2020 Air Quality Annual Status Report (ASR)

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

June 2020

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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 and older people, and those with heart and lung conditions. There is also often a strong correlation with equalities issues because areas with poor air quality are also often the less affluent areas[1,2]. The annual health cost to society of the impacts of particulate matter alone in the UK is estimated to be around £16 billion[3].

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 176,800[4] although the area also attracts local, national and international visitors throughout the year with over 13 million days visits made annually[5]. With 96%[5] 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.

The pollutants of concern in the New Forest district are nitrogen dioxide (NO_2), particulate matter (PM_{10} and $PM_{2.5}$) and sulphur dioxide (SO_2). Traffic produces both

[1] Environmental equity, air quality, socioeconomic status and respiratory health, 2010
[2] Air quality and social deprivation in the UK: an environmental inequalities analysis, 2006
[3] Defra. Abatement cost guidance for valuing changes in air quality, May 2013
[4] Environmental equity, air quality, socioeconomic status and respiratory health, 2010
[5] New Forest National Park, Facts and Figures, 2007

NO_2 and particulate emissions, whilst the local industry may produce NO_2, particulate and SO_2 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 NO_2:

- **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 Plan[6] 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 modelling[7] was undertaken in the New Forest and determined that compliance will 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 is to continue with a business as usual scenario

[6] https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/633270/air-quality-plan-detail.pdf
[7] 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 NO_2, PM_{10} and SO_2 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 NO_2 has two objectives: an annual mean and an hourly mean.

2019 was the fifth 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 at locations relevant for exposure.

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 NO_2 is 40μgm^{-3}), with no exceedances of the nitrogen dioxide annual mean objective being monitored in Lyndhurst over the past five years. However, whilst the decreases are noted and welcome, the cause of the decrease is not clear. Improvements have been made to the flow of traffic within Lyndhurst, but these came into effect in 2010 when the decrease in the monitored concentrations started but the continued decreases are difficult to explain, other than a generalisation that newer vehicles on the road may also be having a positive local impact.

As such it is concluded that there needs to be confidence that current nitrogen dioxide concentrations in Lyndhurst can be maintained over the long term. Therefore, further work with our partners and the community will continue with the aim to reduce

concentrations further in order to obtain the required confidence in the long-term concentrations for Lyndhurst before the Council considers revoking the current Air Quality Management Area. However, it is noted the evidence is supporting revocation in the near future should the current trend in monitored nitrogen dioxide concentrations continue.

Additional sites were installed in Lyndhurst towards the end of 2017 in response to monitoring along a Clean Walking Route from the main car park to St. Michaels and All Angels School. Nitrogen dioxide concentrations were shown to be about three times less than the concentrations measured with the Air Quality Management Area on High Street.

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.

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 guidance[8] 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 2019;
- working within other legislative parameters such as the planning regime and / or the permitting of industrial processes to assess the impact of

[8] Defra. Technical Guidance LAQM.TG16

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 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 has become 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

Lyndhurst

In order to reduce congestion and air pollution in the High Street in Lyndhurst, particularly within a street canyon, a new traffic light sequencing system has been installed. The aim of the system is to allow traffic to turn left from the High Street onto the northbound A337 out of Lyndhurst even when the southbound A337 traffic is passing through the junction on a green light. The traffic lights enable a green filter to work continuously (in the absence of approaching long vehicles or when the pedestrian crossings are not in use), therefore reducing congestion and pollution on the approach to the junction.

Whilst this system has been operational since 2010, it would appear that it has taken drivers a while to be aware of the new traffic system and to keep driving along the High Street. Observations made have concluded that congestion in Lyndhurst has reduced although there are still periods of congestion due to the numbers of vehicles driving into Lyndhurst or local incidents. New Forest District Council work with Hampshire County Council (the regulator for the road network) when issues arise with the traffic lights and flow of traffic, and typically the County Council reassess the lights and traffic system, making adjustments when required.

Without the filter lane in use

With the filter lane in use

During 2019 New Forest District Council updated the original Air Quality Action Plan (2008) for Lyndhurst[9]. 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. It should also be noted as part of the update additional monitoring is being installed in Emery Down (just outside Lyndhurst) in 2020 to assess whether increases in traffic in the local area is resulting 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 NO_2, with a 4-11µgm^{-3} decrease in NO_2 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 NO_2 monitored in Lyndhurst during 2019.

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 Plan[6] 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 been working 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 modelling[10] was undertaken in the New Forest and determined that compliance will be met by 2019 in a business as usual scenario.

[9] http://www.newforest.gov.uk/media/39874/Air-Quality-Action-Plan-2019/Pdf/Air_Quality_Action_Plan.pdf
[10] https://democracy.newforest.gov.uk/documents/s10445/Annex%20A%20to%20Air%20Quality%20Plan.pdf

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

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

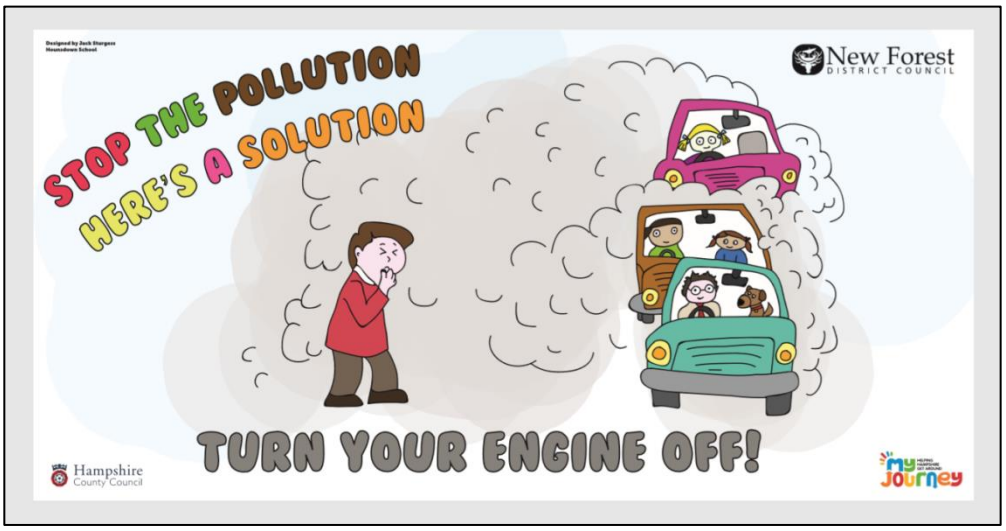
During 2019 New Forest District Council has been working with Hampshire County Council and local schools to promote and improve local air quality. In summary the work completed includes:

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

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

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

- continuation of diffusion tube monitoring along the Clean Walking Route to show the differences in pollution levels when compared to the High Street; and,
- promoting anti-idling within Lyndhurst High Street including the use of a banner designed by local school children in 2017



New Milton Infants School

New Forest District Council has been working with New Milton Infants School and installed a mini monitoring scheme at and outside the school to determine nitrogen dioxide levels. 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 started in May 2018 and ran for a year. The results for the 3 locations varied between and approximately 12 and 15µgm^{-3} , significantly below the objective value of 40µg m^{-3}.

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 within the next few years.

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 will also be installed in the Emery Down area (just outside Lyndhurst) in 2020 to assess nitrogen dioxide concentrations on a known ‘rat-run’ avoiding Lyndhurst.

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 develop a Clean Air Strategy for New Forest;
- to forward collaborative work on the updated Air Quality Action Plan for Lyndhurst;

- to forward collaborative work on the Southampton CAZ work; and
- to work regionally, pooling expertise and resource to forward local and national air quality issues and strategies.

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 be prepared for the submission of significant planning applications; and
- 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.
- 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 links:

  (3 routes throughout the New Forest) 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 healthy.

- 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/8129/Councillors-and-democracy

- *New Forest District Council*

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

Mrs Rachel Higgins
Environmental Protection
Environment 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/8129/Councillors-and-democracy

Table of Contents

List of Tables

List of Figures

1 Local Air Quality Management

This report provides an overview of air quality in New Forest District Council during 2019. 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 can be found in Table E.2 in Appendix E.

2 Actions to Improve Air Quality

2.1 Air Quality Management Areas

Air Quality Management Areas (AQMAs) are declared when there is an exceedance or likely exceedance of an air quality objective. After declaration, the authority must prepare an Air Quality Action Plan (AQAP) within 12-18 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. 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.. Alternatively, see Appendix D: Map(s) of Monitoring Locations and AQMAs, which provides for a map of air quality monitoring locations in relation to the AQMAs. 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	City / Town	One Line Description	Is air quality in the AQMA influenced by roads controlled by Highways England?	Level of Exceedance (maximum monitored/modelled concentration at a location of relevant exposure)				Action Plan		
						At Declaration		Now		Name	Date of Publication	Link
Lyndhurst	Declared 6 June 2005	NO2 Annual Mean	Lyndhurst	25m either side of the High St, Lyndhurst incorporating Lyndhurst Infant School - 97 High St, and 8-76 High St.	NO	52	µg m^{-3}	31	µg m^{-3}	Lyndhurst	2008 and updated in 2019	http://newforest.gov.uk/media/39874/Air-Quality-Action-Plan-2019/Pdf/Air_Quality_Action_Plan.pdf
Totton	Declared 6 June 2005	NO2 Annual Mean	Totton	An area encompassing a number of properties along Rumbridge Street, Eling Lane, Junction Road and Maynard Road, Totton.	yes	44	µg m^{-3}	21	µg m^{-3}	Totton	2008	AQMA revoked 22 June 2016
Fawley	Declared 13 December 2005	SO2 15 Minute Mean	Fawley	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**

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

Defra's appraisal of last year's ASR (2019) concluded that: '*The Council are currently updating their Action Plan for the Lyndhurst AQMA. While the annual mean NO_2 concentrations within the AQMA have been below the air quality objective for the past four years, the Council do not wish to revoke the AQMA until they are confident that concentrations have stabilised. This is supported.'*

New Forest District Council recognise that the measured NO_2 concentrations will need to stabilise at a concentration level of about 36 μg m^{-3} or less.

The current monitoring shows within the Lyndhurst AQMA NO_2 concentrations were at all time low values in 2019 and while the highest concentration (35 μg m^{-3}; measured at Site 8, 16 High Street) is sufficiently less than the annual objective concentration to be considered for revocation, NO_2 concentrations will need to stabilise around this value.

'It is noted that there are several locations where annual mean concentrations are only marginally below the AQS objective. These locations (sites 13 and 33) do not fall within the designated AQMA and should therefore be closely monitored to prevent exposure of relevant receptors to concentrations of NO_2 above national objectives.'

Site 13 (Gosport Lane) is relatively close to the Lyndhurst AQMA and NO_2 concentrations remain sufficiently high that monitoring will continue.

Site 33 forms part of a study on the A35 designed to ensure that a stretch of road within the district council area will be compliant with the EU Air Quality Directive. Nitrogen dioxide concentrations in 2019 (39.7 μg m^{-3}) showed that compliance was met at this location.

New Forest District Council has taken forward a number of direct measures during the current reporting year of 2019 in pursuit of improving local air quality. The Action Plan for Lyndhurst AQMA[11] 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.

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

Whilst more detail on these measures can be found in the updated Air Quality Plan. Key completed measures, some of which are ongoing, 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
- 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 for Lyndhurst:

- 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.
- Creation of a Lyndhurst Action Group including representatives from Hampshire County Council, Lyndhurst Parish Council, Lyndhurst Infant School and businesses 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.

New Forest District Council anticipates that the measures stated above and in Table 2.2 will achieve compliance in Lyndhurst AQMA.

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

- **To develop 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

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 be prepared for the submission of significant planning applications;
- 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.

Table 2.2 – Progress on Measures to Improve Air Quality

Measure No.	Measure	EU Category	EU Classification	Date Measure Introduced	Organisations involved	Funding Source	Key Performance Indicator	Reduction in Pollutant / Emission from Measure	Progress to Date	Estimated / Actual Completion Date	Comments / Barriers to implementation
1	Enforcement of loading restrictions	Traffic Management	Other	Ongoing	NFDC Enforcement	NFDC	Traffic surveys	<1-2 µg/m3	surveys undertaken June 2019	continuous	Survey showed no illegal parking during survey period
2	Enforcement of HGV restriction in High Street	Traffic Management	Other	Survey undertaken June 2019	NFDC,Police	NFDC	Traffic surveys	<1-2 µg/m^3	Survey undertaken June 2019	continuous	Only Police may take enforcement action. Resource intensive
3	Clean walk to school route	Promoting Travel Alternatives	School Travel Plans	Implemented in 2017 and promoted again in 2019	NFDC Env. Health,school	NFDC	Travel Surveys,increase number of children walking to school	<1-2 µg/m3	Implementation on-going with new year groups	continuous	Location of school means most children already walk
4	Anti idling campaign	Traffic Management	Anti-idling enforcement	Feb-18	NFDC Env Health	NFDC	Traffic surveys and NO2 monitoring	<1-2 µg/m3	Poster/banner campaign in High Street undertaken Feb 2018 and to be reviewed again	2020	Most vehicles now have start stop engines
5	Reduce trade vehicle movement	Public Information	Via leaflets	2020/21	NFDC, local business,chamber of trade, parish council, community groups	NFDC	traffic surveys,questionnaires	<1-2 µg/m3	to convene working party 2020	ongoing	Businesses may be reluctant to change delivery times or suppliers
6	Improve motorway signage	Traffic Management	UTC, Congestion management, traffic reduction	System installed 2009	HCC	HCC	NO_2 monitoring	<1-2 µg/m3	system used sporadically	ongoing	System installed but requires HCC to operate
7	Sustainable travel	Vehicle Fleet Efficiency	Promoting Low Emission Public Transport	Continuous	HCC, NFDC,Southampton City Council	All Agencies	NO_2 monitoring	<1-2 µg/m3	Retro fitting of buses, promotion of cycle network	Southampton bus fleet has been retrofitted. Cycle way complete 2019	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	Some points already installed and feasibility study carried out for more	NFDC	NFDC	NO_2 monitoring	<1-2 µg/m3	Many points installed in car parks by 2019 and on going	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	Electric vehicles procured 2019	NFDC	NFDC	Increase in number of electric vehicles in fleet	<1-2 µg/m3	Electric cars procured 2019	on going	Mileage range of electric vehicles

10	Increase awareness of issues	Policy Guidance and Development Control	Other policy	Ongoing	NFDC HCC Public Health England	All Agencies	Questionnaires from community groups	<1-2 µg/m3	Publication of 2019 Air Quality Action Plam	continuous	
11	Smarter working	Promoting Travel Alternatives	Encourage / Facilitate home-working	Ongoing	NFDC	NFDC	work mileage costs	<1-2 µg/m3	substantial investment in IT	2019 Majority of staff have laptops	Not suitable for all employees

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

As detailed in Policy Guidance(Defra, 2016(a)) (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 PM_{10} analysers. The estimation of the $PM_{2.5}$ annual mean concentration for 2019 is provided in Appendix F.

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 G.

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 PM_{10} concentrations), concentrations at both sites (Totton and Fawley) have remained consistent.

Current measures

Whilst it is noted that no specific measures are being implemented to reduce $PM_{2.5}$ concentrations, 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.

Further current measures include:

Working with Public Health colleagues

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.

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 addition, New Forest District Council has worked with neighbouring authorities in 2019 to apply for Government funding for a regional approach to residential use of wood-burners and bonfires. This bid is primarily seeking a regional communication project to provide residents with advice and direct them to more appropriate fuel

sources, and to determine the local issues. The outcome of the application should be known in 2020.

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
- To develop a Clean Air Strategy for New Forest

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

3.1 Summary of Monitoring Undertaken

3.1.1 Automatic Monitoring Sites

This section sets out what monitoring has taken place and how it compares with objectives.

New Forest District Council undertook automatic (continuous) monitoring at three sites during 2019. Table A.1 in Appendix A shows the details of the 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. National monitoring results are available at http://www.airqualityengland.co.uk/local-authority/?la_id=236

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 (passive) monitoring of NO_2 at forty-eight sites during 2019. 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
- Clean walking route to school
- Local Plan

Table A.2 in Appendix A shows the details of the 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[12], "annualisation" (where the data capture falls below 75%), and distance correction[13]. Further details on adjustments are provided in Appendix C.

3.2.1 Nitrogen Dioxide (NO_2)

Table A.3 in Appendix A compares the ratified and adjusted monitored NO_2 annual mean concentrations for the past 5 years with the air quality objective of 40 µg m^{-3}. Concentrations are presented in a consistent format for previous years – bias adjustments, annualisation **and** distance correction have been applied[12,14]. Figure A.1 presents the data in a graphical form.

Whilst it is acknowledged that the technical notes advises Table A.3 should not include distance corrected results, New Forest District Council has historically reported distance corrected results (where applicable) in Table A.3 to provide a concentration at the nearest relevant receptor, in accordance with guidance(Defra,2016(b)). Therefore, Table A.3 in the ASR 2020 for New Forest District Council will continue reporting diffusion tube data as distance corrected where applicable.

The full 2019 dataset of monthly mean values for diffusion tubes is provided in Appendix B. The concentration data presented in Table B.1 includes the annual mean concentration at the monitoring location prior to distance correction and the distance corrected result at the relevant sites.

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

The monitoring undertaken within New Forest district throughout 2019 has shown no exceedances of the annual mean objective for nitrogen dioxide at any of the automatic and non-automatic monitoring sites, once results have been distance-corrected for relevant exposure.

[12] https://laqm.defra.gov.uk/bias-adjustment-factors/bias-adjustment.html
[13] Fall-off with distance correction criteria is provided in paragraph 7.77, LAQM.TG(16)
[14] Note the 2020 ASR Template proposed that the just the bias and annualised NO_2 concentrations should be presented in Table A.3 (and not the distance corrected values). However, given the concentrations trends for the annual status reports have always been corrected for distance it seems more robust that trends should be viewed in a consistent way.

Lyndhurst

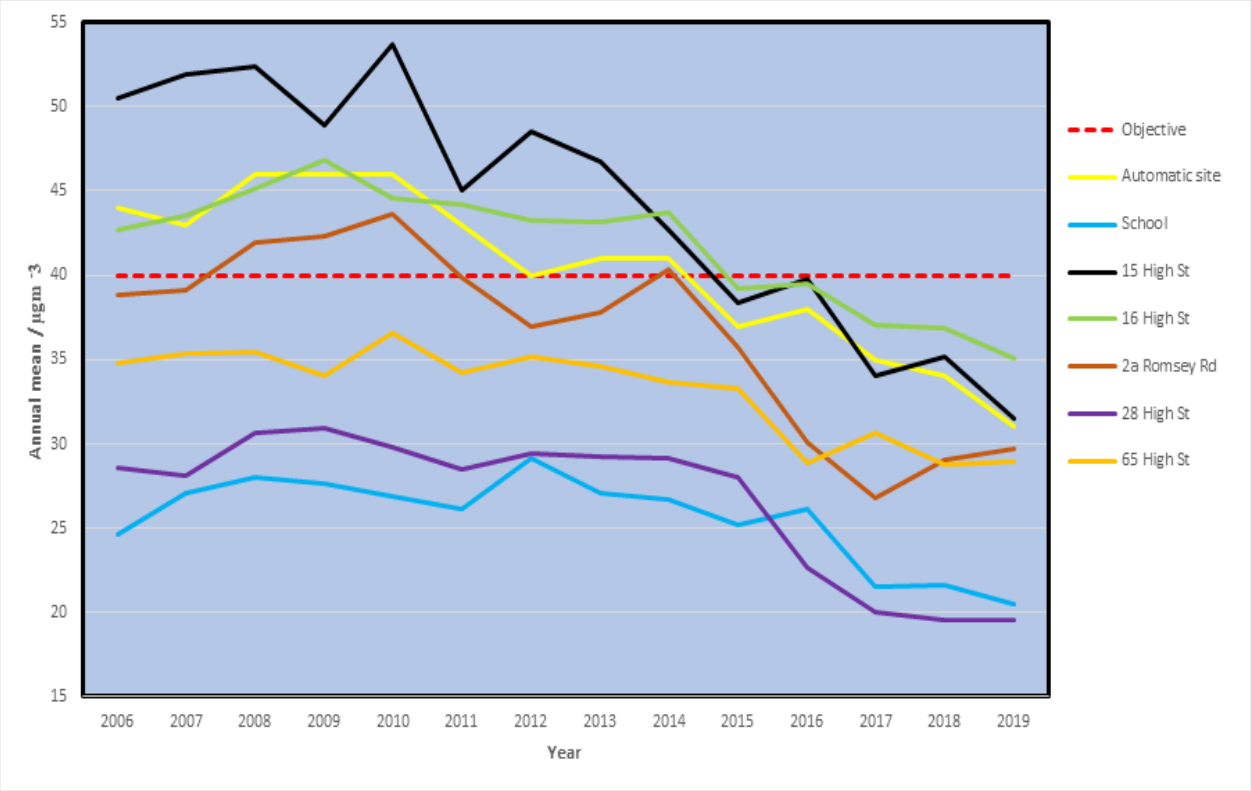
It is noted that there is an overall reduction of nitrogen dioxide concentrations in Lyndhurst (sites CM2 and non-automatic sites 5 - 12) with some significant decreases monitored of up to 11 µgm-3 throughout the whole of Lyndhurst over the six year period 2014 to 2019. Within the current AQMA in Lyndhurst the monitoring results were as follows:

Site ID	Location	NO_2 Annual Mean Concentration (µg/m^3) (distance from kerb to receptor corrections have been applied where necessary)					
		2014	2015	2016	2017	2018	2019
CM2	Lyndhurst	41	37	38	35	34	31
5	School, High St.	26.7	25.19	26.1	21.56	21.6	20.5
6	15, High St.	42.7	38.38	39.8	34.03	35.2	31.5
7	14, High St. (analyser)	40.12	37.43	38.5	34.46	34.9	31.6
8	16, High St.	43.73	39.22	39.5	37.01	36.9	35.1
9	2a, Romsey Rd	40.3	35.76	30.1	26.8	29.1	30.1
11	28, High St.	29.19	27.99	22.7	20	19.6	20.0
12	65, High St.	33.66	33.33	28.9	30.7	28.8	29.0

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 all apart from Site 9 (2a Romsey Road) are recording the lowest nitrogen dioxide concentrations since monitoring began. At Site 9 concentrations remain significantly below the annual objective concentration.

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 concentrations 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. Therefore monitoring will continue within the AQMA with the view that revocation could be considered if the decrease in monitoring trend continues.

New Forest District Council will not be proceeding to revoke the Lyndhurst AQMA at this time. Monitoring will continue throughout Lyndhurst using automatic and non-automatic monitoring.

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 21-31) has continued to ensure nitrogen dioxide concentrations remain below the air quality objective. The monitoring

during 2019 has shown the nitrogen dioxide annual mean concentrations were significantly below the Air Quality Objective of 40µgm^{-3}. The highest monitored result for 2019 was ~27µgm^{-3} monitored at a location in Commercial Road (Site 28) whilst the automatic site (CM1) monitored a concentration of 21 µg m^{-3}.

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

Other monitoring locations

Monitoring at the remaining locations have remained at similar levels compared to previous years. These sites are either roadside, industrial or rural in location and have provided consistent results over the past 5 years below the air quality objective. Lowest concentrations were measured (8.8 µgm^{-3}) at the rural site (school field, Beaulieu (Site 43).

New moniting locations since 2018

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 2018 were:

- Red Lodge (Site 20),
- Highwood Cottage, Ower (Site 36)
- 131 Christchurch Rd, Ringwood (Site 44)
- St. Catherines, Christchuch Rd, Ringwood (Site 45)
- Eastfield Lane, Ringwood (A31) (Site 46)

Ministerial Decision (Clean Air Zone)

In 2017 New Forest District Council were issued with a Ministerial Direction to achieve complinance with the EU Ambient Air Quality Directive on a short stretch of

the A35 at Totton. Detailed assessment work determined a 'business as usual scenario' would ensure compliance with the EU Limit Value for nitrgoen dioxide as an annual mean (40µg m^{-3}). As a result, and to ensure compliance is being met, monitoring has been carried out at a number of sites along the A35 in Totton (sites with Site IDs 32 to 35).

Site A35(2) (Site ID 33) recorded an exceedance of the EU Limit Value for annual mean NO_2 (42.4 µg m^{-3}) at the point of monitoring, however following distance-correction to 4m from the kerbside as required for the Clean Air Zone work, a concentration of 39.7 µg m^{-3} has been calculated, which is close to the EU Limit Value but not an exceedance.

Clean Walking Route

An additional 3 sites have also been located in Lyndhurst to promote a Clean Walking Route to the infant school located in the High Street. This route leads from the main car park and through the church, avoiding the High St and current AQMA. The locations of the sampling sites are shown in Figure 3-2 with the route displayed using the green markers, sites in the AQMA shown by the red markers and the school by the purple marker .

Figure 3-2 Locations where nitrogen dioxide is measured along the Clean Walking Route in Lyndhurst (Green Markers)

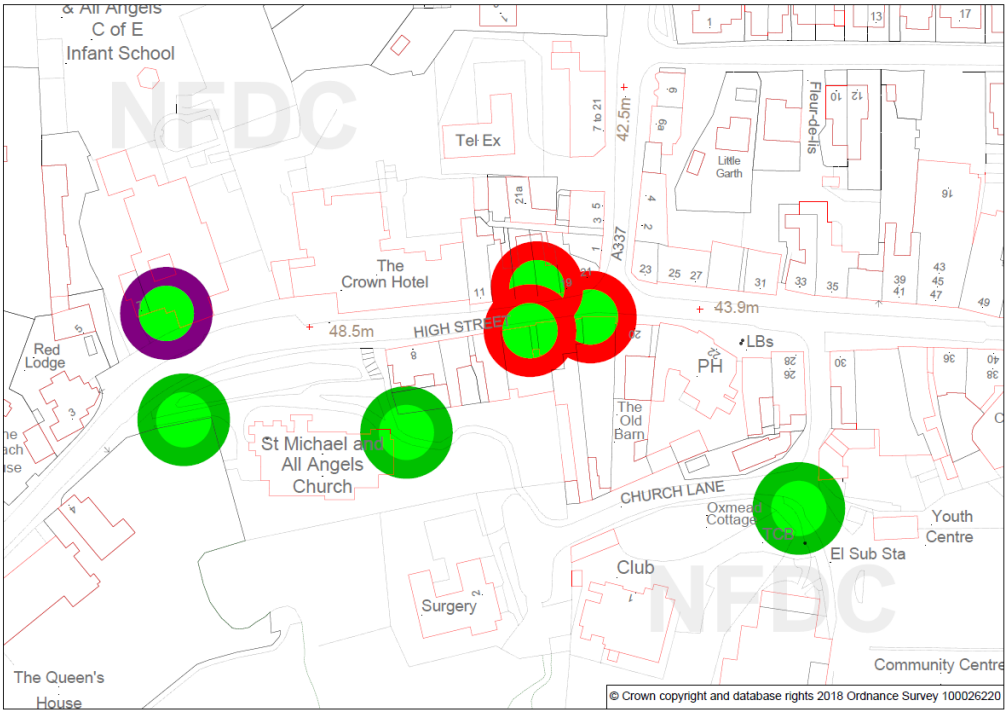
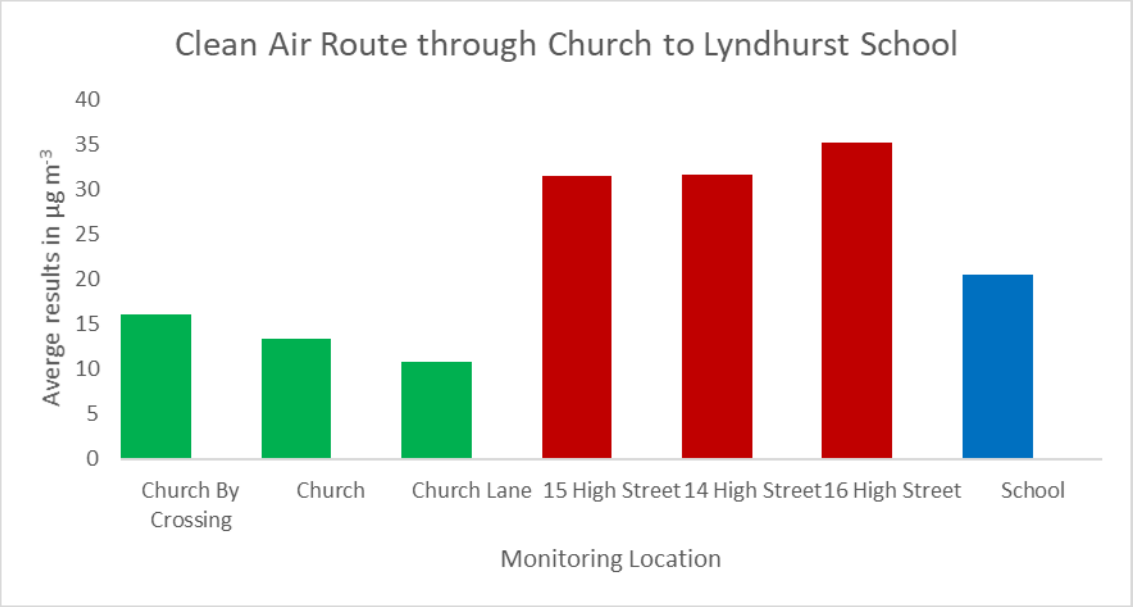


Figure 3-3 shows that the nitrogen concentrations along the Clean Walking route are are significantly less than those measured within the AQMA.

Figure 3-3 Nitrogen dioxide concentrations measured along the route of the Clean Walking Route,within the AQMA and at the Infant School on High Street



3.2.2 Particulate Matter (PM_{10})

Table A.5 in Appendix A compares the ratified and adjusted monitored PM_{10} annual mean concentrations for the past 5 years with the air quality objective of 40µg/m^3.

Table A.6 in Appendix A compares the ratified continuous monitored PM_{10} daily mean concentrations for the past 5 years with the air quality objective of 50µg/m^3, not to be exceeded more than 35 times per year.

PM_{10} annual mean concentrations and exceedances remain significantly below air quality objectives.

3.2.3 Sulphur Dioxide (SO_2)

Table A.7 in Appendix A compares the ratified continuous monitored SO_2 concentrations for 2019 with the air quality objectives for SO_2. There were no exceedances in 2019.

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 Grida Ref (Northing)	Pollutants Monitored	In 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	Chemiluminescent	1	0.6	3
CM3	Fawley	Industrial	445885	103248	SO2; 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

Site ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA?	Distance to Relevant Exposure (m) (1)	Distance to kerb of nearest road (m) (2)	Tube collocated with a Continuous Analyser?	Height (m)
1	Lyndhurst Rd, Goose Green	Roadside	429991	107583	NO_2	NO	0	0.4	NO	3
2	1, Foxlease Terrace, Shrubbs Hill Rd	Roadside	429928	107687	NO_2	NO	0	1.5	NO	3
3a	Shrubbs Hill Rd,The Orchards - façade	Roadside	429895	107770	NO_2	NO	0	3	NO	3
3b	Shrubbs Hill Rd,The Orchards - Front Door	Roadside	429895	107770	NO_2	NO	0	5	NO	3
4	Queens House	Roadside	429710	108128	NO_2	NO	0	5	NO	3
5	School, High St.	Roadside	429767	108205	NO_2	YES	0	6	NO	3
6	15, High St.	Kerbside	429864	108213	NO_2	YES	0	1	NO	3
7	14, High St. (analyser)	Kerbside	429858	108205	NO_2	YES	0	0.9	YES	3
8	16, High St.	Kerbside	429875	108207	NO_2	YES	0	1.55	NO	3
9	2a, Romsey Rd	Roadside	429891	108245	NO_2	YES	3	2	NO	3
10	22, Romsey Rd	Roadside	429911	108402	NO_2	NO	0	2.3	NO	2
11	28, High St.	Roadside	429933	108200	NO_2	YES	5	4	NO	3
12	65, High St.	Roadside	430026	108206	NO_2	YES	0	1.8	NO	3
13	2, Gosport Lane	Roadside	430079	108147	NO_2	NO	0	2.2	NO	3
14	South View, Gosport Lane	Roadside	430092	108077	NO_2	NO	5	2	NO	3

15	Lyndhurst Park Hotel	Roadside	430162	108173	NO_2	NO	5	2	NO	3
16	Baytree Cottage, Bournem'th Rd	Roadside	429169	108129	NO_2	NO	0	1.5	NO	3
17	Lyndhurst 1 (church by crossing)	Urban Background	429756	108179	NO_2	NO	n/a	1.5	NO	3
18	Lyndhurst 2 (on church)	Urban Background	429825	108176	NO_2	NO	n/a	n/a	NO	3
19	Lyndhurst 3 (Church Lane)	Urban Background	429928	108165	NO_2	NO	n/a	1	NO	3
20	Red Lodge, High St	Roadside	429739	108185	NO2	NO	0	2	NO	3
47	Shrubbs Hill Rd, Hillmead Lodge	Roadside	429760	107972	NO2	NO	n/a	1.5	NO	3
Totton										
21	Junction Rd (analyser)	Roadside	436189	113235	NO_2	NO	7	2	YES	3
22	30, Junction Rd	Roadside	436210	113210	NO_2	NO	3	1	NO	3
23	25, Junction Rd	Roadside	436232	113156	NO_2	NO	0	4	NO	3
24	26, Rumbridge St.	Roadside	436205	113019	NO_2	NO	2	1.5	NO	3
25	BATs corner	Roadside	436278	113081	NO_2	NO	3	1.5	NO	3
26	Elingfield Court, High St.	Roadside	436383	113135	NO_2	NO	0	1.5	NO	3
27	55, High St.	Roadside	436476	113214	NO_2	NO	0	4	NO	3
28	114, Commercial Rd	Roadside	436364	113322	NO_2	NO	0	1	NO	3
29	1, Rose Rd	Roadside	436374	112929	NO_2	NO	5	2	NO	3
30	26 Winsor Rd	Roadside	436210	112948	NO_2	NO	0	2	NO	3
31	A35	Roadside	436234	112898	NO_2	NO	3	1	NO	3
32*	A35 (1)	Roadside	436210	112902	NO_2	NO	1.4	2.6	NO	3
33*	A35 (2)	Roadside	436470	113088	NO_2	NO	1.4	2.6	NO	3
34*	A35 (3)	Roadside	436608	113254	NO_2	NO	1.6	2.4	NO	3

35*	A35 (4)	Roadside	436675	113400	NO_2	NO	0.8	3.2	NO	3
Other locations										
36	Highwood Cottage, Ower	Other	431920	115929	NO2	NO	0	n/a	NO	3
37	A31, Stoney Cross	Roadside	425877	111778	NO_2	NO	0	20	NO	3
38	Shorefield Rd, Marchwood	Roadside	438765	111006	NO_2	NO	0	1	NO	3
39	Marchwood School, Twiggs Lane	Roadside	438363	109694	NO_2	NO	0	25	NO	3
40	Bury Rd, Marchwood	Roadside	437730	111374	NO_2	NO	4	1	NO	3
41	Teachers Way, Holbury	Industrial	442947	103931	NO_2	NO	0	n/a	NO	3
42	Jubilee Hall, The Square, Fawley	Industrial	445881	103247	NO_2	NO	0	n/a	NO	3
43	School field, Beaulieu	Rural	438836	102115	NO_2	NO	10	n/a	NO	3
44	131 Christchurch Rd, Ringwood	Roadside	415118	104608	NO_2	NO	0	1	NO	3
45	St. Catherines, Christchuch Rd, Ringwood	Roadside	415022	104926	NO_2	NO	3	1	NO	3
46	Eastfield Lane, Ringwood (A31)	Roadside	416157	105467	NO_2	NO	0	2	NO	3

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.

*** denotes monitoring Clean Air Zone (CAZ) monitoring sites only and are not associated with Local Air Quality Management monitoring regime. Monitoring sites ID's 32-35**

Table A.3 – Annual Mean NO_2 Monitoring Results (distance corrected where required)

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2019 (%) (2)	NO_2 Annual Mean Concentration ($\mu g/m^3$) (3) (4)				
							2015	2016	2017	2018	2019
CM1 Totton	436188	113237	Roadside	Automatic	74.38	74.38	24	31	26	26	21
CM2 Lyndhurst	429859	108294	Kerbside	Automatic	99.6	99.6	37	38	35	34	31
1	429991	107583	Roadside	Diffusion Tube	100	100	24.41	23.4	20.41	17.4	16.7
2	429928	107687	Roadside	Diffusion Tube	100	100	30.42	28.8	25.26	25	23.2
3a	429895	107770	Roadside	Diffusion Tube	91.7	91.6	37.05	36.2	32.6	32.7	29.8
3b	429895	107770	Roadside	Diffusion Tube	16.6	16.6	29.54	27.8	25.34	25	24.2
4	429710	108128	Roadside	Diffusion Tube	100	100	19.97	20.9	17.9	18	16.0
5	429767	108205	Roadside	Diffusion Tube	91.7	91.7	25.19	26.1	21.56	21.6	20.5
6	429864	108213	Kerbside	Diffusion Tube	100	100	38.38	39.8	34.03	35.2	31.5
7	429858	108205	Kerbside	Diffusion Tube	91.7	91.7	37.43	38.5	34.46	34.9	31.6
8	429875	108207	Kerbside	Diffusion Tube	91.7	91.7	39.22	39.5	37.01	36.9	35.1
9*	429891	108245	Roadside	Diffusion Tube	100	100	35.76	30.1	26.8	29.1	30.1
10	429911	108402	Roadside	Diffusion Tube	100	100	23.39	23.3	23.22	22.5	23.9
11*	429933	108200	Roadside	Diffusion Tube	100	100	27.99	22.7	20	19.6	20.0
12	430026	108206	Roadside	Diffusion Tube	100	100	33.33	28.9	30.7	28.8	29.0
13	430079	108147	Roadside	Diffusion Tube	100	100	35.83	36.4	38.55	39.3	36.4
14*	430092	108077	Roadside	Diffusion Tube	83.3	83.3	30.38	24.9	20.2	22.1	22.6
15*	430162	108173	Roadside	Diffusion Tube	100	100	24.72	19.7	17.3	17.3	17.5
16	429169	108129	Roadside	Diffusion Tube	83.3	83.3	28.85	27.2	26.76	27.2	26.9

17	429756	108179	Urban Background	Diffusion Tube	100	100	_	_	Project	12.5	16.0
18	429825	108176	Urban Background	Diffusion Tube	91.7	91.7	_	_	Project	12.3	13.4
19	429928	108165	Urban Background	Diffusion Tube	100	100	_	_	Project	11.7	10.8
20	429739	108185	Roadside	Diffusion Tube	100	100	_	_	_	27.9	31.9
47*	429760	107972	Roadside	Diffusion Tube	66.7	66.7	-				23.2
Totton											
21*	436189	113235	Roadside	Diffusion Tube	100	100	23.89	23.9	23.2	23.2	22.5
22*	436210	113210	Roadside	Diffusion Tube	100	100	24.48	25.9	23.8	24.7	24.5
23	436232	113156	Roadside	Diffusion Tube	91.7	91.7	24.96	25.2	24.18	24.3	22.6
24*	436205	113019	Roadside	Diffusion Tube	91.7	91.7	26.13	27.6	24.7	25.2	25.6
25*	436278	113081	Roadside	Diffusion Tube	100	100	25.67	27.6	25.2	25	24.8
26	436383	113135	Roadside	Diffusion Tube	100	100	22.97	28.5	25.81	24.8	25.5
27	436476	113214	Roadside	Diffusion Tube	100	100	22.07	27.1	23.7	25.4	24.6
28	436364	113322	Roadside	Diffusion Tube	66.7	66.7	25.31	28.5	26.74	27.8	26.6
29*	436374	112929	Roadside	Diffusion Tube	100	100	19.23	21.8	19.9	21.3	19.2
30	436210	112948	Roadside	Diffusion Tube	100	100	_	25.9	24.57	23.7	24.1
31*	436234	112898	Roadside	Diffusion Tube	91.7	91.7	_	23.7	20.1	20.4	18.5
32*	436210	112902	Roadside	Diffusion Tube	100	100	_	_	**CAZ**	28.7	29.3
33*	436470	113088	Roadside	Diffusion Tube	91.7	91.7	_	_	**CAZ**	39.8	39.7
34*	436608	113254	Roadside	Diffusion Tube	100	100	_	_	**CAZ**	34	33.4
35*	436675	113400	Roadside	Diffusion Tube	100	100	_	_	**CAZ**	38	37.5
Other Locations											
36	431920	115929	Other	Diffusion Tube	100	100	_	_	_	21.3	19.7
37	425877	111778	Roadside	Diffusion Tube	91.7	91.7	35.6	34	33.1	28.2	29.1

38	438765	111006	Roadside	Diffusion Tube	100	100	18.18	18	13.81	16.8	16.0
39	438363	109694	Roadside	Diffusion Tube	100	100	18.51	18.3	16.88	16.7	16.0
40*	437730	111374	Roadside	Diffusion Tube	91.7	91.7	-	19.7	15.4	17.1	16.4
41	442947	103931	Industrial	Diffusion Tube	100	100	10.2	11	9.46	12.3	12.2
42	445881	103247	Industrial	Diffusion Tube	100	100	15.1	13.3	12.36	12.9	12.1
43	438836	102115	Rural	Diffusion Tube	91.7	91.7	9.63	10.7	8.97	10.6	8.8
44	415118	104608	Roadside	Diffusion Tube	100	100	_	_	_	26.2	25.4
45*	415022	104926	Roadside	Diffusion Tube	100	100	_	_	_	26.3	26.6
46	416157	105467	Roadside	Diffusion Tube	91.7	91.7	_	_	_	27.8	24.3

☒ **Diffusion tube data has been bias corrected**

☒ **Annualisation has been conducted where data capture is <75%**

☐ **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 adjustment**

***denotes sites which have been distance corrected in accordance with guidance.**

Notes:

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

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

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

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

(3) Means for diffusion tubes have been corrected for bias. All means have been "annualised" as per Boxes 7.9 and 7.10 in LAQM.TG16 if valid data capture for the full calendar year is less than 75%. See Appendix C for details.

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

Figure A.1 – Trends in Annual Mean NO_2 Concentrations

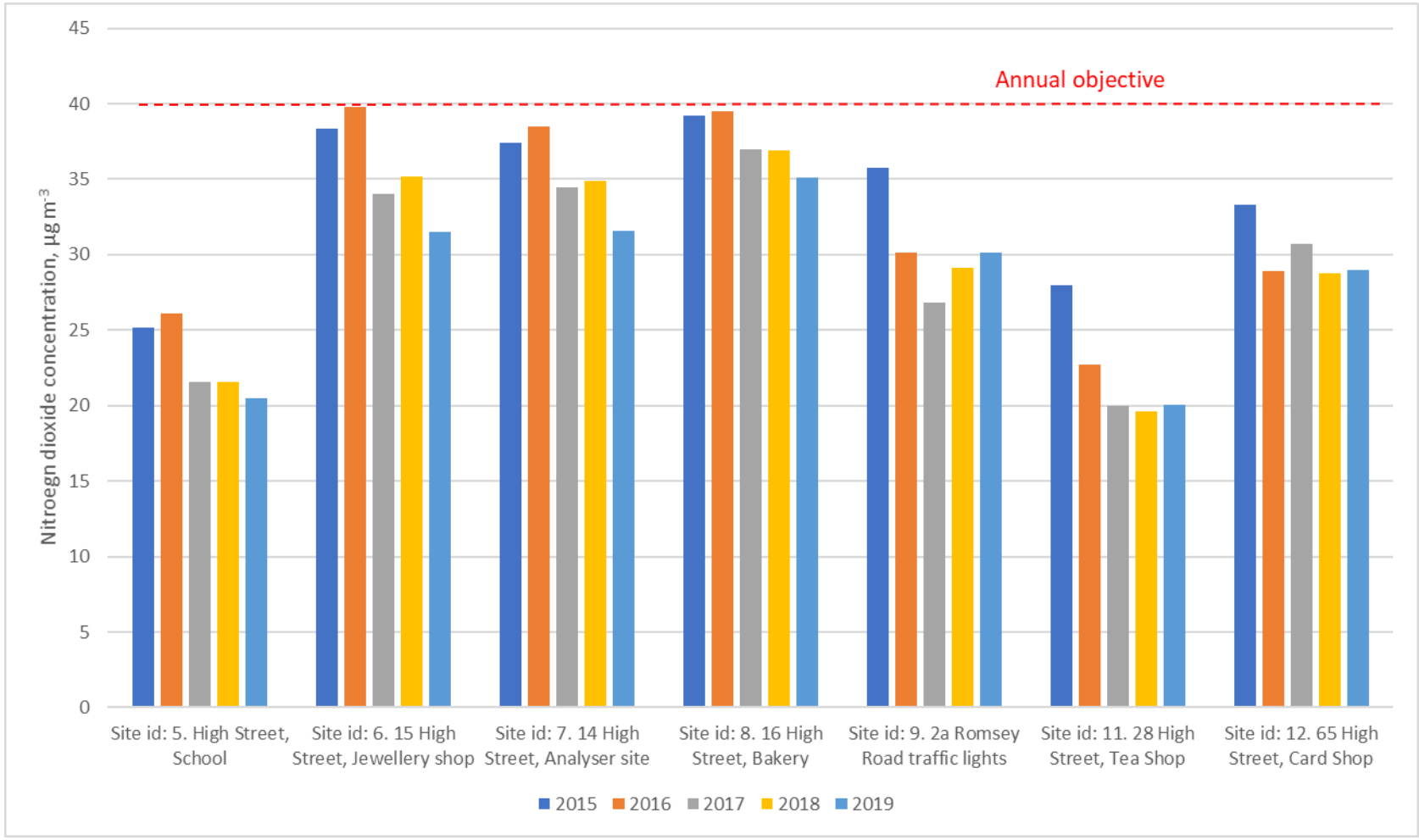


Table A.4 – 1-Hour Mean NO_2 Monitoring Results

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2019 (%) (2)	NO_2 1-Hour Means > 200µg/m^3 (3)				
							2015	2016	2017	2018	2019
CM1 Totton	436188	113237	Roadside	Automatic	74.38	74.38	0	0 (129)	0	0	0
CM2 Lyndhurst	429859	108294	Kerbside	Automatic	99.6	99.6	0	5	0	0	0

Notes:

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

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

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

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

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

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2019 (%) (2)	PM_{10} Annual Mean Concentration (µg/m³) (3)				
						2015	2016	2017	2018	2019
CM1 (Totton)	436188	113237	Roadside	97.04	97.04	22	22	20	18	19
CM3 (Fawley)	445885	103248	Industrial	96.63	96.63	-	-	15	16	17

☐ **Annualisation has been conducted where data capture is <75%**

Notes:

Exceedances of the PM_{10} annual mean objective of 40µg/m³ are shown in **bold.**

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

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

(3) All means have been "annualised" as per Boxes 7.9 and 7.10 in LAQM.TG16, valid data capture for the full calendar year is less than 75%. See Appendix C for details.

Figure A.2 – Trends in Annual Mean PM_{10} Concentrations

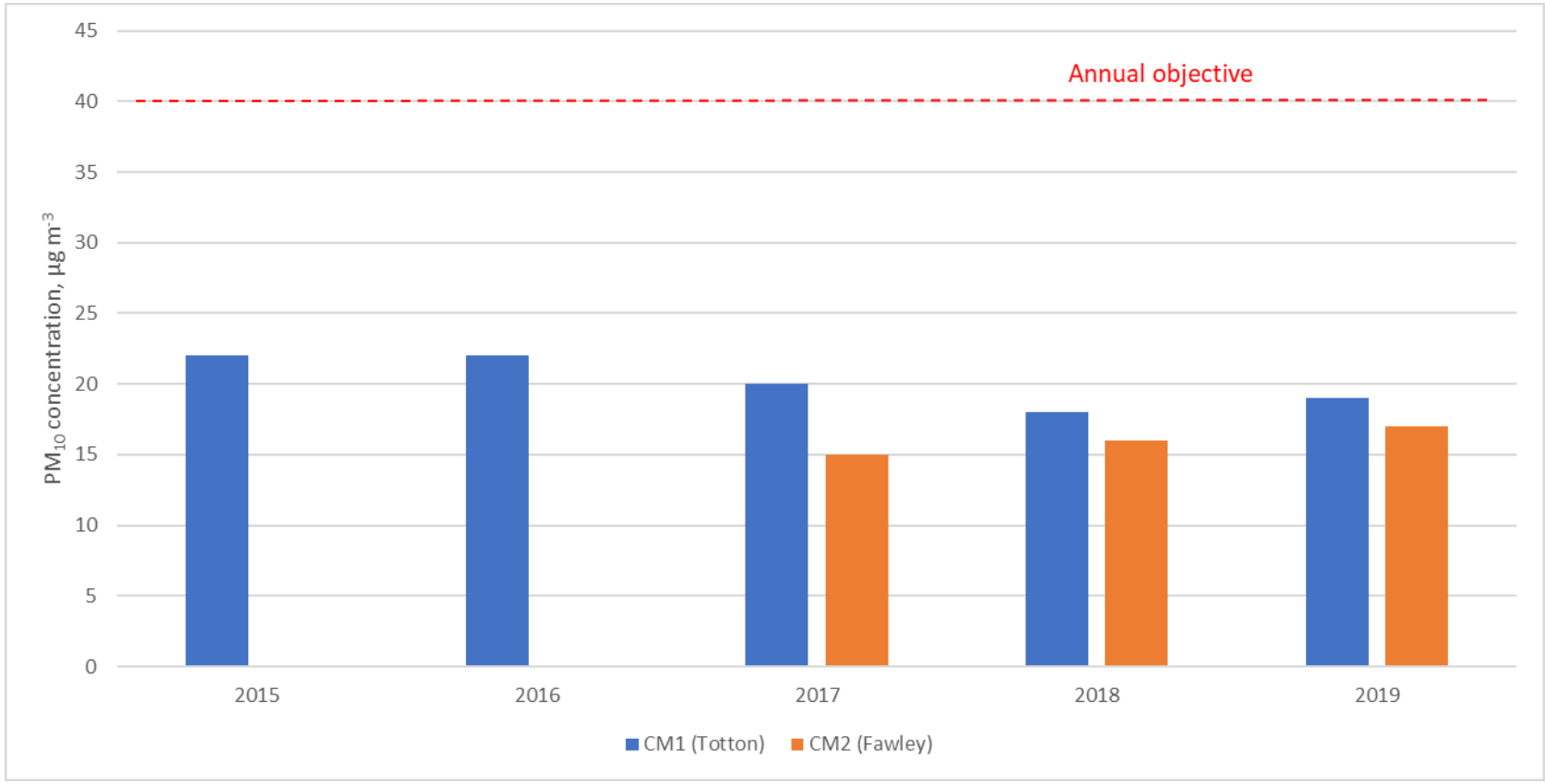


Table A.6 – 24-Hour Mean PM_{10} Monitoring Results

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2019 (%) (2)	PM_{10} 24-Hour Means > 50µg/m^3 (3)				
						2015	2016	2017	2018	2019
CM1 (Totton)	436188	113237	Roadside	97.04	97.04	12	10 (39**)**	4	0	5
CM3 (Fawley)	445885	103248	Industrial	96.63	96.63	-	-	0	0	2

Notes:

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

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

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

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

Table A.7 – SO_2 Monitoring Results

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for monitoring Period (%) [1]	Valid Data Capture 2019 (%) [2]	Number of Exceedances 2019 (percentile in bracket) [3]		
						15-minute Objective (266 µg/m^3)	1-hour Objective (350 µg/m^3)	24-hour Objective (125 µg/m^3)
CM3 (Fawley)	445885	103248	Industrial	97.01	97.01	0	0	0

Notes:

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

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

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

(3) If the period of valid data is less than 85%, the relevant percentiles are provided in brackets.

Appendix B: Full Monthly Diffusion Tube Results for 2019

Table B.1 - NO_2 Monthly Diffusion Tube Results - 2019

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	NO_2 Mean Concentrations (µg/m^3)														
			Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean		
															Raw Data	Bias Adjusted (factor) and Annualised (1)	Distance Corrected to Nearest Exposure (2)
1	429991	107583	25.4	12.7	22.1	25.3	23.7	19.9	22.1	19.5	23.7	25.4	25.7	18.0	22.0	16.7	-
2	429928	107687	33.7	26.7	35.1	41.9	31.7	28.4	28.5	21.2	28.9	31.9	36.2	22.9	30.6	23.2	-
3a	429895	107770	39.95	33.6	41.4	50.7	41	37.4	43.15	35.55		43.45	37.75	27.1	39.2	29.8	-
3b	429895	107770						37.4						26.4	31.9		-
4	429710	108128	24.8	12.2	24.8	27.7	21.3	19.4	19.1	16.8	20.9	41.1	26.2	18.2	21.0	16.0	-
5	429767	108205	32.1	17.1	30.6	29.8	24.1	24.3	24.5	26.5		27.7	31.9	27.6	26.9	20.5	-
6	429864	108213	45.4	43.1	55.7	55.3	41.3	41.9	48.3	43.9	45.7	47.7	52	36	46.4	31.5	-
7	429858	108205	45.67	49	48.57	49.2	47.33	42.27	48.5	44	42.6	42.85	50.7		46.4	31.6	-
8	429875	108207	64.8	58.5	53.2	54.3	50.6	43.5	51.1	46.7	44.9	47.4	52.7		51.6	35.1	-
9	429891	108245	46.5	25.7	47.9	56.7	43.7	43.3	47.2	43	41.4	48.4	53.1	45.5	47.0	35.7	30.1
10	429911	108402	14.3	30	34.6	43.6	29.6	30.4	31.4	26.3	28.9	30.1	35.4	25.3	31.4	23.9	-
11	429933	108200	35	36.8	36.05	30.6	26.55	24.55	26.2	26.55	26.25	31.05	34.1	31.1	30.4	23.1	20.0
12	430026	108206	41.1	39	45.5	44.3	37.4	35	33.6	32.3	34.7	38.3	44.6	31.9	38.1	29.0	-
13	430079	108147	48	58	59.5	53.1	32.3	49.9	54.2	24.2	48.3	48.1	50	48.4	47.8	36.4	-
14	430092	108077	40.4	31	40.2	42.2	54.6	27.9		3.8	27.4	34.5	32.2		36.7	27.9	22.6

15	430162	108173	31.6	28.4	29.2	26.9	22.9	22.7	25.3	51.1	26.4	29.6	31.5	25.4	27.3	20.7	17.5
16	429169	108129	39.6	21.5	40.8	40.9	39		38.8	36.3	34.7	35.7		27.1	35.4	26.9	-
17	429756	108179	18.3	15.3	25.3	27	20.9	18.2	20.3	18.4	16.9	22.7	27.4	22.4	21.1	16.0	-
18	429825	108176	19.8	17	18.7	20.2	15.2	12.3	20.3		14.8	20.2	23.3	12	17.6	13.4	-
19	429928	108165	30.8	15.7	14.4	17	10.7	8.9	9.1	7.8	10.8	15.6	18.9	10.4	14.2	10.8	-
20	429739	108185	44.6	50	48.7	43.8	43.2	35	44.4	43.4	38.4	42	39.2	30.6	41.9	31.9	-
47	429760	107972	33	35.6				17.6	32.6	34.9		35.3	38.4	19.8	30.9	23.5	23.2
21	436189	113235	38.7	38.63	35.03	32.53	27.97	27.63	29.17	26.43	30.63	37.23	40.23	34.53	33.2	25.3	22.5
22	436210	113210	42.8	35.9	37.7	41.3	32	26.7	30.3	26.7	35.6	44.3	42.5	35.3	35.9	27.3	24.5
23	436232	113156	34.6	35.1	30.7	32.8	28.8	22.3	26.3	24.4	27.7	34.6		29.3	29.7	22.6	-
24	436205	113019	42.1	39.4	40.7	41.8	32.3	28.1		28.1	31.7	38.4	42.2	33.8	36.2	27.5	25.6
25	436278	113081	43.3	36.8	41.1	38.4	30.5	29.1	30.5	26.4	31.6	39.4	47.1	34.1	35.7	27.1	24.8
26	436383	113135	38	40	34.7	38.7	26.6	27.3	29.1	28.8	29.8	36.2	36.5	37.2	33.6	25.5	-
27	436476	113214	40.3	37.1	36.1	40.3	30.3	26.2	26.8	21.9	25.2	34.1	38.1	32.4	32.4	24.6	-
28	436364	113322	39.4			41.7	28	28.9			29.2	35.7	42.3	34.4	35.0	26.6	-
29	436374	112929	33.9	27.3	30.7	38.4	26.1	23	23.4	18.4	25.8	28.3	36.1	23.8	27.9	21.2	19.2
30	436210	112948	35	36.4	32.2	37.6	28.2	27	28.2	26.2	31	33.1	34	31.4	31.7	24.1	-
31	436234	112898	36.3	27.6	29.6	31.4	25	22.5	20.6	17.5	24.2		33	23.2	26.4	20.1	18.5
32	436210	112902	49	38.7	48.8	49.8	35.2	31.9	30.6	27.8	35.7	42.8	46.9	53.9	40.9	31.1	29.3
33	436470	113088	66.4	56	65.3	54.1	53.9	54.4		49	57	59.7	57.5	40.1	55.8	**42.4**	39.7
34	436608	113254	53.7	51.5	49.9	48.8	48.1	40.9	43.8	40.1	47.1	52.5	39.8	51.6	46.9	35.7	33.4
35	436675	113400	60.5	55.7	55.7	47.9	51.2	45.9	47.3	52.2	44.3	53	58.7	40.3	51.1	38.8	37.5
36	431920	115929	30	26.8	28.3	31.3	24	21.1	22.1	22.1	24.7	27.2	31.8	22.2	26.0	19.7	-
37	425877	111778	40.1	32.05	44.5	38.65	38.95	36.65	39.5	33.15	40.9	40	36.9		38.3	29.1	-
38	438765	111006	26.4	19.2	24.3	26.8	19.5	19.9	17.6	13.4	20	22.9	26.7	15.8	21.0	16.0	-
39	438363	109694	25	23	22.1	25.7	18	15.5	18.5	15.4	23.7	21.7	26	18	21.1	16.0	-

40	437730	111374	26.8	19.2	28	33.4	22.6	21.7	20		20.6	25.5	29.6	16.7	24.0	18.2	16.4
41	442947	103931	20.6	19.4	18.3	19.9	12.6	12.1	10.5	9.2	12.5	18.8	26	12.4	16.0	12.2	-
42	445881	103247	20.6	16.6	20.2	21.2	14.5	11.4	12.7	10.3	13.2	17.5	22	11.6	16.0	12.1	-
43	438836	102115	13.9	11.2	12.4	13.5	10.5	8.7	10.1	7.6	9.8	15.1	15.1		11.6	8.8	-
44	415118	104608	42.7	19.1	36.1	39.1	29.3	30.8	32.9	30.2	30.2	42.7	39	28.8	33.4	25.4	-
45	415022	104926	51.4	25.1	51.9	45.6	39.1	35.7	41.1	39.5	40.5	46.2	52.4	44.4	42.7	32.5	26.6
46	416157	105467	46.1	18.7		39.1	29.3	28.2	28.5	23.4	30	35.9	41.6	31.3	32.0	24.3	-

☒ **Local bias adjustment factor used**

☒ **National bias adjustment factor used**

☒ **Annualisation has been conducted where data capture is <75%**

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

Notes:

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

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

(1) See Appendix C for details on bias adjustment and annualisation.

(2) Distance corrected to nearest relevant public exposure.

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

Further Assessment

During 2019 there have been no significant changes to pollutant sources, therefore no additional air quality screening assessments have been undertaken by New Forest District Council other than the district wide assessment associated with the development of the Local Plan. It is noted that air quality assessments have been undertaken during 2019 with regards to specific sites or areas as a result of proposed planning applications and / or part of the Environmental Permitting (LAPPC) Regime.

Numerous planning applications are expected to be submitted to the Council for proposed medium/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.

Future sites of interest include:

- Large redevelopment of the Fawley Power Station site for mixed use (residential, commercial, leisure). The proposed number of residential dwellings is expected to be ~1500 with anticipated impacts to local air quality during development and operational use, including on the local road network. Planning applications are expected in 2019.
- Large developments of strategic sites as identified within the updated Local Plan. Includes developments (predominately residential, commercial and light industrial) in Fordingbridge, Ringwood, Totton and the Waterside.
- Continued use of Eling Wharf as a haulage site and container port. The site was purchased in 2018 by ABP who operate Southampton Port. There are limited planning restrictions relating to the site, and whilst current use is anticipated to continue any significant increases in HGV vehicle movements onto the site may require further assessment.

Additional AQMA / Action Plan Assessments

During 2019 there has been no additional dispersion modelling or monitoring campaigns to provide evidence to declare, amend or revoke an AQMA within the New Forest district.

Changes to Monitoring Regime

Current network

Nitrogen dioxide tubes are used extensively throughout the New Forest district as a means to identify potential locations with increased nitrogen dioxide concentrations.

In connection with the New Forest District Council Local Plan, district wide NO_2 health receptor modelling work was commissioned for pre and post developments as detailed in the Local Plan and completed by air quality consultants. Through this work 3 locations were identified as potentially exceeding annual mean NO_2 air quality objectives. As such the diffusion tube monitoring network has been extended to include these locations with monitoring starting in 2018:

- A31 and Christchurch Road (Ringwood)
- A35 (Lyndhurst)
- Romsey Road (Cadnam)

See Section 3.1.2.

Clean Air Zone – Southampton

New Forest District Council was named in 2017 as have a road (A35, Totton) that was determined as exceeding the EU limit value for nitrogen dioxide. This short stretch of road (<1km) is seen as an extension of the current Clean Air Zone issue in Southampton, therefore New Forest District Council has been working in partnership with Southampton City Council to progress the Clean Air Zone work. Monitoring nitrogen dioxide using diffusion tubes along the A35 continues at four monitoring locations (site ID's 32-35) and the installation of a real time analyser along this stretch of the A35 is due in 2020. This work is regarded as separate from the Local Air Quality Management regime work associated with this Annual Status Report,

however the Council has no other mechanism to report the monitoring results for this work.

Working with schools

New Forest District Council has started to work with some local schools to look at pollutant levels where concerns have been raised or to forward projects with the aim to raise awareness of air pollution and educate the local community. This is a new area of work, and we anticipate working with a couple of schools every year. The current projects are:

- Lyndhurst Infant School – monitoring undertaken on a 'clean walking route' to encourage parents and guardians to walk their children to school avoiding the High Street (and current AQMA).

  It also anticipated that a monitoring 'at different heights' project with start in 2020 at the school, with diffusion tube monitoring undertaken at the same location but with the tubes located at 1m, 2m and 3m. This is to compare any differences in pollutant concentrations with increasing height.

- Eling School, Totton – monitoring on and around the school to determine concentrations and working with pupils to devise schemes to reduce local pollution levels. This work is being undertaken in collaboration with Hampshire County Council.

In addition, this monitoring will provide useful nitrogen dioxide data on routes of local concern within the District which will be actioned as required through the Local Air Quality Management regime.

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 2019 which was downloaded twice a day. During the validation process any potential problems are identified and if necessary reported 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 2019 has been fully ratified.

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 2019 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 Bias Adjustment Factors

The nitrogen dioxide diffusion tubes were supplied and analysed by Socotec. The preparation method used for the diffusion tubes was 20% TEA (triethanolamine) in water.

The national bias adjustment factor for Socotec (2019) was 0.76. This was obtained from the Local Air Quality Management website (Defra, 2020(b)) from database version 03/20 in May 2020. This database collates results from Local Authorities who co-

locate diffusion tubes with automatic monitoring sites and is subject to change as additional results are reported.

Factor from Local Co-location Studies

A local bias correction factor was determined for the data for 2019:

Table C.1 – Details of Bias Correction Factors – 2019

Location	Bias Correction Factor
Lyndhurst (street canyon)	**0.68**
Totton	**0.70**

The local bias correction factors have been determined using calculations supplied by the Local Air Quality Management website (Defra, 2018(b)) and are shown below for Totton and Lyndhurst.

Lyndhurst – Local Bias Correction Factor Spreadsheet

Obtained as follows:
Lyndhurst = 0.68 – used for Lyndhurst tubes within the AQMA

Diffusion Tubes Measurements

Period	Start Date dd/mm/yyyy	End Date dd/mm/yyyy	Tube 1 µgm⁻³	Tube 2 µgm⁻³	Tube 3 µgm⁻³	Triplicate Mean	Standard Deviation	Coefficient of Variation (CV)	95% CI of mean
1	09.01.19	06.02.19	44.0	45.3	47.7	46	1.9	4	4.7
2	06.02.19	15.03.19	50.2	47.8		49	1.7	3	15.2
3	15.03.19	03.04.19	47.1	48.0	50.6	49	1.8	4	4.5
4	03.04.19	01.05.19	51.3	45.0	51.3	49	3.6	7	9.0
5	01.05.19	05.06.19	47.4	45.8	48.8	47	1.5	3	3.7
6	05.06.19	03.07.19	40.7	42.2	43.9	42	1.6	4	4.0
7	03.07.19	07.08.19	48.0	51.6	45.9	49	2.9	6	7.2
8	07.08.19	04.09.19	44.1	44.9	43.0	44	1.0	2	2.4
9	04.09.19	04.10.19	42.8	42.8	42.2	43	0.3	1	0.9
10	04.10.19	06.11.19	44.6		41.4	43	2.3	5	20.3
11	06.11.19	04.12.19	49.3	48.6	54.2	51	3.1	6	7.6
12	04.12.19	08.01.20							
13									

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

Automatic Method		Data Quality Check	
Period Mean	Data Capture (% DC)	Tubes Precision Check	Automatic Monitor Data
30.63	98.96	Good	Good
34.64	99.33	Good	Good
35.42	99.78	Good	Good
37.7	99.85	Good	Good
30.81	99.88	Good	Good
28.02	99.41	Good	Good
29.79	99.64	Good	Good
26.89	99.55	Good	Good
27.03	99.17	Good	Good
29.55	99.87	Good	Good
37.81	99.85	Good	Good
29.44	99.88		Good
Overall survey -->		Good precision	Good Overall DC

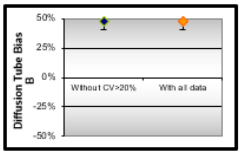
(Check average CV & DC from Accuracy calculations)

Site Name/ ID: Lyndhurst

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

Accuracy (with 95% confidence interval)
without periods with CV larger than 20%
Bias calculated using 11 periods of data
Bias factor A: 0.68 (0.65 - 0.72)
Bias B: 47% (39% - 54%)
Diffusion Tubes Mean: 46 µgm⁻³
Mean CV (Precision): 4
Automatic Mean: 32 µgm⁻³
Data Capture for periods used: 100%
Adjusted Tubes Mean: 32 (30 - 33) µgm⁻³

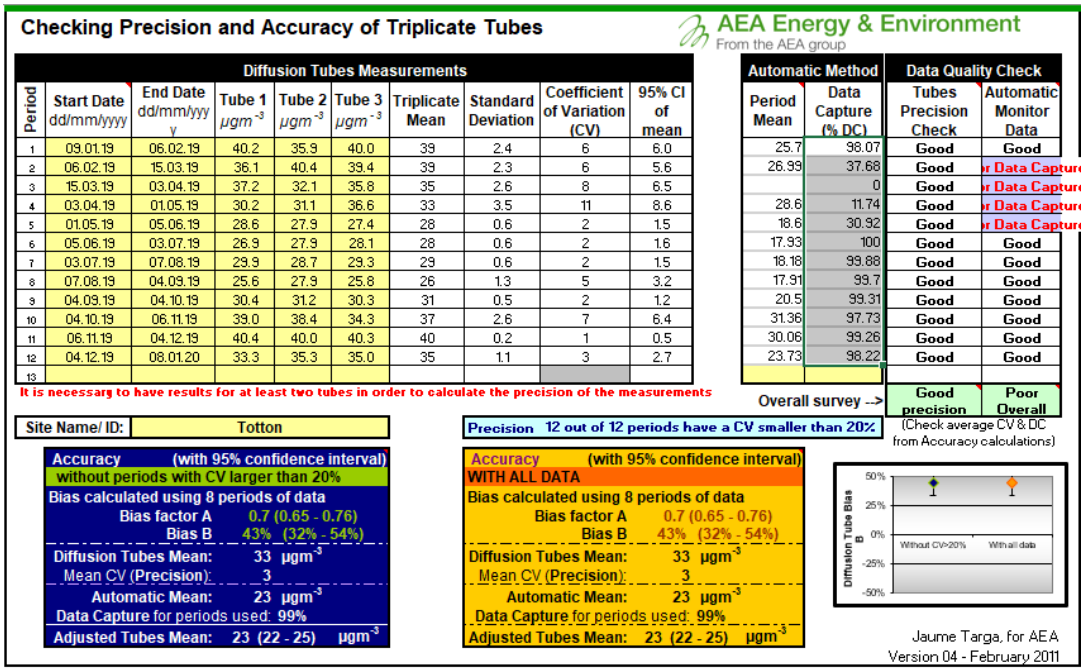
Accuracy (with 95% confidence interval)
WITH ALL DATA
Bias calculated using 11 periods of data
Bias factor A: 0.68 (0.65 - 0.72)
Bias B: 47% (39% - 54%)
Diffusion Tubes Mean: 46 µgm⁻³
Mean CV (Precision): 4
Automatic Mean: 32 µgm⁻³
Data Capture for periods used: 100%
Adjusted Tubes Mean: 32 (30 - 33) µgm⁻³



Jaume Targa, for AEA
Version 04 - February 2011

Totton – Local Bias Correction Factor Spreadsheet

Totton = 0.7 Previously used for Totton diffusion tubes, however the poor data capture provides unreliable results and so after discussing with DEFRA helpdesk, the National Bias Correction figure was used for Totton sites.



Checking Precision and Accuracy of Triplicate Tubes

AEA Energy & Environment
From the AEA group

Diffusion Tubes Measurements

Period	Start Date dd/mm/yyyy	End Date dd/mm/yyyy	Tube 1 µgm^{-3}	Tube 2 µgm^{-3}	Tube 3 µgm^{-3}	Triplicate Mean	Standard Deviation	Coefficient of Variation (CV)	95% CI of mean	Automatic Method: Period Mean	Automatic Method: Data Capture (% DC)	Data Quality Check: Tubes Precision Check	Data Quality Check: Automatic Monitor Data
1	09.01.19	06.02.19	40.2	35.9	40.0	39	2.4	6	6.0	25.7	98.07	Good	Good
2	06.02.19	15.03.19	36.1	40.4	39.4	39	2.3	6	5.6	26.99	37.68	Good	or Data Capture
3	15.03.19	03.04.19	37.2	32.1	35.8	35	2.6	8	6.5		0	Good	or Data Capture
4	03.04.19	01.05.19	30.2	31.1	36.6	33	3.5	11	8.6	28.6	11.74	Good	or Data Capture
5	01.05.19	05.06.19	28.6	27.9	27.4	28	0.6	2	1.5	18.6	30.92	Good	or Data Capture
6	05.06.19	03.07.19	26.9	27.9	28.1	28	0.6	2	1.6	17.93	100	Good	Good
7	03.07.19	07.08.19	29.9	28.7	29.3	29	0.6	2	1.5	18.18	99.88	Good	Good
8	07.08.19	04.09.19	25.6	27.9	25.8	26	1.3	5	3.2	17.91	99.7	Good	Good
9	04.09.19	04.10.19	30.4	31.2	30.3	31	0.5	2	1.2	20.5	99.31	Good	Good
10	04.10.19	06.11.19	39.0	38.4	34.3	37	2.6	7	6.4	31.36	97.73	Good	Good
11	06.11.19	04.12.19	40.4	40.0	40.3	40	0.2	1	0.5	30.06	99.26	Good	Good
12	04.12.19	08.01.20	33.3	35.3	35.0	35	1.1	3	2.7	23.73	98.22	Good	Good
13													

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

Overall survey --> Good precision / Poor Overall

Site Name/ ID: Totton

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

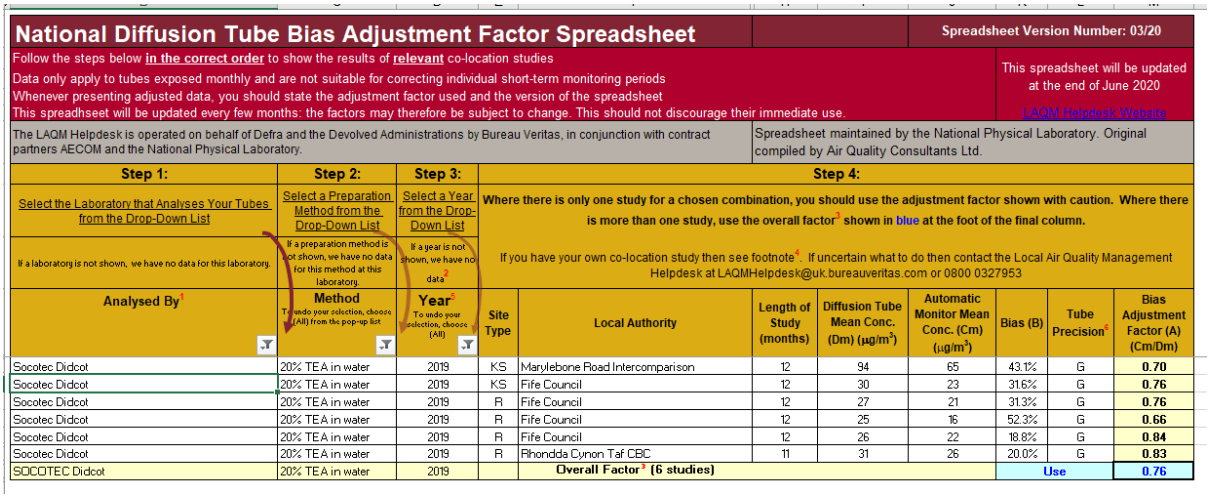
(Check average CV & DC from Accuracy calculations)

Accuracy (with 95% confidence interval) without periods with CV larger than 20%
Bias calculated using 8 periods of data
Bias factor A 0.7 (0.65 - 0.76)
Bias B 43% (32% - 54%)
Diffusion Tubes Mean: 33 µgm^{-3}
Mean CV (Precision): 3
Automatic Mean: 23 µgm^{-3}
Data Capture for periods used: 99%
Adjusted Tubes Mean: 23 (22 - 25) µgm^{-3}

Accuracy (with 95% confidence interval) WITH ALL DATA
Bias calculated using 8 periods of data
Bias factor A 0.7 (0.65 - 0.76)
Bias B 43% (32% - 54%)
Diffusion Tubes Mean: 33 µgm^{-3}
Mean CV (Precision): 3
Automatic Mean: 23 µgm^{-3}
Data Capture for periods used: 99%
Adjusted Tubes Mean: 23 (22 - 25) µgm^{-3}

Jaume Targa, for AEA
Version 04 - February 2011

National Bias Correction = 0.76



National Diffusion Tube Bias Adjustment Factor Spreadsheet — Spreadsheet Version Number: 03/20

Follow the steps below in the correct order to show the results of relevant co-location studies
Data only apply to tubes exposed monthly and are not suitable for correcting individual short-term monitoring periods
Whenever presenting adjusted data, you should state the adjustment factor used and the version of the spreadsheet
This spreadhseet will be updated every few months: the factors may therefore be subject to change. This should not discourage their immediate use.

This spreadsheet will be updated at the end of June 2020
LAQM Helpdesk Website

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.

Spreadsheet maintained by the National Physical Laboratory. Original compiled by Air Quality Consultants Ltd.

Step 1: Select the Laboratory that Analyses Your Tubes from the Drop-Down List. If a laboratory is not shown, we have no data for this laboratory.
Step 2: Select a Preparation Method from the Drop-Down List. If a preparation method is not shown, we have no data for this method at this laboratory.
Step 3: Select a Year from the Drop-Down List. If a year is not shown, we have no data[2]
Step 4: 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[3] shown in blue at the foot of the final column.

If you have your own co-location study then see footnote[4]. If uncertain what to do then contact the Local Air Quality Management Helpdesk at LAQMHelpdesk@uk.bureauveritas.com or 0800 0327953

Analysed By[1]	Method (To undo your selection, choose (All) from the pop-up list)	Year[2] (To undo your selection, choose (All))	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[5]	Bias Adjustment Factor (A) (Cm/Dm)
Socotec Didcot	20% TEA in water	2019	KS	Marylebone Road Intercomparison	12	94	65	43.1%	G	**0.70**
Socotec Didcot	20% TEA in water	2019	KS	Fife Council	12	30	23	31.6%	G	**0.76**
Socotec Didcot	20% TEA in water	2019	R	Fife Council	12	27	21	31.3%	G	**0.76**
Socotec Didcot	20% TEA in water	2019	R	Fife Council	12	25	16	52.3%	G	**0.66**
Socotec Didcot	20% TEA in water	2019	R	Fife Council	12	26	22	18.8%	G	**0.84**
Socotec Didcot	20% TEA in water	2019	R	Rhondda Cynon Taf CBC	11	31	26	20.0%	G	**0.83**
SOCOTEC Didcot	20% TEA in water	2019		**Overall Factor[3] (6 studies)**				**Use**		**0.76**

Discussion of Choice of Factor to Use

The diffusion tube results have been bias corrected to allow for laboratory bias. Bias correction factors can either be determined from local or national data sets, and factors influencing the decision on which bias correction factors to use include local conditions and the location of automatic nitrogen oxides analysers. Two different bias correction factors have been applied to the 2019 diffusion tube data for New Forest.

In Lyndhurst three diffusion tube sites (Sites 6, 7 and 8) have been locally biased corrected (0.68). These is because these diffusion tubes and the automatic monitoring site are located within the street canyon of the High Street. The remaining diffusion tube sites in Lyndhurst have been bias corrected using the national bias correction factor (0.76), as these sites are located outside the effects of the street canyon in the High Street, Lyndhurst. The bias correction factors used on the 2019 diffusion tube data are shown below:

Table C.2 – Details of Bias Correction Factors – 2019(b)

Location	Bias Correction Factor	Local / National
Lyndhurst (street canyon)	0.68	Local
Remaining sites	0.76	National

It is noted that bias correction factors less than 1 will reduce the raw annual mean result for each diffusion tube, whilst factors greater than 1 will increase the raw annual mean result. The degree of adjustment will depend on the bias correction factor with larger adjustments noted the further the correction factor is from 1. Therefore, the choice of bias correction factor is important.

In conclusion, New Forest District Council is confident in the determination and selection of the bias correction factors used to adjust raw diffusion tube data. The correct methods have been followed using the data available, although it is clear how influential the correction factors can be to the overall conclusion made.

PM Monitoring Adjustment

New Forest District Council uses TEOM analysers to monitor PM_{10}. 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 PM_{10} concentrations are below the objectives. When the equipment is due for replacement the Council will consider other equipment which meets the equivalence criteria.

PM_{10} data has been adjusted using the Volatile Correction Model (VCM) to correct for the use of a TEOM particulate monitor

Short-term to Long-term Data adjustment (annualised data)

During 2019 the data capture was less than 75 % at the following diffusion tube sites:

- Shrubbs Hill Road, Hillmead Lodge -Lamp Post (Site 47)
- 114 Commercial Road, (down pipe at no. 93) (Site 28)

Therefore, in accordance with Technical Guidance LAQM.TG16 (Defra, 2016(b)) Box 7.10, the data collated from this site was annualised, as detailed below.

Table C.3 – Monitoring Adjustment

The long-term sites utilised in the calculations were Portsmouth AURN and Southampton AURN (background sites).

Shrubbs Hill Road, Hillmead Lodge -Lamp Post (Site 47)

Based on eight months of diffusion data the annual average was calculated to be 30.9 µg m^{-3} after annualisation the revised annual mean is 30.5 µg m^{-3}. The annual means and monthly concentrations used in the annualisation process are presented in the table below:

Start date	End date	B1 (Southampton)	B2 (Portsmouth)	D1 (monthly mean diffusion tube)	B1 when D1 is available Pm	B2 when D1 is available Pm
09.01.19	06.02.19	33.9	25.9	33.0	33.9	25.9
06.02.19	14.03.19	34.7	20.9	35.6	34.7	20.9
14.03.19	03.04.19	31.7	22.5			
03.04.19	01.05.19	29.9	18.1			
01.05.19	05.06.19	22.5	14.2			
05.06.19	03.07.19	20.4	12.3	17.6	20.4	12.3
03.07.19	07.08.19	19.8	12.2	32.6	19.8	12.2
07.08.19	04.09.19	23.8	11.8	34.9	23.8	11.8
04.09.19	04.10.19	24.0	13.4			
04.10.19	06.11.19	29.4	17.9	35.3	29.4	17.9
06.11.19	04.12.19	32.9	22.8	38.4	32.9	22.8
04.12.19	08.01.20	30.9	17.5	19.8	30.9	17.5
Averages		27.8	17.5	**30.9**	28.2	17.7
				AM	27.8	17.5
				AM when D availiable	28.2	17.7
				Factors	0.986	0.988
					Average of factors	0.987
					Annualised annual mean	**30.5**

114 Commercial Road, (down pipe at no. 93) (Site 28)

Based on eight months of diffusion data the annual average was calculated to be 35.0 µg m^{-3} after annualisation the revised annual mean is 34.6 µg m^{-3}. The annual means and monthly concentrations used in the annualisation process are presented in the table below:

Start date	End date	B1 (Southampton)	B2 (Portsmouth)	D1 (monthly mean diffusion tube)	B1 when D1 is available Pm	B2 when D1 is available Pm
09.01.19	06.02.19	33.9	25.9	39.4	33.9	25.9
06.02.19	14.03.19	34.7	20.9			20.9
14.03.19	03.04.19	31.7	22.5			
03.04.19	01.05.19	29.9	18.1	41.7	29.9	
01.05.19	05.06.19	22.5	14.2	28.0	22.5	
05.06.19	03.07.19	20.4	12.3	28.9	20.4	12.3
03.07.19	07.08.19	19.8	12.2			12.2
07.08.19	04.09.19	23.8	11.8			11.8
04.09.19	04.10.19	24.0	13.4	29.2	24.0	
04.10.19	06.11.19	29.4	17.9	35.7	29.4	17.9
06.11.19	04.12.19	32.9	22.8	42.3	32.9	22.8
04.12.19	08.01.20	30.9	17.5	34.4	30.9	17.5
Averages		27.8	17.5	**35.0**	28.0	17.7
				AM	27.83	17.46
				AM when D availiable	28.0	17.7
				Factors	0.994	0.988
					Average of factors	0.991
					Annualised annual mean	**34.6**

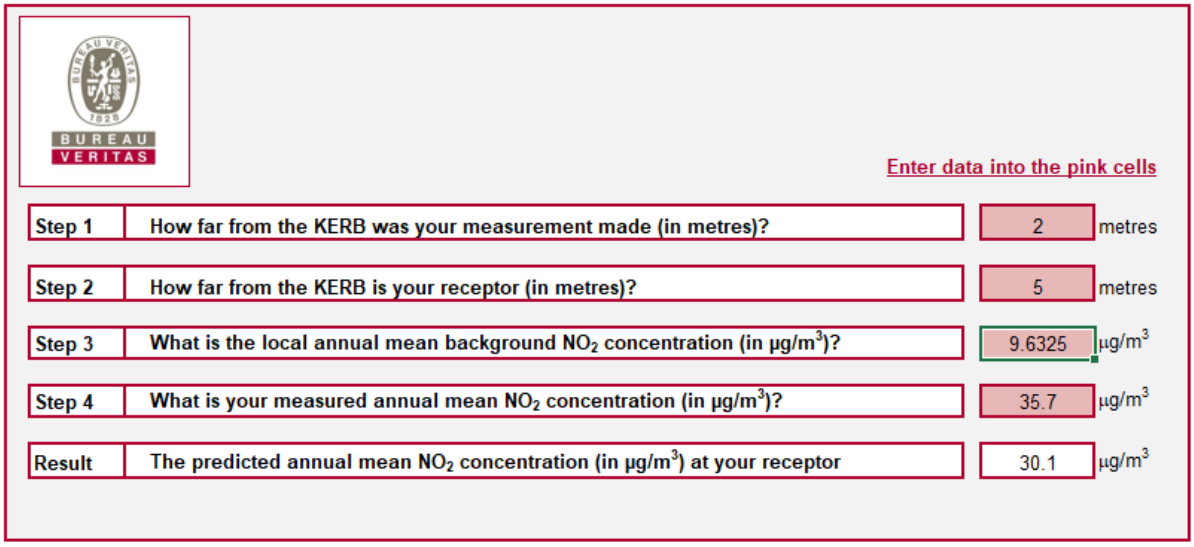
DISTANCE CORRECTION

The distance correction is carried for sixteen locations. An example is carried out for 2a Romsey Road (Site 9). There are five steps to the process, these are shown below:

- **Step 1** Distance to kerb from nearest road (from Table A.2) = 2 m
- **Step 2** Distance to relevant exposure (from Table A.2) = 3 m. Therefore distance from kerb to receptor = 3 + 2 = 5 m
- **Step 3** From background maps (9.6 µg m^{-3})
- **Step 4** annual mean (bias adjusted; 46.97 µg m^{-3} x 0.76 = 35.7 µg m^{-3})
- **Step 5** calculated result (30.1 µg m^{-3})

A screen shot showing how these inputs are inserted into the NO2-Fall-Off-With Distance-from-Roads-Calculator[15] and the predicted concentration at the receptor is shown below:

[15] https://laqm.defra.gov.uk/documents/NO2-Fall-Off-With-Distance-from-Roads-Calculator-v4.2.xls



Enter data into the pink cells

Step 1	How far from the KERB was your measurement made (in metres)?	2	metres
Step 2	How far from the KERB is your receptor (in metres)?	5	metres
Step 3	What is the local annual mean background NO_2 concentration (in µg/m^3)?	9.6325	µg/m^3
Step 4	What is your measured annual mean NO_2 concentration (in µg/m^3)?	35.7	µg/m^3
Result	The predicted annual mean NO_2 concentration (in µg/m^3) at your receptor	30.1	µg/m^3

The distance to receptor corrections for all sixteen locations are shown below:

Site	How far from the kerb was the measurement taken? m	How far from the kerb is the receptor? m	Local annual mean background NO_2 conc^n µg m^{-3}	Measured annual mean NO_2 conc^n (Bias corrected) µg m^{-3}	Predicted annual mean NO_2 at receptor µg m^{-3}
Site: 9. 2a, Romsey Rd	2	5	9.6	35.7	30.1
Site: 11. 28 High Street, Tea Shop	4	9	9.6	23.1	20.0
Site: 14. South View, Gosport Lane	2	7	9.8	27.9	22.6
Site: 15. Lyndhurst Park Hotel	2	7	9.8	20.7	17.5
Site: 40. Bury Rd, Marchwood	1	5	12.4	18.2	16.4
Site: 21. Junction Rd (analyser)	2	9	17.3	25.3	22.5
Site: 22. 30, Junction Rd	1	4	17.3	27.3	24.5
Site: 24. 26, Rumbridge St.	1.5	3.5	17.3	27.5	25.6
Site: 25. BATs corner	1.5	4.5	17.3	27.1	24.8
Site: 29. 1, Rose Rd	2	7	14.5	21.2	19.2
Site: 31. A35	1	4	14.5	20.1	18.5
Site: 32. A35 (1)	2.6	4	14.5	31.1	29.3
Site: 33. A35 (2)	2.6	4	17.3	42.4	39.7
Site: 34. A35 (3)	2.4	4	17.3	35.7	33.4
Site: 35. A35 (4)	3.2	4	17.3	38.8	37.5
Site: 45. St. Catherines, Christchuch Rd, Ringwood	1	4	11.4	32.5	26.6

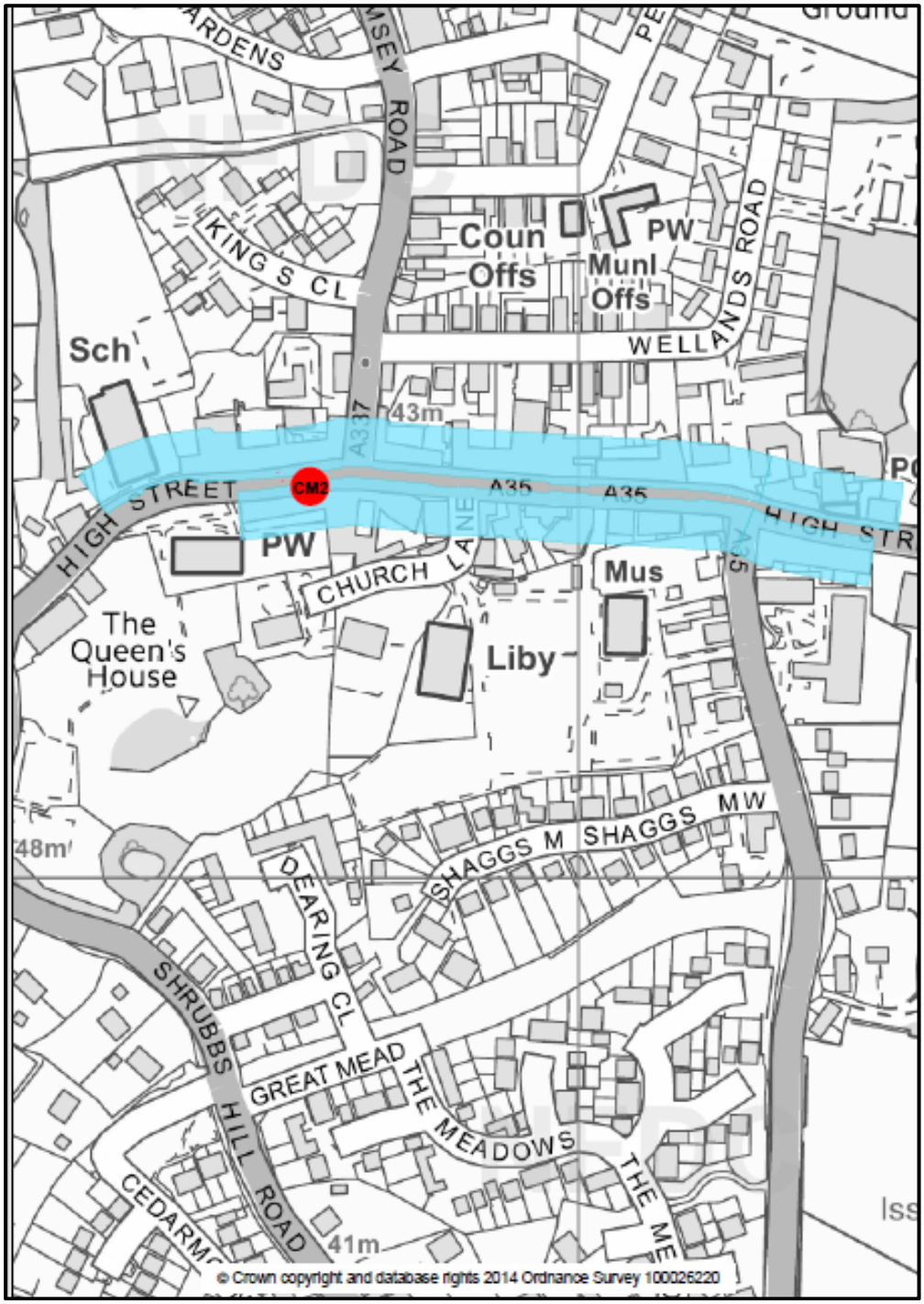
Appendix D: Map(s) of Monitoring Locations and AQMAs

Automatic Monitoring Sites

Figure D.1 - Totton (CM1)

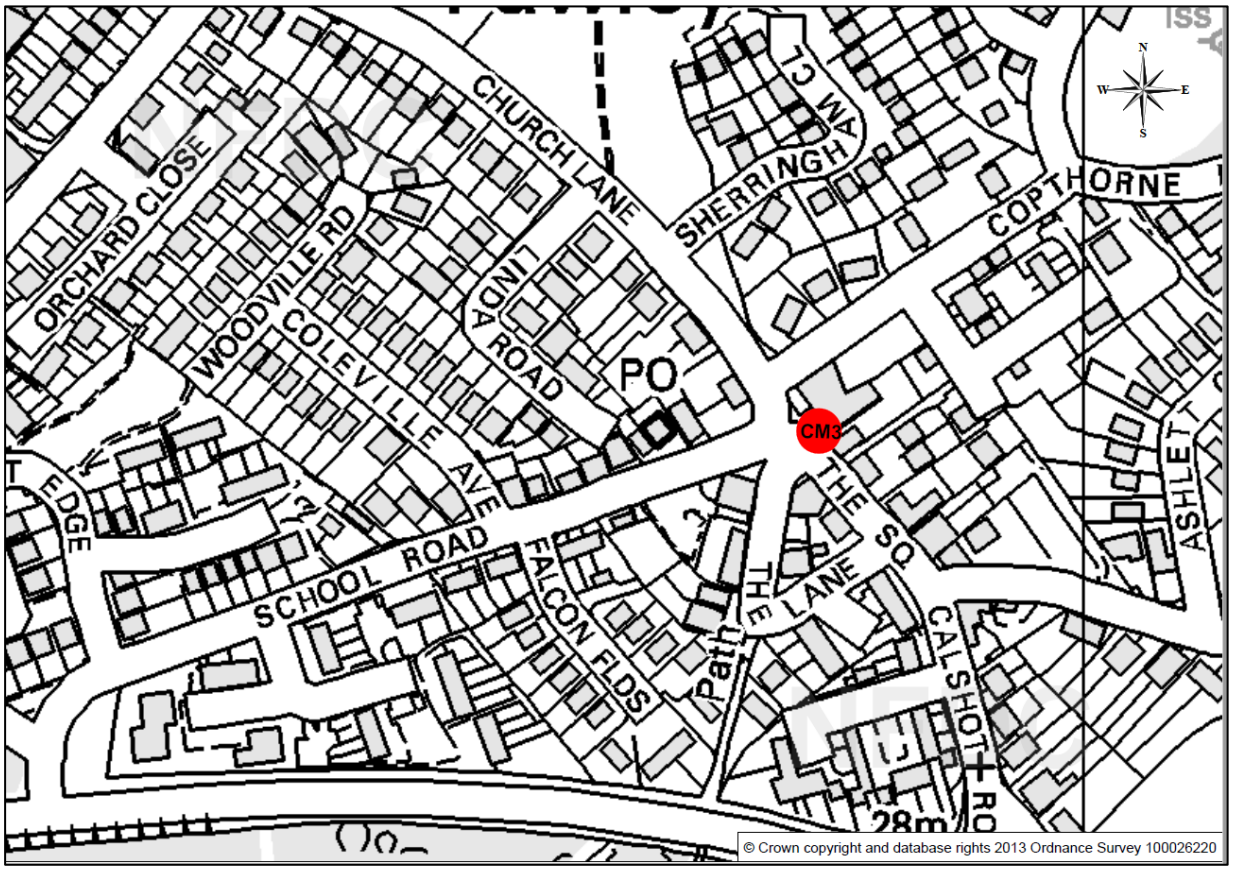
The Totton site is located in a roadside location to monitor for emissions from a road. This site is located between the road and residential properties, some 5m from the building façade. Therefore, the site is not representative of relevant public exposure.

Figure D.2 - Lyndhurst (CM2)



The 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.

Non-automatic Monitoring Sites

Figure D.4 – NO_2 diffusion tube sites in New Forest district

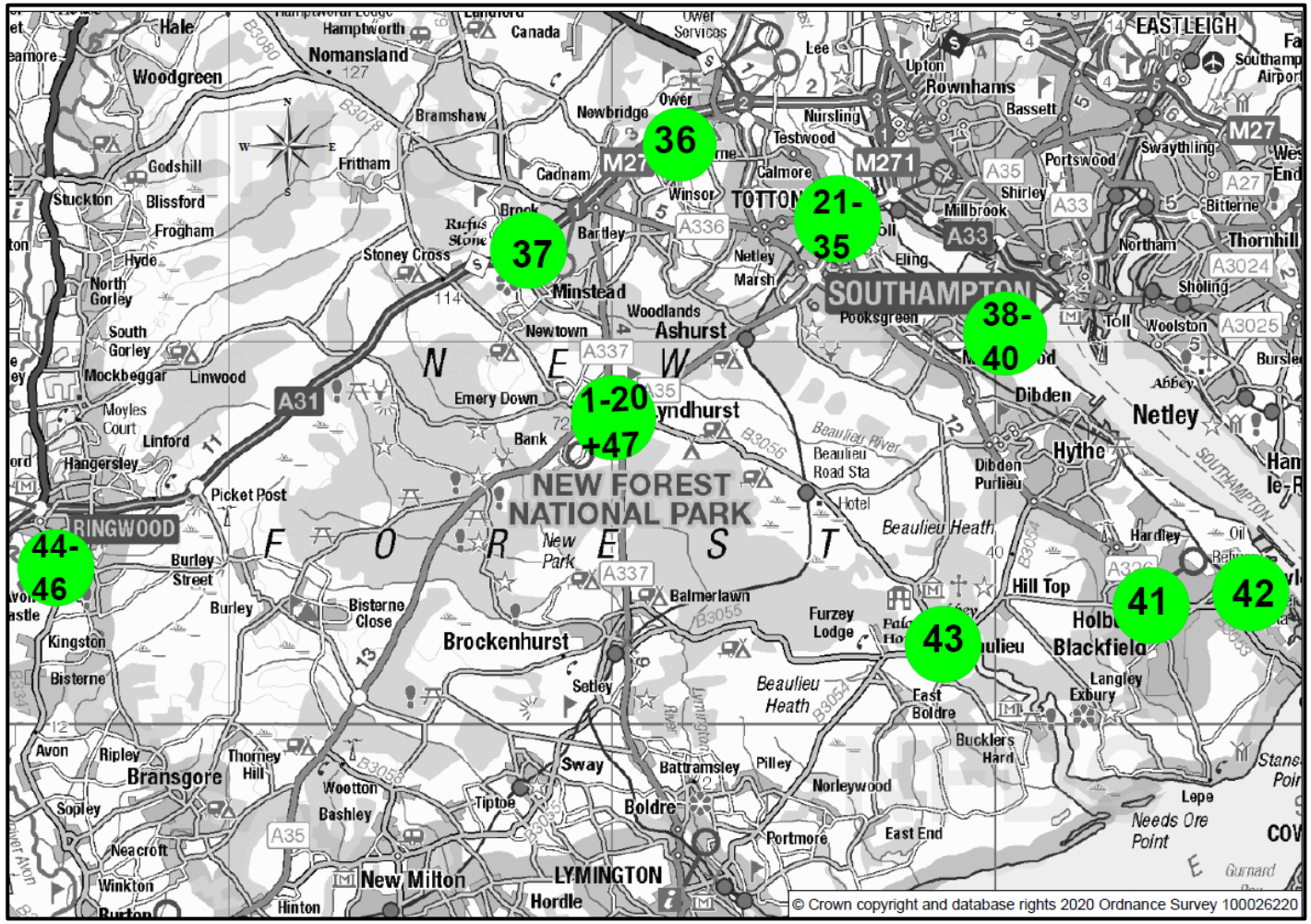


Figure D.5 – NO_2 diffusion tube sites in Lyndhurst

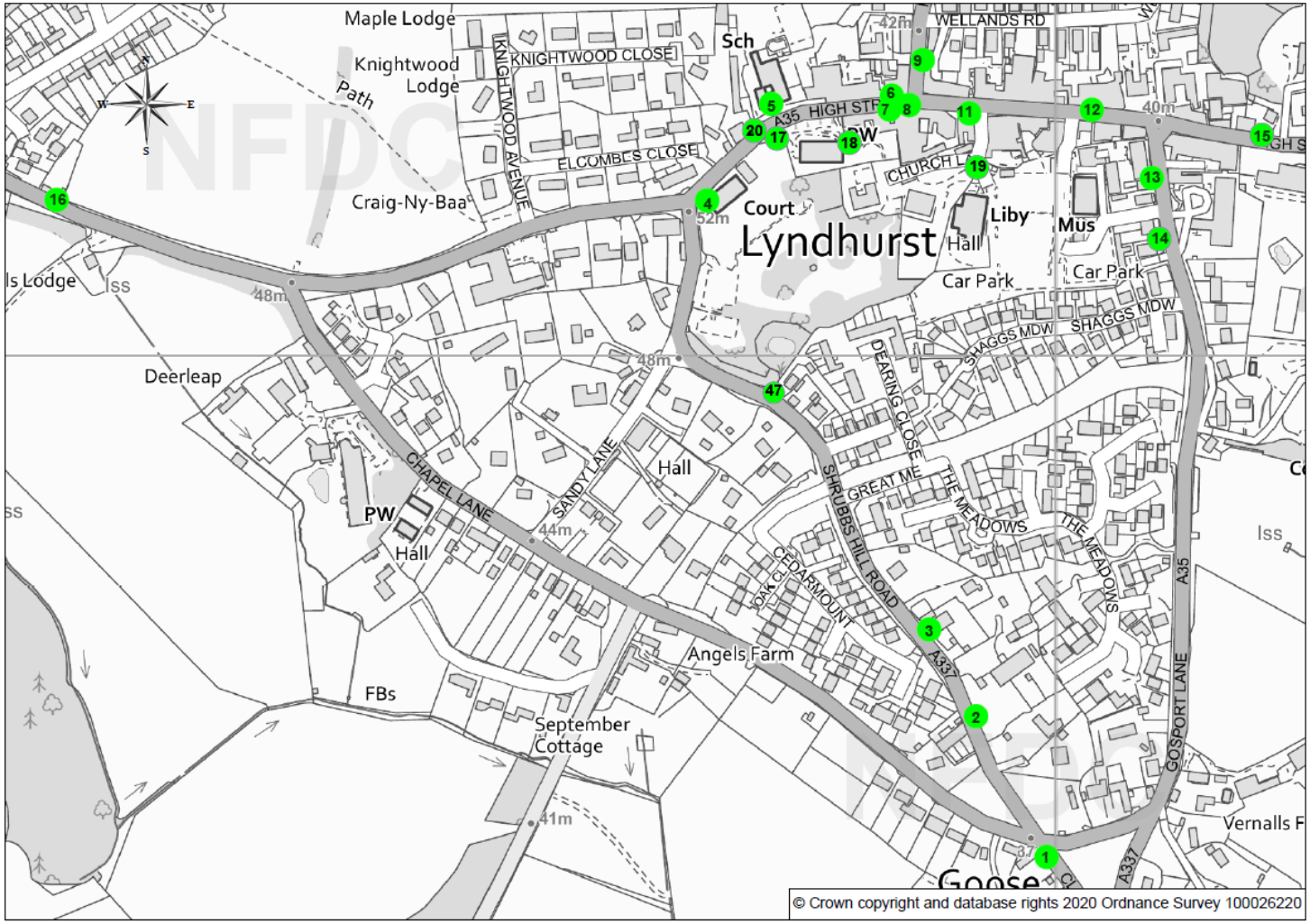
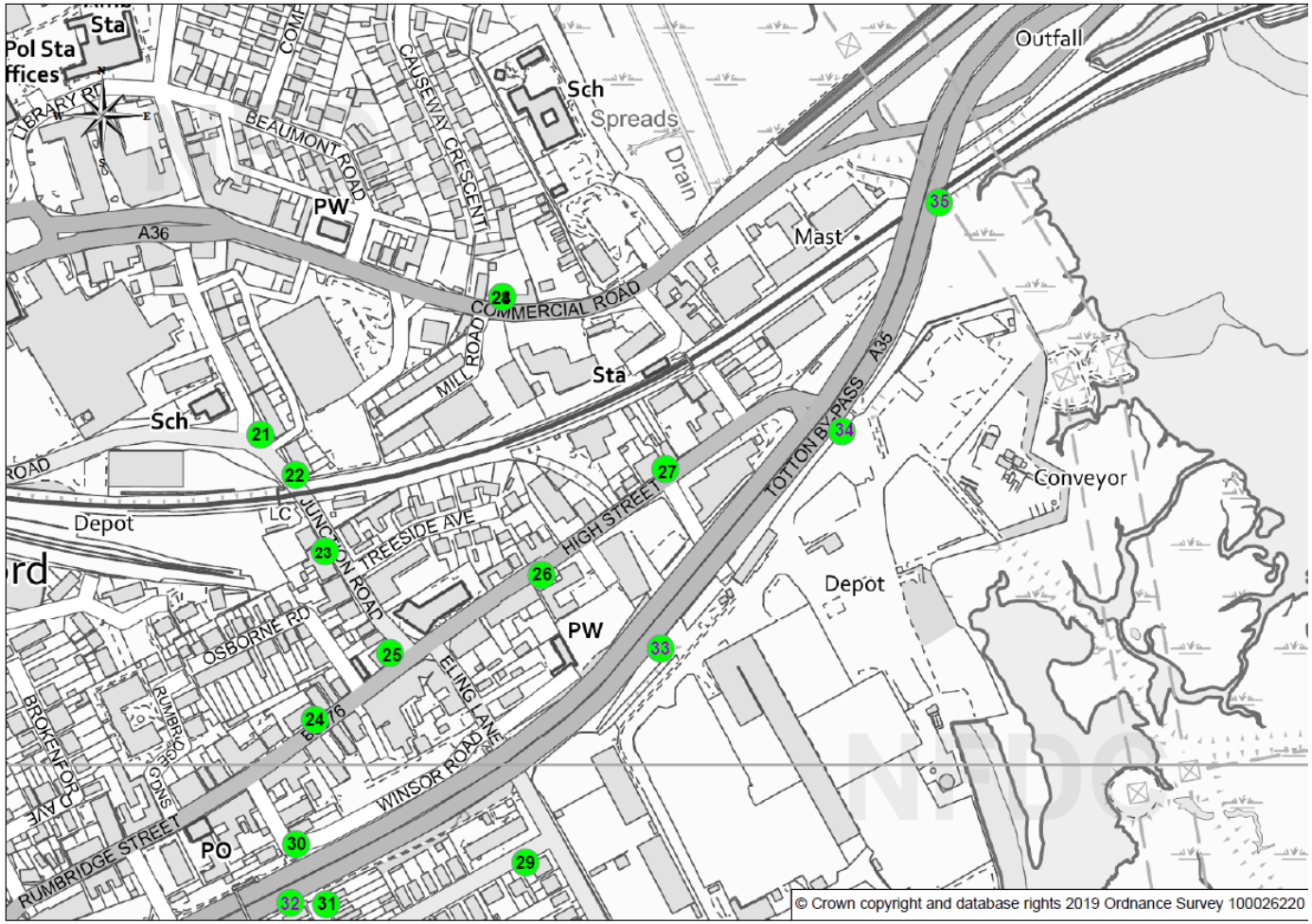


Figure D.6 – NO_2 diffusion tube sites in Totton



Appendix E: Summary of Air Quality Objectives in England

Table E.2 – Air Quality Objectives in England

Pollutant	Air Quality Objective[16]	
	Concentration	Measured as
Nitrogen Dioxide (NO_2)	200 µg/m^3 not to be exceeded more than 18 times a year	1-hour mean
	40 µg/m^3	Annual mean
Particulate Matter (PM_{10})	50 µg/m^3, not to be exceeded more than 35 times a year	24-hour mean
	40 µg/m^3	Annual mean
Sulphur Dioxide (SO_2)	350 µg/m^3, not to be exceeded more than 24 times a year	1-hour mean
	125 µg/m^3, not to be exceeded more than 3 times a year	24-hour mean
	266 µg/m^3, not to be exceeded more than 35 times a year	15-minute mean

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

Appendix F: Estimating $PM_{2.5}$ Concentrations from PM_{10} Monitoring Data

Technical Guidance(Defra, 2016(b)) Box 7.7 provides methods to estimate $PM_{2.5}$ concentrations from monitored PM_{10} concentrations.

New Forest District Council monitors PM_{10} 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 PM_{10}.

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 PM_{10} data to estimate local $PM_{2.5}$ concentrations:

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

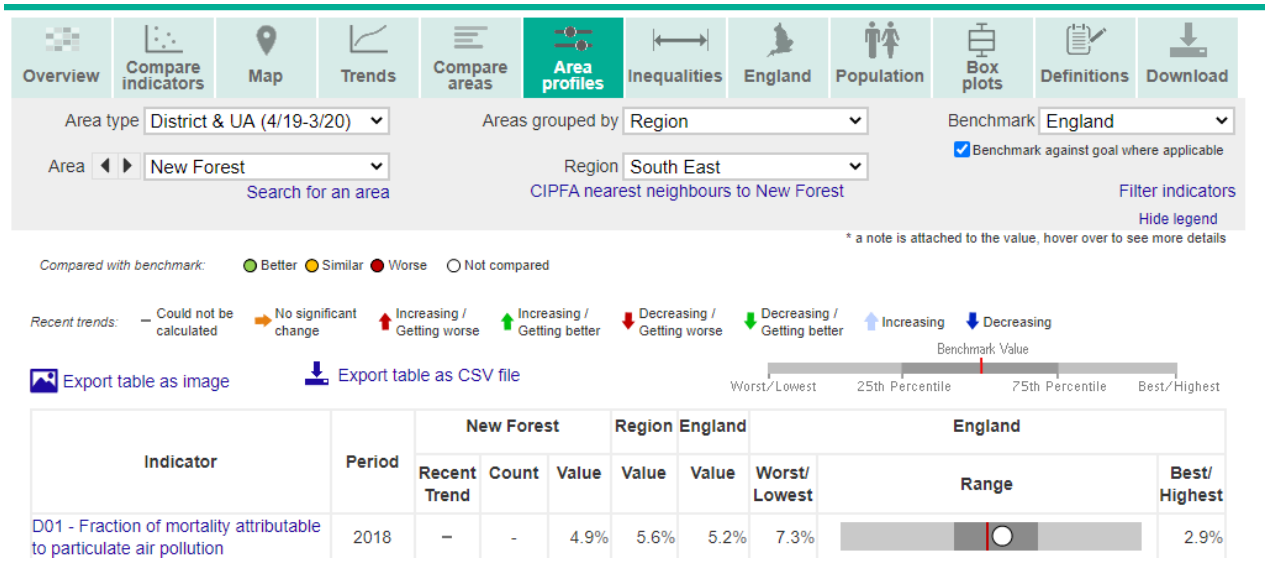
Monitoring Site	2015 Measured Annual Mean PM_{10} Concentration / μgm^{-3}	2015 Estimated Annual Mean $PM_{2.5}$ Concentration / μgm^{-3}	2016 Measured Annual Mean PM_{10} Concentration / μgm^{-3}	2016 Estimated Annual Mean $PM_{2.5}$ Concentration / μgm^{-3}	2017 Measured Annual Mean PM_{10} Concentration / μgm^{-3}	2017 Estimated Annual Mean $PM_{2.5}$ Concentration / μgm^{-3}	2018 Measured Annual Mean PM_{10} Concentration / μgm^{-3}	2018 Estimated Annual Mean $PM_{2.5}$ Concentration / μgm^{-3}	2019 Measured Annual Mean PM_{10} Concentration / μgm^{-3}	2019 Estimated Annual Mean $PM_{2.5}$ Concentration / μgm^{-3}
Totton (CM1)	22	**15.4**	22*	**15.4**	20	**14**	18	**12.6**	19	**13.3**
Holbury (CM4) Site closed 2017	17	**11.9**	15*	**10.5**	-	**-**	-	**-**	-	**-**
Fawley	-	**-**	-	**-**	15	**10.5**	16	**11.2**	17	**11.9**

***Note;** As advised in Section 3.2.2 the PM_{10} 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.*

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

Table G.1 – Fraction of Mortality Attributable to Particulate Air Pollution - 2018[17]

Region	Fraction of Mortality Attributable to Particulate Air Pollution (2018)
England	5.2
South East	5.6
Hampshire	5.4
New Forest DC	4.9



[17] https://fingertips.phe.org.uk/profile/public-health-outcomes-framework/data#page/1/gid/1000043/pat/6/par/E12000008/ati/201/are/E07000091/iid/30101/age/230/sex/4/cid/4/page-options/map-ao-4_cin-ci-4_car-do-0

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	Air quality 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 (micrometres or microns) or less
$PM_{2.5}$	Airborne particulate matter with an aerodynamic diameter of 2.5µm or less
QA/QC	Quality Assurance and Quality Control
SO_2	Sulphur Dioxide
…	…

References

Defra (2016(a)). *Part IV of the Environment Act 1995. Local Air Quality Management. Policy Guidance LAQM.PG(16). June 2017*. Defra.

Defra (2016(b)). *Part IV of the Environment Act 1995. Local Air Quality Management. Technical Guidance LAQM.TG(16). June 2017*. Defra.

Defra (2020(a)). *Background Maps.* [Online]. Available from: http://laqm.defra.gov.uk/review-and-assessment/tools/background-maps.html [Accessed 29th May 2020].

Defra (2020(b)). *Diffusion Tubes*. [Online]. Available from: http://laqm.defra.gov.uk/diffusion-tubes/diffusion-tubes.html [Accessed May 2020].

Defra & DfT (2017). *UK Plan for Tackling Roadside Nitrogen Dioxide Concentrations.* [Online]. Available from: https://www.gov.uk/government/publications/air-quality-plan-for-nitrogen-dioxide-no2-in-uk-2017 [Accessed 30 July 2017].

New Forest National Park (2007). *Tourism and Recreation, Facts and Figures.* 2007. New Forest National Park Authority.

Public Health England (2020). *Public Health Profiles.* [Online]. Available from: http://fingertips.phe.org.uk/search/air%20quality#page/0/gid/1/pat/102/par/E10000014/ati/101/are/E07000084 [Only 2018 data provided; accessed 23 June 2020].