2019 Air Quality Annual Status Report (ASR)

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

June 2019

Local Authority Officer	Rachel Higgins
Department	Environmental and Regulation
Address	New Forest District Council Appletree Court Lyndhurst Hampshire SO43 7PA
Telephone	023 8028 5561
E-mail	rachel.higgins@nfdc.gov.uk
Report Reference number	NF/01/19
Date	June 2019

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 gas fired power station, 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.

---

[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

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 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 was 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.

2018 was the fourth consecutive year since monitoring began in 2002 (using the current monitoring methods) that there were <u>no</u> monitored exceedances of any of the Air Quality Objectives.

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 Following monitored improvements in air quality, two of the declared AQMA's have subsequently been revoked (Fawley in 2013 and Totton in 2016), with Lyndhurst remaining.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

Lyndhurst has monitored significant decreases in nitrogen dioxide concentrations of between 4-11μgm^{-3} over the last 8 or 9 years within part of the High Street (the annual mean objective for NO_2 is 40μgm^{-3}), with no exceedances of the nitrogen dioxide annual mean objective being monitored in Lyndhurst over the past 4 years, with the result for 2018 measured as 34μgm^{-3} at the real time analyser. 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[7] produced by Defra;

- continuously monitoring pollutants of interest at relevant sites including rural background, roadside and industrial locations;

_____

[7]Defra. Technical Guidance LAQM.TG16

- 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 2018;

- working within other legislative parameters such as the planning regime and / or the permitting of industrial processes to assess the impact of development or industry on local air quality, and if appropriate, take measures to reduce the determined impact;

- providing training and updates concerning local air quality to colleagues within the local authority, Council Members, Town and Parish Councils and members of the public; and

- working with our partners such as Hampshire County Council, the Environment Agency, local industry, district and national park colleagues, local Council Members, neighbouring local authorities and Town and Parish Councils.

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

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

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 has been no exceedances of the annual mean objective for NO_2 monitored in Lyndhurst during 2018.

Without the filter lane in use

With the filter lane in use

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[8] 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

---

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

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

During 2018 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:

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

(front)

(reverse)

- o continuation of diffusion tube monitoring along the Clean Walking Route to show the differences in pollution levels when compared to the High Street; and,

- o 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 the monitoring locations and result determination, and the school would change the tubes. After the study, the Council will work with the school to discuss ways to reduce exposure of pollution to their pupils and ways to reduce local pollution. The monitoring started in May 2018 and will run for a year before reporting the findings back to the school.

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. As such further work is proposed in Lyndhurst, for example an update of the current Action Plan 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 at additional locations in Ringwood

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 update Lyndhurst Air Quality Action Plan;

- to develop an Air Quality Strategy for New Forest;

- to forward Southampton CAZ work, including the production of regional planning guidance; and,

- to work regionally, pooling expertise and resource to forward local and national air quality issues, strategies and consistent messages.

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

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:

  http://myjourneyhampshire.com/journeyplanner/

- 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
Governance 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 2018. 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 http://www.newforest.gov.uk/airquality . 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 AQMA.

The full list AQMA's in the UK can be found at http://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	6 June 2005	NO$_2$ Annual Mean	Lyndhurst	25m either side of the High St, Lyndhurst including Lyndhurst Infant School - 97 High St, and 8-76 High St.	NO	52	µg/m^3	37	µg/m^3	Lyndhurst	2008	http://www.newforest.gov.uk/airquality
Totton	6 June 2005	NO$_2$ Annual Mean	Totton	An area including a number of properties along Rumbridge Street, Eling Lane, Junction Road and Maynard Road, Totton.	NO	44	µg/m^3	25	µg/m^3	Totton	2008	**AQMA revoked 22 June 2016**
Fawley	13 December 2005	SO$_2$ 15 Minute Mean	Fawley	An area including 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 (2018) concluded that *'the report is well structured, detailed and provides the information specified in the Guidance, using the latest report template.'*

The main comments from the previous Annual Status Report (2018) include:

"The Council has recently revised their monitoring programme to include a number of special sites (for Clean Air Zone and Clean Walking Routes projects), alongside a small number of additional sites. The vast majority of current monitoring sites have continually recorded concentrations far below objective limits. The Council are encouraged to review their monitoring strategy, ideally redeploying these resources to identify new hotspots or assess the extents or established areas of concern.

The Councils AQAP is very good and comprehensive. The Councils actions have clearly resulted in improved local air quality. The Council should continue their hard work to bring the last existing AQMA into compliance. Apart from the Lyndhurst AQMA air quality is very good in the District."

New Forest District Council will continue towards improving air quality and the list of all measures completed, in progress or planned for the District are summarised below. Table 2.2 sets out the work considered, completed and planned for the AQMA in Lyndhurst (based on the current Action Plan).

Key completed measures are:

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

  New Forest District Council was named in 2017 within the UK Air Quality Plan(Defra & DfT, 2017) 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 a location where the public has access. As such New Forest District Council was mandated by the Government to produce a plan 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.

Southampton had already been identified in 2015 as an area which also had roads persistently exceeding the EU limit values for nitrogen dioxide and therefore Southampton City Council has already progressed some action in forwarding further measures to improve local air quality. The identified stretch of the A35 in New Forest is considered as an extension of the Southampton issue, so the Authorities worked in partnership to deliver a Southampton CAZ.

In 2017 New Forest District Council completed a feasibility study and detailed assessment on the area of concern within the District. During 2018 New Forest District Council had written and agreed a memorandum of understanding with Southampton City Council to ensure we worked effectively together, met a Ministerial Direction[9] placed on the Authority to submit an Initial Plan and then Final Plan by 31 December 2018. The Final Plan described how compliance with the EU limit value would be met in the New Forest in a business as usual case.

Whilst New Forest District Council is responsible for achieving compliance within its own Authority, we continue to work with Southampton City Council. Currently Southampton City Council has determined through their Final Plan that compliance will be met with the implementation of schemes such as the retrofitting of buses, use of distribution centres, low emission taxi scheme and improvements to the local cycle network and as such a charging option is not being forwarded at this time.

It should be noted that the clean air zone work has dominated the air quality resource and work at New Forest District Council during 2018.

---

[9] https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/746095/air-quality-no2-plan-directions-2017.pdf

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

Hampshire County Council has a small team of officers who engage with schools with regards to sustainable travel which includes local air quality. Our aim in 2018 was to continue to work collaboratively with the County Council to engage with local schools to provide education on air quality and implement local measures to improve air quality and included:

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

St. Michael's and All Angels School in Lyndhurst is on the High Street within the current AQMA. Although the school itself is below the annual mean objective for nitrogen dioxide, children are often walked to school along the High Street and through areas of poorer air quality. Hampshire County Council has installed an alternative route in the area, through the church and by-passing part of the High Street, therefore we have continued to work with the school and Hampshire County Council to reduce children's exposure in areas of poorer air quality and reduce vehicle emissions in the High Street by;

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

(front)

(reverse)

- o continuing diffusion tube monitoring along the Clean Walking Route to show the differences in pollution levels when compared to the High Street; and,

- o 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 Milton Infants School approached the Council in 2017 with concerns relating to air quality at their school. The school is located on a busy road and many children are driven to the school.

Whilst it was determined, following Guidance (DEFRA, 2016) that the school was not in a location of concern requiring further assessment, the Council proposed a mini monitoring scheme at and outside the school to determine nitrogen dioxide levels. The idea is for the Council to provide the tubes, expertise in the monitoring locations and result determination, and the school would change the tubes. The study was started in May 2018 and will continue for 1 year. After the study, the Council will educate the school further in pollution and ways to reduce exposure to their pupils and reduce local pollution.

- **To re-engage and work collaboratively regionally, with departments and Members within the Council, Public Health and the National Park**

Whilst council officers from Hampshire Local Authorities have previously met regularly to discuss regional air quality issues, in 2018 there has been a commitment to move this group forward. This has been in part in response the local Clean Air Zone work and the understanding that collaborative working is an effective method of working through pooling resource and knowledge. The ambition of the regional group is to build on this work, including colleagues from Hampshire County Council (public health and transport) and Public Health England to target specific air quality work areas such as producing supplementary planning guidance and forwarding air quality engagement with the public.

Some work has also been undertaken to work more closely with officers within the Council (planning and well-being in particular) as well as promoting air quality with Members by presenting to relevant committees on the duties placed on the Council with regards to air quality concerning the Local Air Quality Management regime, Clean Air Zone work and planning. This work will continue and is proving to be successful in promoting local air quality awareness.

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

- **To produce an update for the Air Quality Action Plan for Lyndhurst**

    The Acton Plan for Lyndhurst requires updating even though it is acknowledged the monitoring results are decreasing and are currently within the Air Quality Objectives. Work has started updating the Plan and the implementation of some minor schemes particularly those working with the local school. However it should be noted that due to the Clean Air Zone work the update on the Air Quality Action Plan has been delayed.

- **To develop a draft Air Quality Strategy for the New Forest**

  Following the work on the Clean Air Zone and the production of the Governments Clean Air Strategy, New Forest District Council is planning to develop its own Air Quality Strategy. Whilst it is acknowledged that air quality across the New Forest is good, the Strategy will advise on the local air quality issues and provide a Council strategy for improving air quality in general, for example by looking at improvements from solid fuel burning, installation of electric charging points, sustainable transport and engaging further with local businesses

- **Working more collaboratively with regional Local Authorities, Public Health and Transport to share information and experiences**

  This work was started in 2018 and builds on the regional meetings between air quality officers within local councils. The aim is to pool local resources and target local air quality issues as a region to provide a consistent message and deliver outcomes.

- **Southampton Clean Air Zone work**

  New Forest District Council will continue to work with Southampton City Council to deliver a Southampton CAZ to ensure compliance is met with the EU limit value for nitrogen dioxide. Work is continuing within the New Forest with the installation of a real time analyser on the A35 (the road identified by Government of failing the EU limit value) to supplement current diffusion tube monitoring and working with colleagues in Hampshire County Council to improve cycle links and routes from the Totton and Waterside area into Southampton.

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

  Work will continue to engage with Hampshire County Council and schools to promote air quality by forwarding schemes to understand local issues and implement measures to improve local air quality. For example, measuring the impact of children being driven to school and implementing schemes to reduce car use.

- **Determining availability of local PM$_{2.5}$ monitoring**

  It has been noted that some local industries and businesses may monitor PM$_{2.5}$ in the district. If this is the case the Council will determine if the monitoring techniques are acceptable and whether the data can be used for local air quality assessment purposes.

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

- **to update Lyndhurst Air Quality Action Plan**

This is a priority piece of work to ensure all measures are in place to maintain the reductions in emissions within the Air Quality Management Area. It is acknowledged that this work has been delayed due to the Clean Air Zone work which was deemed the priority for Council resources in 2018.

- **to develop an Air Quality 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 an Air Quality Strategy for the New Forest.

- **to forward Southampton CAZ work**

To continue working collaboratively with Southampton City Council to ensure compliance is met with the EU limit value for nitrogen dioxide in the shortest time possible.

- **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.

The principle challenges and barriers to implementation that New Forest District Council anticipates facing continues to be the availability of resources, officer time and funding. The Clean Air Zone work has had a huge impact on the service being

able to deliver Local Air Quality Management work, resulting in a delay in the progression of implementing certain measures such as the update of the Lyndhurst Action Plan.

As such officers within the service with limited air quality knowledge are being upskilled to progress work to update Lyndhurst Air Quality Action Plan. In the long term, expanding air quality knowledge within the team is a positive step forward enabling more officers to progress work and being able to develop their ideas however increasing officer knowledge and experience takes time and this obviously results in extended timescales for completing current air quality work areas.

Whilst the measures stated above and in Table 2.2 will help to contribute towards compliance with air quality objectives New Forest District Council anticipates that further additional measures not yet prescribed will be required in subsequent years to achieve compliance and enable the revocation of Lyndhurst Air Quality Management Area. This is to ensure long term compliance within Lyndhurst can be achieved and maintained.

Table 2.2 – Progress on Measures to Improve Air Quality (within Lyndhurst AQMA)

Measure No.	Measure	EU Category	EU Classification	Organisations involved and Funding Source	Planning Phase	Implementation Phase	Key Performance Indicator	Reduction in Pollutant / Emission from Measure	Progress to Date	Estimated / Actual Completion Date	Comments / Barriers to implementation
1	Bypass	Transport Planning and Infrastructure	Other	Hampshire County Council (HCC) (lead + funded) + New Forest District Council (NFDC) Environmental Health (EH)	n/a	n/a	n/a	Unknown	Scrutiny review at County Council in 2008	**Option discounted** (cost and environmental impacts)	Option not feasible after scrutiny review
2	Improvements to A337 and High St. junction	Traffic Management	Strategic highway improvements, Re-prioritising road space away from cars, including Access management, Selective vehicle priority, bus priority, high vehicle occupancy lane	HCC (lead + funded) + NFDC (EH)	Completed (2008)	Completed (2010)	Traffic surveys to assess traffic movements and monitoring NO2	~11 µgm-3	No physical junction alterations Installation of long vehicle detection technology in High Street on approach to junction with Romsey Road. 'MOVA' system installed to work in conjunction with long vehicle detection.	Option to alter junction layout **discounted** (cost) Option to install long vehicle detection **completed** Option to install 'MOVA' **completed**	Monitoring at the automatic site has noted a decrease of 11µgm-3 since 2010. Real time analyser monitored compliance with AQO's in 2016. Observations have determined reduced congestion in terms of queue lengths and frequency of occurrence. Traffic counts in 2019 advise no significant changes in vehicle numbers have been noted on the routes around and through Lyndhurst
3	Additional road traffic management scheme	Traffic Management	Other	HCC (lead + funded) + NFDC (EH)	Completed (2008)	AQ & traffic modelling (2009). 2025 for CCTV recognition	Traffic surveys to assess traffic movements and monitoring NO2	1-5 µgm-3	Air quality and traffic modelling work completed. Additional traffic gating systems discounted due to impacts on vehicle flows. New Forest Transport Statement advises of	Traffic gating option **discounted** (impact on traffic flows) >10years for traffic management scheme	Traffic management scheme will depend on funding from developers contributions. The scheme is not proposed as a 'vehicle charging' scheme.

New Forest District Council

#	Measure										
									schemes to install CCTV and number plate recognition around Lyndhurst to assist in overall traffic management		
4	Enforcement of heavy goods vehicle restriction	Traffic Management	Other	Police - own budget	Continuous	Continuous	Traffic surveys to assess no's. of illegal HGV's and monitoring NO2	1–2 µgm-3	County Council traffic survey	**Continuous**	2019 traffic surveys (vehicle figures and officer survey) show HGV's travelling down High St. (potentially without delivering). Further action, formal and informal, being considered by NFDC with partners.
5	Installation of variable messaging system	Traffic Management	UTC, Congestion management, traffic reduction	HCC - unknown funding	Completed (2009)	Completed (2010)	Traffic surveys to assess traffic flows and monitoring NO2	1–2 µgm-3	System installed	**Completed**	System is only used when traffic is congested on A337 and the traffic signs are available for use.
6	Enforcing current parking restrictions	Traffic Management	Other	NFDC (parking) - own budget	Continuous	Continuous	Enforcement figures and monitoring NO2	< 1µgm-3	None	**Continuous**	Commitment for traffic enforcement / informally messaging to be completed in High St.
7	Review signage around Lyndhurst	Traffic Management	Other	HCC - own budget	Completed (2011)	Completed (2012)	Visitor surveys	< 1µgm-3	7.5t restriction signage reviewed	2018	Meeting held with County Council - agreement for a further review of signage in 2019
8	Review and support New Forest District Council's travel plan	Promoting Travel Alternatives	Workplace Travel Planning	NFDC - own budget	Continuous	Continuous	Travel surveys of Council staff and monitoring NO2	< 1µgm-3	Incentives to car share, use alternative transport.	**Continuous**	Council moving to a smarter more flexible working environment with officers able to work away from the main Council office in Lyndhurst when able. Progress still required.
9	Development of school travel plan	Promoting Travel Alternatives	School Travel Plans	HCC - unknown funding	Continuous	Continuous	Travel surveys of school travel and monitoring NO2	< 1µgm-3	School travel plan approved 2006. Improved pathway to school via church avoiding High Street completed. Monitoring undertaken to identify a clean walking route	**Continuous**	New links with HCC school travel team. Engagement made with 3 local schools to discuss AQ / sustainable travel options. Working directly with Lyndhurst school - walking clean

#											
					to school via the church and avoiding the High Street						air route, anti-idling campaign
10	Areas of planned developments	Alternatives to private vehicle use	Other	NFDC (EH and Planning) + New Forest National Park planning authority - own budgets	Continuous	Continuous	None	< 1 µgm-3	Planning assessed for air quality impacts, including provision of air quality GIS maps to planning	**Continuous**	Including developments outside of Lyndhurst but whose transport routes may impact on Lyndhurst
11	Review bus routes (incl. green transport)	Transport Planning and Infrastructure	Bus route improvements	HCC + NFDC (transport) - own budgets	Continuous	Continuous	Travel surveys to assess use of public transport and monitoring NO2	< 1 µgm-3	Bus priority lane installed in Shrubbs Hill Road.	Bus priority lane (Shrubbs Hill Road) **completed**	Option unlikely to reduce NO2 emissions greatly, but encourages use of public and green transport into and through Lyndhurst. Funding obtained in 2018 (due to Southampton CAZ work) to retrofit buses accessing Southampton. This work has started and will include some buses travelling through Lyndhurst en route to Southampton.
12	Review cycle routes	Transport Planning and Infrastructure	Cycle network	HCC + NFDC - own budgets	Completed (2008)	Completed (2010)	Travel surveys to assess use of cycle routes and monitoring NO2	< 1 µgm-3	Installation of additional cycle parking in Lyndhurst. Additional cycle schemes identified in New Forest Transport Statement including cycle routes to rear of primary school	Cycle parking **completed**. >10yrs for additional schemes	Additional schemes currently at prefeasibility stage
13	Review car parking	Transport Planning and Infrastructure	Other	NFDC (EH) - own budget	2016	2016	Travel surveys and monitoring NO2	< 1 µgm-3	Car parking reviewed by County Council	2018 to review car park usage	County Council review determined no agreeable alterations to current car parking arrangement. Car park usage should be reviewed for air quality purposes.
14	New Forest District Council	Vehicle Fleet Efficiency	Driver training and ECO driving aids	NFDC - own budget to date	Completed (2008)	Continuous	n/a	< 1 µgm-3	Assessment of council fleet. Staff using Council	**Continuous**	Procurement of fleet vehicles being investigated

	vehicle fleet management								vehicles trained in eco-driving. Tracker equipment installed into vehicles. Review methods of working of council workers. Assessment of remaining Council fleet.		
15	Vehicle emission testing	Vehicle Fleet Efficiency	Testing Vehicle Emissions	NFDC	2012	2013	n/a	< 1 µgm-3	None	**Discounted**	
16	Investigate use of absorbing paving surface	Transport Planning and Infrastructure	Other	NFDC	n/a	n/a	n/a		Option discounted due to lack of positive outcomes from trials with other LA's	**Discounted** (technology not viable)	
17	Increase public awareness of air quality	Public Information	Via the Internet	NFDC (EH) - own budget	Continuous	Continuous	n/a	< 1 µgm-3	Update website. Completed a 'anti-idling campaign along the High Street to encourage residents and visitors to turn their engines off when stationary at the traffic lights - media coverage plus school poster campaign	**Continuous**	Limited success with additional engines being turned off - basic count monitoring noted a 2% increase in vehicles turning off their engines. Working regionally to pull resource and expertise to forward targeted campaigns and information
18	Review air quality monitoring	Public Information	Other	NFDC (EH) - own budget	Continuous	Continuous	n/a	n/a	Additional monitoring completed	**Continuous** Review every November	

Note: Table 2.2 (above) concerns all schemes considered and implemented within the Lyndhurst AQMA, including those identified within the Action Plan (2008) as such the measures are not listed in a hierarchy of potential impact. Additional district-wide schemes are noted in Section 2.2.

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 2018 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 the 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 Air Quality Strategy for the New Forest.

After 3 years of reporting $PM_{2.5}$ concentrations (based on the monitored PM_{10} concentrations) a slight decrease is noted at the roadside monitoring station in Totton, whereas the industrial monitoring locations of Holbury (and now) Fawley has 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 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 PM2.5

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 PM2.5 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 PM2.5and 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 (not currently agreed)	√	√	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 measure 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 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 and this work has started at a regional level during 2018.

<u>Hampshire County Council</u>

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 provide information on how the children travel to and from school, education sessions on air quality, increasing walking and cycling to school and competitions to highlight 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 land owners (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.

New Measures

Development of an Air Quality 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 an Air Quality

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 an Air Quality 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 3 sites during 2018. 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 47 sites during 2018. While the vast majority of the sites are in place to fulfil the requirements of Local Air Quality Management regime 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 all the monitoring sites.

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

3.2 Individual Pollutants

The air quality monitoring results presented in this section are, where relevant, adjusted for bias, "annualisation" and distance correction. Further details on adjustments are provided in Appendix C.

3.2.1   Nitrogen Dioxide (NO₂)

Table A.3 in Appendix A compares the ratified and adjusted monitored NO_2 annual mean concentrations for the past 5 years with the air quality objective of 40 µg/m^3. For diffusion tubes, the full 2018 dataset of monthly mean values is provided in Appendix B.

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 200 µg/m^3, not to be exceeded more than 18 times per year.

The monitoring undertaken within New Forest district throughout 2018 has shown no exceedances of the annual mean objective for nitrogen dioxide at any of the automatic and non-automatic monitoring sites. This is the fourth year since this type of monitoring has been undertaken (since 2002) that no exceedances have been monitored.

Lyndhurst

It is noted that there is an overall reduction of nitrogen dioxide concentrations in Lyndhurst (sites CM2 and non-automatic sites 1- 16) with some significant decreases monitored of up to 11 µgm^{-3} throughout the whole of Lyndhurst. Within the current AQMA in Lyndhurst the monitoring results were as follows:

Site ID	Location	NO$_2$ Annual Mean Concentration (µg/m^3)				
		2014	2015	2016	2017	2018
CM2	Lyndhurst	41	37	38	35	34
5	School, High St.	26.7	25.19	26.1	21.56	21.6
6	15, High St.	42.7	38.38	39.8	34.03	35.2
7	14, High St. (analyser)	40.12	37.43	38.5	34.46	34.9
8	16, High St.	43.73	39.22	39.5	37.01	36.9
9	2a, Romsey Rd	40.3	35.76	30.1	26.8	29.1
11	28, High St.	29.19	27.99	22.7	20	19.6
12	65, High St.	33.66	33.33	28.9	30.7	28.8

Figure 3-1 shows that concentrations in 2018 continue to be below the air quality objective but compared to 2017 four of the sites showed an increase in concentration and four showed a decrease. Such inter year variability may be expected and monitoring should be continued to confirm the overall downward trend seen since about 2014. 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
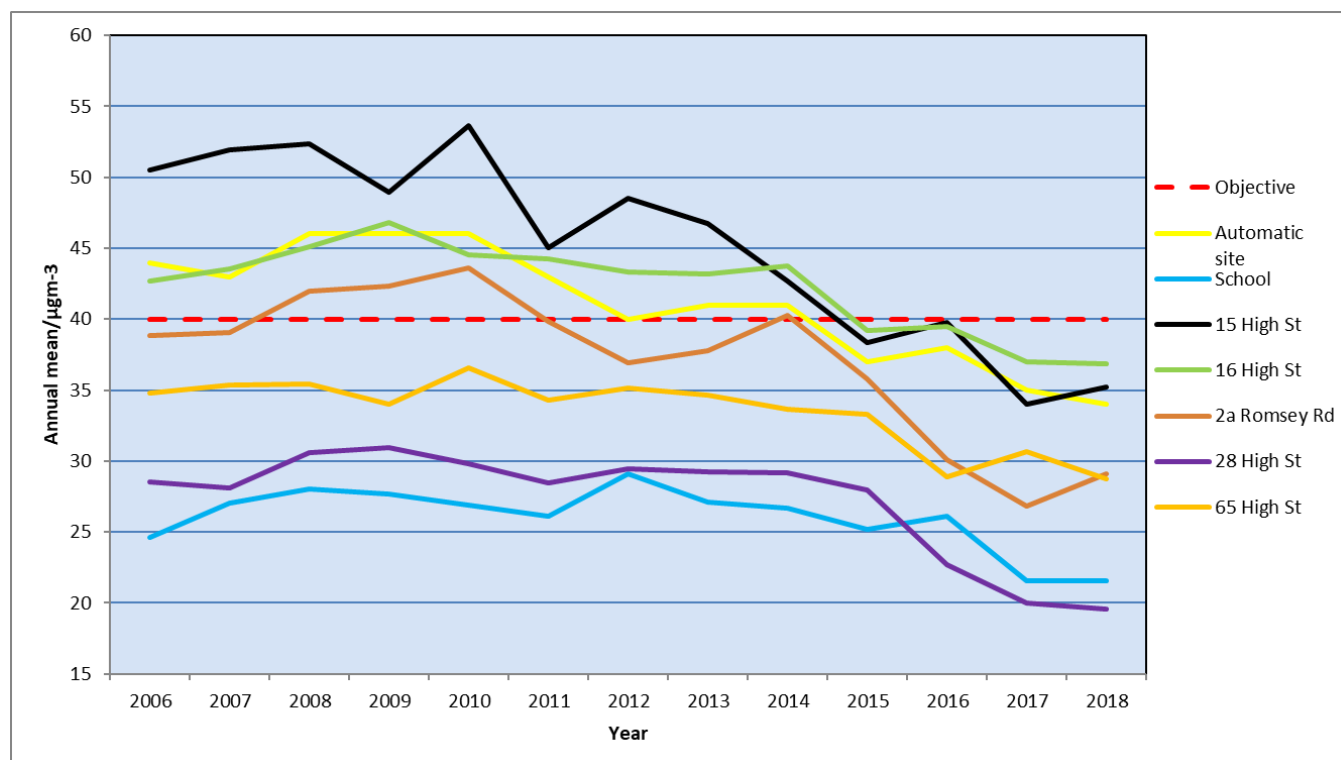
Further work is being undertaken within the AQMA to improve nitrogen dioxide concentrations, primarily through the forwarding of smarter options such as anti-idling campaigns and working with the local community. Therefore monitoring will continue within the AQMA with the view that revocation could be considered if the decrease in monitoring trend continues.

New Forest District Council will not be proceeding to revoke the Lyndhurst AQMA at this time.

The other monitoring locations around Lyndhurst have also shown a variable increases or decreases in nitrogen dioxide concentration compared to 2017. The highest concentration continues to be measured at 2 Gosport St (39.3 μgm^{-3}) a slight increase compared to last year but still just below the air quality objective. This location is after 2 right angled bends where traffic will be accelerating and is a site that historically has shown higher nitrogen dixide concentrations. This site is outside the current Lyndhurst AQMA, however monitoring will be continuing at this location to determine if further action is required.

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 2018 has shown the nitrogen dioxide annual mean concentrations were significantly below the Air Quality Objective of 40μgm^{-3}. The highest monitored result for 2018 was ~28μgm^{-3} monitored at a location in Commercial Road whilst the the automatic site (CM1) monitored a concentration of 26μgm^{-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 (10.6 μgm^{-3}) at the rural site (school field, Beaulieu).

New moniting locations

Following concerns from residents monitoring in Lymington and Brockenhurst began in 2017. However, annual concentrations were shown to be significantly below the annual objective concentrations and were consequently discontinued.

Monitoring was also carried out 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 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)

In 2018 New Forest District Council were issued with a Ministerial Direction to achieve complinance with the EU Ambient Air Quality Directive. As a result, monitoring has been carried out at a number of sites along the A35 in Totton (sites with Site IDs 32 to 35). The concentration at Site A35(2) (Site ID 33) was measured (39.8 µgm^{-3}) close to the EU Limit Value.

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

Figure 3-2 Locations where nitrogen dioxide is measured along the Clean Walking Route in Lyndhurst (Green Markers)
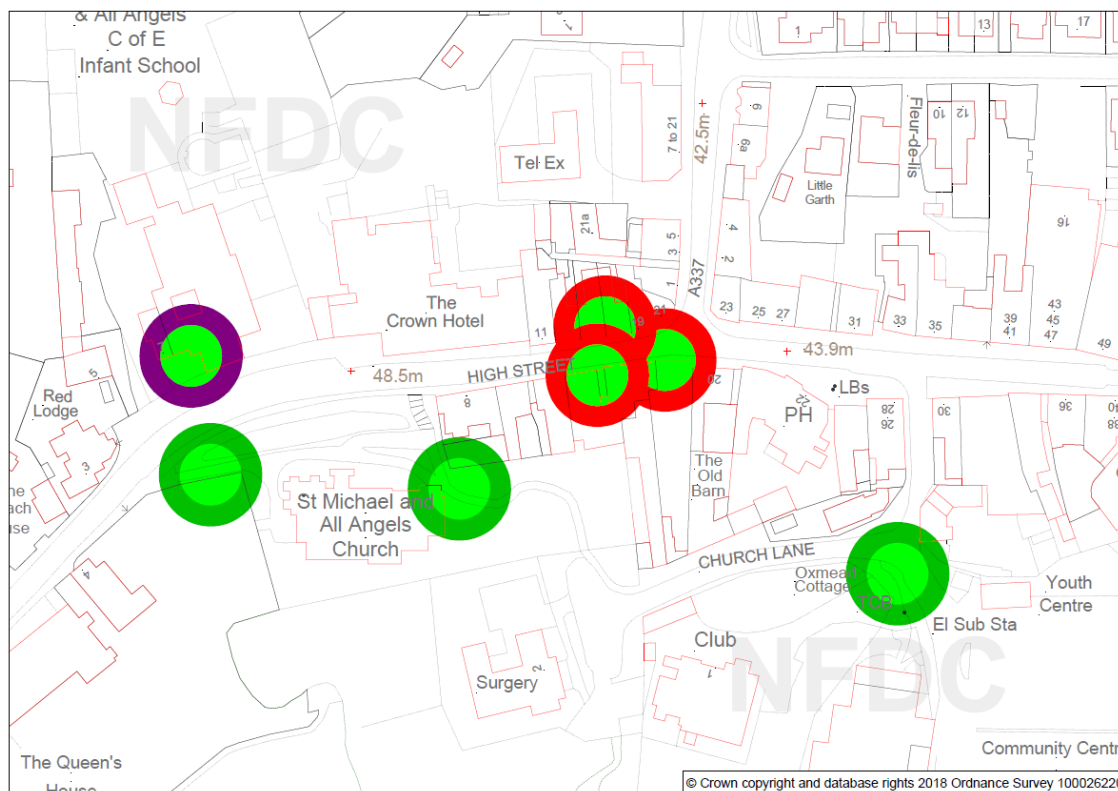
Figure 3-3 Nitrogen dioxide concentrations measured along the route of the Clean Walking Route,within the AQMA and at the Infant School on High Street
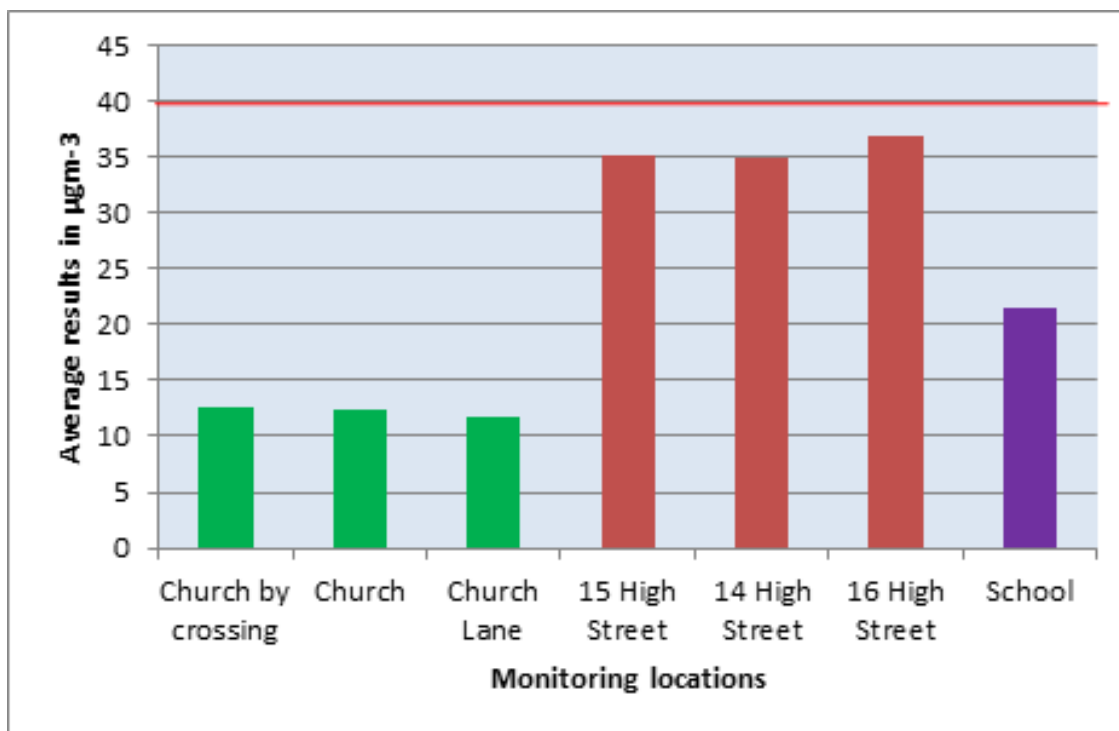
<u>Hourly mean air quality objective</u>

The hourly mean nitrogen dioxide objective has not been exceeded at either automatic monitoring sites (CM1 and CM2), with Lyndhurst reducing from 5 hourly exceedances of 200 μgm^{-3} in 2016 to 0 in 2018. None of the non-automatic monitoring sites monitored an annual mean nitrogen dioxide concentration greater than 60μgm^{-3} which would also indicate a possible exceedance of the hourly mean nitrogen dioxide concentration.

Based on the monitoring results obtained from 2018 and previous years, no new AQMA's will be declared for the likely exceedance of the annual mean objective or hourly mean objective for nitrogen dioxide. Monitoring using automatic and non-automatic techniques will continue throughout the New Forest district.

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 40$\mu g/m^3$.

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 50$\mu g/m^3$, not to be exceeded more than 35 times per year.

PM$_{10}$ is monitored at automatic monitoring sites at Totton (CM1) a roadside site and Fawley (CM3) an industrial site. Previously the TEOM operating at Fawley was operating for a number of years at Holbury (another industrial site) which was closed in 2017 due to over 10 years of monitoring data not showing an exceedance of the air quality objectives. The TEOM was then moved to the Fawley site.

Neither site (Totton and Fawley) monitored an exceedance of the annual mean or hourly mean objective for PM$_{10}$ during 2018, although it is noted that the Totton site

monitors higher concentrations of PM_{10} both as an annual mean and hourly mean compared to Fawley. All monitoring results were well below the air quality objectives.

As such no AQMA's will be declared with regards to PM_{10} within the New Forest district. Monitoring of PM_{10} will continue at Totton (CM1) and Fawley (CM3).

3.2.3   Sulphur Dioxide (SO_2)

Table A.7 in Appendix A compares the ratified continuous monitored SO_2 concentrations for 2018 with the air quality objectives for SO_2.

SO_2 is monitored at an automatic monitoring site at Fawley (CM3). SO_2 was also monitored in Holbury an industrial site until 2017 however after 10 years of no exceedances of the air quality objectives the site was closed.

Fawley did not monitor an exceedance of the 15 minute mean, hourly mean or 24 hour mean objective for SO_2 during 2018.

It should be noted that the Exxon Mobil oil refinery in the vicinity of the Fawley monitoring site has a direct link with the Fawley analyser which enables the refinery to take action should SO_2 concentrations start to increase. This system, in addition to Operators Permit conditions reducing SO_2 emissions from the refinery, has worked well since the monitored exceedance of the 15minute mean objective in 2005 when 65 exceedance were monitored.

The concentrations monitored over 2018 are well below the objective levels. Therefore no AQMA's will be declared with regards to SO_2 within the New Forest district. Monitoring of SO_2 will continue at Fawley (CM3).

Appendix A: Monitoring Results

Table A.1 – Details of Automatic Monitoring Sites

Site ID	Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA?	Monitoring Technique	Distance to Relevant Exposure (m) [1]	Distance to kerb of nearest road (m) [2]	Inlet Height (m)
CM1	Totton	Roadside	436188	113237	NO2; PM10	NO	Chemiluminescent; TEOM	5	1.5	1.75
CM2	Lyndhurst	Kerbside	429859	108204	NO2	YES	Chemiluminescent	1	0.6	3
CM3	Fawley	Industrial	445885	103248	SO2; PM10	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	Y OS Grid Ref	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)
Lyndhurst										
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	The Orchards, Shrubbs Hill Rd	Roadside	429895	107770	NO_2	NO	0	3	NO	3
3b	The Orchards, Shrubbs Hill Rd	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	NO₂	NO	0	2.2	NO	3
14	South View, Gosport Lane	Roadside	430092	108077	NO₂	NO	5	2	NO	3
15	Lyndhurst Park Hotel	Roadside	430162	108173	NO₂	NO	5	2	NO	3
16	Baytree Cottage, Bournem'th Rd	Roadside	429169	108129	NO₂	NO	0	1.5	NO	3
17	Lyndhurst 1 (church by crossing)	Urban Background	429756	108179	NO₂	NO	n/a	1.5	NO	3
18	Lyndhurst 2 (on church)	Urban Background	429825	108176	NO₂	NO	n/a	n/a	NO	3
19	Lyndhurst 3 (Church Lane)	Urban Background	429928	108165	NO₂	NO	n/a	1	NO	3
20	Red Lodge, High St	Roadside	429739	108185	NO₂	NO	0	2	NO	3
Totton										
21	Junction Rd (analyser)	Roadside	436189	113235	NO₂	NO	7	2	YES	3
22	30, Junction Rd	Roadside	436210	113210	NO₂	NO	3	1	NO	3
23	25, Junction Rd	Roadside	436232	113156	NO₂	NO	0	4	NO	3
24	26, Rumbridge St.	Roadside	436205	113019	NO₂	NO	2	1.5	NO	3
25	BATs corner	Roadside	436278	113081	NO₂	NO	3	1.5	NO	3
26	Elingfield Court, High St.	Roadside	436383	113135	NO₂	NO	0	1.5	NO	3
27	55, High St.	Roadside	436476	113214	NO₂	NO	0	4	NO	3
28	114, Commercial Rd	Roadside	436364	113322	NO₂	NO	0	1	NO	3
29	1, Rose Rd	Roadside	436374	112929	NO₂	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		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: 0m if the monitoring site is at a location of exposure (e.g. installed on/adjacent to the façade of a residential property). (2) N/A if not applicable.

Table A.3 – Annual Mean NO₂ Monitoring Results

Site ID	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2018 (%) (2)	NO₂ Annual Mean Concentration (μg/m³) (3)				
					2014	2015	2016	2017	2018
CM1 (Totten)	Roadside	Automatic	99.69	99.69	26	24	31	26	26
CM2 (Lynhurst)	Kerbside	Automatic	88.25	88.25	**41**	37	38	35	34
Lyndhurst									
1	Roadside	Diffusion Tube	83.3	83.3	28.96	24.41	23.4	20.41	17.4
2	Roadside	Diffusion Tube	100.0	100.0	32.73	30.42	28.8	25.26	25.0
3a	Roadside	Diffusion Tube	100.0	100.0	39.83	37.05	36.2	32.6	32.7
3b	Roadside	Diffusion Tube	83.3	83.3	32.92	29.54	27.8	25.34	25.0
4	Roadside	Diffusion Tube	91.7	91.7	20.78	19.97	20.9	17.9	18.0
5	Roadside	Diffusion Tube	91.7	91.7	26.7	25.19	26.1	21.56	21.6
6	Kerbside	Diffusion Tube	100.0	100.0	**42.7**	38.38	39.8	34.03	35.2
7	Kerbside	Diffusion Tube	91.7	91.7	40.12	37.43	38.5	34.46	34.9
8	Kerbside	Diffusion Tube	100.0	100.0	**43.73**	39.22	39.5	37.01	36.9
9	Roadside	Diffusion Tube	100.0	100.0	40.3	35.76	30.1	26.8	29.1
10	Roadside	Diffusion Tube	91.7	91.7	29.17	23.39	23.3	23.22	22.5

11	Roadside	Diffusion Tube	100.0	100.0	29.19	27.99	22.7	20	19.6
12	Roadside	Diffusion Tube	100.0	100.0	33.66	33.33	28.9	30.7	28.8
13	Roadside	Diffusion Tube	100.0	100.0	37.65	35.83	36.4	38.55	39.3
14	Roadside	Diffusion Tube	91.7	91.7	26.2	30.38	24.9	20.2	22.1
15	Roadside	Diffusion Tube	91.7	91.7	25.77	24.72	19.7	17.3	17.3
16	Roadside	Diffusion Tube	83.3	83.3	29.17	28.85	27.2	26.76	27.2
17	Urban Background	Diffusion Tube	100.0	100.0	–	–	–	Project	12.5
18	Urban Background	Diffusion Tube	91.7	91.7	–	–	–	Project	12.3
19	Urban Background	Diffusion Tube	100.0	100.0	–	–	–	Project	11.7
20	Roadside	Diffusion Tube	66.7	66.7	–	–	–	–	27.9
Totton									
21	Roadside	Diffusion Tube	100.0	100.0	25.61	23.89	23.9	23.2	23.2
22	Roadside	Diffusion Tube	100.0	100.0	27.41	24.48	25.9	23.8	24.7
23	Roadside	Diffusion Tube	100.0	100.0	23.31	24.96	25.2	24.18	24.3
24	Roadside	Diffusion Tube	91.7	91.7	28.18	26.13	27.6	24.7	25.2
25	Roadside	Diffusion Tube	91.7	91.7	27.58	25.67	27.6	25.2	25.0
26	Roadside	Diffusion Tube	100.0	100.0	25.06	22.97	28.5	25.81	24.8

27	Roadside	Diffusion Tube	100.0	100.0	23.05	22.07	27.1	23.7	25.4
28	Roadside	Diffusion Tube	83.3	83.3	26.47	25.31	28.5	26.74	27.8
29	Roadside	Diffusion Tube	100.0	100.0	20.44	19.23	21.8	19.9	21.3
30	Roadside	Diffusion Tube	100.0	100.0	–	–	25.9	24.57	23.7
31	Roadside	Diffusion Tube	100.0	100.0	–	–	23.7	20.1	20.4
32	Roadside	Diffusion Tube	100.0	100.0	–	–	–	Project	28.7
33	Roadside	Diffusion Tube	100.0	100.0	–	–	–	Project	39.8
34	Roadside	Diffusion Tube	100.0	100.0	–	–	–	Project	34.0
35	Roadside	Diffusion Tube	100.0	100.0	–	–	–	Project	38.0
Other locations									
36	Other	Diffusion Tube	66.7	66.7	–	–	–	–	21.3
37	Roadside	Diffusion Tube	100.0	100.0	31.42	35.6	34	33.1	28.2
38	Roadside	Diffusion Tube	100.0	100.0	20.24	18.18	18	13.81	16.8
39	Roadside	Diffusion Tube	100.0	100.0	19.14	18.51	18.3	16.88	16.7
40	Roadside	Diffusion Tube	91.7	91.7	0	0	19.7	15.4	17.1
41	Industrial	Diffusion Tube	83.3	83.3	11.32	10.2	11	9.46	12.3
42	Industrial	Diffusion Tube	100.0	100.0	14.4	15.1	13.3	12.36	12.9
43	Rural	Diffusion Tube	91.7	91.7	10.22	9.63	10.7	8.97	10.6

44	Roadside	Diffusion Tube	66.7	66.7	–	–	–	–	26.2
45	Roadside	Diffusion Tube	66.7	66.7	–	–	–	–	26.3
46	Roadside	Diffusion Tube	66.7	66.7	–	–	–	–	27.8

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

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

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.

Figure A.1 – Trends in Annual Mean NO₂ Concentrations

Table A.4 – 1-Hour Mean NO$_2$ Monitoring Results

Site ID	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) [1]	Valid Data Capture 2018 (%) [2]	NO$_2$ 1-Hour Means > 200µg/m^3 [3]				
					2014	2015	2016	2017	2018
CM1 (Totton)	Roadside	Automatic	88	88	0	0	0 (129)	0	0
CM2 (Lyndhurst)	Kerbside	Automatic	100	100	1	0	5	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	Site Type	Valid Data Capture for Monitoring Period (%) [1]	Valid Data Capture 2018 (%) [2]	PM$_{10}$ Annual Mean Concentration (µg/m^3) [3]				
				2014	2015	2016	2017	2018
CM1 (Totton)	Roadside	99	99	23	22	22	20	18
CM3 (Fawley)	Industrial	99	99	–	–	–	15	16

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

Notes:

Exceedances of the PM$_{10}$ annual mean objective of 40µg/m^3 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.
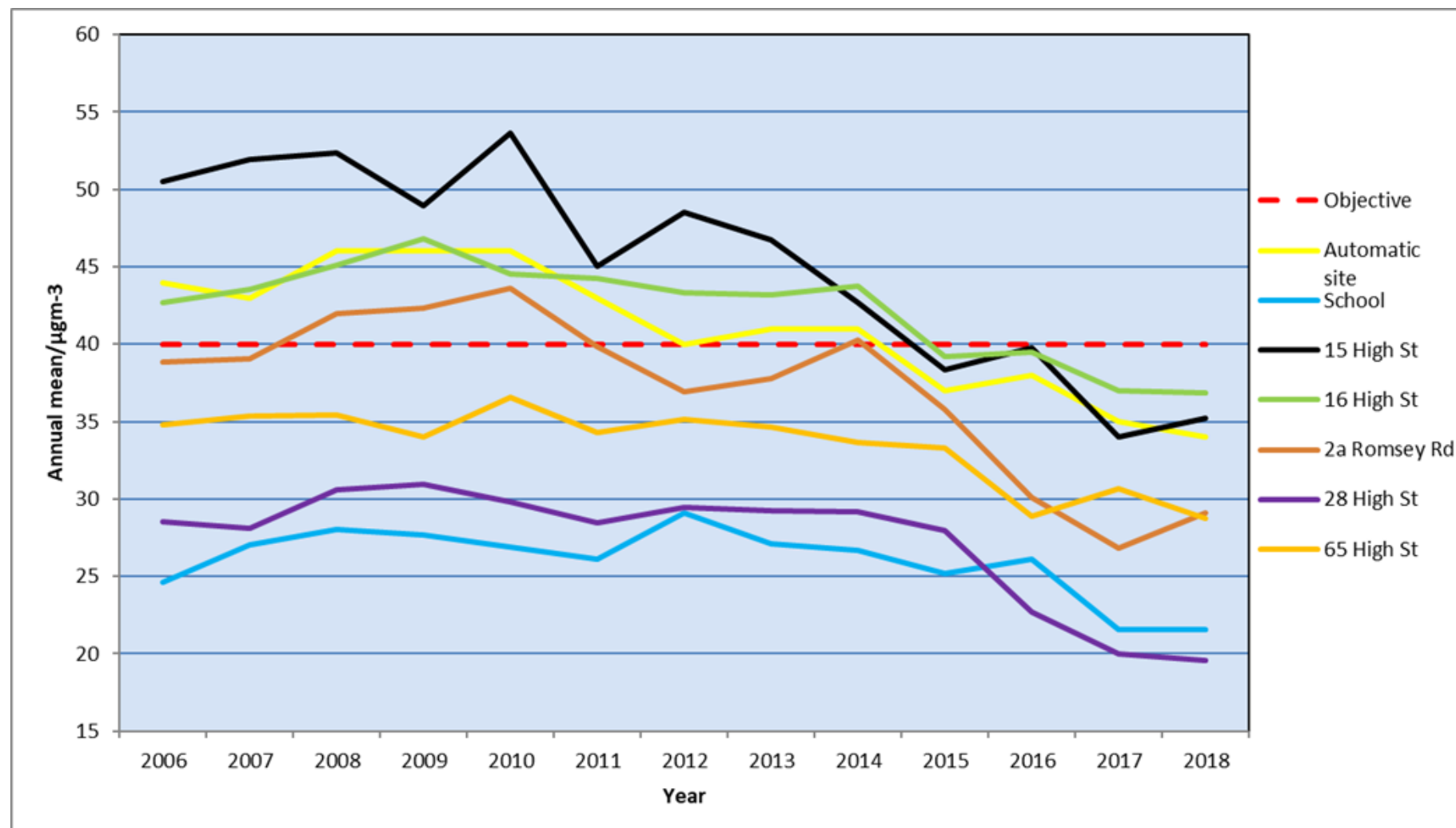
Table A.6 – 24-Hour Mean PM$_{10}$ Monitoring Results

Site ID	Site Type	Valid Data Capture for Monitoring Period (%) [1]	Valid Data Capture 2018 (%) [2]	PM$_{10}$ 24-Hour Means > 50µg/m^3 [3]				
				2014	2015	2016	2017	2018
CM1 (Totton)	Roadside	99	99	9	12	10 (39)	4	0
CM3 (Fawley)	Industrial	99	99	–	–	–	0	0

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 – SO₂ Monitoring Results

Site ID	Site Type	Valid Data Capture for monitoring Period (%) [1]	Valid Data Capture 2018 (%) [2]	Number of Exceedances 2018 (percentile in bracket) [3]		
				15-minute Objective (266 µg/m³)	1-hour Objective (350 µg/m³)	24-hour Objective (125 µg/m³)
CM3 (Fawley)	Industrial	93	93	0	0	0

Notes:

Exceedances of the SO₂ objectives are shown in **bold** (15-min mean = 35 allowed a year, 1-hour mean = 24 allowed a year, 24-hour mean = 3 allowed a year)

(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 2018

Table B.1 – NO₂ Monthly Diffusion Tube Results - 2018

Site ID	NO₂ Mean Concentrations (µg/m³)												Annual Mean		
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Raw Data	Bias Adjusted and Annualised (1)	Distance Corrected to Nearest Exposure (2)
Lyndhurst															
1	23.5	29	15.4	28.2	25.2	_	_	21.5	23.3	24	23.4	21.2	23.47	17.37	17.37
2	30.8	38.9	37.2	39.3	37.3	36.9	30.5	27.1	30.9	36.3	29.8	29.6	33.72	24.95	24.95
3a	35.8	41	45.25	45.5	50	49.95	48.85	47.2	42.65	48.9	39.2	36.6	44.24	32.74	32.74
3b	31.7	32.4	36.5	34.7	32.1	32.5	36.9	35.5	32.8	35.7	_	_	34.08	24.95	24.95
4	20.9	31.7	27.2	25	24.2	25.2	24.2	24	19.6	_	23	22.8	24.34	18.02	18.02
5	28	_	32.6	28.1	25.7	26.5	30.5	29.3	27.9	35.9	26.3	30.2	29.18	21.59	21.59
6	41	52.6	54	51.4	55.3	65	56.1	53.5	45.8	55.7	41.9	39.8	51.01	35.2	35.2
7	44.7	48.27	51.37	_	52.23	53.97	60.43	57.27	48.9	53.37	42.1	43.63	50.57	34.89	34.89
8	49.7	49.9	59	56.1	54.1	55.7	60.4	55.8	52.7	52.2	48.4	47.2	53.43	36.87	36.87

9	44.6	51.8	54.5	54	50.2	56.6	58.5	46.3	43.9	47.2	48.5	40.7	49.73	34.31	29.1
10	24.6	33.4	_	36.3	34.6	35.7	12.1	31.3	26.9	36.7	33.9	29.6	30.46	22.54	22.54
11	34.4	31	33.3	34.15	25	25.4	30.05	27.6	28.65	33.3	29	30.4	30.18	22.34	19.6
12	37.8	41.1	44.6	40.9	41.1	35.9	38.6	33	36.5	45	34.1	38.1	38.89	28.78	28.78
13	51.5	45.2	48.7	56	53.1	49.6	64.7	57.2	53.4	57.2	45.6	55.1	53.11	39.3	39.3
14	_	40.2	36.1	35.3	39	31.5	30.4	32.7	37	47.3	35.7	37.4	36.6	27.08	22.1
15	31.4	27	29.4	29.7	24.7	26.1	25.1	22.7	27.7	31.3	_	26.7	27.44	20.3	17.3
16	38.8	27.7	25.9	36.3	40.4	41.3	24.1	57.7	_	41.5	34.4	_	36.81	27.24	27.24
17	19.3	14.3	15.8	15.5	15.7	15.8	13.6	14.6	15.9	21.4	21.4	19.4	16.89	12.5	12.5
18	18.6	20.5	21.1	16.5	12.2	14.2	10.1	9.7	_	22.6	21	16.9	16.67	12.33	12.33
19	13.2	20.2	23.2	22.1	13.3	12.5	12.5	11.6	15.1	17.2	15.7	13.8	15.89	11.74	11.74
20	_	_	_	_	37.7	43.2	55.2	43.2	43	42.6	35.3	40.1	42.54	33.5	33.5
Totton															
21	37.23	38.2	43.8	40.27	32.9	32.37	32.2	26.9	31.97	37.77	44.53	37.03	36.26	26.11	23.2
22	37.6	43.1	44.5	41.3	35.4	39.5	30.5	27.2	32	44.1	42	39	38.02	27.37	24.7
23	34.4	36.5	38	38.1	31.1	30.2	30.2	26.4	30.3	38	39	32.7	33.74	24.29	24.29
24	40.3	35.5	44.2	_	33.6	37.3	33.3	29.8	34.6	39.7	42.9	39.6	37.34	26.88	25.2
25	41.6	37.6	47.2	43.5	35.1	36.3	28.6	_	36	39	31.7	40.2	37.89	27.28	25

26	39.1	33.1	44.4	42.2	30	29.4	31.5	26.2	31.3	34.1	34.6	37.3	34.43	24.79	24.79
27	34.1	41.6	45.3	42.9	33.7	34	28.4	23.4	28.3	34.3	41.9	34.6	35.21	25.35	25.35
28	41.3	41.7	52.6	41.8	36.9	38.5	30.9	_	31.8	34.2	_	36.7	38.64	27.82	27.82
29	29	36.7	38.7	36	27.4	33.2	34.4	20.7	26.2	35.5	31.4	29.9	31.59	22.74	21.3
29	33.7	33.4	39.4	33.9	29.4	30.1	33.1	29.3	30.6	32.7	38	31.1	32.89	23.68	23.68
31	29.3	37.1	35.1	33.2	27.6	31.6	22.1	21.6	27.8	32.9	28.9	29.1	29.69	21.38	20.4
32	51.9	48.3	51.7	41.3	43	46.2	30.1	29.7	33.4	43.6	36.3	43	41.54	29.9	28.7
33	64.7	55.8	63.4	56.8	49.5	60.5	59.6	54.8	61.1	61	62.6	56.8	58.88	42.4	39.8
34	49.9	52.4	51.9	53.2	56.3	49.1	46.1	45.3	52.8	55.3	47.3	44.7	50.36	36.3	34.0
35	64	56.3	66.2	58.2	51.4	48.1	55	47.1	57.8	51.9	50.4	48	54.53	39.3	38.0
Other locations															
36	_	_	_	_	28.7	27.5	23.9	23.6	25.4	28.4	28.3	30.4	27.02	21.3	21.3
37	35.3	30.4	28.45	37.4	40.85	45.6	47	43.7	46.9	37.7	28	35.8	38.1	28.19	28.19
38	21.2	26.9	26.3	22.2	27.1	27.7	17.9	17.8	20.9	25.7	22.3	15.7	22.64	16.75	16.75
39	23.1	24.5	27	24.4	22.1	22.1	20.8	19.2	22.2	26.8	27	11	22.52	16.66	16.66
40	22.4	_	30.1	28.8	27.8	31	23.9	21.6	22.9	31.2	26.2	16	25.63	18.97	17.1
41	14.1	14.6	18.7	16.5	13.2	12.9	_	_	12.5	20	21.8	22	16.63	12.31	12.31
42	17.3	17.3	19	19.1	18	16.6	15.7	13.1	15.6	21.3	16.9	20	17.49	12.94	12.94

43	13.4	15.1	15.8	14.9	11.5	12.4	_	9.6	10.3	17.1	14.8	22.1	14.27	10.56	10.56
44	_	_	_	_	34.3	25.8	35.9	31.2	31.7	39.2	35.9	31.5	33.19	26.2	26.2
45	_	_	_	_	35.8	30.8	43.5	43.4	41.7	41.9	46	42.5	40.7	32.1	26.3
46	_	_	_	_	33.5	37.2	30.6	31.3	34.4	40.4	37.3	37.2	35.24	27.8	27.8

☒ **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**

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 2018 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 2017/18 with regards to specific sites or areas as a result of proposed planning applications and / or part of the Environmental Permitting (LAPPC) Regime.

It is noted that 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.

- 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 2018 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. Due to local concerns raised due to increases in HGV's and buses on particular routes (although not at a level that meets the criteria laid out in Technical Guidance LAQM.TG16 (Defra, 2016(b)) which would require further action), some additional monitoring was undertaken in 2017 at the following sites at locations of relevant exposure:

- Marsh Lane (Lymington)

- A337 (Brockenhurst)

However, annual concentrations were shown to be significantly below the annual objective concentrations and were consequently discontinued.

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)

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 at 3 monitoring locations, with the installation of a real time analyser along this stretch of the A35 during 2019.

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)

- New Milton Infant School – monitoring on and around the school (located on a busy road) to determine concentrations and potentials impacts on students.

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 2017 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 to externally audit the automatic monitoring sites biannually. This process ensures quality assurance and control of the sites.

The data given 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 2018 for both sites.

The diffusion tube supplier (ESG/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 ESG (now Socotec). The preparation method used for the diffusion tubes was 20% TEA (triethanolamine) in water.

The national bias adjustment factor for ESG (2018) was 0.74. This was obtained from the Local Air Quality Management website (Defra, 2018(b)) from database version 03/19 in June 2019. 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 2018:

Table C.1 – Details of Bias Correction Factors – 2018(a)

Location	Bias Correction Factor
Lyndhurst (street canyon)	0.69
Totton	0.72

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.

Totton – Local Bias Correction Factor Spreadsheet

Checking Precision and Accuracy of Triplicate Tubes

AEA Energy & Environment
From the AEA group

Period	Start Date dd/mm/yyyy	End Date dd/mm/yyyy	Tube 1 μgm^{-3}	Tube 2 μgm^{-3}	Tube 3 μgm^{-3}	Triplicate Mean	Standard Deviation	Coefficient of Variation (CV)	95% CI of mean		Period Mean	Data Capture (% DC)	Tubes Precision Check	Automatic Monitor Data
1	03.01.2018	05.02.2018	35.3	36	40.4	37	2.8	7	6.9		29.16	98.99	Good	Good
2	05.02.2018	26.02.2018	38.4	39.7	36.5	38	1.6	4	4.0		37.15	99.60	Good	Good
3	26.02.2018	27.03.2018	42	42.5	46.9	44	2.7	6	6.7		30.17	99.71	Good	Good
4	27.03.2018	01.05.2018	41	40.1	39.7	40	0.7	2	1.7		24.43	99.88	Good	Good
5	01.05.2018	05.06.2018	35.9	31.6	31.2	33	2.6	8	6.5		23.36	99.88	Good	Good
6	05.06.2018	03.07.2018	33.3	33	30.8	32	1.4	4	3.4		20.44	100.00	Good	Good
7	03.07.2018	03.08.2018	30.4	33	33.2	32	1.6	5	3.9		19.22	99.87	Good	Good
8	03.08.2018	04.09.2018	25.7	27.6	27.4	27	1.0	4	2.6		25.54	99.48	Good	Good
9	04.09.2018	04.10.2018	32.9	33.5	29.5	32	2.2	7	5.4		22.30	99.45	Good	Good
10	04.10.2018	30.10.2018	40.1	38.3	34.9	38	2.6	7	6.6		26.44	99.68	Good	Good
11	30.10.2018	04.12.2018	46.2	44.3	43.1	45	1.6	4	3.9		29.94	100.00	Good	Good
12	04.12.2018	08.01.2019	35.2	38.7	37.2	37	1.8	5	4.4		26.65	99.76	Good	Good
13														

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

Overall survey --> **Good precision** | **Good Overall**

(Check average CV & DC from Accuracy calculations)

Site Name/ ID:	TOTTON

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

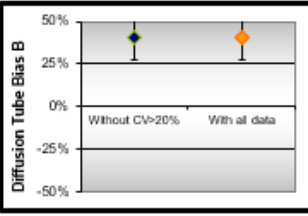**Accuracy** (with 95% confidence interval)
without periods with CV larger than 20%
Bias calculated using 12 periods of data
Bias factor A	0.72 (0.66 - 0.8)
Bias B	38% (25% - 51%)
Diffusion Tubes Mean:	36 μgm^{-3}
Mean CV (Precision):	5
Automatic Mean:	26 μgm^{-3}
Data Capture for periods used:	100%
Adjusted Tubes Mean:	26 (24 - 29) μgm^{-3}

Accuracy (with 95% confidence interval)
WITH ALL DATA
Bias calculated using 12 periods of data
Bias factor A	0.72 (0.66 - 0.8)
Bias B	38% (25% - 51%)
Diffusion Tubes Mean:	36 μgm^{-3}
Mean CV (Precision):	5
Automatic Mean:	26 μgm^{-3}
Data Capture for periods used:	100%
Adjusted Tubes Mean:	26 (24 - 29) μgm^{-3}

Jaume Targa, for AEA
Version 04 - February 2011

If you have any enquiries about this spreadsheet please contact the LAQM Helpdesk at: LAQMHelpdesk@uk.bureauveritas.com

Lyndhurst – Local Bias Correction Factor Spreadsheet

Checking Precision and Accuracy of Triplicate Tubes

AEA Energy & Environment
From the AEA group

Period	Start Date dd/mm/yyyy	End Date dd/mm/yyyy	Tube 1 μgm^{-3}	Tube 2 μgm^{-3}	Tube 3 μgm^{-3}	Triplicate Mean	Standard Deviation	Coefficient of Variation (CV)	95% CI of mean	Period Mean	Data Capture (% DC)	Tubes Precision Check	Automatic Monitor Data
1	03.01.2018	02.02.2018	50.5	45	38.6	45	6.0	13	14.8	28.85	99.58	Good	Good
2	02.02.2018	27.02.2018	46	51.7	47.1	48	3.0	6	7.5	41.82	100.00	Good	Good
3	27.02.2018	27.03.2018	49.4	50.2	54.5	51	2.7	5	6.8	36.06	100.00	Good	Good
4	27.03.2018	02.05.2018								35.74	100.00		Good
5	02.05.2018	08.06.2018	51.4	52.3	53	52	0.8	2	2.0	37.63	99.89	Good	Good
6	08.06.2018	06.07.2018	52.7	54.2	55	54	1.2	2	2.9	33.99	99.70	Good	Good
7	06.07.2018	01.08.2018	61.6	60.7	59	60	1.3	2	3.3	38.84	46.24	Good	r Data Capture
8	01.08.2018	04.09.2018	58.2	53.8	59.8	57	3.1	5	7.7	32.13	60.95	Good	r Data Capture
9	04.09.2018	03.10.2018	49.1	47.9	49.7	49	0.9	2	2.3	30.56	47.49	Good	r Data Capture
10	03.10.2018	01.11.2018	53.5	55.9	50.7	53	2.6	5	6.5	31.25	99.86	Good	Good
11	01.11.2018	04.12.2018	44.2	38.3	43.8	42	3.3	8	8.2	30.76	99.75	Good	Good
12	04.12.2018	09.01.2019	43.7	46.5	40.7	44	2.9	7	7.2	30.36	99.88	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 -->

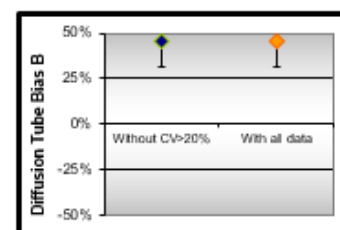| Good precision	Poor Overall

(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 8 periods of data
Bias factor A   0.69 (0.63 - 0.77)
Bias B   44%   (30% - 58%)
Diffusion Tubes Mean: 49 μgm^{-3}
Mean CV (Precision):   6
Automatic Mean: 34 μgm^{-3}
Data Capture for periods used: 100%
Adjusted Tubes Mean: 34 (31 - 38) μgm^{-3}

Accuracy   (with 95% confidence interval)
WITH ALL DATA
Bias calculated using 8 periods of data
Bias factor A   0.69 (0.63 - 0.77)
Bias B   44%   (30% - 58%)
Diffusion Tubes Mean: 49 μgm^{-3}
Mean CV (Precision):   6
Automatic Mean: 34 μgm^{-3}
Data Capture for periods used: 100%
Adjusted Tubes Mean: 34 (31 - 38) μgm^{-3}

Jaume Targa, for AEA
Version 04 - February 2011

If you have any enquiries about this spreadsheet please contact the LAQM Helpdesk at: LAQMHelpdesk@uk.bureauveritas.com

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. Three different bias correction factors have been applied to the 2018 diffusion tube data for New Forest.

In Lyndhurst four diffusion tube sites (Sites 6, 7, 8 and 9) have been locally biased corrected. 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, as these sites are located outside the effects of the street canyon in the High Street, Lyndhurst.

Advice from the National Air Quality Helpdesk and National Physical Laboratory who collate the data for obtaining national correction factors, advised in previous years that the Totton local bias correction factor could be used, for consistency we have continued to use the local derived bias factor for Totton.

The bias correction factors used on the 2018 diffusion tube data are shown below:

Table C.2 – Details of Bias Correction Factors – 2018(b)

Location	Bias Correction Factor	Local / National
Lyndhurst (street canyon)	**0.69**	Local
Totton	**0.72**	Local
Remaining sites	**0.74**	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 2018 the data capture was less than 75 % at the following diffusion tube sites:

- Red Lodge, High St (Site ID 20)

- Highwood Cottage, Ower (Site ID 36)

- 131 Christchurch Rd, Ringwood (Site ID 44)

- St. Catherines, Christchuch Rd, Ringwood (Site ID 45)

- Eastfield Lane, Ringwood (A31)　 (Site ID 46)

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).

Long term site	Annual mean (Am)	Period mean (PM) (02.05.18 – 09.01.19)	Ratio (Am/Pm)
A	19	17.6	1.08
B	29	27.5	1.05
Average ratio			**1.065**

Where:

A= Portsmouth background AURN site

B= Southampton background AURN site

Red Lodge, High Street, Lyndhurst

Data from site over monitoring period = 42.54µgm^{-3}

Annualised result   = 42.54µgm^{-3} x 1.065

                             = **45.31µgm^{-3}**

Bias corrected result   = 45.31µgm^{-3} x 0.74

                             = **33.52µgm^{-3}**

Highwood Cottage, Ower

Data from site over monitoring period = 27.025µgm^{-3}

Annualised result   = 27.025µgm^{-3} x 1.065

                             = **28.78µgm^{-3}**

Bias corrected result   = 28.78µgm^{-3} x 0.74

                             = **21.30µgm^{-3}**

131 Christchurch Rd, Ringwood

Data from site over monitoring period = 33.19µgm^{-3}

Annualised result	= 33.19µgm^{-3} x 1.065
	= **35.35µgm^{-3}**
Bias corrected result	= 35.35µgm^{-3} x 0.74
	= **26.16µgm^{-3}**

St. Catherine's, Christchurch Rd, Ringwood

Data from site over monitoring period = 40.7µgm^{-3}

Annualised result	= 40.7µgm^{-3} x 1.065
	= **43.35µgm^{-3}**
Bias corrected result	= 43.35µgm^{-3} x 0.74
	= 32.08µgm^{-3}
Distance corrected	= **26.3 µgm^{-3}**

58, Eastfield Lane, Ringwood

Data from site over monitoring period = 35.24µgm^{-3}

Annualised result	= 35.24µgm^{-3} x 1.065
	= **37.53µgm^{-3}**
Bias corrected result	= 37.53µgm^{-3} x 0.74
	= **27.77µgm^{-3}**

New Forest District Council

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

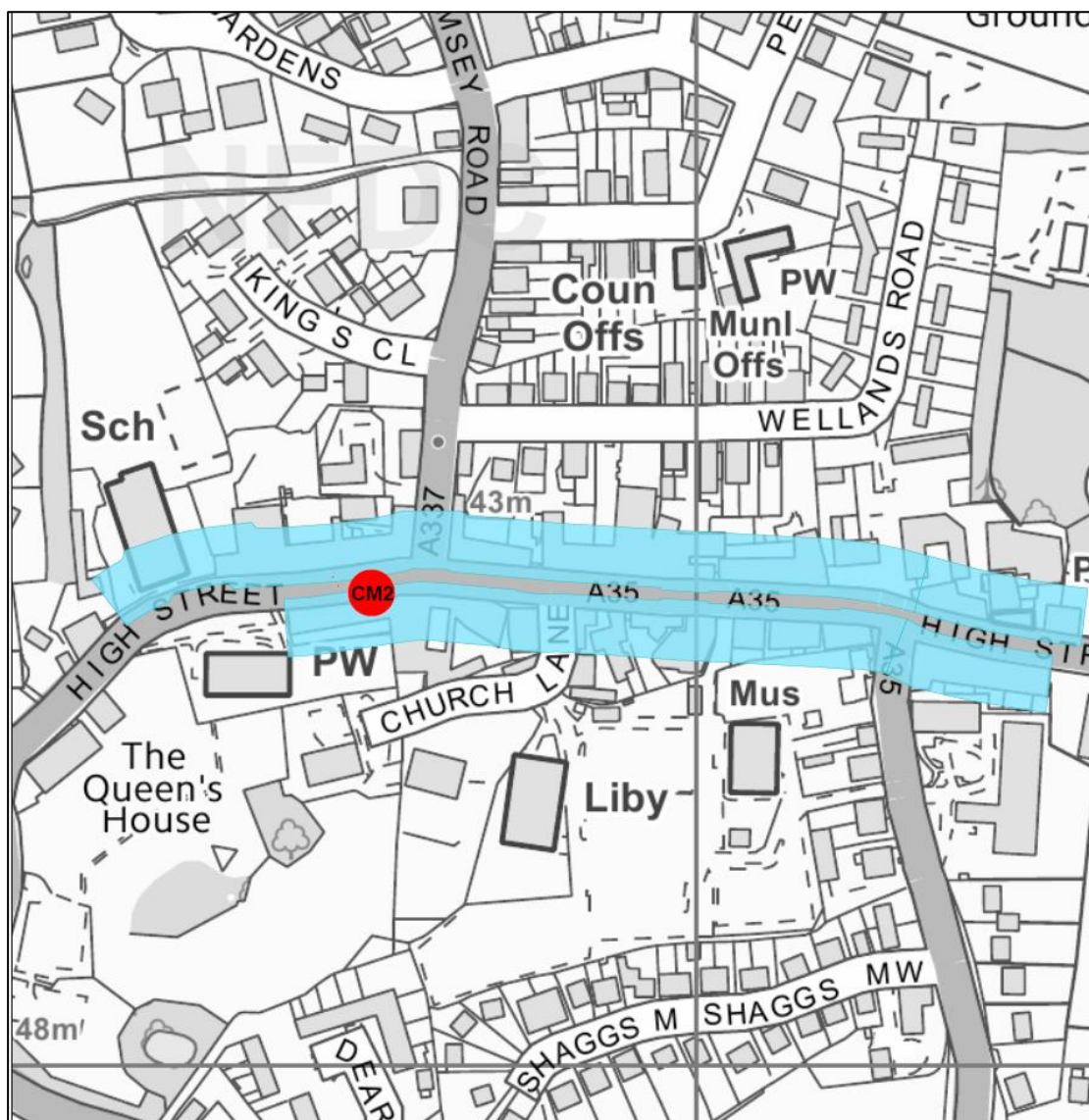**Automatic Monitoring Sites**

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 5 m from the building façade. Therefore the site is not representative of relevant public exposure.
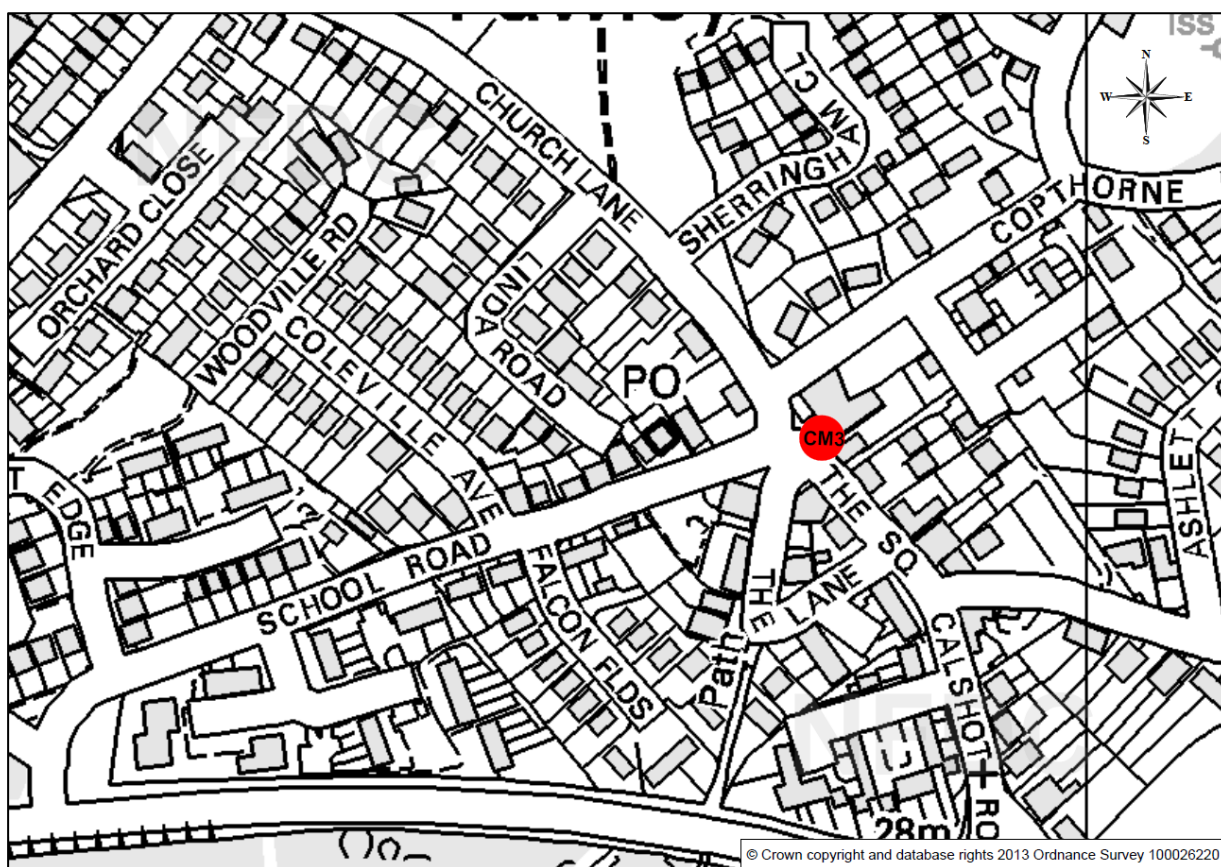
LAQM Annual Status Report 2019   76

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

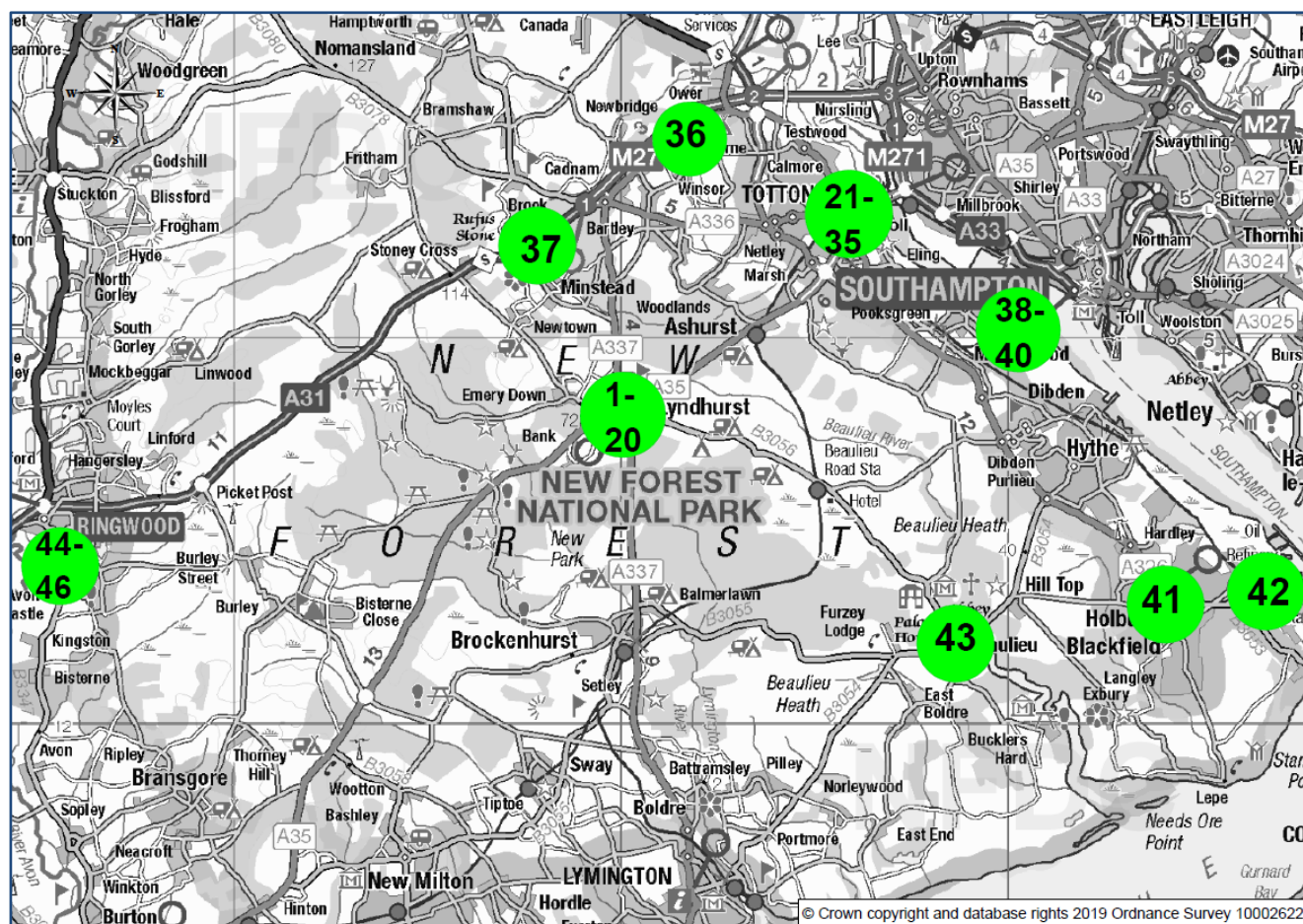**Figure D.4 – NO$_2$ diffusion tube sites in New Forest district**

Figure D.5 – NO₂ diffusion tube sites in Lyndhurst

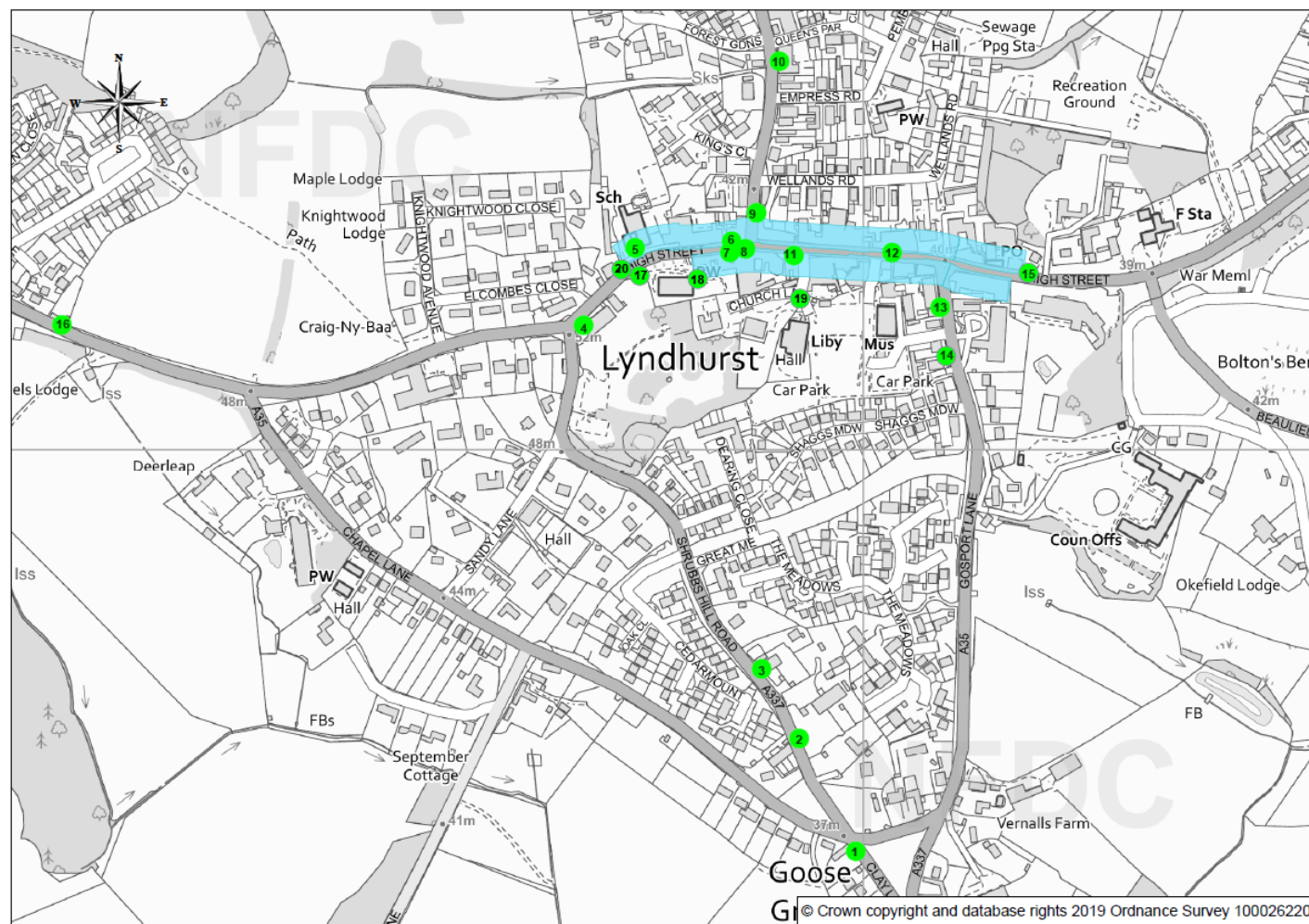© Crown copyright and database rights 2019 Ordnance Survey 100026220
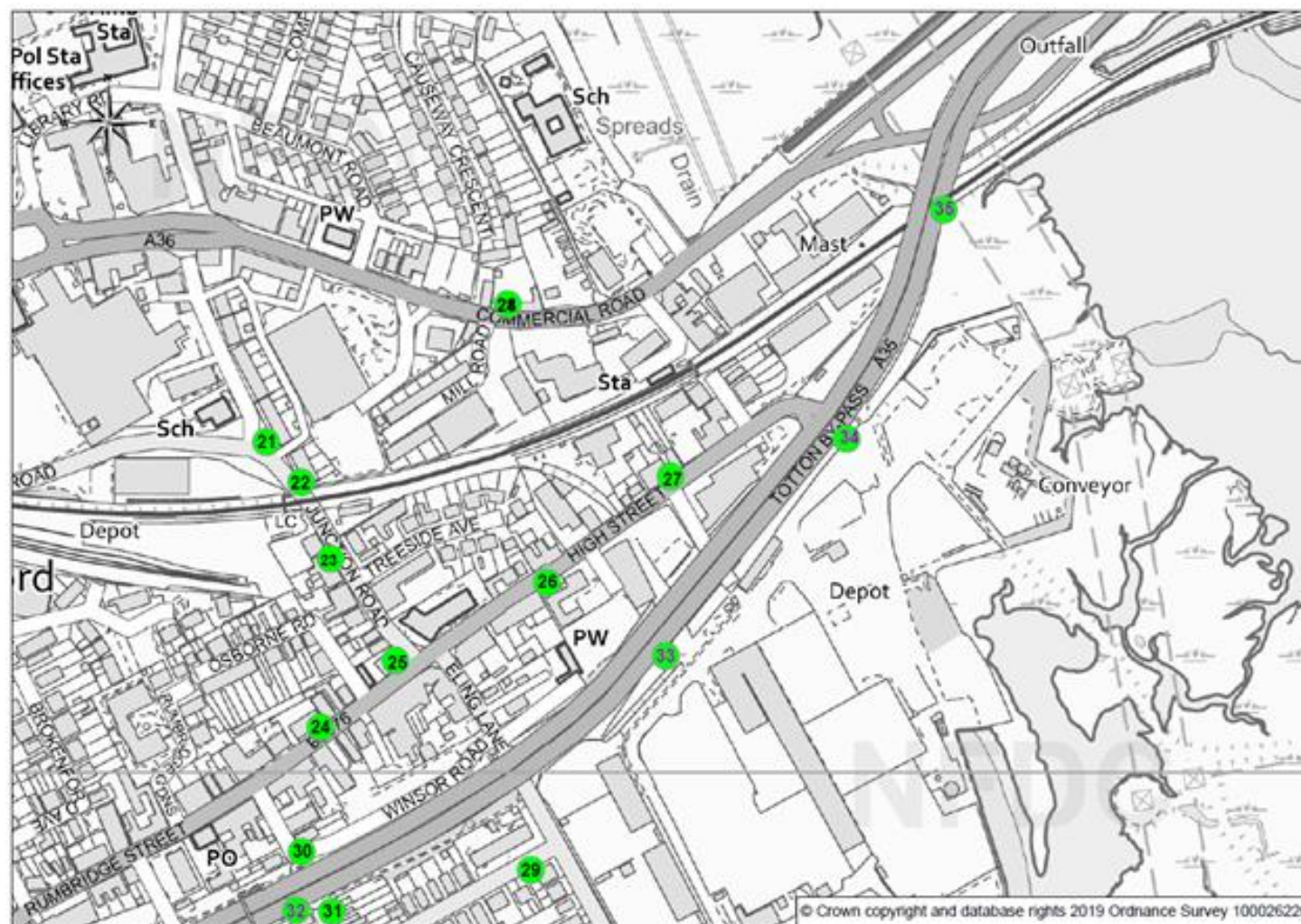
Figure D.6 – NO₂ diffusion tube sites in Totton

Appendix E: Summary of Air Quality Objectives in England

Table E.2 – Air Quality Objectives in England

Pollutant	Air Quality Objective[10]	
	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

---

[10] 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$_{2.5}$ Estimations 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}
Totton (CM1)	22	**15.4**	22*	**15.4**	20	**14**	18	**12.6**
Holbury (CM4) Site closed 2017	17	**11.9**	15*	**10.5**	-	**-**	-	**-**
Fawley	-	**-**	-	**-**	15	**10.5**	16	**11.2**

__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 (PHE, 2016)

Table G.1 – Fraction of Mortality Attributable to Particulate Air Pollution - 2013

Region	Fraction of Mortality Attributable to Particulate Air Pollution (2013)
England	5.3
South East	5.2
Hampshire	5.0
New Forest DC	4.6

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
CAZ	Clean Air Zone
Defra	Department for Environment, Food and Rural Affairs
DMRB	Design Manual for Roads and Bridges – Air quality screening tool produced by Highways England
EU	European Union
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 (2019(a)). *Background Maps.* [Online]. Available from: http://laqm.defra.gov.uk/review-and-assessment/tools/background-maps.html [Accessed 4 June 2019].

Defra (2019(b)). *Diffusion Tubes*. [Online]. Available from: http://laqm.defra.gov.uk/diffusion-tubes/diffusion-tubes.html [Accessed 4 June 2019].

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 (2016). *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 [Accessed 08 August 2018].