini monitoring scheme at and outside the school to determine nitrogen dioxide concentrations. It was agreed that the Council would provide the tubes, expertise in deciding the monitoring locations and assistance with interpreting the results, the school would change the tubes. The monitoring took place over November and December 2019 and the findings presented to the school in 2020. The results were significantly below the objective value of $40\mu\text{g m}^{-3}$ but enabled the school to initiate discussions with parents and pupils on air quality and the benefits of anti-idling schemes, walking to school etc.

Working with the Environment Centre (tEC) and other Local Authorities to promote the 'Burn Better' scheme

NFDC are currently working with tEC and other Local Authorities to support residents in avoiding air pollution from household burning and improving air quality for their health, their community and the environment. The scheme promotes awareness of the air quality issues surrounding solid fuel burning and has focussed on bonfires and the use of solid fuel appliances such as wood burners and stoves to encourage residents to turn to other means of disposing of waste or heating their homes and to 'burn better' by burning appropriate material and 'ready to burn' fuels.

Conclusions and Priorities

Conclusions

Monitoring of pollutants within the New Forest district has not shown an exceedance of the Air Quality Objectives at any monitoring location. Decreases in nitrogen dioxide concentrations are observed within the AQMA in Lyndhurst however the Council needs to be confident that the monitored levels can be maintained over the long term. For example, the 2008 Action Plan was updated in 2019 and should help to build confidence in the evidence to support revocation of the Lyndhurst AQMA in 2021.

Further monitoring has been and will be installed within the District to assess pollutant levels when circumstances or issues arise. For example, additional monitoring was installed towards the end of 2017 and in 2018 to obtain information on the A35 in Totton as part of the Clean Air Zone work, along a Clean Walking Route to school in Lyndhurst and in additional locations in Ringwood. Additional monitoring was installed in the Emery Down area (just outside Lyndhurst) in 2020 to assess nitrogen dioxide concentrations on a known 'rat-run' avoiding Lyndhurst, in Fordingbridge to gather background data ahead of a proposed new housing developments and in Lymington close to a relocated bus station.

It is noted that planning applications are expected to be submitted to the Council for proposed large developments over the forthcoming years. As such the associated work to assess the submitted plans and the impact on local air quality (including the potential impact on the Southampton Clean Air Zone) may be significant for the Department.

Priorities

New Forest District Council has the following priorities with regards to local air quality:

- to assist in the development of an air quality supplementary planning guide / document to support applicants submitting planning applications and state expectations regarding appropriate mitigation requirements;
- to forward the development of a Clean Air Strategy for New Forest;
- to forward collaborative work on the updated Air Quality Action Plan for Lyndhurst;
- to work regionally, pooling expertise and resource to forward local and national air quality issues and strategies; and
- to continue to promote the 'burn better' scheme.

Challenges

New Forest District Council has the following challenges with regards to local air quality:

- to ensure the Council makes the best use of the resource available to move local air quality forward and to respond appropriately on consultations received for planned development with particular reference to the Local Plan;
- to motivate local communities to change their behaviour to improve local air quality, particularly when air quality (outside of the known problem areas) is considered good; and
- the long-term investment needed from multiple agencies to build a sustainable transport system.

Local Engagement and How to get Involved

Everyone can take small steps to improve local air quality and improve their health, for example:

Vehicles

- Find out about your local public transport and car share schemes when travelling to work, school, business trips or weekends away.
- Find out about local bus services. For example, during the summer, bus companies in the New Forest operate hop on / off services throughout the district and to local beaches, often with offers to some local attractions. Details can be found via the following link:

<http://www.thenewforesttour.info/>

- Find out about cycle routes in your local area and across the New Forest - you may be surprised how easy it is to cycle to your destination rather than take your car.
- Use **My Journey Planner** website to identify transport options, routes (including fastest and quietest) and public transport details. This is an excellent and informative website giving the user great options to compare different journey options. Details can be found via the following link:

<https://journeyplanner.myjourneyhampshire.com>

- Turn off your engine when waiting at traffic lights, closed railway barriers or in traffic jams.
- Turn your vehicles air circulation from pulling in external air to re-circulating internal air to stop drawing the surrounding air pollution into your vehicle for you to breathe.
- Become an eco-driver for example by anticipating traffic flow, maintaining a steady speed at a low revs per minute (RPM) and shifting up through the gears early. This will not only reduce pollution from your vehicle but save on fuel consumption.
- Maintain your vehicle regularly, including checking tyre pressures monthly.

Get Active

- Leave your car at home and try walking to the local shops or school, even if it is just once or twice a week. If you can make it part of your normal routine, not only will you be reducing air pollution you will be more active and healthier.
- The majority of New Forest residents live within walking or cycling distance of open spaces. Explore walking and cycling routes you can take from your doorstep, get active and leave your car at home.

Plan ahead

- Take some time to plan ahead and consider the small steps you can take to reduce pollution, for example planning journeys that you can leave your car at home or car share with work colleagues or on the school run even it is just for one day a week or fortnight.
- When planning a walk, consider the route. It may be possible to take footpaths and streets away from busy high street or areas of local traffic congestion therefore avoiding areas of higher air pollution.
- If you are buying or leasing a new vehicle (private or business) consider the vehicle emissions and fuel type in addition to the other typical considerations such as miles per gallon, insurance group and safety.

- Be aware of air pollution forecasts for your local area, particularly if you suffer from respiratory issues. The local forecasts can be found via the following link:

<https://uk-air.defra.gov.uk/>

Raising concerns

- New Forest District Council residents and businesses can raise concerns about air pollution directly with the Environmental Protection department or their local Councillor; details and links are listed below. Officers may be able to offer advice or investigate your concerns further.
- The New Forest Environmental Protection Liaison Committee holds an annual public participation meeting (usually in the Autumn) where members of the public can raise concerns directly with the Committee. The Committee includes local Councillors, Environmental Health, the Environment Agency, Hampshire County Council, Friends of the Earth and local industry. A link to the details of the Committee is listed below.

Contacts

- *Local Councillors*

Your local Councillor details can be found via the link:

<http://www.newforest.gov.uk/article/1074/Councillors-and-democracy>

- *New Forest District Council*

Your contact with regards to local air quality at New Forest District Council is:

Environmental Protection
Environmental and Regulation
Appletree Court
Lyndhurst
Hampshire
SO43 7PA
023 8028 5411

New Forest Environmental Protection Liaison Committee

Details of the committee can be found via the link:

<http://www.newforest.gov.uk/article/1074/Councillors-and-democracy>

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1 Local Air Quality Management

This report provides an overview of air quality in New Forest District Council during 2020. It fulfils the requirements of Local Air Quality Management (LAQM) as set out in Part IV of the Environment Act (1995) and the relevant Policy and Technical Guidance documents.

The LAQM process places an obligation on all local authorities to regularly review and assess air quality in their areas, and to determine whether or not the air quality objectives are likely to be achieved. Where an exceedance is considered likely the local authority must declare an Air Quality Management Area (AQMA) and prepare an Air Quality Action Plan (AQAP) setting out the measures it intends to put in place in pursuit of the objectives. This Annual Status Report (ASR) is an annual requirement showing the strategies employed by New Forest District 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

2.1 Air Quality Management Areas

Air Quality Management Areas (AQMAs) are declared when there is an exceedance or likely exceedance of an air quality objective. After declaration, the authority 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 New Forest District Council can be found in Table 2-1. The table presents a description of the AQMA that is currently designated within New Forest District Council. Appendix D: Maps of Monitoring Locations and the AQMA, provides maps of air quality monitoring locations in relation to the Lyndhurst AQMA.

The air quality objectives pertinent to the current AQMA designation are as follows:

- NO₂ annual mean.

Further information related to declared or revoked AQMAs, including maps of AQMA boundaries are available online at https://uk-air.defra.gov.uk/aqma/local-authorities?la_id=167. The full list of AQMA's in the UK can be found at <https://uk-air.defra.gov.uk/aqma/list>.

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 Highways England?	Level of Exceedance: Declaration	Level of Exceedance: Current Year	Name and Date of AQAP Publication	Web Link to AQAP
Lyndhurst	Declared 6 June 2005	NO ₂ Annual Mean	25m either side of the High Street, Lyndhurst incorporating Lyndhurst Infant School -97 High Street and 8-76 High street	NO	52 µg m ⁻³	23 µg m ⁻³	Lyndhurst Action Plan 2008 & Lyndhurst Air Quality Action Plan - An update 2019	https://www.newforest.gov.uk/airquality
Totton	Declared 6 June 2005	NO ₂ Annual Mean	An area encompassing a number of properties along Rumbridge Street, Eling Lane, Junction Road and Maynard Road, Totton.	Yes	44 µg m ⁻³	19 µg m ⁻³	Totton 2008	AQMA revoked 22 June 2016
Fawley	13 December 2005	SO ₂ 15 Minute Mean	An area encompassing Fawley village	No	63 Exceedances	0 Exceedances	Fawley 2008	AQMA revoked 19 April 2013

New Forest District Council confirm the information on UK-Air regarding their AQMA(s) is up to date.

New Forest District Council confirm that all current AQAPs have been submitted to Defra.

2.2 Progress and Impact of Measures to address Air Quality in New Forest District Council

Defra's appraisal of last year's ASR concluded that the report was well structured, detailed, and provided the information specified in the Guidance. It provided additional guidance on the reporting of data and this advice has been taken into account during the production of this report.

New Forest District Council has taken forward a number of direct measures during 2019, but progress on some was stalled during 2020. The Action Plan for Lyndhurst AQMA¹⁵ was updated in the latter part of 2019. A review of the original nineteen options was carried out and eleven measures were adopted. Details of all measures completed, in progress or planned are set out in Table 2-2.

Whilst more detail on these measures can be found in the updated Air Quality Plan. Key completed measures are:

- Works to improve junction of A337 and High Street
- Enforcement of heavy good vehicle restrictions
- Installation of variable messaging system
- Enforcing parking restrictions in High Street
- Review signage around Lyndhurst
- Review and support NFDC's travel plan
- Smarter working
- Review and support St Michael and All Angels Infant School Travel Plan
- Review of bus routes and services
- Review of cycle routes
- Increase public awareness of air quality issues

¹⁵ http://www.newforest.gov.uk/media/39874/Air-Quality-Action-Plan-2019/Pdf/Air_Quality_Action_Plan.pdf

- Review air quality monitoring in the New Forest

New Forest District Council expects the following measures to be completed over the course of the next reporting year:

- Anti-idling campaign. A poster/banner campaign in High Street, Lyndhurst was undertaken Feb 2018 and is to be reviewed again. As most vehicles now have start stop engines this should contribute to lower emissions in High Street.
- In 2020 a Lyndhurst Action Group including representatives from Hampshire County Council, Lyndhurst Parish Council, Lyndhurst Infant School and businesses was created to consider means of improving air quality in Lyndhurst through 'softer' measures such as promotion of walking and cycling and changes to commercial delivery times. Due to the Covid 19 pandemic, the actions developed in the inaugural meeting have not been progressed, but it is hoped that progress can be made during the latter part of 2021 and into 2022.

New Forest District Council's priorities for the coming year are:

- **To assist in the development of an air quality supplementary planning guide / document**

Officers will work with planning colleagues to develop a simple air quality supplementary planning guide to assist applicants in providing the required air quality documentation to support their planning applications. This will include an appropriate air quality assessment and mitigation measures.

- **To forward the development of a Clean Air Strategy for New Forest**

Local air quality measures have historically focused on the Air Quality Management Area's, however with the reduction of these from 3 to 1 within the New Forest there is a requirement to formally expand the air quality focus throughout the New Forest through the development of a Clean Air Strategy for the New Forest.

- **To forward collaborative work on the updated Air Quality Action Plan for Lyndhurst**

To include all relevant stakeholders, including the public and local businesses.

- **To work regionally with colleagues in air quality, public health and transport**

To pool expertise and resource to forward local and national air quality issues and strategies regionally, including the Southampton CAZ work, and include:

- installation of electric charging points
- encourage sustainable travel
- encourage smarter working
- to promote the 'Burn Better' message through collaborative work with tEC and other Local Authorities.

The principal challenges and barriers to implementation that New Forest District Council anticipates facing are:

- to ensure the Council makes the best use of the resource available to move local air quality forward and to respond appropriately on consultations received for planned development with particular reference to the Local Plan
- to motivate local communities to change their behaviour to improve local air quality, particularly when air quality (outside of the known problem areas) is considered good; and,
- the long-term investment needed from multiple agencies to build a sustainable transport system.

New Forest District Council anticipates that the measures stated above and in Table 2-2 will achieve compliance in Lyndhurst AQMA.

Whilst the measures stated above and in Table 2-2 will help to contribute towards compliance, New Forest District Council anticipates that further additional measures not yet prescribed will be required in subsequent years to achieve compliance and enable the revocation of Lyndhurst AQMA

Table 2-2 – Progress on Measures to Improve Air Quality

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
1	Enforcement of loading restrictions	Traffic Management	Other	2010	2032	NFDC Enforcement	NFDC	NO	Not Funded	< £10k	Implementation	<1-2 µg/m3	Traffic surveys	Surveys undertaken June 2019	Survey showed no illegal parking during survey period
2	Enforcement of HGV restriction in High Street	Traffic Management	Other	2010	2032	NFDC,Police	NFDC	NO	Not Funded	< £10k	Implementation	<1-2 µg/m3	Traffic surveys	Survey undertaken June 2019	Only Police may take enforcement action. Resource intensive
3	Clean walk to school route	Promoting Travel Alternatives	School Travel Plans	2017	2025	NFDC Env. Health,school	NFDC	NO	Not Funded	< £10k	Implementation	<1-2 µg/m3	Travel Surveys. Increase number of children walking to school	Implementation on-going with new year groups	Location of school means most children already walk
4	Anti idling campaign	Traffic Management	Anti-idling enforcement	2018	2025	NFDC Env Health	NFDC	NO	Not Funded	< £10k	Implementation	<1-2 µg/m3	Traffic surveys and NO2 monitoring	Poster/banner campaign in High Street undertaken Feb 2018 and to be reviewed again	Most vehicles now have start stop engines
5	Reduce trade vehicle movement	Traffic Management	Other	2021	2025	NFDC, local business,chamber of trade, parish council, community groups	NFDC	NO	Not Funded	< £10k	Implementation	<1-2 µg/m3	traffic surveys,questionnaires	to convene working party 2020	Businesses may be reluctant to change delivery times or suppliers
6	Improve motorway signage	Traffic Management	UTC, Congestion management, traffic reduction	2010	2032	HCC	HCC	NO	Not Funded	< £10k	Implementation	<1-2 µg/m3	NO2 monitoring	system used sporadically	System installed but requires HCC to operate
7	Sustainable travel	Vehicle Fleet Efficiency	Promoting Low Emission Public Transport	2010	2032	HCC, NFDC,Southampton City Council	All Agencies	NO	Not Funded	< £10k	Implementation	<1-2 µg/m3	NO2 monitoring	Retro fitting of buses, promotion of cycle network	Requires long term investment from multiple agencies
8	Installation of electric charge points	Promoting Low Emission Transport	Procuring alternative Refuelling infrastructure to promote Low Emission Vehicles, EV recharging, Gas fuel recharging	2018	2032	NFDC	NFDC	NO	Not Funded	< £10k	Implementation	<1-2 µg/m3	NO2 monitoring	Many points installed in car parks by 2019 and on going	Charge points in car parks take up parking spaces
9	Review Council Fleet	Promoting Low Emission Transport	Company Vehicle Procurement - Prioritising uptake of low emission vehicles	2019	2032	NFDC	NFDC	NO	Not Funded	< £10k	Implementation	<1-2 µg/m3	Increase in number of electric vehicles in fleet	Electric cars procured 2019	Mileage range of electric vehicles

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
10	Increase awareness of issues	Policy Guidance and Development Control	Other policy	2019	2032	NFDC HCC Public Health England	All Agencies	NO	Not Funded	< £10k	Implementation	<1-2 µg/m ³	Questionnaires from community groups	Publication of 2019 Air Quality Action Plan	
11	Smarter working	Promoting Travel Alternatives	Encourage / Facilitate home-working	2019	2023	NFDC	NFDC	NO	Not Funded	< £10k	Implementation	<1-2 µg/m ³	work mileage costs	substantial investment in IT	Not suitable for all employees

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.

New Forest District Council is taking the following measures to address PM_{2.5}:

Collate information with regards to local PM_{2.5} data

Annual mean concentration

New Forest District Council does not currently monitor PM_{2.5} concentrations. However by using current guidance, Technical Guidance_{(Defra, 2016(b))}, the PM_{2.5} annual mean concentration can be estimated using monitoring data from local PM₁₀ analysers. The estimation of the PM_{2.5} annual mean concentration for 2020 is provided in Appendix G.

Furthermore, it is noted that some private sector businesses in the New Forest area (along Southampton Water) monitor PM_{2.5}. Therefore, the Council will determine whether this data could be made available to the Local Authority and the monitoring undertaken is appropriate, in order to provide some monitored local PM_{2.5} concentrations.

Health burden

Public Health England provide a Public Health Indicator for PM_{2.5} (PHE, 2016) which references the health burden of PM_{2.5} at a local authority level as a fraction of mortality attributable to particulate air pollution. This enables local authorities to assess their local figure, compare it to other regions and take appropriate action by targeting resources to reduce the fraction. The figures are provided for the New Forest District and other regions of interest in Appendix H.

Local hot-spots

Background pollutant maps provided electronically by Defra (Defra,2017(a)) also give a basic local background concentration for PM_{2.5}. This information may show areas of higher PM_{2.5} concentrations which New Forest District Council could assess to determine if there are local particulate issues where specific measures could be implemented to reduce particulate emissions.

The above noted methods will 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 New Forest District Council 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 near future, and to target resources to assess and improve any identified hot spot areas for PM_{2.5}. This data will be updated on an annual basis, and therefore provide some guidance of whether implemented measures are reducing local PM_{2.5} concentrations. In addition, this work could be included within any future Clean Air Strategy for the New Forest.

After five years of reporting PM_{2.5} concentrations (based on the monitored PM₁₀ concentrations), concentrations at both sites (Totton and Fawley) have remained consistent.

Current measures

A number of schemes are being actioned through the Lyndhurst Air Quality Action Plan and potentially through the introduction of a Southampton CAZ to reduce nitrogen dioxide concentrations which may also reduce PM_{2.5}. These measures are shown in Table 2-3.

Table 2-3 Measures to reduce PM_{2.5}

Measure	Applicable to Lyndhurst	Applicable to District	Comments
Improvements to A337 and High St. junction	√		
Enforcement of heavy goods vehicle restriction	√		
Installation of variable messaging system	√		
Review and support New Forest District Council's travel plan	√	√	Including encouraging car sharing and reducing vehicle use
Development of school travel plan	√	√	To include messages concerning local air quality. Links to the Public Health Outcomes Framework by increasing physical activity and weight loss of children and parents/ guardians. Work has started with Hampshire County Council to work with a number of local schools on sustainable travel and air quality schemes.
Areas of planned developments	√	√	To review and assess the impact of PM _{2.5} where applicable
Review bus routes (incl. green transport)	√	√	To support use of public transport as alternatives to car use
Review cycle routes	√	√	Both recreational and non-recreational. Links to the Public Health Outcomes Framework by increasing physical activity and weight loss.
New Forest District Council vehicle fleet management	√	√	Including supporting eco-driving for all Council staff
Increase public awareness of local air quality	√	√	To include health messages concerning PM _{2.5} and encourage cycling and walking as alternatives to vehicle use. Links to the Public Health Outcomes Framework by increasing physical activity and weight loss.
Southampton CAZ	√	√	Measures will be implemented to reduce emissions from all vehicles in the eastern part of the District. Measures being considered include reducing the numbers of higher polluting vehicles on the road network, retrofitting buses, improving cycle paths and reducing number of vehicle journeys. Links to the Public Health Outcomes Framework by increasing physical activity and weight loss.

Measure	Applicable to Lyndhurst	Applicable to District	Comments
Promotion of 'Burn Better' scheme and partnership working with neighbouring Authorities and tEC		Y	Encouraging residents to consider alternatives to burning, to only burn suitable materials and to use ready to burn fuels. The procurement of low cost sensors in 2021 will allow detailed assessment of local air quality in terms of PM

Further current measures include:

Working with Public Health colleagues

NFDC had previously met with Public Health colleagues and Hampshire County Council where the actions stated below were discussed. The continuation of these meetings and subsequent implementation of schemes was halted during 2020 due to Covid 19. It is anticipated that work will resume in 2021/22

Meetings have been held with Public Health colleagues working within New Forest District Council and Hampshire County Council, and the following actions were discussed:

- Regular meetings (initially bi-annual) with public health colleagues to forward and implement measures linking air quality and public health which would improve both PM_{2.5} and the health and well-being of the local population by linking with other public health indicators such as weight loss and physical activity.
- Public Health colleagues have implemented walking and cycling schemes to get the local population active for 30 minutes every day as part of their daily routine, which links into the Public Health Outcomes Framework. In addition to the health benefits of walking and cycling (including increased physical activity and weight loss) the air quality message will also be used to encourage individuals to reduce their vehicle use in order to undertake their daily 30 minutes of exercise for example by walking to the shops, school and / or place of work.
- Provide air quality training to local Members and the Health and Well-being board to link the air quality and health and well-being messages which will assist in forwarding future joint actions and schemes.

Working with other partners

Local Tourism

The New Forest district attracts millions of visitors each year including 13.5 million day trips. 96% (NFNP, 2007) of visitors will arrive in cars or coaches, however there are alternative methods of transport to arrive and explore the New Forest area. By working with partners such as New Forest National Park Authority, New Forest Tourism and transport companies on current and future schemes, the air quality link of improving not only PM_{2.5} but air quality in general by using alternative transport methods could be forwarded.

Transport schemes include:

- Local public transport schemes such as New Forest Bus Tour (3 tourist bus routes operating a hop on / off concession scheme)
- Promotion of cycle and walking routes throughout the New Forest
- The production of tourist maps linking local attractions with available transport routes.

Environment Agency

The Environment Agency permits 20 industrial installations within the New Forest and immediate vicinity including some large chemical, waste, energy generating and oil refining processes. Whilst these installations currently operate under the conditions laid out in their Permit which will include emissions to air, New Forest District Council will continue to work further with the Environment Agency and local industries to discuss local PM_{2.5} emissions and whether these can be reduced further. In particular New Forest District Council hosts the Environmental Protection Liaison Committee which brings together local Members, industry, Environmental Health, Environment Agency, Hampshire County Council and Friends of the Earth which is an ideal platform for addressing and discussing PM_{2.5} to attempt to reduce local emissions.

Planning authorities

In addition to the current measures to review and assess the impact of PM_{2.5} from planning developments (as applicable), it is the intention to work with the local planning authorities (New Forest District Council, New Forest National Park Authority and Hampshire County Council) to provide training to Planning Officers with regards to local air quality and planning, with particular reference to PM_{2.5}. Ideally, this work would be forwarded into

formal local planning guidance which would be consistent between the three planning authorities within the New Forest district. This work started at a regional level during 2019.

Hampshire County Council

New Forest District Council has worked with Hampshire County Council on a number of transport related schemes to reduce congestion and vehicle use. This includes working with a number of local schools to collate information on how the children travel to school as well as the provision of education sessions on air quality. This combined information is then used to assist the schools with promoting walking and cycling to school as well as running competitions to highlight and address local issues concerning air quality.

Regional Partnerships

Localised burning

New Forest District Council has not declared any smoke control areas. The District is primarily rural with a high proportion of domestic open fires and wood burning stoves. Residents with commoner's rights are also able to collect wood from the Forest for their own domestic use, and therefore to some extent wood burning is an accepted form of heating for many residents within the District. In addition, landowners (including the Forestry Commission and National Trust) will periodically burn heathland to effectively manage their land, producing localised smoke episodes with the associated generation of pollution.

Whilst it is acknowledged that these fires and domestic heating sources will give rise to the production of particulate matter, there should be a balance and proportionate response to heathland burning and the use of domestic fires and stoves. Therefore heathland burning is always controlled with an emphasis not to allow smoke to drift over residential properties, and the Council deals with issues of domestic burning as they arise (typically through a nuisance complaint or planning regime) with advice given regarding burning including stove type, flue design, fuel source, wood type, storage and seasoning.

In 2019 New Forest District Council worked with neighbouring authorities to apply for Government funding for a regional approach to the use of wood burners and bonfires. The bid was successful and NFDC and other authorities are now working with the environmental charity, the Environment Centre (tEC) to promote alternatives to burning and cleaner burning.

As part of this scheme the group has successfully bid for the purchase of low cost sensors which can be deployed in 'hotspots' around the district to provide localised information on air quality particularly particulate matter.

New Measures

Development of a Clean Air Strategy for New Forest

It is acknowledged the assessment and review of PM_{2.5} has not progressed over recent years within the New Forest. Therefore, the development of a Clean Air Strategy for New Forest will include the assessment of PM_{2.5} and if required reduce the pollutant through working with different officers, agencies and businesses.

In summary

The following actions will continue and be progressed:

- To continue to determine local concentrations of PM_{2.5} using current monitoring data (including the use of data from non-Council operated monitoring sites) and data from Public Health England (health indicators) and Defra (background maps).
- To continue to raise awareness of air quality (including particulate emissions) with partners (Public Health, Health and Well-being Board, planning authorities, local tourism, Hampshire County Council and the Environment Agency), local Members and the public through training session and at public events
- To continue to work with partners to identify and forward feasible schemes to reduce particulate emissions for example through our work with the Environment Centre to encourage cleaner burning.
- To forward the development of a Clean Air Strategy for New Forest

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

This section sets out the monitoring undertaken within 2020 by New Forest District Council and how it compares with the relevant air quality objectives. In addition, monitoring results are presented for a five-year period between 2016 and 2020 to allow monitoring trends to be identified and discussed.

3.1 Summary of Monitoring Undertaken

3.1.1 Automatic Monitoring Sites

New Forest District Council undertook automatic (continuous) monitoring at 3 sites during 2020. Table A.1 in Appendix A shows the details of the automatic monitoring sites. NB. Local authorities do not have to report annually on the following pollutants: 1,3 butadiene, benzene, carbon monoxide and lead, unless local circumstances indicate there is a problem. The http://www.airqualityengland.co.uk/local-authority/?la_id=236 page presents automatic monitoring results for New Forest District Council, with automatic monitoring results also available through the UK-Air website .

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

3.1.2 Non-Automatic Monitoring Sites

New Forest District Council undertook non- automatic (i.e. passive) monitoring of NO₂ at 57 sites during 2020. While the vast majority of the sites are in place to fulfil the requirements of LAQM, a number are in place to support project work undertaken as part of:

- Southampton Clean Air Zone
- Local Plan

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.

3.2 Individual Pollutants

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 (NO₂)

Table A.3 and Table A.4 in Appendix A presents the NO₂ concentrations measured by the automatic monitor and diffusion tubes, respectively, for the past five years. The NO₂ concentrations presented in Table A.4 for years 2016 to 2019 are the concentrations presented in previous ASR reports and had been distance corrected when required. The concentrations presented for 2020 were derived using the new NO₂ processing tool and because all bias adjusted NO₂ concentrations were less than 36 µg m⁻³ no distance correction is required. Figure A.1 presents the data in a graphical form for those sites along High Street in Lyndhurst.

The full 2020 dataset of monthly mean values is provided in Appendix B – again no distance correction is required.

Table A.5 in Appendix A presents the ratified continuous monitored NO₂ hourly mean concentrations for the past five years with the air quality objective of 200µg/m³, not to be exceeded more than 18 times per year. There were no exceedances of the objective concentration.

The monitoring undertaken within New Forest District Council throughout 2020 has shown no exceedances of the annual mean objective for nitrogen dioxide at any of the automatic and non-automatic monitoring sites.

Lyndhurst

It is noted that there is an overall reduction of nitrogen dioxide concentrations in Lyndhurst (sites CM2 and non-automatic sites 5 - 12) with significant decreases compared to previous years. Within the current AQMA in Lyndhurst the monitoring results are presented in Table 3-1.

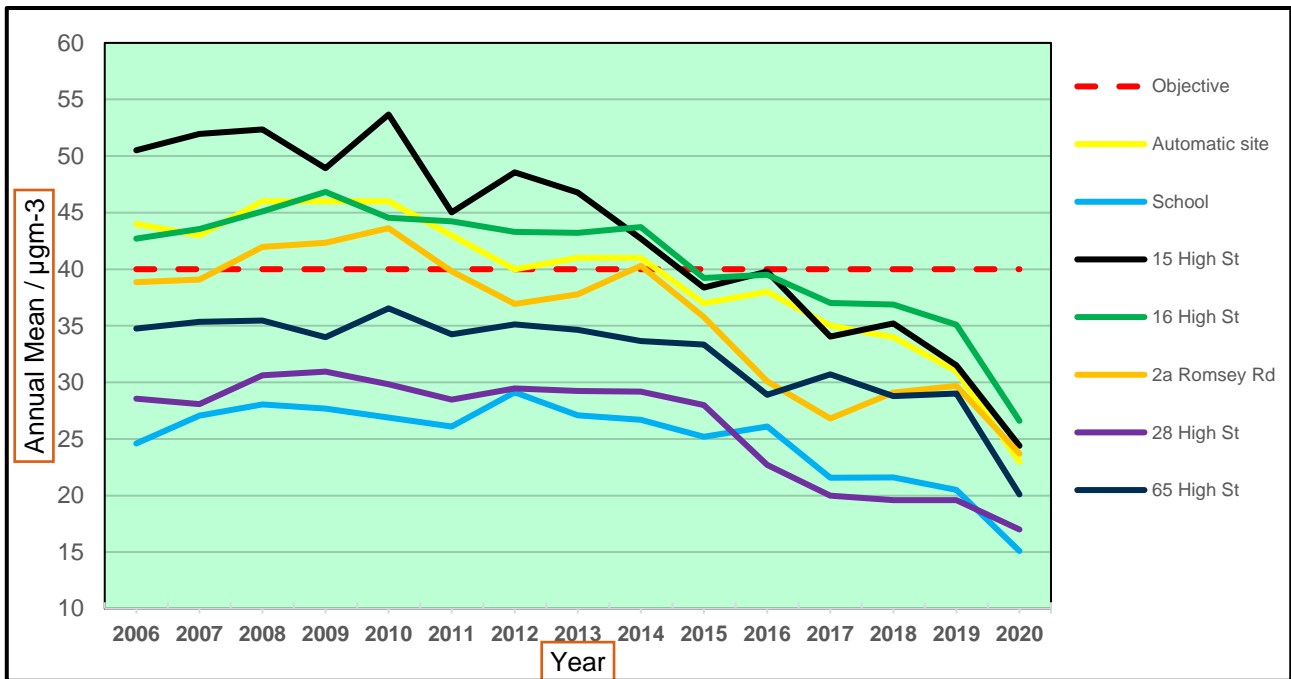
Table 3-1 Nitrogen dioxide concentrations measured within the Lyndhurst AQMA.

Site ID	Location	NO ₂ Annual Mean Concentration (µg/m ³)						
		2014	2015	2016	2017	2018	2019	2020
CM2	Lyndhurst	41	<u>37</u>	<u>38</u>	35	34	31	23
5	School, High St.	26.7	25.19	26.1	21.6	21.6	20.5	15.1
6	15, High St.	42.7	<u>38.38</u>	<u>39.8</u>	34.0	35.2	31.5	24.4
7	14, High St.	40.12	<u>37.43</u>	<u>38.5</u>	34.5	34.9	31.6	24.0
8	16, High St.	43.73	<u>39.22</u>	<u>39.5</u>	<u>37.0</u>	<u>36.9</u>	35.1	26.6
9	2a, Romsey Rd	40.3	35.76	30.1	26.8	29.1	30.1	23.7
11	28, High St.	29.19	27.99	22.7	20.0	19.6	20.0	17.0
12	65, High St.	33.66	33.33	28.9	30.7	28.8	29.0	20.1

Figure 3-1 shows the trend in nitrogen dioxide concentrations within the Lyndhurst AQMA since 2006 - concentrations continue to be below the air quality objective and the impact of Covid-19 on the measured concentrations can be seen at each site (the impact of Covid-19 on pollutant concentrations is discussed further in Appendix F).

Technical guidance provided by Defra(Defra, 2016(b)) has been followed for these monitoring methods and as such the data produced is concluded as being robust.

Figure 3-1 Annual mean nitrogen dioxide concentraton within Lyndhurst AQMA



Further work is being undertaken within the AQMA to improve nitrogen dioxide concentrations, primarily through the forwarding of smarter options such as anti-idling campaigns and working with the local community as advised in the updated Air Quality Action Plan.

The continued compliance with the air quality objective for nitrogen dioxide suggests revocation of the Lyndhurst AQMA should be considered. During 2020 air quality has been significantly impacted by Covid-19, further consideration of revocation will be taken in 2022 once 2021 data has been processed to ensure concentrations are remaining at or below 2019 concentrations.

Totton

In June 2016, New Forest District Council revoked the AQMA in Totton. The AQMA was declared in 2005 for the likely exceedance of the nitrogen dioxide annual mean objective. Since the revocation monitoring in Totton using an automatic analyser and diffusion tubes (CM1 and diffusion tube Sites 21-35) has continued to ensure nitrogen dioxide concentrations remain below the air quality objective. The monitoring during 2020 has shown the nitrogen dioxide annual mean concentrations were significantly below the Air Quality Objective of 40µgm⁻³ however the impact of Covid-19 has resulted in significantly reduce concentrations.

New Forest District Council will continue to monitor nitrogen dioxide throughout Totton using automatic and non-automatic monitoring.

Other monitoring locations

Monitoring at the remaining locations have also shown a noted decrease in concentrations during 2020. This again is contributed to the impact of Covid-19.

New monitoring locations since previous ASR

Monitoring was started at additional locations following the completion of a district wide air quality model as part of work in connection with the development of the Local Plan but concentrations to date are significantly below the annual objective concentration. The additional monitoring locations starting in 2020 were:

- Britannia House, Lymington (Site 53)
- Sunnydale, Emery Down (Site 49)
- Horseshoe Cottage, Emeryn Down (Site 50)
- Grey Gables, Pikes Hill, Lyndhurst (Site 51)
- Swan Green, Emery Down (Site 52)
- 8 Shaftesbury Street, Fordingbridge (Site 54)
- Co-op, Fordingbridge (Site 55)
- 10 High Street, Fordingbridge (Site 56)
- 32 Salisbury Street, Fordingbridge (Site 57)

Ministerial Decision

In 2018 New Forest District Council were issued with a Ministerial Direction to achieve compliance with the EU Ambient Air Quality Directive. As a result, monitoring has been carried out at a number of sites along the A35 in Totton (sites with Site IDs 32 to 35). The site measuring the highest mean annual concentration was Site ID 35, measuring (34.3 $\mu\text{g m}^{-3}$) which was within the EU Limit Value. All sites have reduced measured concentrations from the previous year.

3.2.2 Particulate Matter (PM₁₀)

Table A.6 in Appendix A: Monitoring Results compares the ratified and adjusted monitored PM₁₀ annual mean concentrations for the past five years with the air quality objective of 40µg/m³.

Table A.7 in Appendix A compares the ratified continuous monitored PM₁₀ daily mean concentrations for the past five years with the air quality objective of 50µg/m³, not to be exceeded more than 35 times per year.

PM₁₀ annual mean concentrations and exceedances remain significantly below air quality objectives.

3.2.3 Sulphur Dioxide (SO₂)

Table A.8 in Appendix A compares the ratified continuous monitored SO₂ concentrations for 2020 with the air quality objectives for SO₂. There were no exceedances in 2020.

Appendix A: Monitoring Results

Table A.1 – Details of Automatic Monitoring Sites

Site ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA? Which AQMA?	Monitoring Technique	Distance to Relevant Exposure (m) ⁽¹⁾	Distance to kerb of nearest road (m) ⁽²⁾	Inlet Height (m)
CM1	Totton	Roadside	436188	113237	NO ₂ , PM ₁₀	No	Chemiluminescent; TEOM	5	1.5	1.75
CM2	Lyndhurst	Kerbside	429859	108204	NO ₂	Yes AQMA 1	Chemiluminescent	1	0.6	3
CM3	Fawley	Industrial	445885	103248	SO ₂ , PM ₁₀	No	UV Fluorescence, TEOM	5	n/a	5

Notes:

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

(2) N/A if not applicable

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

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	Lyndhurst Road, Goose Green	Roadside	429991	107583	NO ₂	No	0.0	0.4	No	3.0
2	1 Foxlease Terrace, Shrubbs Hill Rd	Roadside	429928	107687	NO ₂	No	0.0	1.5	No	3.0
3ai (duplicate), 3aii (duplicate)	Shrubbs Hill Rd The Orchards - façade	Roadside	429895	107770	NO ₂	No	0.0	3.0	No	3.0
3b	Shrubbs Hill Rd, The Orchards	Roadside	429895	107770	NO ₂	No	0.0	5.0	No	3.0
47	Shrubbs Hill Road, Hillmead Lodge	Roadside	429760	107972	NO ₂	No		1.5	No	3.0
4	Queens House, Lyndhurst	Roadside	429710	108128	NO ₂	No	0.0	5.0	No	3.0
5	High St, School, Lyndhurst	Roadside	429767	108205	NO ₂	Yes - Lyndhurst AQMA	0.0	6.0	No	3.0
6	15 High Street, Lyndhurst	Kerbside	429864	108213	NO ₂	Yes - Lyndhurst AQMA	0.0	1.0	No	3.0
7a (triplicate), 7b(triplicate), 7c (triplicate)	14 High Street, Analyser site	Kerbside	429858	108205	NO ₂	Yes - Lyndhurst AQMA	0.0	0.9	Yes	3.0
8	16 High St, Lyndhurst	Kerbside	429875	108207	NO ₂	Yes - Lyndhurst AQMA	0.0	1.6	No	3.0
9	2a Romsey Rd, Lyndhurst	Roadside	429891	108245	NO ₂	Yes - Lyndhurst AQMA	3.0	2.0	No	3.0
10	22 Romsey Rd, Lyndhurst	Roadside	429911	108402	NO ₂	No	0.0	2.3	No	2.0

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)
11a, 11b	28 High St, Lyndhurst	Roadside	429933	108200	NO ₂	Yes - Lyndhurst AQMA	5.0	4.0	No	3.0
12	65 High St, Lyndhurst	Roadside	430026	108206	NO ₂	Yes - Lyndhurst AQMA	0.0	1.8	No	3.0
13	2 Gosport Lane, Lyndhurst	Roadside	430079	108147	NO ₂	No	0.0	2.2	No	3.0
14	South View, Gosport Lane, Lyndhurst	Roadside	430092	108077	NO ₂	No	5.0	2.0	No	3.0
15	Southampton Rd, Lyndhurst Park Hotel	Roadside	430162	108173	NO ₂	No	5.0	2.0	No	3.0
16	A35, Baytree Cottage, B'th Road	Roadside	429169	108129	NO ₂	No	0.0	1.5	No	3.0
17	Lyndhurst School lamp post 1m	Roadside	429782	108209	NO ₂	No	0.0	6.0	No	1.0
18	Lyndhurst School lamp post 2m	Roadside	429782	108209	NO ₂	No	0.0	6.0	No	2.0
19	Lyndhurst School lamp post 3m	Roadside	429782	108209	NO ₂	No	0.0	6.0	No	3.0
20	Red Lodge, High St, Lyndhurst	Roadside	429739	108195	NO ₂	No	0.0	2.0	No	3.0
36	Highwood Cottage, Ower	Other	431920	115929	NO ₂	No	0.0	n/a	Yes	3.0
37a, 37b	Stoney Cross	Roadside	425877	111778	NO ₂	No	0.0	20.0	No	3.0
38	Shorefield Road, Marchwood	Roadside	438765	111006	NO ₂	No	0.0	1.0	No	3.0
39	Marchwood School, Twiggs Lane	Roadside	438363	109694	NO ₂	No	0.0	25.0	No	3.0
41	Teachers Way, Holbury School	Industrial	442947	103931	NO ₂	No	0.0	n/a	No	3.0
42	Jubilee Hall, The Square, Fawley	Industrial	442947	103931	NO ₂	No	0.0	n/a	No	3.0

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	Beaulieu	Rural	445881	103247	NO ₂	No	10.0	n/a	No	3.0
44	131 Christchurch Road, Ringwood	Roadside	438836	102115	NO ₂	No	0.0	1.0	No	3.0
45	St Catherine's, Christchurch Road	Roadside	415118	104608	NO ₂	No	3.0	1.0	No	3.0
46	58 Eastfield Lane, Ringwood (A31)	Roadside	415022	104926	NO ₂	No	0.0	2.0	No	3.0
49	Emery Down Adj Sunnydale	Roadside	416157	105467	NO ₂	No	6.0	3.0	No	3.0
50	Emery Down - Horseshoe Cottage	Roadside	428783	108535	NO ₂	No	0.0	3.0	No	3.0
51	Emery Down - Grey Gables, Pikes Hill	Roadside	429621	108873	NO ₂	No	0.0	0.0	No	3.0
52	Emery Down - Swan Green	Roadside	429033	108203	NO ₂	No	5.0	2.0	No	3.0
53	Bus depot, Lymington	Other	432694	95766	NO ₂	No	0.0	2.0	No	3.0
54	8 Shaftesbury Street, Fordingbridge	Roadside	414648	114165	NO ₂	No	0.0	1.5	No	3.0
55	Co-Op, High Street, Fordingbridge	Roadside	414759	114192	NO ₂	No	0.0	1.5	No	3.0
56	10 High Street, Fordingbridge	Roadside	414835	114234	NO ₂	No	0.0	1.5	No	3.0
57	32 Salisbury Rd, Fordingbridge	Roadside	414941	114354	NO ₂	No	0.0	1.5	No	3.0
21a, 21b, 21c	Junction Road, Totton - analyser	Roadside	436189	113235	NO ₂	No	7.0	2.0	Yes	3.0
22	30 Junction Road, Totton	Roadside	436210	113210	NO ₂	No	3.0	1.0	No	3.0
23	25 Junction Road, Totton	Roadside	436232	113156	NO ₂	No	0.0	4.0	No	3.0
24	26 Rumbridge St, Totton	Roadside	436205	113019	NO ₂	No	2.0	1.5	No	3.0

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)
25	Junction Rd - BATS corner, Totton	Roadside	436278	113081	NO ₂	No	3.0	1.5	No	3.0
26	Elingfield Court, High St, Totton	Roadside	436383	113135	NO ₂	No	0.0	1.5	No	3.0
27	55 High St, Totton	Roadside	436476	113214	NO ₂	No	0.0	4.0	No	3.0
28	93 Commercial Road, Totton	Roadside	436364	113322	NO ₂	No	0.0	1.0	No	3.0
29	1 Rose Road, Eling	Roadside	436374	112929	NO ₂	No	5.0	2.0	Yes	3.0
30	26 Winsor Road, Totton	Roadside	436210	112948	NO ₂	No	0.0	2.0	No	3.0
31	A35 (Fisher Rd)	Roadside	436234	112898	NO ₂	No	3.0	1.0	No	3.0
48a, 48b, 48c	A35 Triplicate	Roadside	436465	113082	NO ₂	No	0.0	2.0	No	3.0

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 NO₂ Monitoring Results: Automatic Monitoring (µg/m³)

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) ⁽¹⁾	Valid Data Capture 2020 (%) ⁽²⁾	2016	2017	2018	2019	2020
CM1 (Totton)	436188	113237	Roadside	90	90	31	26	26	21	19
CM2 (Lyndhurst)	429859	108204	Kerbside	97	97	38	35	34	31	23

☒ **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/m³.

Exceedances of the NO₂ annual mean objective of 40µg/m³ 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 NO₂ Monitoring Results: Non-Automatic Monitoring (µg/m³)

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 2020 (%) ⁽²⁾	2016	2017	2018	2019	2020
1	429991	107583	Roadside	90.4	90.4	23.4	20.4	17.4	16.7	12.4
2	429928	107687	Roadside	100	100.0	28.8	25.3	25.0	23.2	17.3
3ai (duplicate), 3aii (duplicate)	429895	107770	Roadside	100	100.0	36.2	32.6	32.7	29.8	19.5
3b	429895	107770	Roadside	67.3	67.3	27.8	25.3	25.0	24.2	19.0
47	429760	107972	Roadside	65.4	65.4				23.2	18.3
4	429710	108128	Roadside	100	100.0	20.9	17.9	18.0	16.0	11.9
5	429767	108205	Roadside	100	100.0	26.1	21.6	21.6	20.5	15.1
6	429864	108213	Kerbside	100	100.0	39.8	34.0	35.2	31.5	24.4
7a (triplicate), 7b(triplicate), 7c (triplicate)	429858	108205	Kerbside	92.3	92.3	38.5	34.5	34.9	31.6	24.0
8	429875	108207	Kerbside	100	100.0	39.5	37.0	36.9	35.1	26.6
9	429891	108245	Roadside	100	100.0	30.1	26.8	29.1	30.1	23.7
10	429911	108402	Roadside	100	100.0	23.3	23.2	22.5	23.9	15.6
11a, 11b	429933	108200	Roadside	100	100.0	22.7	20.0	19.6	20.0	17.0
12	430026	108206	Roadside	92.3	92.3	28.9	30.7	28.8	29.0	20.1
13	430079	108147	Roadside	100	100.0	36.4	38.6	39.3	36.4	29.0
14	430092	108077	Roadside	100	100.0	24.9	20.2	22.1	22.6	17.8
15	430162	108173	Roadside	84.6	84.6	19.7	17.3	17.3	17.5	15.7
16	429169	108129	Roadside	90.4	90.4	27.2	26.8	27.2	26.9	19.3
17	429782	108209	Roadside	84.6	84.6					18.0
18	429782	108209	Roadside	90.4	90.4					16.6
19	429782	108209	Roadside	73.1	73.1					16.3
20	429739	108195	Roadside	100	100.0			27.9	31.9	23.3
36	431920	115929	Other	67.3	67.3	–	–	21.3	19.7	16.2
37a, 37b	425877	111778	Roadside	90.4	90.4	34.0	33.1	28.2	29.1	21.9
38	438765	111006	Roadside	100	100.0	18.0	13.8	16.8	16.0	13.0

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 2020 (%) ⁽²⁾	2016	2017	2018	2019	2020
39	438363	109694	Roadside	67.3	67.3	18.3	16.9	16.7	16.0	13.5
41	442947	103931	Industrial	100	100.0	11.0	9.5	12.3	12.2	9.7
42	442947	103931	Industrial	100	100.0	13.3	12.4	12.9	12.1	9.7
43	445881	103247	Rural	100	100.0	10.7	9.0	10.6	8.8	7.7
44	438836	102115	Roadside	84.6	84.6	–	–	26.2	25.4	19.2
45	415118	104608	Roadside	100	100.0	–	–	26.3	26.6	23.8
46	415022	104926	Roadside	100	100.0	–	–	27.8	24.3	18.4
49	416157	105467	Roadside	100	100.0					6.2
50	428783	108535	Roadside	67.3	67.3					8.1
51	429621	108873	Roadside	67.3	67.3					7.5
52	429033	108203	Roadside	75	75.0					8.3
53	432694	95766	Other	100	100.0					11.1
54	414648	114165	Roadside	59.6	59.6					19.2
55	414759	114192	Roadside	59.6	59.6					24.8
56	414835	114234	Roadside	59.6	59.6					22.2
57	414941	114354	Roadside	42.3	42.3					18.3
21a, 21b, 21c	436189	113235	Roadside	100.0	100.0	23.9	23.2	23.2	22.5	18.0
22	436210	113210	Roadside	100.0	100.0	25.9	23.8	24.7	24.5	19.5
23	436232	113156	Roadside	84.6	84.6	25.2	24.2	24.3	22.6	17.2
24	436205	113019	Roadside	100.0	100.0	27.6	24.7	25.2	25.6	19.8
25	436278	113081	Roadside	100.0	100.0	27.6	25.2	25.0	24.8	19.5
26	436383	113135	Roadside	100.0	100.0	28.5	25.8	24.8	25.5	19.2
27	436476	113214	Roadside	90.4	90.4	27.1	23.7	25.4	24.6	18.8
28	436364	113322	Roadside	65.4	65.4	28.5	26.7	27.8	26.6	17.6
29	436374	112929	Roadside	100.0	100.0	21.8	19.9	21.3	19.2	15.3
30	436210	112948	Roadside	100.0	100.0	25.9	24.6	23.7	24.1	18.0
31	436234	112898	Roadside	100.0	100.0	23.7	20.1	20.4	18.5	14.9
48a, 48b, 48c	436465	113082	Roadside	100.0	100.0					29.1

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 $\mu\text{g}/\text{m}^3$.

Exceedances of the NO₂ annual mean objective of $40\mu\text{g}/\text{m}^3$ are shown in **bold**.

NO₂ annual means exceeding $60\mu\text{g}/\text{m}^3$, indicating a potential exceedance of the NO₂ 1-hour mean objective are shown in **bold and underlined**.

Means for diffusion tubes have been corrected for bias. All means have been “annualised” as per LAQM.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 NO₂ Concentrations

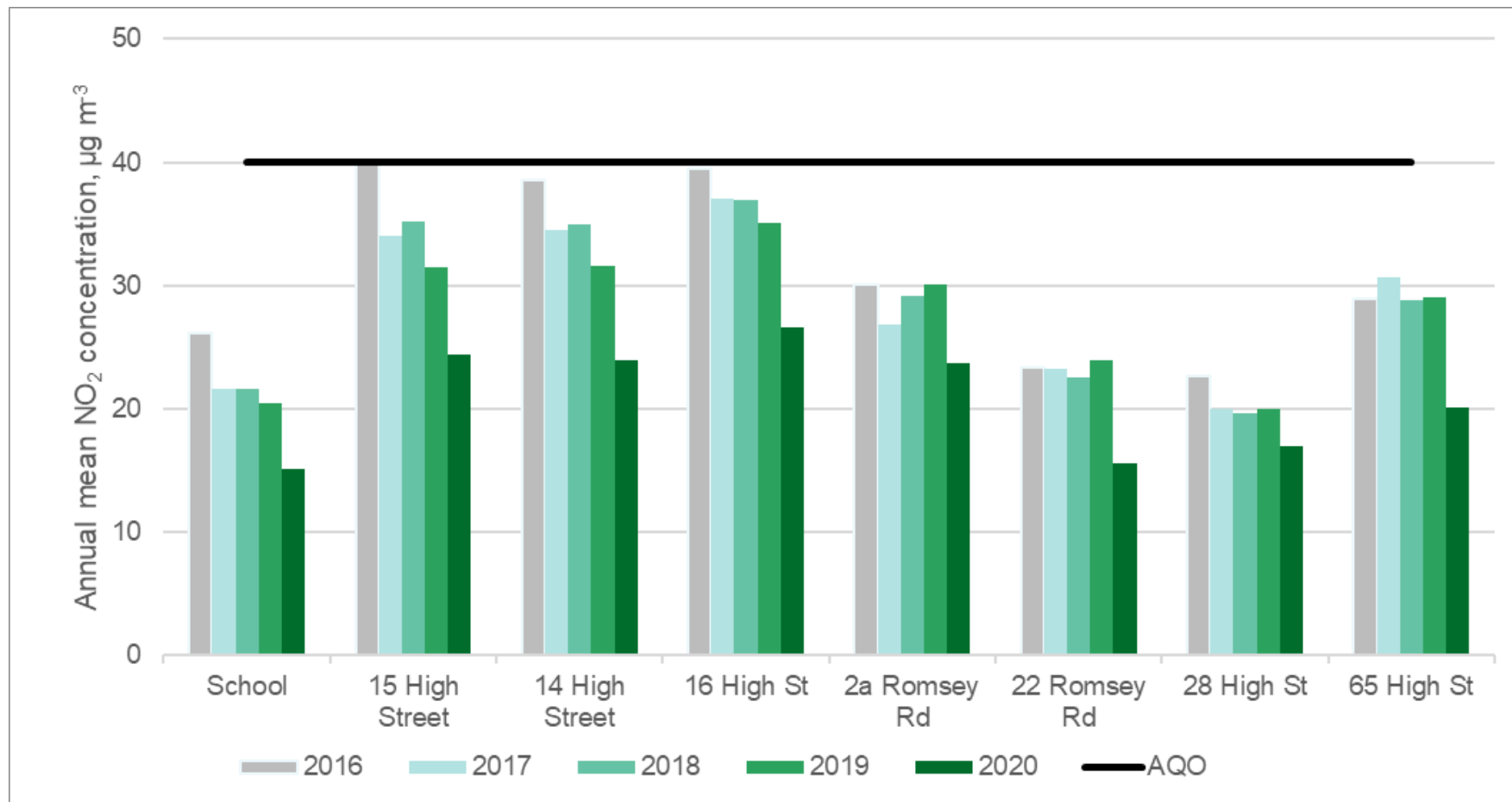


Table A.5 – 1-Hour Mean NO₂ Monitoring Results, Number of 1-Hour Means > 200µg/m³

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) ⁽¹⁾	Valid Data Capture 2020 (%) ⁽²⁾	2016	2017	2018	2019	2020
CM1 (Totton)	436188	113237	Roadside	90	90	0 (129)	0	0	0	0
CM2 (Lyndhurst)	429859	108204	Kerbside	97	97	5	0	0	0	0

Notes:

Results are presented as the number of 1-hour periods where concentrations greater than 200µg/m³ have been recorded.

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

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

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

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

Table A.6 – Annual Mean PM₁₀ Monitoring Results (µg/m³)

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) ⁽¹⁾	Valid Data Capture 2020 (%) ⁽²⁾	2016	2017	2018	2019	2020
CM1 (Totton)	436188	113237	Roadside	90	90	22	20	18	19	21
CM3 (Fawley)	445885	103248	Industrial	99	99		15	16	17	19

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/m³.

Exceedances of the PM₁₀ annual mean objective of 40µg/m³ 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.2 – Trends in Annual Mean PM₁₀ Concentrations

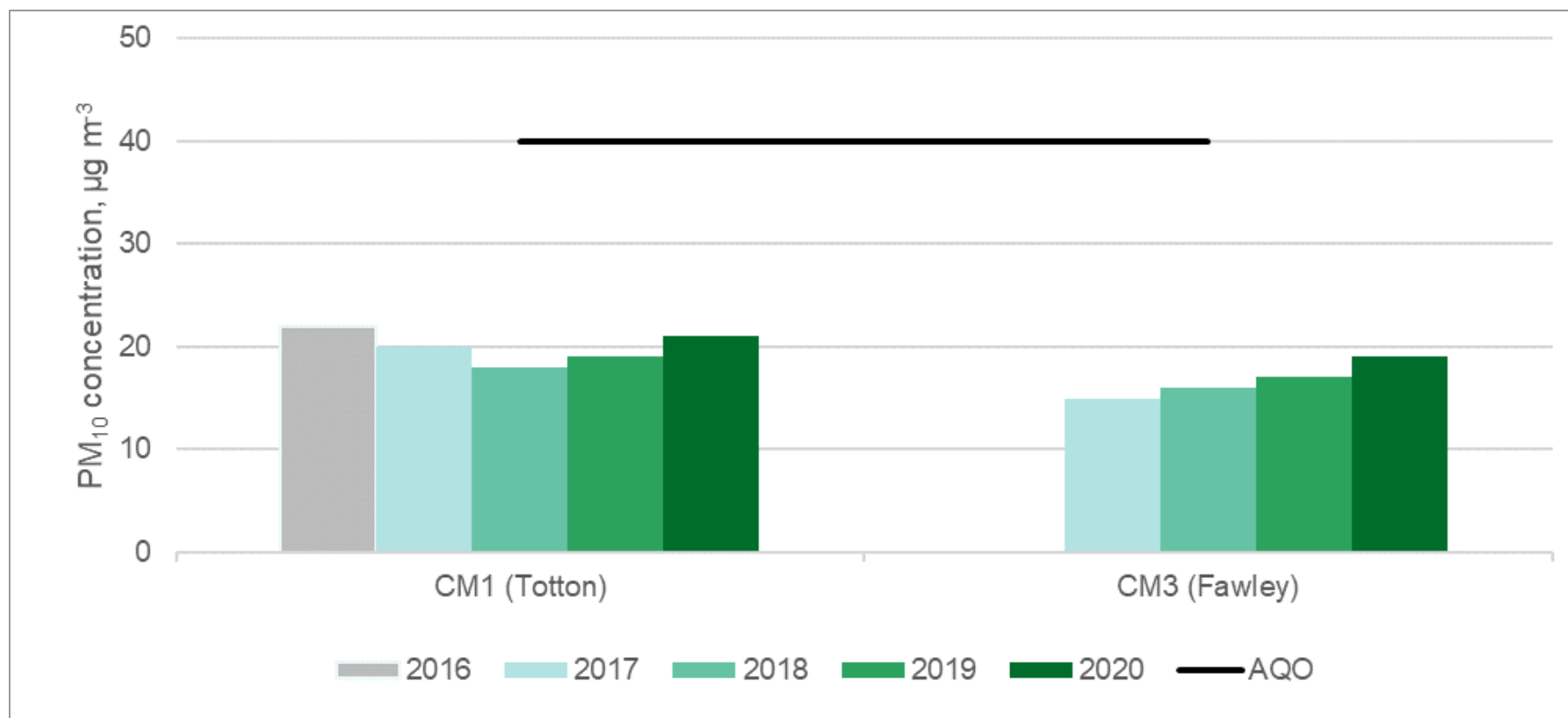


Table A.7 – 24-Hour Mean PM₁₀ Monitoring Results, Number of PM₁₀ 24-Hour Means > 50µg/m³

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) ⁽¹⁾	Valid Data Capture 2020 (%) ⁽²⁾	2016	2017	2018	2019	2020
CM1 (Totton)	436188	113237	Roadside	90	90	10(39)	4	0	5	0
CM3 (Fawley)	445885	103248	Industrial	99	99	-	0	0	2	0

Notes:

Results are presented as the number of 24-hour periods where daily mean concentrations greater than 50µg/m³ have been recorded.

Exceedances of the PM₁₀ 24-hour mean objective (50µg/m³ 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.3 – Trends in Number of 24-Hour Mean PM₁₀ Results > 50µg/m³

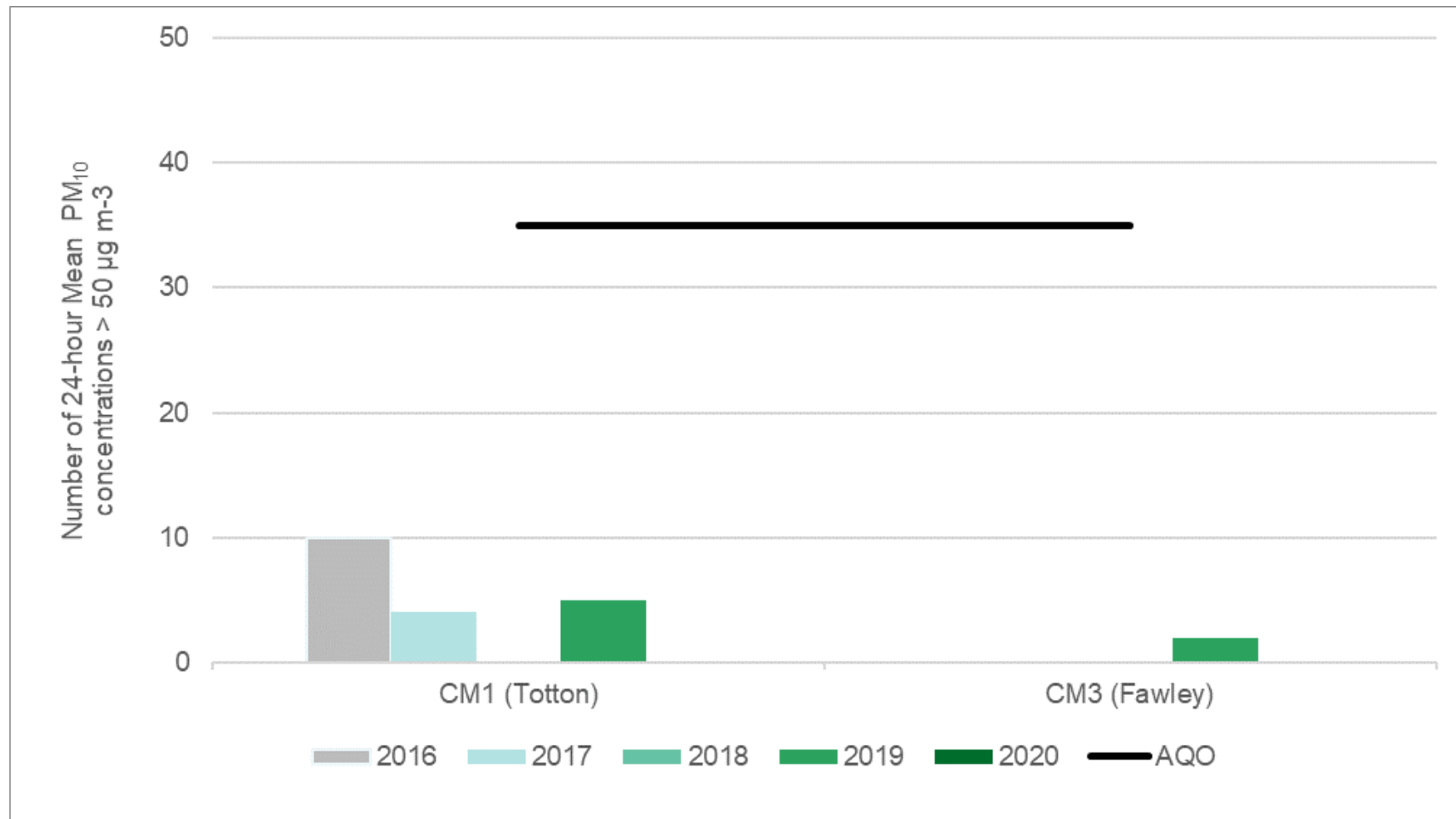


Table A.8 – SO₂ 2020 Monitoring Results, Number of Relevant Instances

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) ⁽¹⁾	Valid Data Capture 2020 (%) ⁽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
CM3 (Fawley)	445885	103248	Industrial	97	97	0	0	0

Notes:

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

Exceedances of the SO₂ 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 2020

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

DT ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Easting)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean: Raw Data	Annual Mean: Annualised and Bias Adjusted (0.74)	Annual Mean: Distance Corrected to Nearest Exposure	Comment
1	429991	107583	20.7	15.9	16.1		12.4	13.1	14.5	18.0	21.8		21.2	16.1	16.8	12.4	-	
2	429928	107687	28.1	21.4	19.4		21.0	22.3	19.0	25.0	27.0	20.4	30.3	26.9	23.3	17.3	-	
3ai (duplicate)	429895	107770	30.9	20.2	18.7		22.4	28.8	23.4	33.3	36.2		30.2	28.6	-	-	-	Duplicate Site with 3ai (duplicate) and 3aia (duplicate) - Annual data provided for 3aia (duplicate) only
3aia (duplicate)	429895	107770	31.1	20.6			26.1	31.1	28.0	29.0	34.2	23.5	28.3	28.4	26.4	19.5	-	Duplicate Site with 3ai (duplicate) and 3aia (duplicate) - Annual data provided for 3aia (duplicate) only
3b	429895	107770	28.0	23.2					22.1	26.6	25.5	24.6	27.2	24.2	25.2	19.0	-	
47	429760	107972		22.7	16.4			23.5	24.7	29.0	30.1			25.3	23.7	18.3	-	
4	429710	108128	20.7	15.0	14.4		11.3	15.4	13.3	15.6	18.4	16.9	22.5	16.6	16.1	11.9	-	
5	429767	108205	29.0	20.1	12.3		14.7	19.4	17.9	22.8	23.7	22.7	27.9	21.6	20.4	15.1	-	
6	429864	108213	43.5	32.2	23.9		26.4	25.7	35.0	42.2	46.5	31.2	32.9	32.1	33.0	24.4	-	
7a (triplicate)	429858	108205		34.4	24.1		20.2	32.9	30.7	44.0	40.8	36.9	34.5	34.7	-	-	-	Triplicate Site with 7a (triplicate), 7b(triplicate) and 7c (triplicate) - Annual data provided for 7c (triplicate) only
7b(triplicate)	429858	108205		31.0	23.0		22.0	29.1	31.3	43.6	40.1	36.1	45.9	37.9	-	-	-	Triplicate Site with 7a (triplicate), 7b(triplicate) and 7c (triplicate) - Annual data provided for 7c (triplicate) only
7c (triplicate)	429858	108205		32.5	24.2		23.1	29.4	33.8	40.6	37.5	32.7	38.1	29.0	32.4	24.0	-	Triplicate Site with 7a (triplicate), 7b(triplicate) and 7c (triplicate) - Annual data provided for 7c (triplicate) only
8	429875	108207	47.8	37.7	28.2		27.8	33.2	34.5	41.5	42.2	41.5	42.8	28.0	36.0	26.6	-	
9	429891	108245	46.2	36.5	22.3		24.6	34.4	26.5	39.1	33.6	32.5	35.7	31.5	32.1	23.7	-	
10	429911	108402	27.6	18.3	15.0		16.6	21.6	16.8	28.1	25.5	22.1	25.5	20.1	21.1	15.6	-	
11a	429933	108200	35.0	27.1	18.2		16.0	19.4	15.4	25.5	24.7	24.4	30.4	25.3	-	-	-	Duplicate Site with 11a and 11b - Annual data provided for 11b only
11b	429933	108200	33.4	30.8	14.5		16.3	21.1	19.5	22.1	23.9	23.2	31.0	23.1	23.0	17.0	-	Duplicate Site with 11a and 11b - Annual data provided for 11b only
12	430026	108206		28.5	20.7		19.7	24.3	24.3	31.2	34.9	30.1	31.1	31.9	27.1	20.1	-	
13	430079	108147	48.9	43.3	28.0		32.0	39.9	40.0	46.0	46.2	41.8	41.3	35.5	39.2	29.0	-	
14	430092	108077	27.2	19.1	15.6		19.3	17.6	19.7	28.0	33.2	25.9	40.9	26.3	24.1	17.8	-	
15	430162	108173	29.0	22.9	14.9		14.8			21.7	24.2	23.2	28.3	20.0	21.3	15.7	-	
16	429169	108129	30.5	27.8	19.6		24.4	25.3	26.9	30.7	27.4	25.0	28.8		26.0	19.3	-	

DT ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Easting)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean: Raw Data	Annual Mean: Annualised and Bias Adjusted (0.74)	Annual Mean: Distance Corrected to Nearest Exposure	Comment
17	429782	108209	28.0	17.8			14.5	21.6	21.5	26.9	29.5	27.6	26.8	28.3	24.3	18.0	-	
18	429782	108209	31.1	25.8	16.8		14.3	20.8	17.8	22.9	26.5	25.3	29.7		22.4	16.6	-	
19	429782	108209	24.8	23.3	17.6				16.5	23.0	25.8	22.8	28.5		22.2	16.3	-	
20	429739	108195	40.7	36.6	21.8		23.4	28.7	30.3	36.7	38.4	33.3	35.8	30.6	31.5	23.3	-	
36	431920	115929	27.4	24.4					18.2	19.8	18.0	20.5	24.9	19.7	21.5	16.2	-	
37a	425877	111778	26.6	29.6	24.6		24.3	27.4	38.0	33.1	36.8	30.9	32.3		-	-	-	Duplicate Site with 37a and 37b - Annual data provided for 37b only
37b	425877	111778			21.5		24.6	26.5	38.6	33.7	36.9	30.8	33.3		29.6	21.9	-	Duplicate Site with 37a and 37b - Annual data provided for 37b only
38	438765	111006	19.6	13.1	20.9		19.2	13.7	12.1	13.4	21.3	14.6	22.8	19.6	17.5	13.0	-	
39	438363	109694	20.6	16.8					11.1	16.0	19.5	17.6	21.5	20.0	17.9	13.5	-	
41	442947	103931	17.4	9.7	13.4		12.6	11.3	9.1	11.2	12.8	9.3	23.1	15.5	13.2	9.7	-	
42	442947	103931	15.9	12.5	13.0		13.3	10.2	10.2	12.4	13.1	10.7	18.9	14.2	13.1	9.7	-	
43	445881	103247	11.8	9.3	10.3		8.3	8.6	7.1	8.6	9.9	10.0	17.8	12.6	10.3	7.7	-	
44	438836	102115	33.2	28.5	20.6		22.1			27.7	27.5	25.2	32.3	23.1	25.9	19.2	-	
45	415118	104608	48.0	39.4	25.9		22.4	30.2	29.0	35.2	35.5	30.9	46.1	21.7	32.1	23.8	-	
46	415022	104926	37.7	26.1	21.6		21.7	22.8	20.4	23.8	30.1	27.6	36.5	12.7	24.9	18.4	-	
49	416157	105467	11.1	7.8	8.2		7.3	7.8	5.7	8.4	8.9	4.2	13.4	10.8	8.4	6.2	-	
50	428783	108535	12.0	10.3					9.0	11.7	12.1	8.5	17.6	6.6	10.8	8.1	-	
51	429621	108873	12.5	9.0					6.7	7.7	8.7	7.8	16.6	11.5	10.0	7.5	-	
52	429033	108203	10.3	2.0			10.0	12.5	9.5	13.0	14.5	11.7	17.2		11.2	8.3	-	
53	432694	95766	20.1	16.3	13.3		10.3	11.5	11.8	12.8	13.2	14.6	23.2	20.4	15.0	11.1	-	
54	414648	114165	n/a	n/a	n/a		n/a	16.8	17.5	20.8	28.9	22.1	45.1	27.3	25.3	19.2	-	
55	414759	114192	n/a	n/a	n/a		n/a	28.1	27.4	28.2	39.3	32.0	39.6	34.5	32.6	24.8	-	
56	414835	114234	n/a	n/a	n/a		n/a	23.6	25.0	27.4	34.8	32.1	38.0	24.6	29.2	22.2	-	
57	414941	114354	n/a	n/a	n/a		n/a	25.2	19.1	24.7	16.1			25.2	22.3	18.3	-	
21a	436189	113235	34.9	28.7	21.7		20.9	27.8	16.1	23.2	25.9	28.4	28.5	30.5	-	-	-	Triplicate Site with 21a, 21b and 21c - Annual data provided for 21c only
21b	436189	113235	38.4	27.8	24.8		21.8	26.3	17.2	24.5	26.5	25.1	32.8	30.5	-	-	-	Triplicate Site with 21a, 21b and 21c - Annual data provided for 21c only
21c	436189	113235	34.6	28.7	27.0		21.0	27.0	15.9	19.3	26.7	27.8	42.7		26.5	18.0	-	Triplicate Site with 21a, 21b and 21c - Annual data provided for 21c only
22	436210	113210	37.6	26.8	28.5		22.8	24.2	17.8	26.1	30.2	29.6	41.0	32.1	28.7	19.5	-	

DT ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Easting)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean: Raw Data	Annual Mean: Annualised and Bias Adjusted (0.74)	Annual Mean: Distance Corrected to Nearest Exposure	Comment
23	436232	113156	29.1	24.7	24.6		20.6	23.4		23.3	26.9	25.8		30.2	25.3	17.2	-	
24	436205	113019	37.7	31.0	28.2		22.4	26.1	16.7	24.1	31.6	30.2	40.1	35.2	29.2	19.8	-	
25	436278	113081	38.9	30.3	23.5		24.2	26.3	19.0	27.2	33.4	28.5	37.8	32.3	28.7	19.5	-	
26	436383	113135	35.6	32.7	29.7		22.2	27.1	17.3	24.9	26.7	29.5	34.7	30.2	28.2	19.2	-	
27	436476	113214	33.7	26.4	29.5		26.3	27.2	12.6	24.4	25.9		35.4	32.8	27.6	18.8	-	
28	436364	113322			28.4		24.1	30.9	16.0	21.3	27.3		36.3		26.4	17.6	-	
29	436374	112929	24.8	19.9	24.0		21.1	21.4	15.1	21.0	23.6	20.5	31.1	24.3	22.5	15.3	-	
30	436210	112948	34.2	27.1	25.4		20.4	28.6	20.0	23.8	24.9	26.4	34.9	27.6	26.4	18.0	-	
31	436234	112898	24.9	21.5	24.1		20.0	16.8	15.9	18.5	22.0	20.0	31.5	24.0	21.8	14.9	-	
48a	436465	113082	45.6	46.2	34.8		33.8	33.7	36.1	41.3	48.6	48.6	54.7	40.0	-	-	-	Triplicate Site with 48a, 48b and 48c - Annual data provided for 48c only
48b	436465	113082	51.5	43.8	39.2		32.7	34.0		39.5	49.7	43.0	55.3	46.1	-	-	-	Triplicate Site with 48a, 48b and 48c - Annual data provided for 48c only
48c	436465	113082	56.3		39.0		33.6	35.5	37.5	41.2	55.7	46.0	58.6	47.4	42.7	29.1	-	Triplicate Site with 48a, 48b and 48c - Annual data provided for 48c only

All erroneous data has been removed from the NO₂ 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.

New Forest District Council confirm that all 2020 diffusion tube data has been uploaded to the Diffusion Tube Data Entry System.

Notes:

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

NO₂ annual means exceeding 60µg/m³, indicating a potential exceedance of the NO₂ 1-hour mean objective are shown in **bold and underlined**.

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 New Forest District Council During 2020

New Forest District Council is currently working on a number of planning applications concerning strategic sites identified within the Local Plan. Air quality impacts are being assessed with submitted applications which consider the impact of the proposed development in isolation and in combination with other local development sites and strategic sites. The work is complex but to date no significant impact has been predicted from the proposed developments.

Areas of current interest in 2020 include Fawley (development of the redundant power station ~1200 residential, marina, commercial), Fordingbridge ~1000 residential over 3 strategic sites – hence the recent start of diffusion tube monitoring in the town centre, Ringwood ~800 residential and commercial over 2 strategic sites, Lymington ~250 residential homes over 2 strategic sites and Bransgore ~100 residential. This work continues.

Additional Air Quality Works Undertaken by New Forest District Council During 2020

In 2020 the New Forest District Council started a survey in Lyndhurst (at the school) to see if pollutant concentrations changed significantly over height. Therefore Sites 17, 18 and 19 are diffusion tubes set up 1m apart up a lamppost. Whilst we have results from these sites, they are not conclusive and therefore the study will continue throughout 2021.

QA/QC of Diffusion Tube Monitoring

The determination of nitrogen dioxide diffusion tube precision is obtained from duplicate and triplicate co-located sites. The results from triplicate diffusion tube sites operated by New Forest District Council at Totton and Lyndhurst can be seen in the spreadsheet calculation used to determine local bias correction and shown in Appendix B. Overall the triplicate diffusion tube sites showed good precision during 2020 for both sites.

The diffusion tube supplier (Socotec) is a UKAS accredited laboratory which has been rated 'satisfactory' in the AIR PT intercomparison scheme. The supplier also follows procedures set out in the Technical Guidance LAQM.TG16 (Defra, 2016(b)).

Diffusion Tube Calendar

The diffusion tube calendar used is provided below. Apart from the extended sampling period from 4th March 2020 to 29th April 2020 (56 days), this did not deviate significantly from the 2020 Diffusion Tube Monitoring Calendar. While not ideal, the extended sampling period was not expected to unduly impact the quality of the measurements.

Month	Diffusion Tube Deployment Dates	
	Tube On	Tube Off
Jan	08/01/2020	05/02/2020
Feb	05/02/2020	04/03/2020
Mar	04/03/2020	29/04/2020
Apr	29/04/2020	29/04/2020
May	29/04/2020	03/06/2020
Jun	03/06/2020	01/07/2020
Jul	01/07/2020	29/07/2020
Aug	29/07/2020	02/09/2020
Sep	02/09/2020	30/09/2020
Oct	30/09/2020	04/11/2020
Nov	04/11/2020	02/12/2020
Dec	02/12/2020	06/01/2021

Diffusion Tube Bias Adjustment Factors

The diffusion tube data presented have been corrected for bias using an 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

with regard to 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/NO₂ continuous analysers. Alternatively, the national database of diffusion tube co-location surveys provides bias factors for the relevant laboratory and preparation method.

A bias adjustment of 0.74 for the year 2020 (based on 6 studies) has been derived from the national bias adjustment spreadsheet (v03_21). A screenshot of the spreadsheet for SOCOTEC is shown below

National Diffusion Tube Bias Adjustment Factor Spreadsheet						Spreadsheet Version Number: 03/21				
Follow the steps below in the correct order to show the results of relevant co-location studies						This spreadsheet will be updated at the end of June 2021				
Data only apply to tubes exposed monthly and are not suitable for correcting individual short-term monitoring periods						LAQM Helpdesk Website				
Whenever presenting adjusted data, you should state the adjustment factor used and the version of the spreadsheet						Spreadsheet maintained by the National Physical Laboratory. Original compiled by Air Quality Consultants Ltd.				
This spreadsheet will be updated every few months; the factors may therefore be subject to change. This should not discourage their immediate use.										
The LAQM Helpdesk is operated on behalf of Defra and the Devolved Administrations by Bureau Veritas, in conjunction with contract partners AECOM and the National Physical Laboratory.										
Step 1:		Step 2:		Step 3:		Step 4:				
Select the Laboratory that Analyses Your Tubes from the Drop-Down List		Select a Preparation Method from the Drop-Down List		Select a Year from the Drop-Down List		Where there is only one study for a chosen combination, you should use the adjustment factor shown with caution. Where there is more than one study, use the overall factor ¹⁶ shown in blue at the foot of the final column.				
If a laboratory is not shown, use have no data for this laboratory.		If a preparation method is not shown, use have no data for this method at this laboratory.		If a year is not shown, use have no data.		If you have your own co-location study then see footnote ¹⁶ . If uncertain what to do then contact the Local Air Quality Management Helpdesk at LAQMhelpdesk@bureauveritas.com or 0800 0327353				
Analysed By	Method	Year	Site Type	Local Authority	Length of Study (months)	Diffusion Tube Mean Conc. (Dm) (µg/m ³)	Automatic Monitor Mean Conc. (Cm) (µg/m ³)	Bias (B)	Tube Precision ¹⁶	Bias Adjustment Factor (A) (Cm/Dm)
SOCOTEC Didcot	20% TEA in water	2020	R	Rhondda Cynon Taf CBC	9	29	23	22.8%	G	0.81
SOCOTEC Didcot	20% TEA in water	2020	KS	Marglebone Road Intercomparison	11	57	43	32.7%	G	0.75
SOCOTEC Didcot	20% TEA in water	2020	R	Fife Council	9	22	13	64.5%	G	0.61
SOCOTEC Didcot	20% TEA in water	2020	R	Fife Council	9	22	17	31.4%	G	0.76
SOCOTEC Didcot	20% TEA in water	2020	R	South Oxfordshire District Council	11	32	29	13.5%	G	0.88
Socoteco Didcot	20% TEA in water	2020	R	New Forest DC	9	27	18	46.3%	G	0.68
Overall Factor¹⁶ (6 studies)									Use	0.74

Choice of bias adjustment factor for 2020

In previous years, the three diffusion tubes in Lyndhurst (Sites 6, 7 and 8) were bias adjusted using the automatic analyser collocated with Site 7. This is because this part of the High Street is considered a street canyon elsewhere within the district the national bias adjustment was generally applied.

However, the new NO₂ processing tool¹⁶ does not permit a mix of local and national bias adjustment factors, and following discussions with the LAQM Helpdesk, we have applied a national bias adjustment factor of 0.74 to all diffusion tube measurements throughout the district.

¹⁶ <https://laqm.defra.gov.uk/tools-monitoring-data/dtdp.html>

For consistency with previous years we have also used the new NO₂ processing tool in a standalone mode to calculate bias for the co-located diffusion tubes located at Site 7 (Lyndhurst) and Site 21 (Totton) to be 0.68 and 0.67 respectively.

A summary of bias adjustment factors used by New Forest District Council over the past five years is presented in Table C.1.

Table C.1 – Bias Adjustment Factor

Year	Local or National	If National, Version of National Spreadsheet	Adjustment Factor
2016	A mix		A mix
2017	A mix		A mix
2018	A mix		A mix
2019	A mix		A mix
2020	National	v03 2021	0.74

NO₂ Fall-off with Distance from the Road

Wherever possible, local authorities should ensure that monitoring locations are representative of exposure. However, where this is not possible, the NO₂ concentration at the nearest location relevant for exposure should be estimated using the Diffusion Tube Data Processing Tool. NO₂ fall-off with distance calculator available on the LAQM Support website. Where appropriate, non-automatic annual mean NO₂ concentrations corrected for distance are presented in Table B.1. No diffusion tube NO₂ monitoring locations within New Forest District Council required distance correction during 2020.

Diffusion Tube Annualisation

Altogether 12 diffusion tube locations required annualisation because the data capture was below 75 %. These are listed in Table C.2. The automatic data for the annualisation was obtained from UK-AIR and included the following background sites:

- Bournemouth
- Southampton
- Portsmouth

- Chilbolton Laboratory

However, the data capture at Southampton and Portsmouth was less than 85 %, so the annualisation was carried using the concentrations measured at Bournemouth and Chilbolton Laboratory only.

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

Site ID	Annualisation Factor Bournemouth	Annualisation Factor Chilbolton Laboratory	Average Annualisation Factor	Raw Data Annual Mean, $\mu\text{g}/\text{m}^3$	Annualised Annual Mean, $\mu\text{g}/\text{m}^3$
3b	0.9699	1.0672	1.0185	25.2	25.6
47	1.0496	1.0344	1.0420	23.7	24.7
19	0.9801	0.9958	0.9880	22.2	22.0
36	0.9699	1.0672	1.0185	21.5	21.9
39	0.9699	1.0672	1.0185	17.9	18.2
50	0.9699	1.0672	1.0185	10.8	11.0
51	0.9699	1.0672	1.0185	10.0	10.2
54	1.0135	1.0402	1.0269	25.3	26.0
55	1.0135	1.0402	1.0269	32.6	33.5
56	1.0135	1.0402	1.0269	29.2	30.0
57	1.0917	1.1228	1.1073	22.3	24.7

QA/QC of Automatic Monitoring

All of the automatic monitoring sites undertake a daily internal calibration using permeation tubes and scrubbers. The sites are also manually calibrated using a reference span gas once a fortnight. The gas is obtained from Air Liquide and BOC, and each cylinder is certified.

In addition, the sites are serviced and calibrated every 6 months by engineers from ESU1 Ltd. who hold current the service contract until 2020. Engineers are also available for call outs if the site appears to be malfunctioning.

Ricardo AEA validated and ratified the data from the sites during 2020 which was downloaded twice a day. During the validation process any potential problems are identified and if necessary report back to the Council and ESU1 Ltd. The data is ratified every 1-3 months during which the manual calibrations and servicing are taken into

account. Full ratification of the data occurs annually when all servicing and auditing reports, calibrations and breakdown information can be applied to the data.

Ricardo Energy & Environment externally audit the automatic monitoring sites biannually. This process ensures quality assurance and control of the sites.

The data provided in the Annual Status Report 2020 has been fully ratified.

PM₁₀ and PM_{2.5} Monitoring Adjustment

New Forest District Council uses TEOM analysers to monitor PM₁₀. It is noted that this monitoring equipment does not meet the equivalence criteria, however guidance states that it is not necessary to immediately replace the monitoring equipment particularly considering the monitored PM₁₀ concentrations are below the objectives. When the equipment is due for replacement the Council will consider other equipment which meets the equivalence criteria.

PM₁₀ data has been adjusted using the Volatile Correction Model (VCM) to correct for the use of a TEOM particulate monitor

Automatic Monitoring Annualisation

All automatic monitoring locations within New Forest District 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.

Appendix D: Maps of Monitoring Locations and the AQMA

Automatic Monitoring Sites

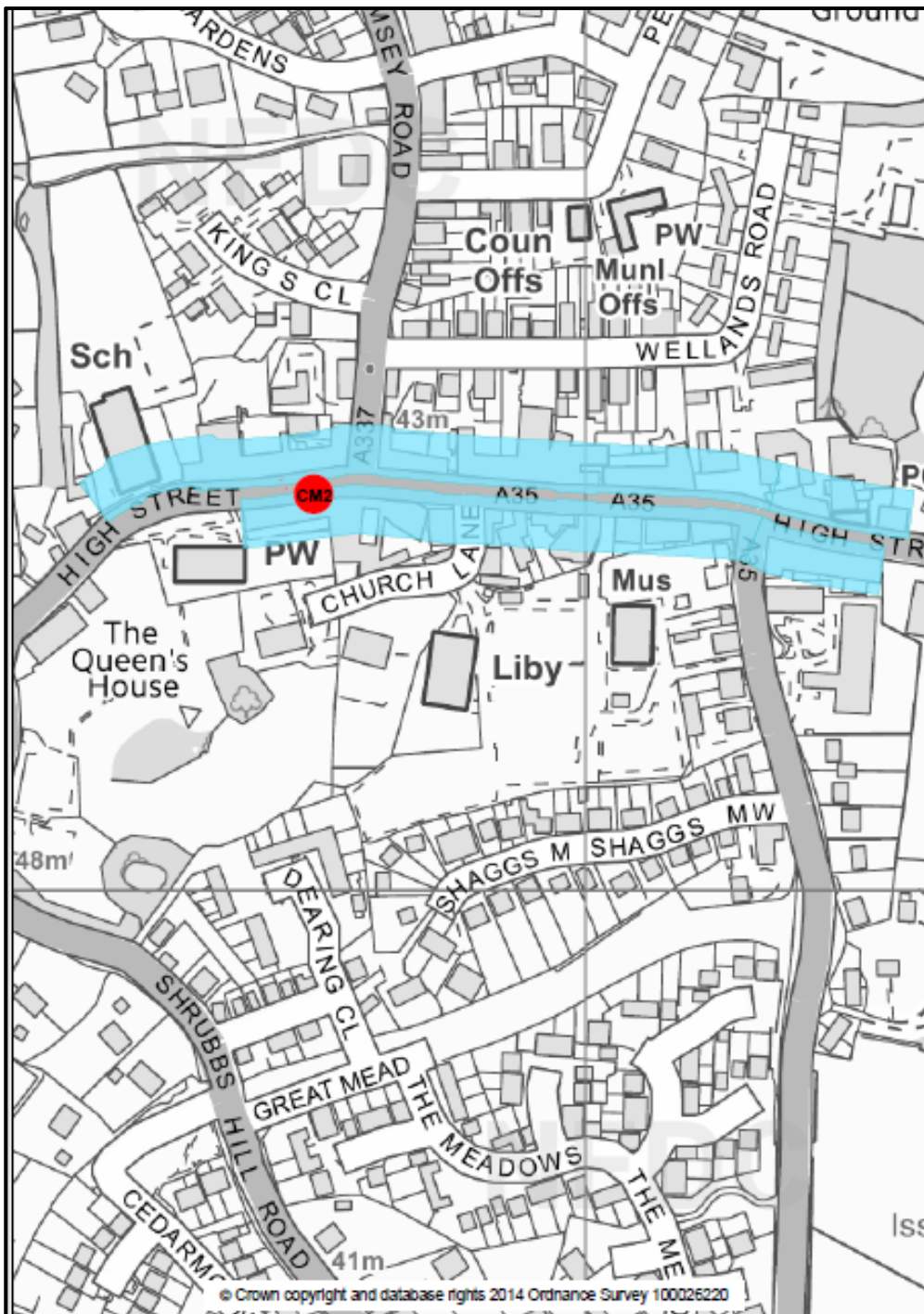
Figure D-1 Totton (CM1)



The Totton site is located in a roadside location to monitor for emissions from a road. This site is located between the road and residential properties, some 5m from the building façade. Therefore, the site is not representative of relevant public exposure.

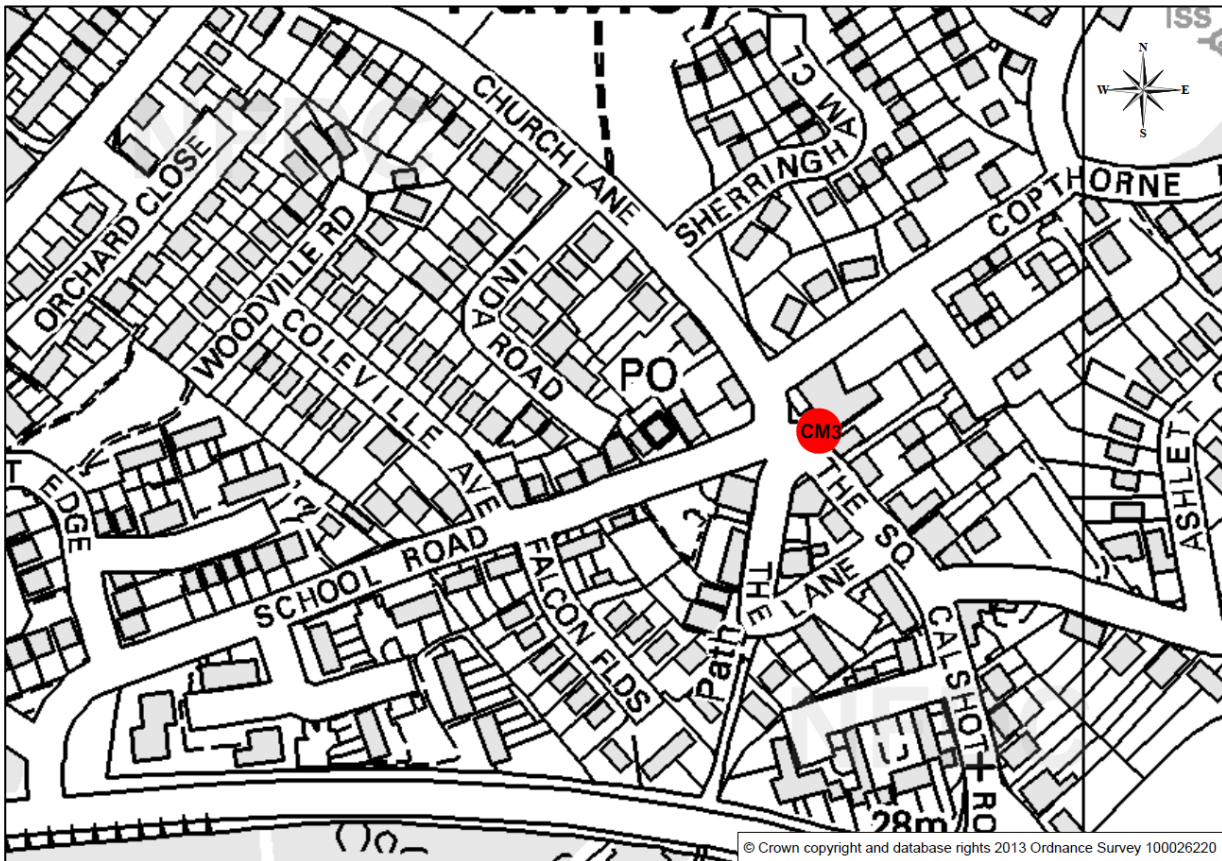
Figure D-2 Lyndhurst (CM2)

The extent of the Air Quality Management Area within the High Street in Lyndhurst is shown in the blue shading.



The Lyndhurst site is located on the first floor of an office. The office is situated within a street canyon and is representative of relevant public exposure because the adjacent properties are residential flats.

Figure D-3 Fawley (CM3)



The Fawley site is located within a village hall, which includes a children's nursery and pre-school, at the centre of the village of Fawley. This site is representative of relevant public exposure.

Figure D-4 Map of Non-Automatic Monitoring Site

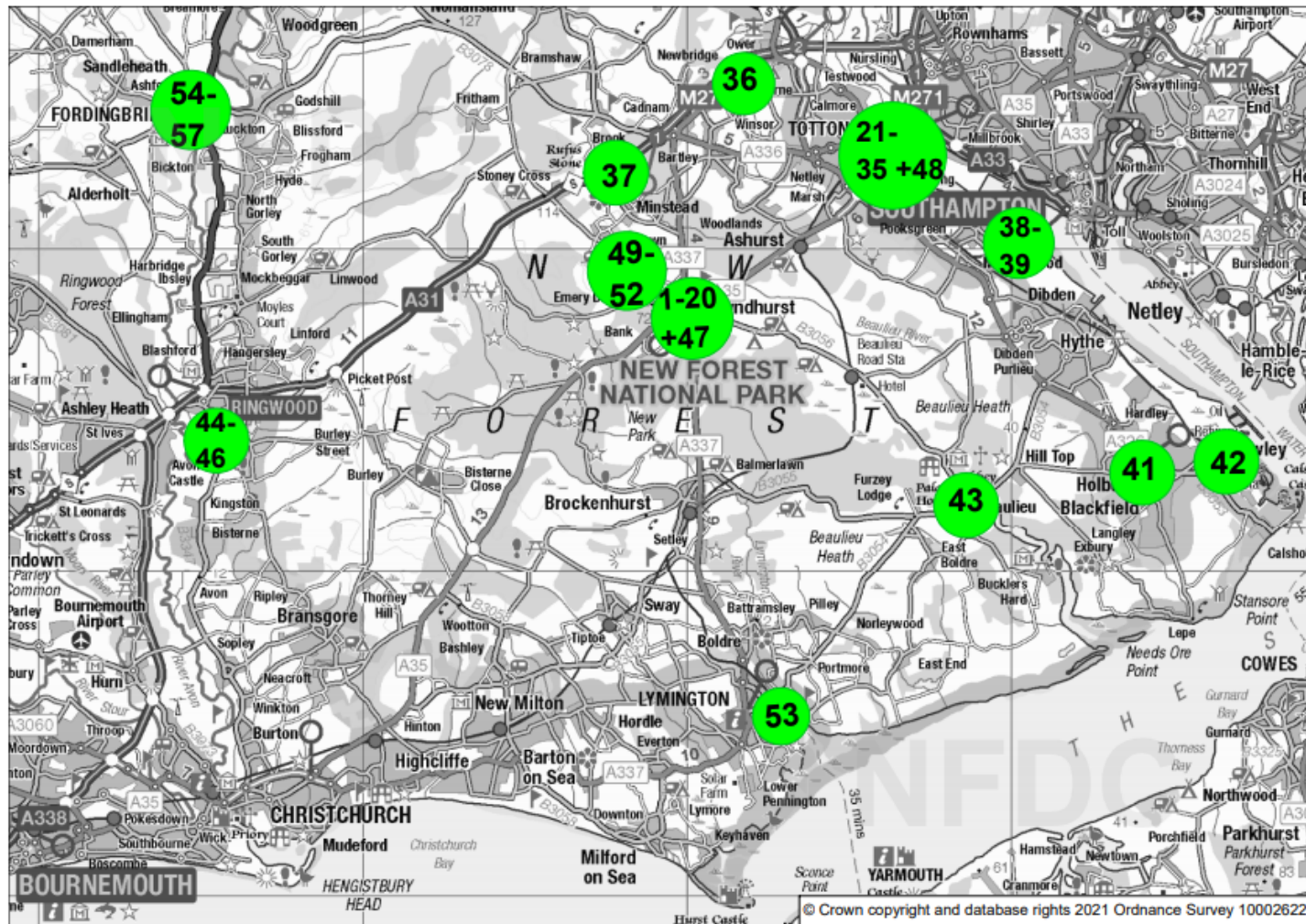
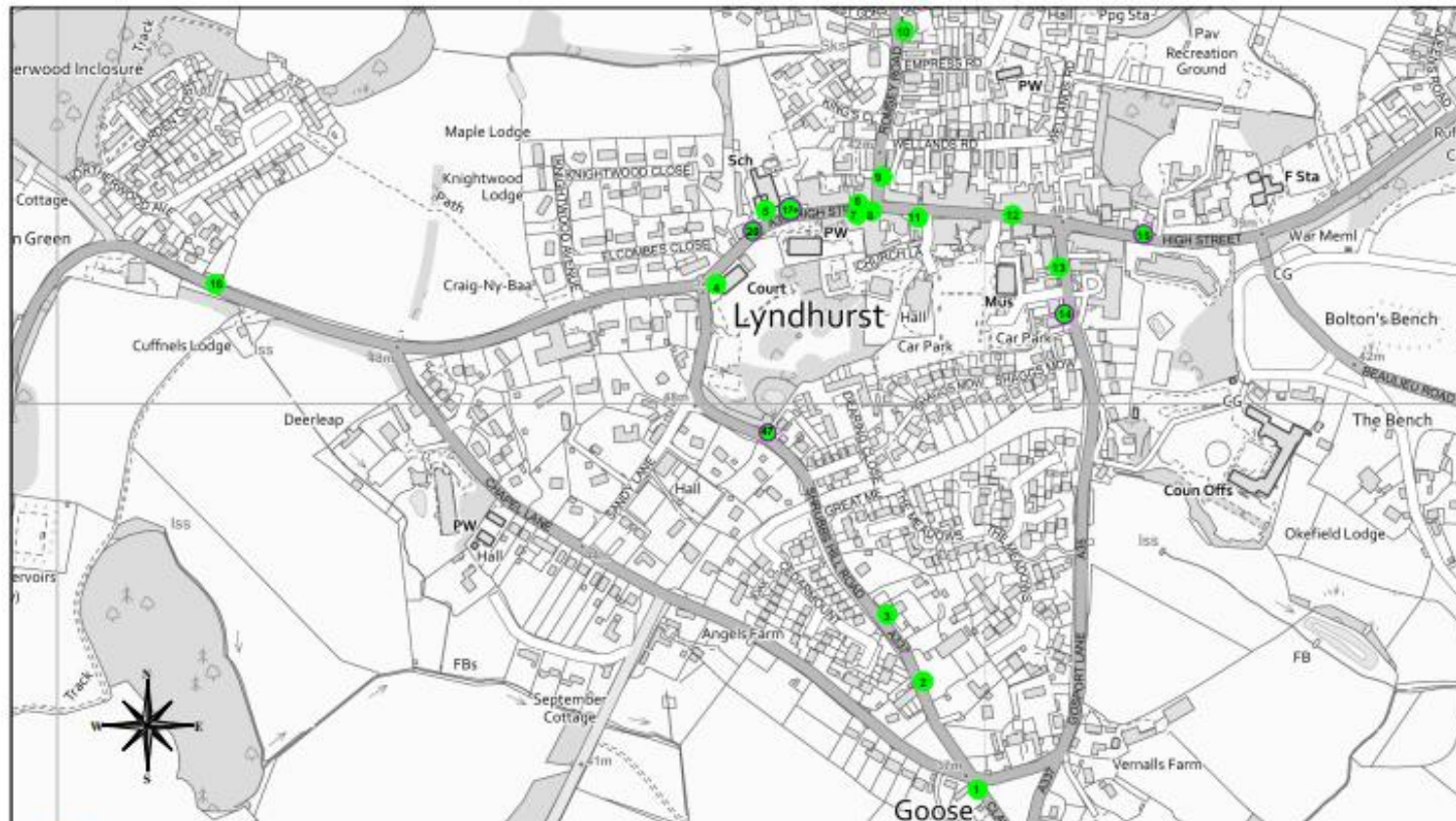


Figure D-5 NO₂ diffusion tube sites in Lyndhurst

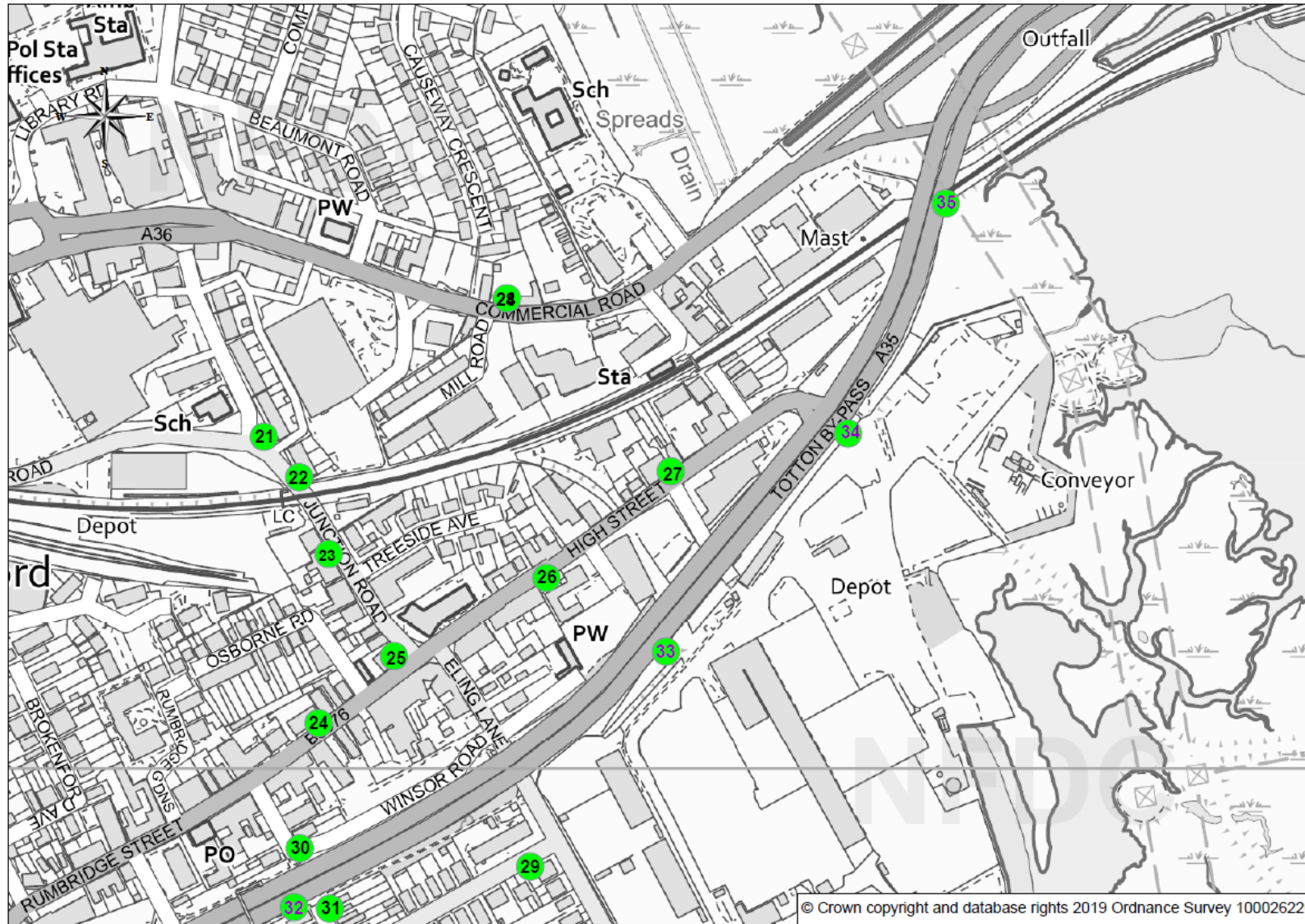


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Figure D-6 NO₂ diffusion tube sites in Totton



Appendix E: Summary of Air Quality Objectives in England

Table E.1 – Air Quality Objectives in England¹⁷

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

¹⁷ The units are in microgrammes of pollutant per cubic metre of air (µg/m³).

Appendix F: Impact of COVID-19 upon LAQM

Covid-19 has had a significant impact on society. Inevitably, Covid-19 has also had an impact on the environment, with implications to air quality at local, regional and national scales.

Covid-19 has presented various challenges for Local Authorities with respect to undertaking their statutory LAQM duties in the 2021 reporting year. Recognising this, Defra provided various advice updates throughout 2020 to English authorities, particularly concerning the potential disruption to air quality monitoring programmes, implementation of Air Quality Action Plans (AQAPs) and LAQM statutory reporting requirements. Defra has also issued supplementary guidance for LAQM reporting in 2021 to assist local authorities in preparing their 2021 ASR. Where applicable, this advice has been followed.

Despite the challenges that the pandemic has given rise to, the events of 2020 have also provided Local Authorities with an opportunity to quantify the air quality impacts associated with wide-scale and extreme intervention, most notably in relation to emissions of air pollutants arising from road traffic. The vast majority (>95%) of AQMAs declared within the UK are related to road traffic emissions, where attainment of the annual mean objective for nitrogen dioxide (NO₂) is considered unlikely. On 23rd March 2020, the UK Government released official guidance advising all members of public to stay at home, with work-related travel only permitted when absolutely necessary. During this initial national lockdown (and to a lesser extent other national and regional lockdowns that followed), marked reductions in vehicle traffic were observed; Department for Transport (DfT) data¹⁸ suggests reductions in vehicle traffic of up to 70% were experienced across the UK by mid-April, relative to pre Covid-19 levels.

This reduction in travel in turn gave rise to a change of air pollutant emissions associated with road traffic, i.e. nitrous oxides (NO_x), and exhaust and non-exhaust particulates (PM). The Air Quality Expert Group (AQEG)¹⁹ has estimated that during the initial lockdown period in 2020, within urbanised areas of the UK reductions in NO₂ annual mean concentrations were between 20 and 30% relative to pre-pandemic levels, which

¹⁸ Prime Minister's Office, COVID-19 briefing on the 31st of May 2020

¹⁹ Air Quality Expert Group, Estimation of changes in air pollution emissions, concentrations and exposure during the COVID-19 outbreak in the UK, June 2020

represents an absolute reduction of between 10 to 20 $\mu\text{g}/\text{m}^3$ if expressed relative to annual mean averages. During this period, changes in PM_{2.5} concentrations were less marked than those of NO₂. PM_{2.5} concentrations are affected by both local sources and the transport of pollution from wider regions, often from well beyond the UK. Through analysis of AURN monitoring data for 2018-2020, AQEG have detailed that PM_{2.5} concentrations during the initial lockdown period are of the order 2 to 5 $\mu\text{g}/\text{m}^3$ lower relative to those that would be expected under business-as-usual conditions.

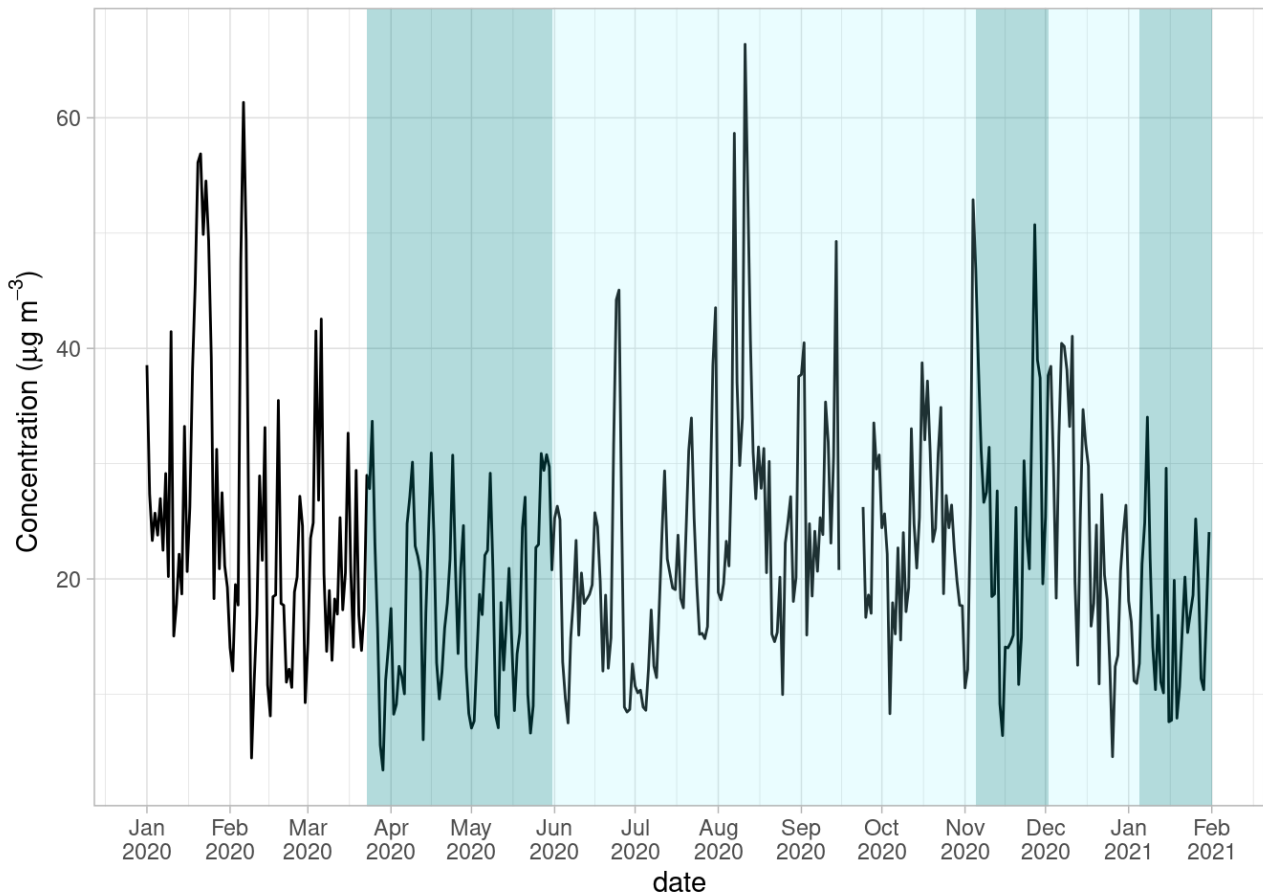
As restrictions are gradually lifted, the challenge is to understand how these air quality improvements can benefit the long-term health of the population.

Impacts of Covid-19 on Air Quality within New Forest District Council

The impact of Covid -19 and its associated lockdowns on air quality have been assessed in relation to the impact upon Lyndhurst – the one area of the District in which an Air Quality Management Area exists. Figure F.1 shows the daily concentration of NO₂ since January 2020²⁰. The dark blue shading represents periods when an England wide lockdown was in place. The light blue shading indicates the periods during which various restrictions on a regional level have been implemented. Decreases in NO₂ levels during the lockdowns can be observed.

²⁰ https://www.airqualityengland.co.uk/assets/reports/236/NewForest_report_covid_analysis.html

Figure F.1-Time series of daily NO₂ concentrations in Lyndhurst during Covid-19 lockdown

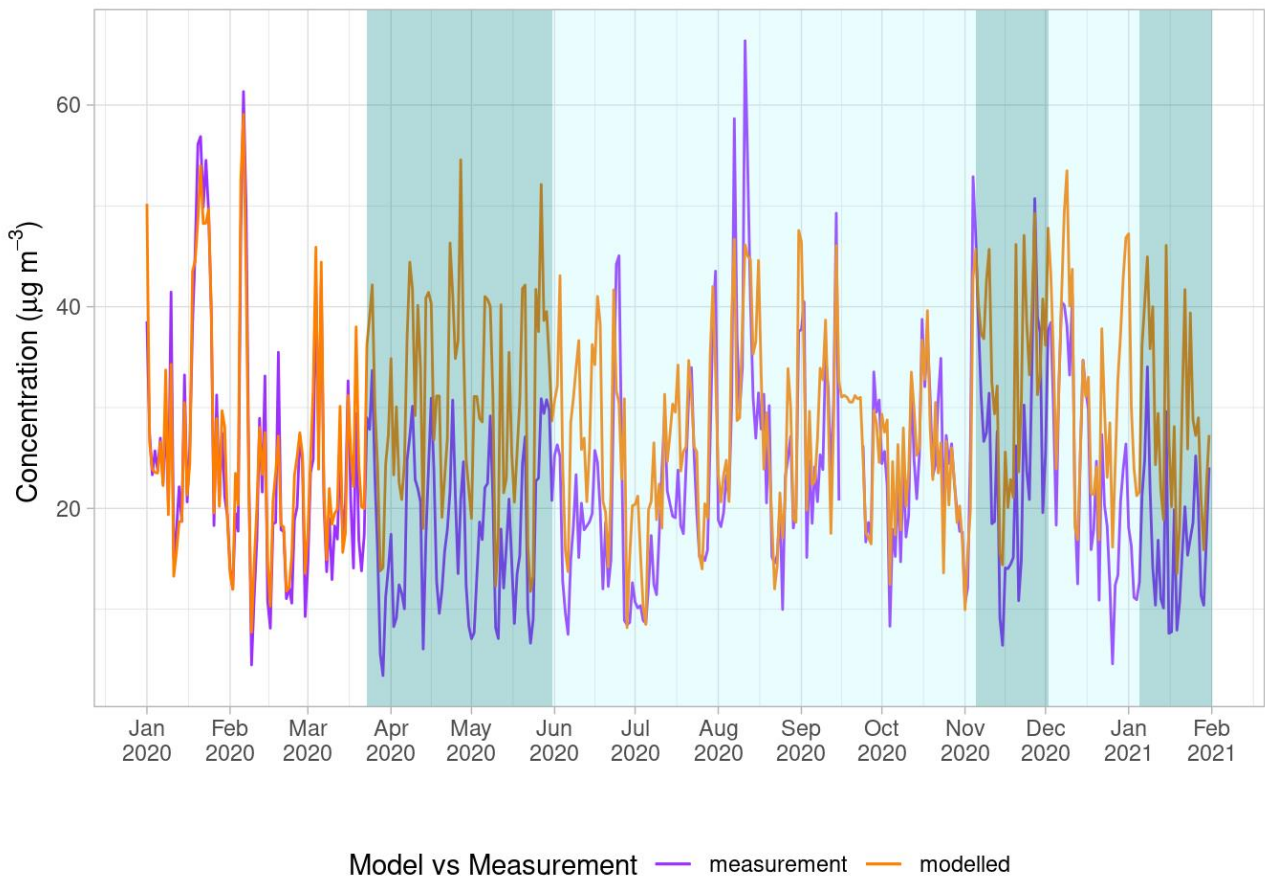


It is expected that the drop in NO₂ can be attributed to a reduction in emissions from traffic and this theory can be tested with reference to modelling work undertaken by Ricardo.

Figure F.2 shows predicted modelled concentrations which would be expected under normal conditions, shown in orange. The purple line shows the measured concentration.

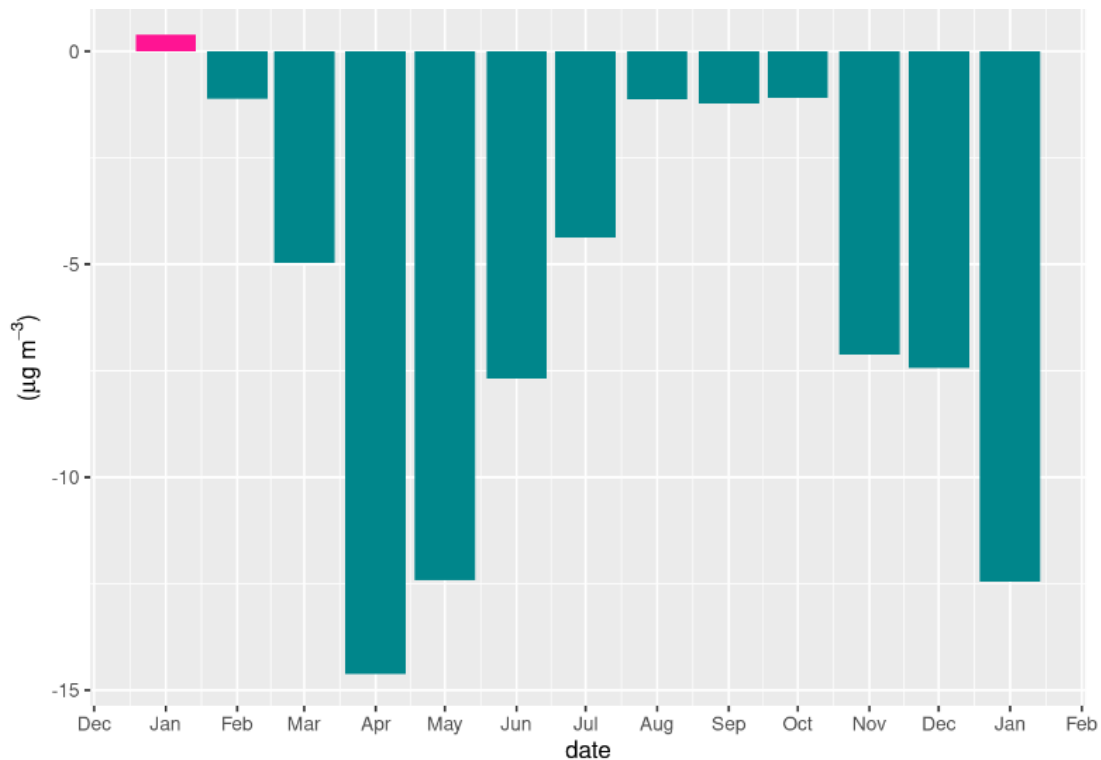
Before 23rd March, when lockdown was enforced, the measured and modelled are similar, suggesting that the measured concentrations are comparable to the usual levels at this time of the year and under normal business activities. The modelled (i.e. 'business as usual') NO₂ and NO_x concentrations are predominately higher than the measured concentrations from 23rd March to July, which suggests that reduced emissions from traffic are being seen in the measurements.

Figure F.2 - A comparison of modelled and measured NO₂ concentrations in Lyndhurst from January 2020 to February 2021



To put the magnitude of the decrease into perspective, the monthly mean difference in measured and modelled 'business as usual' (BAU) concentrations are shown in Figure F.3. Pink bars represent measurements greater than modelled concentrations and green bars represent measurements lower than modelled concentrations. The effects of stricter lockdowns and restricted travel are shown between March and June and again from November to January.

Figure F.3 - Difference in monthly measured and modelled concentrations of NO₂ in Lyndhurst



Comparison of 2020 data with previous years for Lyndhurst AQMA

The 2020 canyon data do show a reduction in NO₂ with the sites seeing a reduction of around 25% when compared with 2019.

Table F.1 - Changes within the Lyndhurst AQMA

Site id	Site name	2018	2019	2020
5	School	21.6	20.5	15.1
6	15 High Street	35.2	31.5	24.4
7	14 High Street	34.9	31.6	24
8	16 High Street	36.9	35.1	26.6
9	2a Romsey Road	29.1	30.1	23.3
11	28 High Street	19.6	20	17
12	65 High Street	28.8	29	20.1

Levels have been steadily falling with the area meeting the air quality objectives since 2015. NFDC fully expect this trend to continue and would expect continued compliance even without the effects of Covid-19.

Opportunities Presented by Covid-19 upon LAQM within New Forest District Council

No LAQM related opportunities have arisen as a consequence of Covid-19 within New Forest District Council

Challenges and Constraints Imposed by Covid-19 upon LAQM within New Forest District Council

NFDC had recently (2019) produced an updated Air Quality Management Plan for Lyndhurst. This plan detailed numerous action plans and initiatives to further reduce NO₂ within the management area. Since the majority of 'hard' options such as traffic management had already been implemented, this plan focussed more on working with other stakeholders to promote initiatives such as modal shift to alternative means of transport, enforcement of loading and parking restrictions etc. Due to the pandemic, these schemes have not been progressed as it has not been possible to meet with the public, business owners etc discuss implementation. These schemes are unlikely to have led to substantial reductions in pollution due to their small scale nature and thus the delay in implementation would not be significant.

Table F1 highlights other challenges faced by the Council in undertaking its air quality management duties throughout the pandemic. No challenge has resulted in a significant detrimental effect on air quality or air quality reporting.

Table F 1 – Impact Matrix

Category	Impact Rating: None	Impact Rating: Small	Impact Rating: Medium	Impact Rating: Large
Automatic Monitoring – Data Capture (%)	More than 75% data capture	50 to 75% data capture	25 to 50% data capture	Less than 25% data capture
Automatic Monitoring – QA/QC Regime	Adherence to requirements as defined in LAQM.TG16	Routine calibrations taken place frequently but not to normal regime. Audits undertaken alongside service and maintenance programmes	Routine calibrations taken place infrequently and service and maintenance regimes adhered to. No audit achieved	Routine calibrations not undertaken within extended period (e.g. 3 to 4 months). Interruption to service and maintenance regime and no audit achieved
Passive Monitoring – Data Capture (%)	More than 75% data capture	50 to 75% data capture	25 to 50% data capture	Less than 25% data capture
Passive Monitoring – Bias Adjustment Factor	Bias adjustment undertaken as normal	<25% impact on normal number of available bias adjustment colocation studies (2020 vs 2019)	25-50% impact on normal number of available bias adjustment studies (2020 vs 2019)	>50% impact on normal number of available bias adjustment studies (2020 vs 2019) and/or applied bias adjustment factor studies not considered representative of local regime
Passive Monitoring – Adherence to Changeover Dates	Defra diffusion tube exposure calendar adhered to	Tubes left out for two exposure periods	Tubes left out for three exposure periods	Tubes left out for more than three exposure periods
Passive Monitoring – Storage of Tubes	Tubes stored in accordance with laboratory guidance and analysed promptly.	Tubes stored for longer than normal but adhering to laboratory guidance	Tubes unable to be stored according to be laboratory guidance but analysed prior to expiry date	Tubes stored for so long that they were unable to be analysed prior to expiry date. Data unable to be used
AQAP – Measure Implementation	Unaffected	Short delay (<6 months) in development of a new AQAP, but is on-going	Long delay (>6 months) in development of a new AQAP, but is on-going	No progression in development of a new AQAP
AQAP – New AQAP Development	Unaffected	Short delay (<6 months) in development of a new AQAP, but is on-going	Long delay (>6 months) in development of a new AQAP, but is on-going	No progression in development of a new AQAP

Appendix G: Estimating PM_{2.5} Concentrations from PM₁₀ Monitoring Data

Technical Guidance(Defra, 2016(b)) Box 7.7 provides methods to estimate PM_{2.5} concentrations from monitored PM₁₀ concentrations.

New Forest District Council monitors PM₁₀ at 2 locations: Totton (roadside) and Fawley (industrial). Whilst it is possible to use data from other local automatic monitoring sites that monitor PM_{2.5} such as Southampton AURN, Bournemouth AURN and Portsmouth AURN, these sites are classified as urban background sites and therefore are not comparable with the automatic monitoring sites in the New Forest district monitoring PM₁₀.

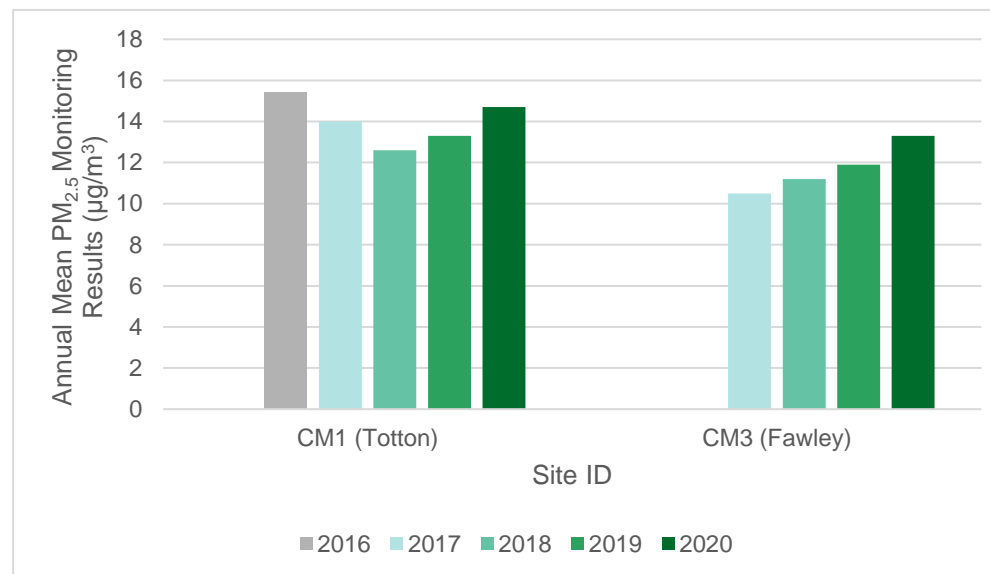
Therefore, in accordance with the Technical Guidance(Defra, 2016(b)) a nationally derived correction ratio of 0.7 can be used to correct locally obtained PM₁₀ data to estimate local PM_{2.5} concentrations:

Table G.1 – PM_{2.5} Estimates for New Forest District Council

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) ⁽¹⁾	Valid Data Capture 2020 (%) ⁽²⁾	2016	2017	2018	2019	2020
CM1 (Totton)	436188	113237	Roadside	90	90	15	14	13	13	15
CM3 (Fawley)	445885	103248	Industrial	99	99		11	11	12	13

**Note; As advised in Section 3.2.2 the PM₁₀ data for 2016 should be treated with caution due to a data capture from the automatic monitoring sites being less than 75% and the inability to annualise the result. However, the data does enable a degree of comparison.*

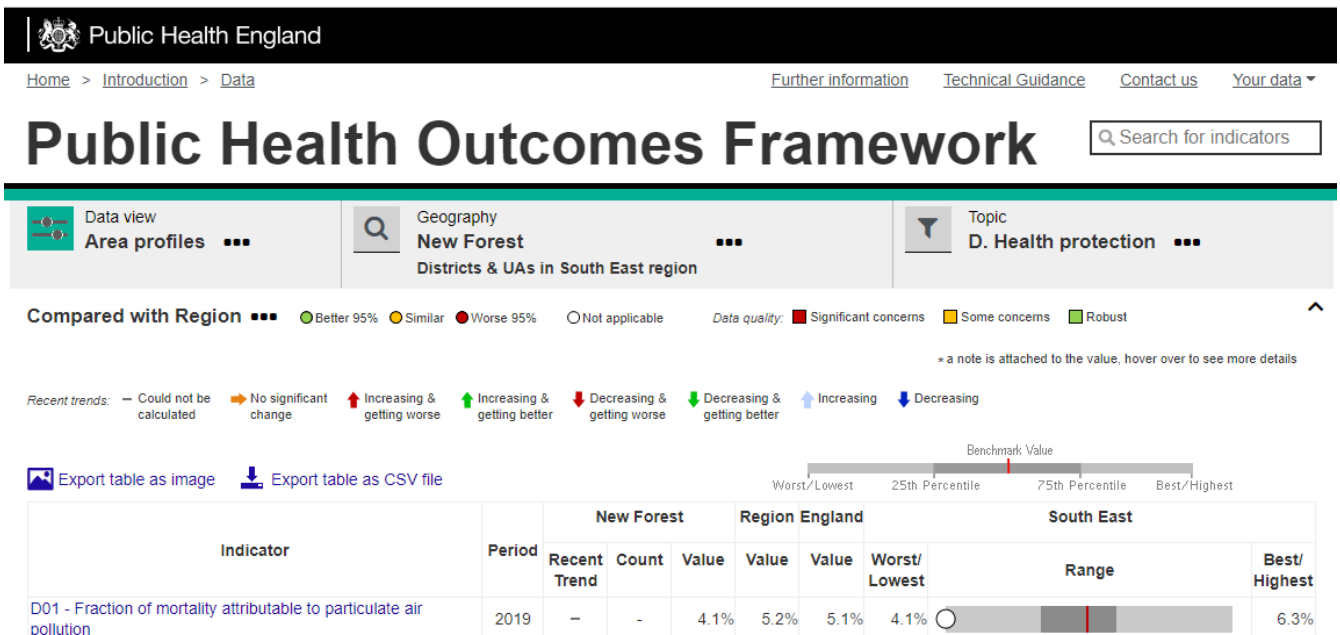
Figure G.1 – Trends in Annual Mean PM_{2.5} Concentrations



Appendix H: Health Burden of PM_{2.5} As Reported by Public Health England

Table H.1 – Fraction of Mortality Attributable to Particulate Air Pollution - 2019²¹

Region	Fraction of Mortality Attributable to Particulate Air Pollution
England	5.1
South East	5.2
Hampshire	4.6
New Forest DC	4.1



²¹ https://fingertips.phe.org.uk/profile/public-health-outcomes-framework/data#page/1/gid/1000043/pat/6/ati/401/are/E07000091/iid/30101/age/230/sex/4/cid/1/tbm/1/page-options/map-ao-4_cin-ci-4_car-ao-0_car-do-0

Appendix I: CAZ Monitoring Results

Monitoring of nitrogen dioxide at the CAZ monitoring sites began in 2018. The results are presented here. .

Table I.9 – Details of CAZ 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)
32 CAZ	A35 1	Roadside	436210	112902	NO ₂	NO	1.4	2.6	No	3.0
33 CAZ	A35 2	Roadside	436470	113088	NO ₂	NO	1.4	2.6	No	3.0
34 CAZ	A35 3	Roadside	436608	113254	NO ₂	NO	1.6	2.4	No	3.0
35 CAZ	A35 4	Roadside	436675	113400	NO ₂	NO	0.8	3.2	No	3.0

Table I.2 – Annual Mean NO₂ Monitoring Results: Non-Automatic Monitoring at CAZ sites (µg/m³)

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 2020 (%) ⁽²⁾	2018	2019	2020
32 CAZ	436210	112902	Roadside	84.6	84.6	28.7	29.3	22.3
33 CAZ	436470	113088	Roadside	84.6	84.6	39.8	39.7	33.5
34 CAZ	436608	113254	Roadside	76.9	76.9	34.0	33.4	32.2
35 CAZ	436675	113400	Roadside	84.6	84.6	38.0	37.5	34.3

Table I.3 – Annual Mean NO₂ Monitoring Results: Monthly concentrations (µg/m³)

DT ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Easting)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean: Raw Data	Annual Mean: Annualised and Bias Adjusted (0.74)	Annual Mean: Distance Corrected to Nearest Exposure
32 CAZ	436210	112902	40.3	34.0		30.7	28.1	24.5	21.5	26.5	26.7	31.9	40.6	28.9	30.2	22.3	-
33 CAZ	436470	113088	58.8	49.8		39.8	36.2	39.6	39.8	43.8	50.8	43.3	56.2	38.7	45.2	33.5	-
34 CAZ	436608	113254	53.9			37.3	34.4	46.6	32.1	37.8	50.7	44.3	52.2	43.3	43.5	32.2	-
35 CAZ	436675	113400	59.1	49.4		38.3	36.7	41.1	35.7	44.6	54.8	47.7	49.8	46.7	46.3	34.3	-

Glossary of Terms

Abbreviation	Description
AQAP	Air Quality Action Plan - A detailed description of measures, outcomes, achievement dates and implementation methods, showing how the local authority intends to achieve air quality limit values'
AQMA	Air Quality Management Area – An area where air pollutant concentrations exceed / are likely to exceed the relevant air quality objectives. AQMAs are declared for specific pollutants and objectives
ASR	Annual Status Report
Defra	Department for Environment, Food and Rural Affairs
DMRB	Design Manual for Roads and Bridges – Air quality screening tool produced by Highways England
EU	European Union
FDMS	Filter Dynamics Measurement System
LAQM	Local Air Quality Management
NO ₂	Nitrogen Dioxide
NO _x	Nitrogen Oxides
PM ₁₀	Airborne particulate matter with an aerodynamic diameter of 10µm or less
PM _{2.5}	Airborne particulate matter with an aerodynamic diameter of 2.5µm or less
QA/QC	Quality Assurance and Quality Control
SO ₂	Sulphur Dioxide

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