2019 Air Quality Annual Status Report (ASR)

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

July 2019

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Executive Summary: Air Quality in Our Area

Air Quality in North Dorset

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].

North Dorset District Council (NDDC) have undertaken a nitrogen dioxide monitoring programme since submission of the previous Annual Status Report. This was in response to Defra's suggestion that the situation be reviewed. The monitoring programme comprised 13 Diffusion Tubes within 7 geographical areas. Each site was chosen having regard to local circumstances. It may have been topography, residents' concerns or sites identified for additional housing developments within the Local Plan.

This monitoring has demonstrated that each of the areas achieve the Annual Mean Air Quality Objectives for Nitrogen Dioxide.

2018	Lawrence Cott, Gillingham N1	Wyke Street, Gillingham N2	Ring Street, Stalbridge N3	The Barbers, Sturminster Newton N4	Spread Eagles, Melbury Abbas N5	Melbury Abbas N6	Spinney Cottage, Melbury Abbas N7	Christy's Lane, Shaftesbury N8	Clockwork House, Spetisbury N9	Vine Cottage, Spetisbury N10	67 Salisbury Street, Blandford N11	East Street, Blandford N12	Willow Cottage, Fontmell Magna N13
Annual Mean	32.94	25.82	27.90	36.96	23.05	26.46	28.00	23.66	20.85	28.12	27.38	30.24	10.59

In February 2018, Government approved plans to create two new unitary councils in Dorset. On 1 April 2019 the former borough, county and district councils in Dorset ceased to exist and were replaced by two new unitary authorities. Each authority delivers all local government services in their respective areas. One covers

[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

Bournemouth, Christchurch and Poole, and is called Bournemouth, Christchurch and Poole Council. The other covers the rest of Dorset, and is called Dorset Council.

Therefore, Weymouth and Portland Borough Council, Purbeck District Council, North Dorset District Council, East Dorset District Council and West Dorset District Council will submit one Annual Status Report from 2020 onwards.

NDDC – Now part of Dorset Council – has therefore reduced monitoring for NO_2 for most areas, concentrating on those which have significant development planned, or have higher concentrations of NO_2.

The council is working proactively with Development Control, the Environment Agency and local businesses by way of the permitting regime and the other former local authority areas within the new Dorset Council to ensure that air quality is continually reviewed. In addition, North Dorset District Council is involved with the pan-Dorset $PM_{2.5}$ project with Dorset Public Health.

Actions to Improve Air Quality

No AQMA has previously been declared and no Action Plans have therefore been required. This ASR will be submitted and the next step will be to undertake monitoring as described above and report the results in the 2020 ASR.

Conclusions and Priorities

Our monitoring programme has demonstrated that the air quality objective for nitrogen dioxide is achieved throughout the area of North Dorset.

As identified within the Local Plan, there are intentions for significant housing developments to be introduced within the area. Developers will now have meaningful data for inclusion within Air Quality Assessments for new housing developments, instead of relying upon the Defra modelled data, therefore better consideration can be made regarding the public health impacts of each development.

Local Engagement and How to get Involved

Our Local Plan states “Everyone has a role to play in tackling climate change and in adapting to its impacts. Community based initiatives such as local car share schemes, village hall investments, biofuel utilisation, community emergency support and renewable energy part ownership will be supported by the Council.

Neighbourhood plans may address the adaptation and mitigation of climate change at the community level as recognition that all neighbourhoods can contribute towards tackling climate change in a way which is appropriate to their local area."

The Dorset Council website https://www.dorsetcouncil.gov.uk/travel/travel.aspx includes measures the public can actively use to improve air quality within the area, these include matters such as interactive cycle maps, adult cycle training and walking routes and trails.

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1 Local Air Quality Management

This report provides an overview of air quality in North Dorset 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 North Dorset 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 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.

North Dorset District Council currently does not have any AQMAs. For reference, site descriptions and maps identifying North Dorset District Council's monitoring locations is available in Appendix D.

2.2 Progress and Impact of Measures to address Air Quality in North Dorset District Council

Defra's appraisal of last year's ASR concluded:

The Report sets out the Annual Status Report, which forms part of the Review & Assessment process required under the Environment Act 1995 and subsequent Regulations.

North Dorset District Council has no AQMA, and consequently there is no associated air quality action plan (AQAP). The report highlights there has been no routine monitoring carried out since 2009, a decision made due to pollutant concentrations being consistently and significantly below objective levels. However, a short term NO_2 monitoring campaign is going to be undertaken in 2018/19 via diffusion tubes at 6 locations across the district to provide an update on air quality in these areas.

The ASR highlights that there are no sources of concern within the district. The most recent detailed assessment for PM_{10} was at the HGV wash facility in Gillingham concluded that it was unlikely objectives would be exceeded. No further complaints have been received and there has been a reduction in the use of the equipment.

The report outlines a number of on-going measures the council undertakes to protect and improve local air quality, including the Carbon Management Programme and Local Transport Plan 3 (2011-2026). The council website provides links to Interactive cycle maps, cycle training, and a car share scheme. The council has also committed to

addressing climate change and is working in collaboration with Public Health Dorset and Southampton University to formulate a $PM_{2.5}$ monitoring and modelling project.

On the basis of the evidence provided by the local authority the conclusions reached are acceptable for all sources and pollutants, under the provisos listed below.

The next step for North Dorset District Council is to submit an Annual Status Report in 2019.

Commentary

The report is well structured, detailed, and provides the information specified in the Guidance.

1. *We appreciate that comments made about last year's ASR have been taken on board.*
2. *A short monitoring campaign of NO_2 is going to be undertaken for one year at 6 locations to assess the air quality. The locations are: Blandford Forum, Gillingham, Shaftesbury, Sturminster Newton, Melbury Abbas and Spetisbury. The results of this campaign will be reported in the 2019 ASR. This short term monitoring is welcomed.*
3. *This monitoring will provide the Council with updated information to aid them in future air quality decisions, and ensure compliance with section 82 of the Environmental Act 1995, which states that every local authority shall review the air quality within its area, both at the present time and the likely future air quality.*
4. *Further monitoring of PM_{10} at the HGV wash facility in Gillingham is not considered to be necessary as there have not been any further complaints and use has decreased. This is supported as long as the situation remains the same. However, should the situation change then monitoring should be reinstated.*
5. *An update on the collaboration with Public Health Dorset and Southampton University to formulate a $PM_{2.5}$ monitoring and modelling project should be reported on in the next ASR.*

North Dorset District Council has taken forward a number of direct measures during the current reporting year of 2018 in pursuit of improving local air quality:

Low Carbon Dorset Programme

The programme is run by the council and the Dorset Area of Outstanding Natural Beauty (AONB). It aims to help improve energy efficiency, increase the use of renewable energy, and aid the development of new low carbon products. Dorset based businesses, public sector and community organisations can access free support and a fund pot of over £2.15m to help improve energy efficiency and develop renewable energy projects. https://www.lowcarbondorset.org.uk/

Climate Emergency

On the 16th May 2019, Dorset Council declared a Climate Emergency & have introduced a Policy Development Panel that will set carbon reduction targets and will focus on three key areas:

- Direct action – reducing our own greenhouse gas emissions
- Indirect action - influence and leadership through our wider services
- Partnership working

The Dorset Council Climate Change Panel will look to build on this and will work in partnership with organisations across Dorset to develop its climate emergency plan. https://news.dorsetforyou.gov.uk/2019/06/04/dorset-council-makes-statement-on-climate-emergency/

Planning Applications

The Environmental Protection Team review all validated planning applications for their air quality impact. Relevant guidance is followed when reviewing these applications, i.e. Land-Use Planning and Development Control: Planning for Air Quality, January 2017 (EPUK and IAQM). Where there is a potential adverse impact, or the development introduces new sensitive receptors within an AQMA, an air quality impact assessment is required. Where this identifies a significant adverse impact on air quality or human health then mitigation measures are required.

Local Transport Plan 3 2011 – 2026

The Local Transport Plan 3 (LTP3) is a statutory document which sets out a strategy for the management, maintenance and development of the County's transport system. It sets out a way forward to deliver transport needs through short, medium and long term transport solutions and how transport can improve safety and health, support the local economy, protect the environment and reduce carbon emissions and pollution. The LTP3 came into effect in April 2011 and has been produced for the whole of Bournemouth, Poole and Dorset. It covers the period from 2011 to 2026 and is based on a longer term strategy (2011 – 2026) and shorter term implementation plan(s) (3 years). Further information can be found at https://www.dorsetcouncil.gov.uk/roads-highways-maintenance/transport-planning/local-transport-plan/local-transport-plan-3.aspx

Air Quality Planning Policies

A new local plan (North Dorset Local Plan Part 1 (LP1)) that sets out the strategic planning policies for the district was adopted by the council on 15 January 2016.

The Plan includes policies that relate to air quality including:

POLICY 3: CLIMATE CHANGE

Development proposals within the District should seek to reduce greenhouse gas emissions including through appropriately sited renewable and low carbon energy developments.

The North Dorset Local Plan can be found at https://www.dorsetcouncil.gov.uk/planning-buildings-land/planning-policy/north-dorset/local-planning-policy-north-dorset.aspx

Travel choice

This is a County-wide initiative to raise awareness about the impacts of travel behaviour and to encourage people to make informed decisions about journeys they make. For example information is provided on interactive cycle maps, adult cycle training and walking routes and trails. This initiative also promotes Car Share Dorset, an online tool to encourage and facilitate car sharing by matching journeys, run jointly by Dorset County Council and Bournemouth and Poole Borough Councils. More information can be found https://www.dorsetcouncil.gov.uk/travel/travel.aspx and https://liftshare.com/uk/community/dorset

Industrial Installations

Certain industrial processes and activities which have the potential to cause pollution are required to have an Environmental Permit to operate. The Environmental Permitting (England and Wales) Regulations 2016 were made under the Pollution Prevention and Control Act 1999 and prescribe those processes and activities which require a permit. These processes are split into three categories: Part A(1), Part A(2) and Part B and are regulated by the Environment Agency and local authorities.
A list of Permitted Processes in North Dorset is provided in Appendix C. Emissions to air are monitored for Part B processes by NDDC.

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

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

North Dorset District Council continued with the Dorset-wide project led by Public Health Dorset with regards to $PM_{2.5}$.

Public Health Dorset use data from the Defra background maps to create a number of dashboards. These are found at https://public.tableau.com/profile/public.health.dorset#!/vizhome/AirPollution_10/AirPollutionStory users are able to display either $PM_{2.5}$ or NO_2 data for the county, the 'former' local authority area, or by ward:

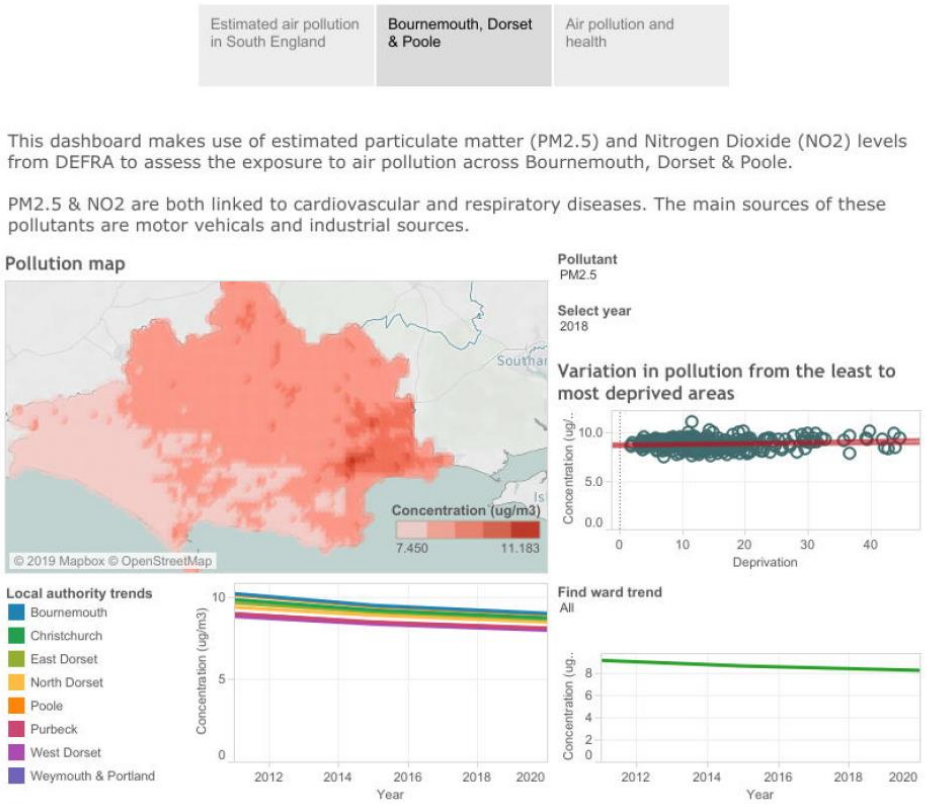


Figure 1 - Example of PM2.5 Concentrations at County Level

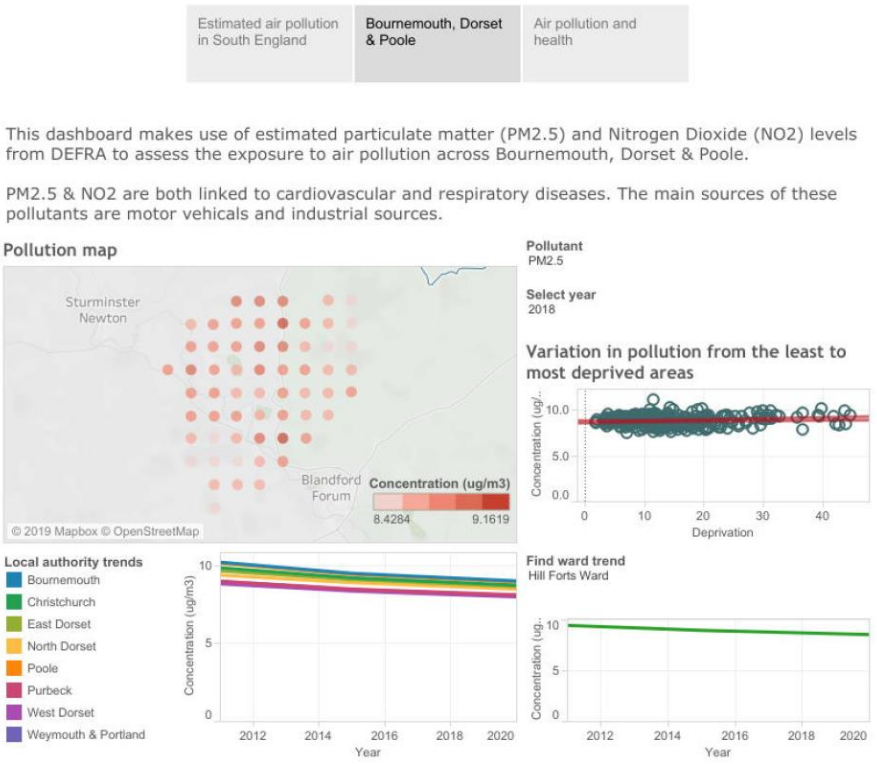


Figure 2 - Example of PM2.5 concentrations at Ward Level

Public Health Dorset also link data regarding hospital admissions for heart and lung disease to pollution episodes for $PM_{2.5}$ and NO_2 so patterns can be identified. These data are displayed as:

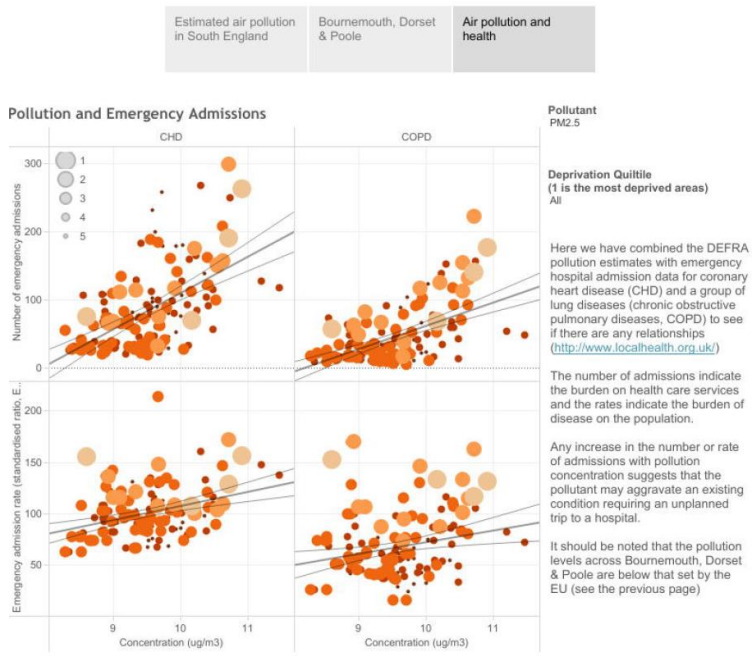


Figure 3 - Example of Pollution and Emergency Emissions

At the time of producing this ASR, Public Health Dorset were upgrading the Dashboard which uses the data from the AQMesh network. An example of the way in which the data will be available is provided below:

Figure 4 – Example of Public Health Dorset's Dashboard Data

Monitoring for $PM_{2.5}$ takes place at Blandford School. Which is a suburban location:

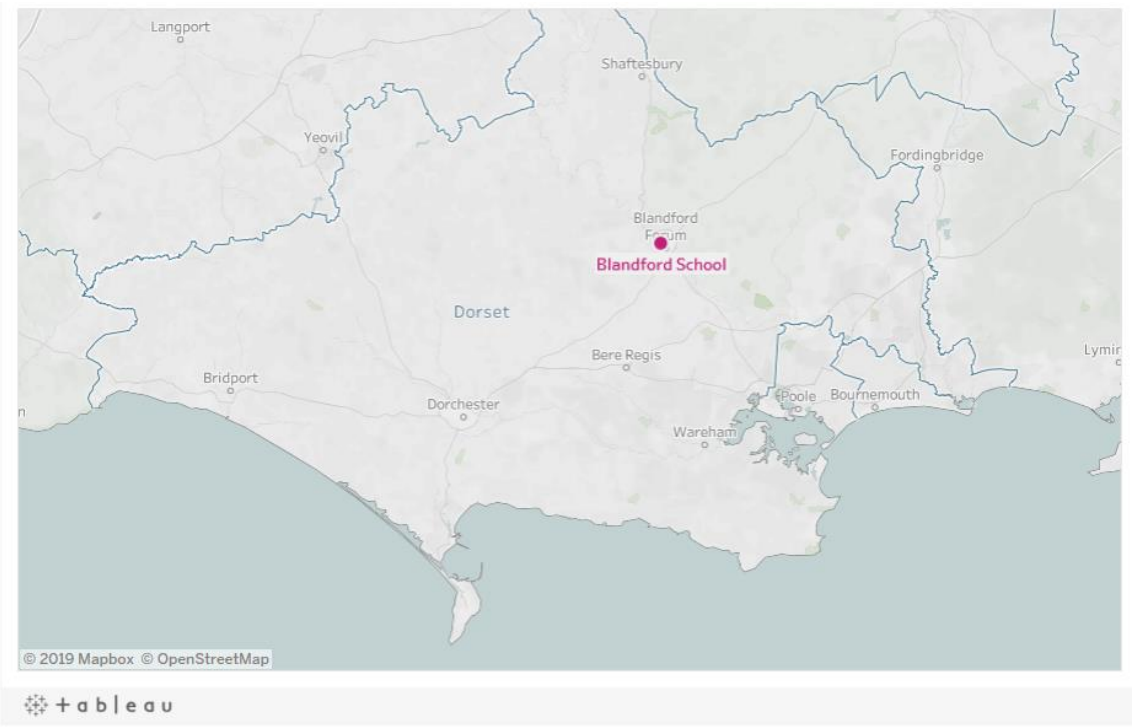


Figure 5 – Location of Blandford School

This is taken from:
https://public.tableau.com/profile/public.health.dorset#!/vizhome/ARUNandPHDnetwork/ARUNandPHDnetowrk

The $PM_{2.5}$ Annual mean for this site is 12.21µg/m^3. The data has not yet been ratified and is likely to change. $PM_{2.5}$ concentrations are considered to be well below the EU Limit Value of 25µg/m^3.

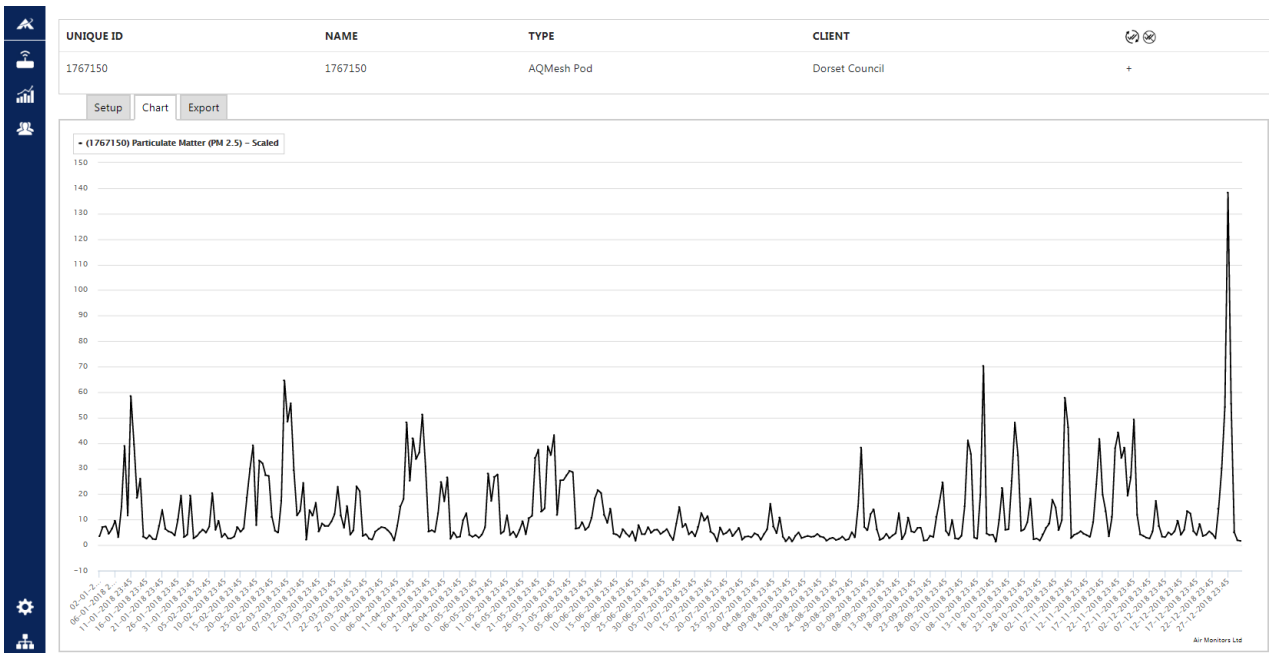


Figure 6 – 2018 $PM_{2.5}$ Monitoring – Blandford School (Not ratified)

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.

North Dorset District Council does not have any automatic monitoring sites.

3.1.2 Non-Automatic Monitoring Sites

North Dorset District Council undertook non- automatic (passive) monitoring of NO_2 at 13 sites during 2018. Table A.1 in Appendix A shows the details of the sites.

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

3.2 Individual Pollutants

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

3.2.1 Nitrogen Dioxide (NO_2)

Table A.2 in Appendix A provides the ratified and adjusted monitored NO_2 annual mean concentrations with the air quality objective of 40µg/m^3. The full 2018 dataset of monthly mean values from the diffusion tube monitoring programme is provided in Appendix B.

There are no exceedances of the Annual Mean or Hourly Mean air quality objective for nitrogen dioxide.

North Dorset District Council have therefore reviewed the monitoring locations for 2019, resulting in an increase of additional diffusion tubes within one Gillingham and reductions elsewhere.

3.2.2 Particulate Matter (PM_{10})

North Dorset District Council does not monitor for PM_{10}.

3.2.3 Particulate Matter ($PM_{2.5}$)

Please see Section 2.3 PM2.5 – Local Authority Approach to Reducing Emissions and/or Concentrations.

3.2.4 Sulphur Dioxide (SO_2)

North Dorset District Council does not monitor for SO_2.

Appendix A: Monitoring Results

Table A.1 – 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)
N1	Lawrence Cott, Gillingham	Roadside	381302	126181	NO2	NO	4.1	3.7	NO	2.5
N2	Wyke Street, Gillingham	Roadside	380511	126490	NO2	NO	9.8	1.7	NO	2.5
N3	Ring Street, Stalbridge	Roadside	373529	117828	NO2	NO	0	0.5	NO	2.5
N4	The Barbers, Sturminster Newton	Kerbside	378606	114009	NO2	NO	0	1.3	NO	2.5
N5	Spread Eagles, Melbury Abbas	Kerbside	388350	119732	NO2	NO	0	0.6	NO	2.5
N6	Melbury Abbas	Kerbside	388210	120246	NO2	NO	2.1	0	NO	2
N7	Spinney Cottage, Melbury Abbas	Roadside	388206	120321	NO2	NO	0	0.7	NO	2.5
N8	Christy's Lane, Shaftesbury	Roadside	387052	122740	NO2	NO	9	2	NO	2.5
N9	Clockwork House, Spetisbury	Roadside	391849	101888	NO2	NO	0	3	NO	2.5
N10	Vine Cottage, Spetisbury	Roadside	391114	102648	NO2	NO	0	0.8	NO	2.5
N11	67 Salisbury Street, Blandford	Roadside	388524	106542	NO2	NO	0	1.2	NO	2.5
N12	East Street, Blandford	Roadside	388760	106383	NO2	NO	0	2.1	NO	2.5
N13	Willow Cottage, Fontmell Magna	Rural	386673	117063	NO2	NO	26	0	NO	2.5

Table A.2 – Annual 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 Annual Mean Concentration (µg/m^3)				
					2014	2015	2016	2017	2018
N1	Roadside	Diffusion Tube	100	75	N/A	N/A	N/A	N/A	32.94
N2	Roadside	Diffusion Tube	100	75	N/A	N/A	N/A	N/A	25.82
N3	Roadside	Diffusion Tube	100	75	N/A	N/A	N/A	N/A	27.9
N4	Kerbside	Diffusion Tube	100	75	N/A	N/A	N/A	N/A	36.96
N5	Kerbside	Diffusion Tube	100	75	N/A	N/A	N/A	N/A	23.05
N6	Kerbside	Diffusion Tube	100	75	N/A	N/A	N/A	N/A	26.46
N7	Roadside	Diffusion Tube	100	75	N/A	N/A	N/A	N/A	28
N8	Roadside	Diffusion Tube	100	75	N/A	N/A	N/A	N/A	23.66
N9	Roadside	Diffusion Tube	100	75	N/A	N/A	N/A	N/A	20.85
N10	Roadside	Diffusion Tube	100	75	N/A	N/A	N/A	N/A	28.12
N11	Roadside	Diffusion Tube	100	66	N/A	N/A	N/A	N/A	27.38
N12	Roadside	Diffusion Tube	100	75	N/A	N/A	N/A	N/A	30.24
N13	Rural	Diffusion Tube	100	75	N/A	N/A	N/A	N/A	10.59

☒ **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.

Appendix B: Full Monthly Diffusion Tube Results for 2018

Table B.1 – NO_2 Monthly Diffusion Tube Results - 2018

Site ID	NO_2 Mean Concentrations (µg/m^3)														
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean		
													Raw Data	Bias Adjusted (0.92) and Annualised (1)	Distance Corrected to Nearest Exposure (2)
N1				35.43	31.74	29.22	39.33	31.50	35.56	36.08	29.12	32.86	33.43	32.9	28.6
N2				25.35	29.35	26.86	24.88	22.16	23.91	30.06	25.81	27.47	26.21	25.8	19.7
N3				29.03	24.39	21.19	29.79	27.80	28.64	31.20	29.83	32.97	28.32	27.9	27.9
N4				32.42	**42.18**	32.86	**40.87**	37.60	38.37	**42.32**	34.61	36.35	37.51	37.0	37.0
N5				19.48	26.40	20.58	29.48	24.45	22.67	26.86	22.28	18.31	23.39	23.0	23.0
N6				24.95	32.74	30.67	31.55	24.90	23.81	26.88	23.05	23.11	26.85	26.5	18.7
N7				22.82	33.84	33.70	33.84	30.40	25.25	30.43	23.69	21.79	28.42	28.0	28.0
N8				25.15	27.06	24.28	20.40	20.60	20.58	28.62	26.62	22.83	24.02	23.7	17.4
N9				18.41	22.10	21.85	19.94	20.50	17.83	24.22	23.69	21.90	21.16	20.8	20.8
N10				31.72	24.42	25.63	28.09	24.16	29.48	31.31	30.91	31.15	28.54	28.1	28.1
N11					23.10	23.50	28.79	25.80	28.09	27.85	29.21	29.88	27.03	27.4	27.4
N12				28.80	29.21	31.53	29.50	28.30	30.90	33.37	29.84	34.76	30.69	30.2	30.2
N13				10.80	9.91	8.62	12.04	11.60	10.48	11.36	11.24	10.70	10.75	10.6	10.6

☐ **Local bias adjustment factor used**

☒ **National bias adjustment factor used**

☒ **Annualisation has been conducted where data capture is <75% (confirm by selecting in box)**

☒ **Where applicable, data has been distance corrected for relevant exposure (confirm by selecting in box)**

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

QA/QC of Diffusion Tube Monitoring

The UKAS accredited laboratory, Gradko International Limited supply and analyse the diffusion tubes, which are a preparation of 50% TEA (triethanolamin) / Acetone. Tubes are handled in accordance with the instruction within LAQM.TG(16), 7.186.

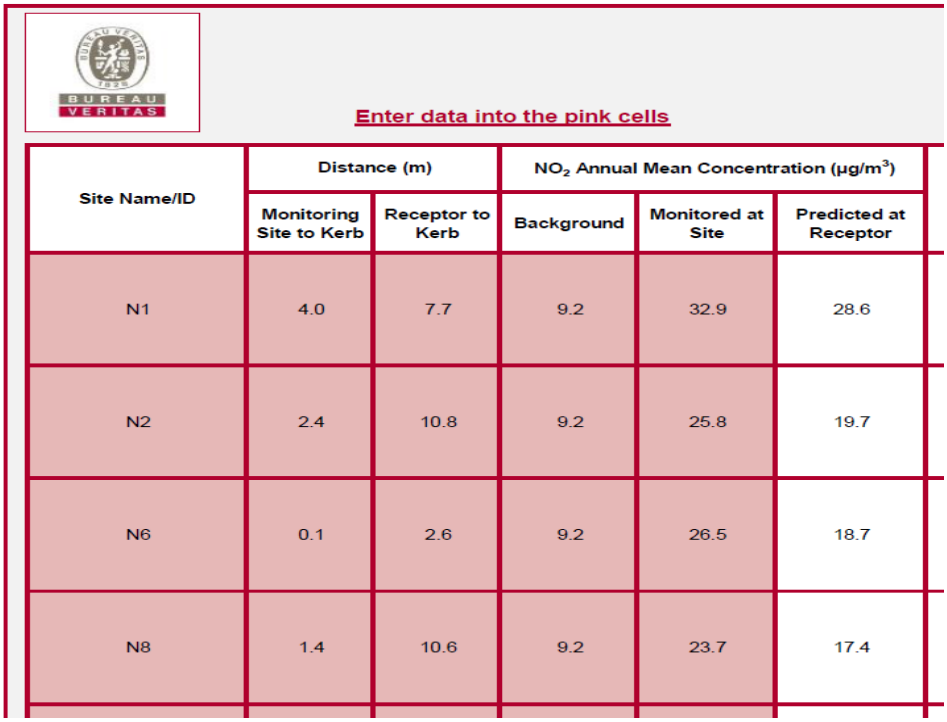
Gradko International participate in the AIR/WASP NO_2 Proficiency Testing Scheme. In the four periods assessed in 2018 the laboratory received a score of 100%. http://laqm.defra.gov.uk/diffusion-tubes/qa-qc-framework.html

For the purposes of Local Air Quality Management, tube precision is separated into two categories, “Good” or “Poor”, tubes are considered to have good precision where the coefficient of variation of duplicate or triplicate diffusion tubes for eight or more periods during the year is less than 20% and the average CV of all monitoring periods is less than 10%.

The results of precision testing show that Gradko International had “Good” precision for 8 out of 8 studies for 2018. http://laqm.defra.gov.uk/diffusion-tubes/precision.html

Workings for NO_2 Data

1. NO2-Fall-Off-With-Distance-from-Roads-Calculator-v4.2



Enter data into the pink cells

Site Name/ID	Distance (m)		NO_2 Annual Mean Concentration (µg/m^3)		
	Monitoring Site to Kerb	Receptor to Kerb	Background	Monitored at Site	Predicted at Receptor
N1	4.0	7.7	9.2	32.9	28.6
N2	2.4	10.8	9.2	25.8	19.7
N6	0.1	2.6	9.2	26.5	18.7
N8	1.4	10.6	9.2	23.7	17.4

Figure 7 NO2-Fall-Off-With-Distance-from-Roads-Calculator-v4.2

2. Annualising Data

All diffusion tubes, except N11, were in place from April to December 2018. These tubes were annualised using a factor of 1.017. N11 was in place May to December 2019 and was annualised using a factor of 1.101. Both factors were calculated using a background tube from the Weymouth and Portland Borough Council.

Site	Start Date	End Date	B1	D1	B1 when D1 is available
N5 Spread Eagles, Melbury Abbas	03.01.18	31.01.18	12.45		
	31.01.18	28.02.18	11.38		
	28.02.18	28.03.18	12.23		
	28.03.18	02.04.18	11.42	19.48	11.42
	02.04.18	06.06.18	10.42	26.40	10.42
	06.06.18	04.07.18	9.36	20.58	9.36
	04.07.18	02.08.18	9.86	29.48	9.86
	02.08.18	05.09.18	6.17	24.45	6.17
	05.09.18	03.10.18	7.59	22.67	7.59
	03.10.18	31.10.18	10.05	26.86	10.05
	31.10.18	05.12.18	10.89	22.28	10.89
	05.12.18	09.01.19	8.50	18.31	8.50
Average			10.03	23.39	9.36
			1.071327		

Site	Start Date	End Date	B1	D1	B1 when D1 is available
N11 67 Salisbury Street, Blandford	03.01.18	31.01.18	12.45		
	31.01.18	28.02.18	11.38		
	28.02.18	28.03.18	12.23		
	28.03.18	02.04.18	11.42		
	02.04.18	06.06.18	10.42	23.10	10.42
	06.06.18	04.07.18	9.36	23.50	9.36
	04.07.18	02.08.18	9.86	28.79	9.86
	02.08.18	05.09.18	6.17	25.80	6.17
	05.09.18	03.10.18	7.59	28.09	7.59
	03.10.18	31.10.18	10.05	27.85	10.05
	31.10.18	05.12.18	10.89	29.21	10.89
	05.12.18	09.01.19	8.50	29.88	8.50
		Average	10.03	27.03	9.11
			1.101		

Monitoring Location	4 St Georges Estate
Jan	12.45
Feb	11.38
Mar	12.23
Apr	11.42
May	10.42
Jun	9.36
Jul	9.86
Aug	6.17
Sep	7.59
Oct	10.05
Nov	10.89
Dec	8.50

Figure 8 Annualising Data Workings

Part A1 Permitted Installations

Name and Address	Process Type
J & G Environmental Ltd, Holland Way Ind Est, Blandford Forum, DT11 7TA	Waste transfer
Walston Poultry Farm Ltd, Thorpe Farm, Winterborne Kingston, Blandford Forum, DT11 7BH	Poultry production
Walston Poultry Farm Ltd, East Down Farm, Winterborne Whitechurch, Blandford Forum DT11 9AS	Poultry production
Old Stour Farm Ltd, Woodville, Stour Provost, Gillingham, Dorset, SP8 5SN	Poultry production
Thrive Unique Ltd, Middle Farm, Stalbridge Weston, Sturminster Newton, DT10 2LA	Poultry production
Yellowstone Environmental Services (formerly Oil and Water Limited), 20, Wincombe Business park, Shaftesbury, SP7 9QJ	Waste transfer/treatment
Savage Cat Farm, Boweridge Hill, Gillingham, SP8 5QR	Poultry production
Farmergy Ltd, Lowbrook Farm, Belchalwell, Blandford Forum, DT11 0EQ	Biodigester and combustion
Ferns Poultry Farm Back Lane, Kingston, Hazelbury Bryan, Sturminster Newton DT10 2AN	Poultry production
BOCM Pauls, Blandford Heights, Blandford Forum, Dorset, DT11 7TL	Animal feed compounder
Sigma Aldrich, The Old Brickyard, Gillingham, Dorset, SP8 4XT	Chemical production
Dorset County Council, Conygar Landfill Site, Castle Lane, Okeford Fitzpaine, Blandford Forum, DT11 0RJ	Waste management
Mark Farwell Ltd, Downend Farm, Bushes Road, Stourpaine, Blandford Forum, DT11 8SY	Waste management
J Cowley and S Kimber, Deer Park Riding Stables, White Cliff Mill Street, Blandford Forum, DT11 7BN	Waste management
Dorset County Council, Gibbs Marsh Trading Estate, Stalbridge, DT10 2RY	Waste management
Mr V Smith, Okeford Common, Okeford Fitzpaine, Blandford Forum, DT11 0RY	Waste management
PCS South West Ltd, 8 Ambassador Business park, West Stour, Gillingham SP8 5SE	Waste management
North Dorset Stone Ltd, Manor Farm, Silton, Gillingham SP8 5PR	Waste management
Geoffrey Thompson Higher Shaftesbury Road, Blandford Forum DT11 7EG	Waste management
MB Crocker Limited, Strangways Farm, Hains Lane, Marnhull, DT10 1JU	Poultry production
RM Mogridge Contracting Limited, Knoll farm, The Common, Okeford Fitzpaine, DT11 0RT	Waste management
BV Dairy, Wincombe Lane, Shaftesbury, Dorset, SP7 8QD	Waste management
Geoffrey Thompson, 8 Wincombe Business Park, Shaftesbury, SP7 9QJ	Waste management
Symonds Auto Salvage Limited, Gibbs Marsh Trading Estate, 143 Hanger, Stalbridge, Sturminster Newton DT10 2RY	Waste management
TF Builders Limited Unit 8 Brickfields Industrial Estate, Gillingham SP8 4JL	Waste management

Figure – 9 Part A1 Permitted Installations

Part B Permitted Installations

Name and Address	Process Type
Dextra Group plc, Unit 17 Brickfields Business Park, Gillingham, SP8 4PX	Powder Coating where > 20t coating powder used in 12m
Snashall Steel, Pulham Business Park, Pulham, Dorchester, Dorset, DT2 7DX	Coating of metal and plastic where >5t organic solvent used in 12m
Hospital Metalcraft, Blandford Heights Industrial Estate, Blandford Forum, Dorset, DT11 7TE	Powder Coating where > 20t coating powder used in 12m
Chantry Field SS, Chantry Fields, Gillingham, Dorset, SP8 4UA	Petrol Vapour Recovery
Cornwall Group Service Station, Blandford Rd, Shillingstone, Blandford Forum, DT11 0BE	Petrol Vapour Recovery
Damory SS, Salisbury Road, Blandford Forum, Dorset, DT11 7LP	Petrol Vapour Recovery
Forge Garage, Bourton, Gillingham, Dorset, SP8 5PZ	Petrol Vapour Recovery
Ivy Cross SS, Shaftesbury, Dorset, SP7 8DS	Petrol Vapour Recovery
Redpost SS, Winterbourne Zelston, Blandford Forum, Dorset, DT11 9EU	Petrol Vapour Recovery
Ring St SS, Stalbridge, Dorset, DT10 7NQ	Petrol Vapour Recovery
Riverside Garage, West Stour, Gillingham, Dorset, SP8 5RJ	Petrol Vapour Recovery
Tesco SS, Stour Park, Blandford St Mary, Dorset, DT11 9PU	Petrol Vapour Recovery
Tesco SS, Christys Lane Shaftesbury, Dorset	Petrol Vapour Recovery
Down End Farm, Stourpaine, Dorset	Mobile Crushing Plant
AD Mills Contracting Limited, Well Common Yard, Todber, Sturminster Newton, Dorset, DT10 1JB	Mobile Crushing Plant
Cavell Dry Cleaners, 23 High Street, Gillingham, Dorset SP8 4AA	Dry Cleaners
Impressed Dry Cleaners, 9 Barnack walk, Blandford Forum, Dorset, DT11 7AL	Dry Cleaners
Johnsons Stalbridge Linen Services, Christys Lane, Shaftesbury, Dorset, SP7 8PH	Dry Cleaners
Market Place Dry Cleaners, market Place, Sturminster Newton, Dorset, DT10 1AS	Dry Cleaners
Blandford Laundry Services, Shaftesbury Lane, Blandford Forum, Dorset, DT11 7EG	Dry Cleaners
Peter Braithwaite Floor Screeders, 23 Portman Road, Pimperne, Blandford Forum, Dorset, DT11 8UJ	Batching of Cement

Figure 10 – Part B Permitted Installations

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

Discussion of Monitoring Location Choices:

The North Dorset Local Plan – Adopted January 2016, highlights a significant increase in the housing provision required:

Location	Homes Proposed (approx.)	% of Total (approx.)
Blandford Forum	1200	21
Gillingham	2200	39
Shaftesbury	1140	20
Sturminster Newton	395	7
Countryside (Stalbridge and the villages	825	14
Total	5700	100

(source: https://www.dorsetcouncil.gov.uk/planning-buildings-land/planning-policy/north-dorset/the-north-dorset-local-plan/the-north-dorset-local-plan.aspx)

Figure 11 – Proposed Housing Provision from Local Plan

Using this Plan, and officers local knowledge of congestion issues within the District, the following areas were targeted.

1. **Gillingham**

   Proposals for a significant increase in houses in the area, means that the diffusion tubes will be retained for 2019/20 monitoring, and two additional tubes were installed in 2019 to provide information adjacent to the location of one proposed development up to 634 dwellings, a primary school, sports pitches, public open space, play facilities. The other is located near to where a new access road could be provided for another slightly smaller residential development.

Figure 12 - Site N1 381302, 126181 Located on the B3081 (Newbury)

Road is the main through road of Gillingham. Is representative of relevant exposure, as some dwellings are on the roadside a little further along that stretch of road. Traffic queues in a North-West direction at the traffic lights.

The annualised, bias adjusted annual mean for 2018 was 28.6µg/m^3. It has been decided that this location will remain for 2019

Figure 13 - N2 380511, 126490 Located on the B3081 (Wyke Street)

Again, some idling traffic present to this area in an Easterly direction onto Le Neubourg Way. Site is representative of relevant exposure - properties located approximately 4m from the kerb.

The annualised, bias adjusted annual mean for 2018 was 19.7µg/m^3. It has been decided that this location will remain for 2019

2. Stalbridge

Site was decided upon due to there being a street canyon present, with relevant exposure (Facades of residential dwellings).

Figure 14 - N3 373529, 117828 Located on the A357 (Ring Street)

The annualised, bias adjusted annual mean for 2018 was 27.9µg/m^3 it has been decided that this location will cease

3. Sturminster Newton

Site was decided upon due to there being a street canyon present, with relevant exposure (Facades of residential dwellings and also a café's outdoor seating area to the entrance to the street canyon).

Figure 15 - N4 378606, 114009 Located on the B3092

The annualised, bias adjusted annual mean for 2018 was 37µg/m^3 It has been decided that this location will remain for 2019.

4. Melbury Abbas

Concerns have previously been raised from residents regarding local air quality in the Melbury Abbas area of the C13. The village sits in the base of the extremely steep Spread Eagle Hill, which runs parallel to the A350. The topography along with the narrow roads cutting through the village has led to numerous occasions where two passing HGVs have become 'stuck' causing tail backs within the bottom of the village. In an attempt to alleviate this, northbound vehicles are advised and directed to use the A350 and southbound vehicles will be advised and directed to use the C13.

In addition, road improvements have been instigated in this area, that include the introduction of a pull-in for HGVs with vehicle activated signs within Dinah's Hollow. Please see https://www.dorsetcouncil.gov.uk/roads-highways-maintenance/highway-improvements/blandford-to-shaftesbury-a350-and-c13-route-management-scheme.aspx for more information.

The C13 road was closed on 7th Jan 2019 for these carriageway improvements. The diffusion tubes remained in place during the closure, however, for 2019, only N7 remains in place.

Figure – 16 N5 388350, 119732 Located on the façade of a residential dwelling on the C13

The façade of their property is located kerbside on the steep incline entering the 'valley' of Melbury Abbas.

The annualised, bias adjusted annual mean for 2018 was 23µg/m^3 it has been decided that this location will cease.

Figure 17 - N6 388210, 120246 Located on road sign on the C3

Site chosen, as vehicles often idle adjacent to this dwelling.

The annualised, bias adjusted annual mean for 2018 was18.7 µg/m^3 it has been decided that this location will cease.

Figure 18 - N7 388206, 120321 Located on facade of residential dwelling on C3.

The annualised, bias adjusted annual mean for 2018 was 28 µg/m^3 it has been decided that this location will remain.

To support the monitoring within Melbury Abbas, North Dorset District Council attempted to deploy diffusion tubes within an area known locally as Bozley Hill. This is the alternative route for vehicles, along the A350, where the northbound HGVs are directed. Unfortunately, there were no available sites to located a diffusion tube to the façade of any dwellings, and there were no other suitable sites which were safe enough for officers to work.

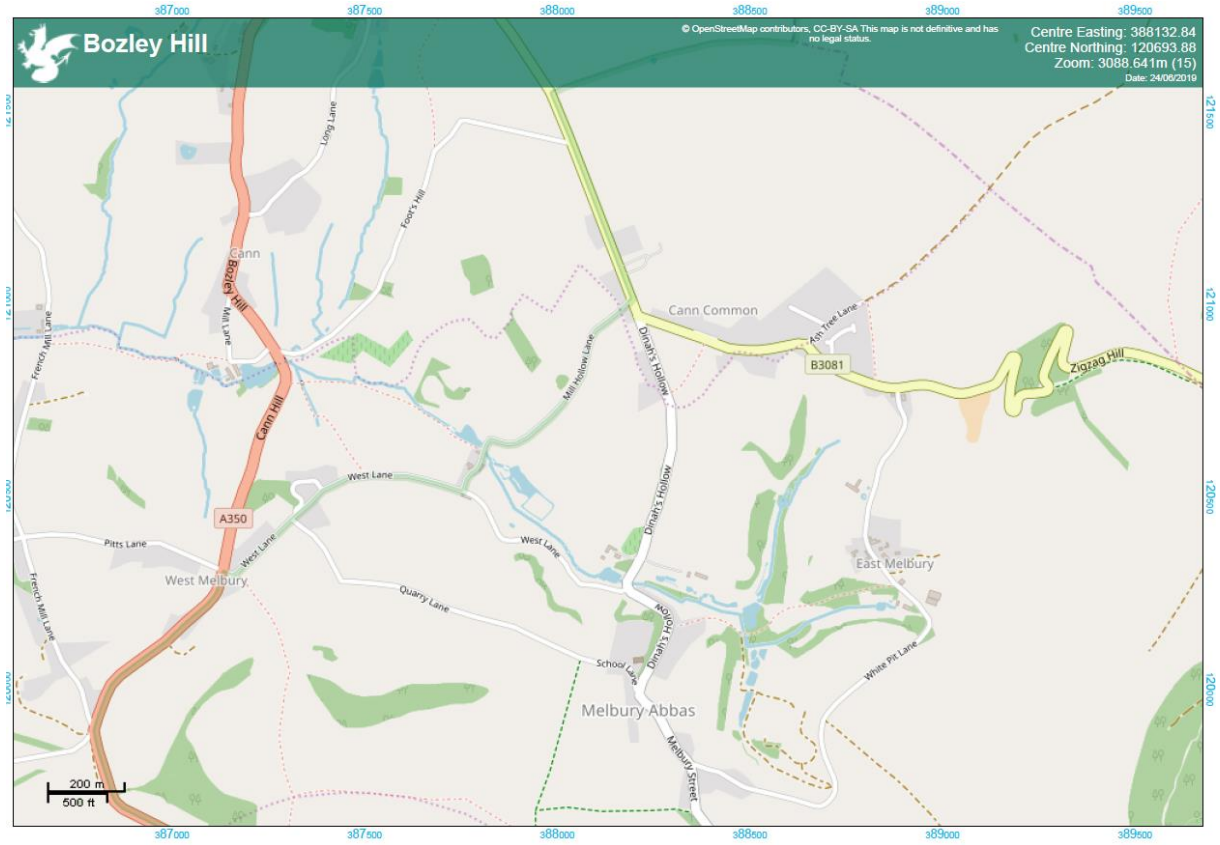


Figure 19 – Map identifying location of Melbury Abbas and Bozley Hill

5. Shaftesbury

Figure 20 - N8 387052, 122740 junction to residential development, on the A350

This location was chosen as no data was available to provide to developers when they consider air quality for residential development proposals.

The annualised, bias adjusted annual mean for 2018 was17.4 µg/m^3 it has been decided that this location will cease

6. Spetisbury

This village was considered appropriate for monitoring, as there have been an increase in small-scale residential developments over the past 5 years, which have been placed alongside the main road the A350, forming a street canyon, which runs almost the length of the village:

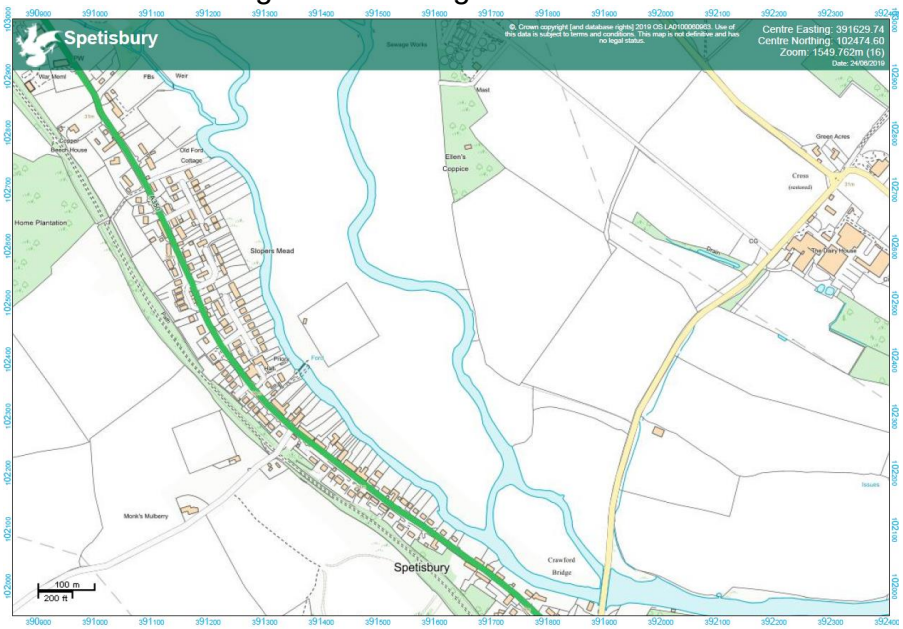


Figure 21 – Map identifying canyon effect of Spetisbury

Monitoring locations were difficult to establish, due to lack of suitable street furniture.

Figure 22 - N9 391849, 101888 Located on the façade of a residential property, just outside of the canyon (East)

Figure 23 - N10 391114, 102648 Located on the façade of a residential property, just prior to the canyon (West)

The annualised, bias adjusted annual mean for 2018 for N9 and N10 respectively was 20.8µg/m^3 and 28.1 µg/m^3 it has been decided that these location will cease.

7. Blandford Forum (Town Centre)

A market town that mixes residential and commercial premises alongside the main through-road which has produced a street canyon. There are some incidents of congestion within the town centre that could impact relevant exposure.

Figure 24 - N11 388524, 106542 Salisbury Street, B3082

On the façade of a residential property, within the one-way system within the street canyon.

Figure 25 - N12 388760, 106383 East Street, B3082

On the façade of a residential property, a one-way system on the outskirts of the street canyon.

The annualised, bias adjusted annual mean for 2018 for N11 and N12 respectively was 27.4µg/m^3 and 30.2µg/m^3 it has been decided that these location will cease.

8. Fontmell Magna

Figure 26 - N13 386673, 117063 A350

This village was chosen, due to dwellings located adjacent to the carriageway. There is also a local concern about the amount of HGVs that use this stretch of the A350. Monitoring sites were severely restricted, due to lack of street furniture and safety considerations for officers when deploying the tubes, therefore the location was some distance away from the dwellings.

The annualised, bias adjusted annual mean for 2018 was10.6µg/m^3 it has been decided that these location will cease.

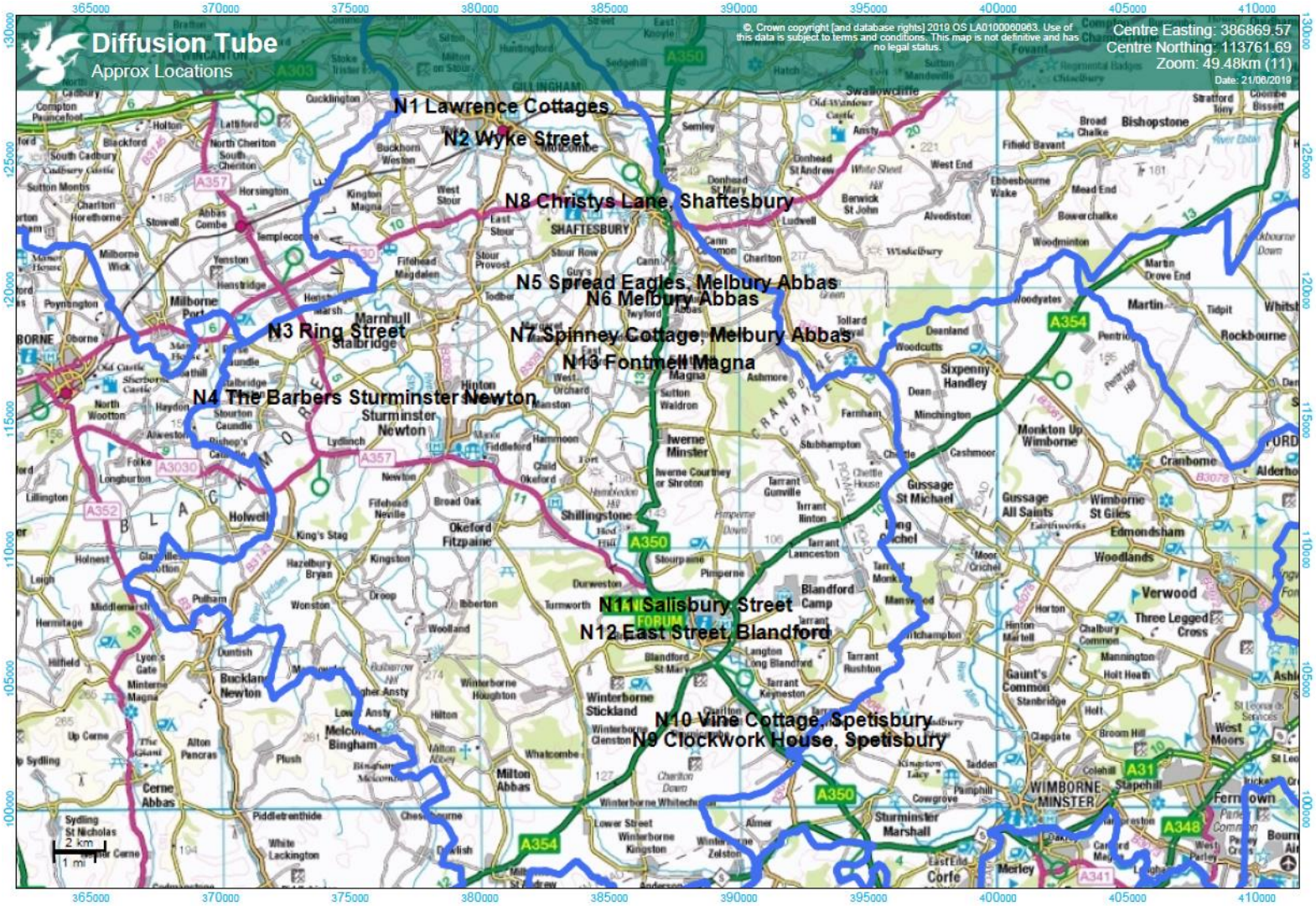


Figure 27 - Approximate Locations of All Diffusion Tubes

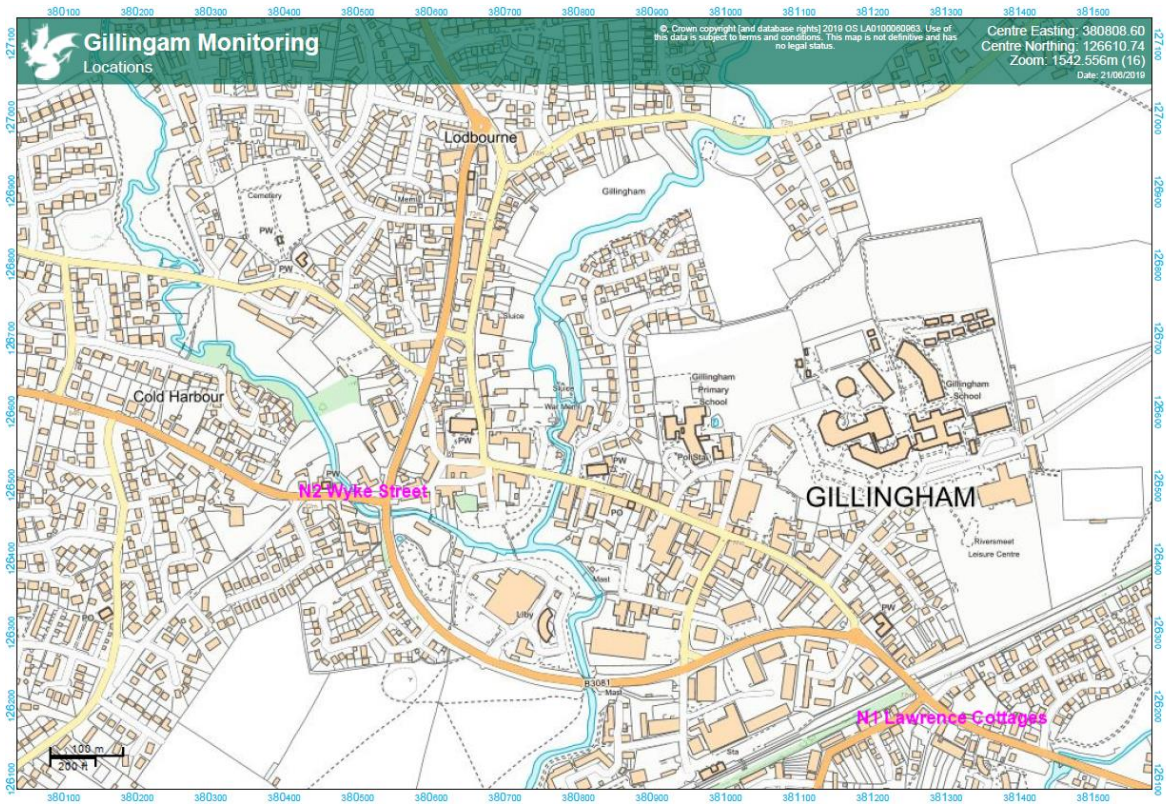


Figure 28 - Monitoring Locations within Gillingham

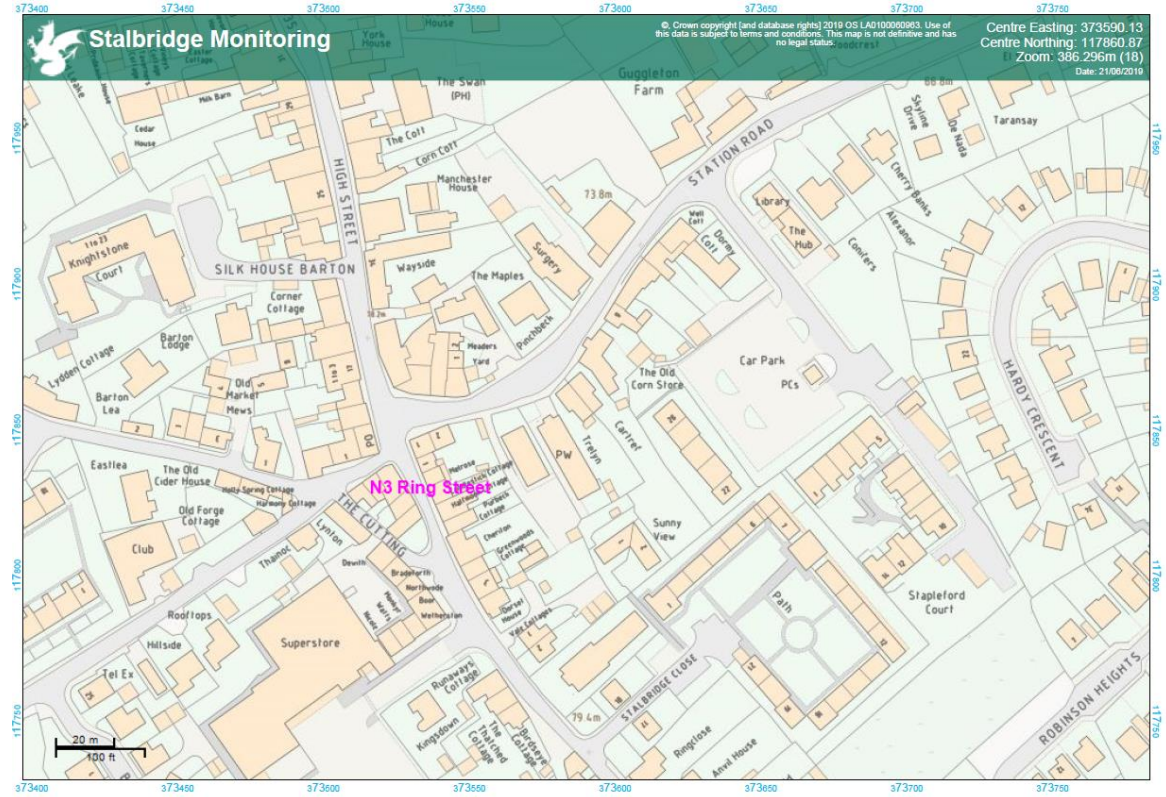


Figure 29 - Monitoring Location within Stalbridge

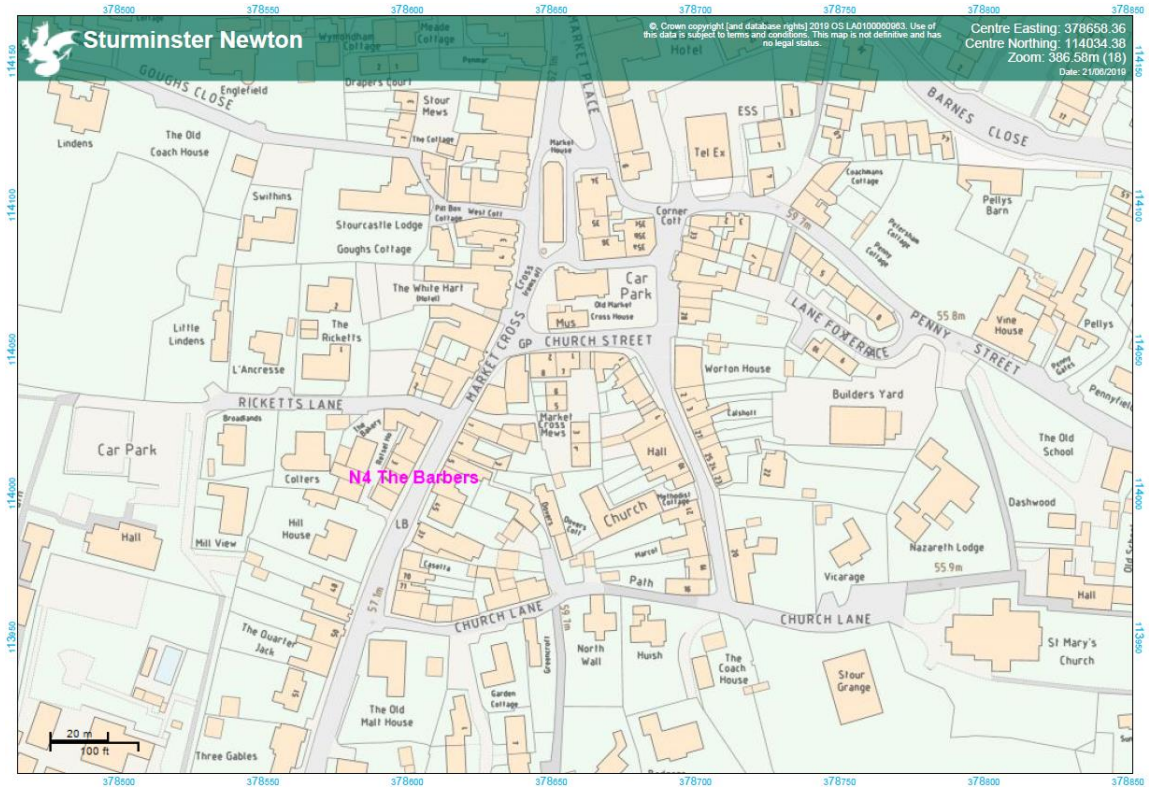


Figure 30 - Monitoring Location within Sturminster Newton

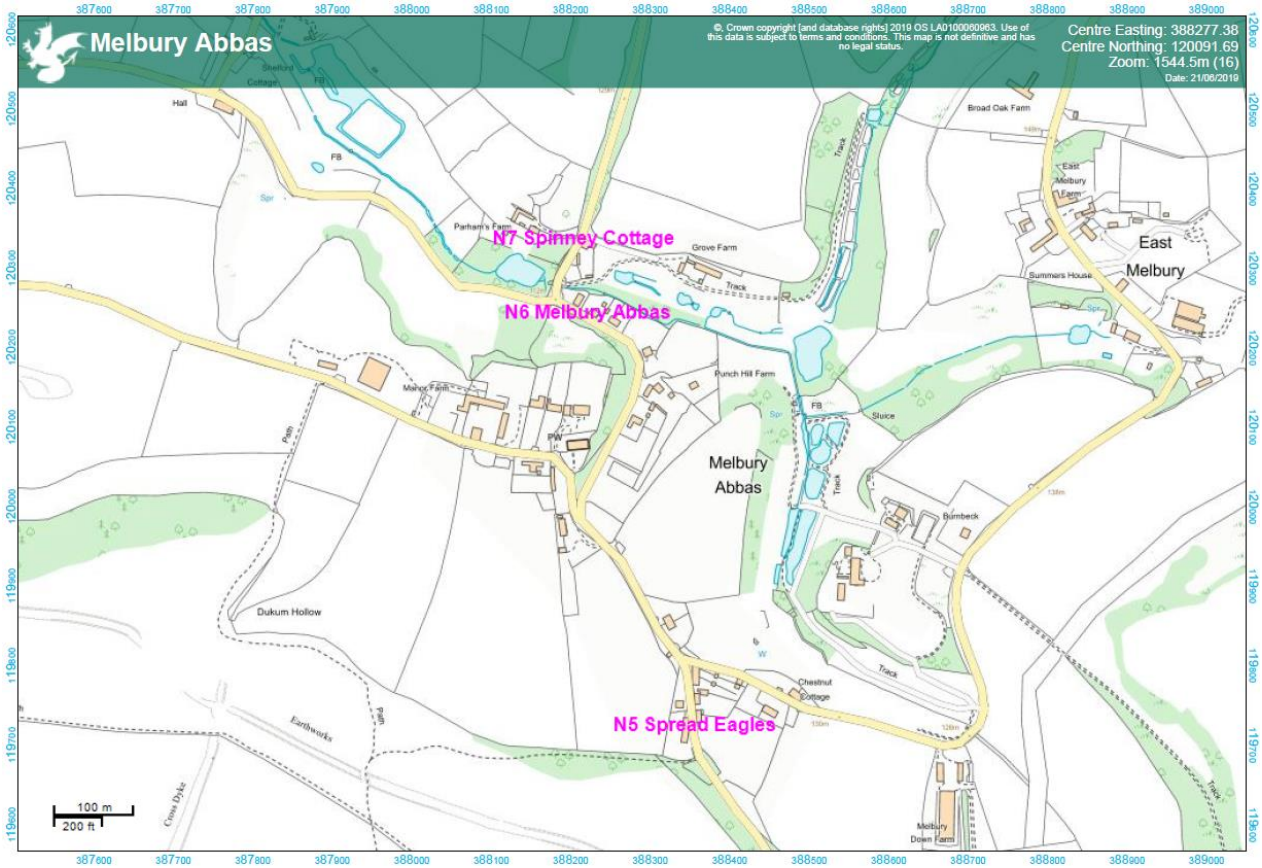


Figure 31 - Monitoring Locations within Melbury Abbas

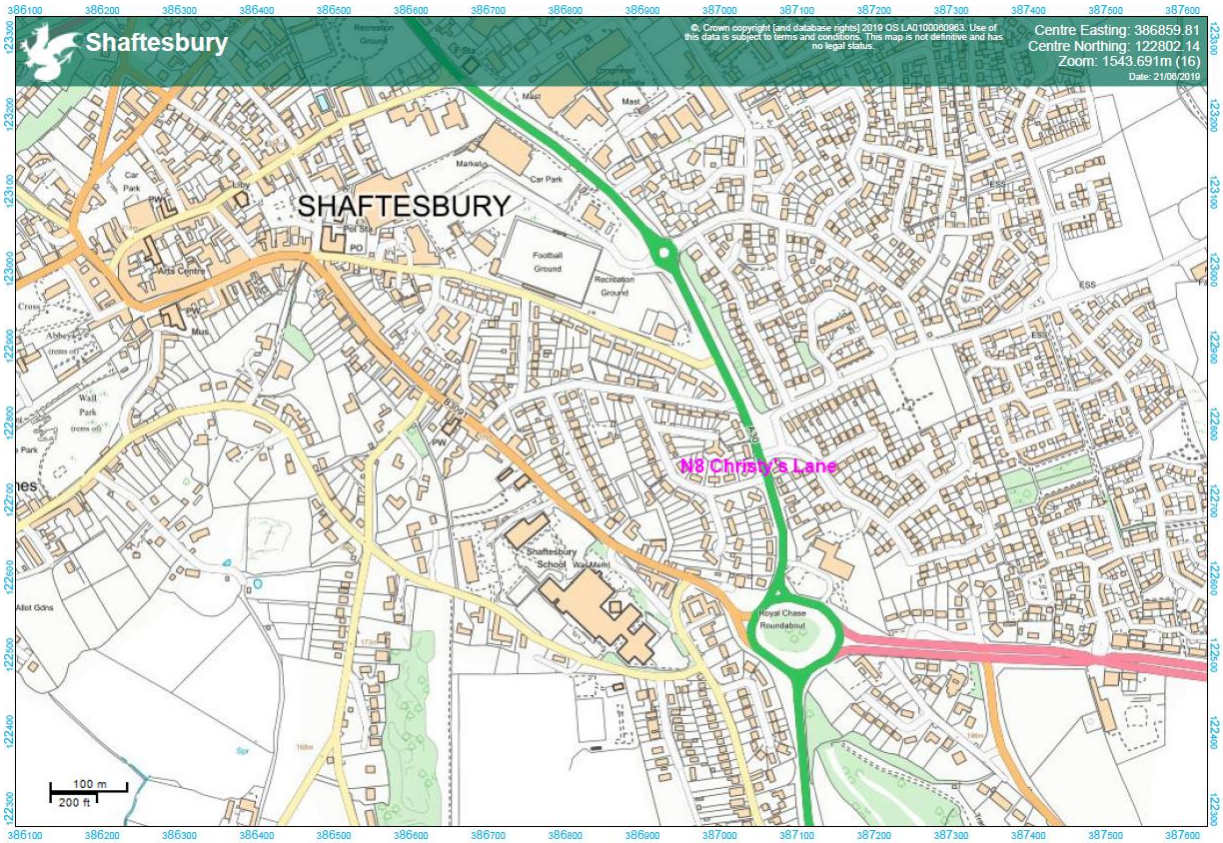


Figure 32 - Monitoring Location within Shaftesbury

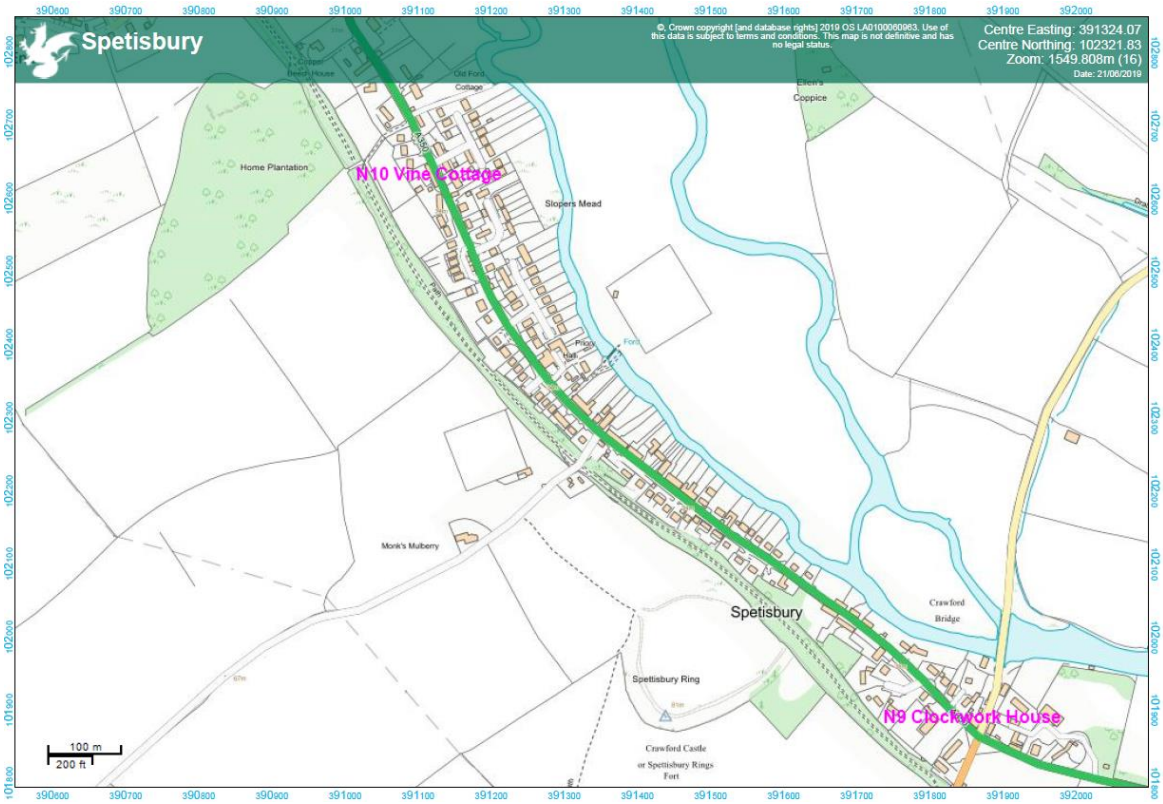


Figure 33 - Monitoring Locations within Spetisbury

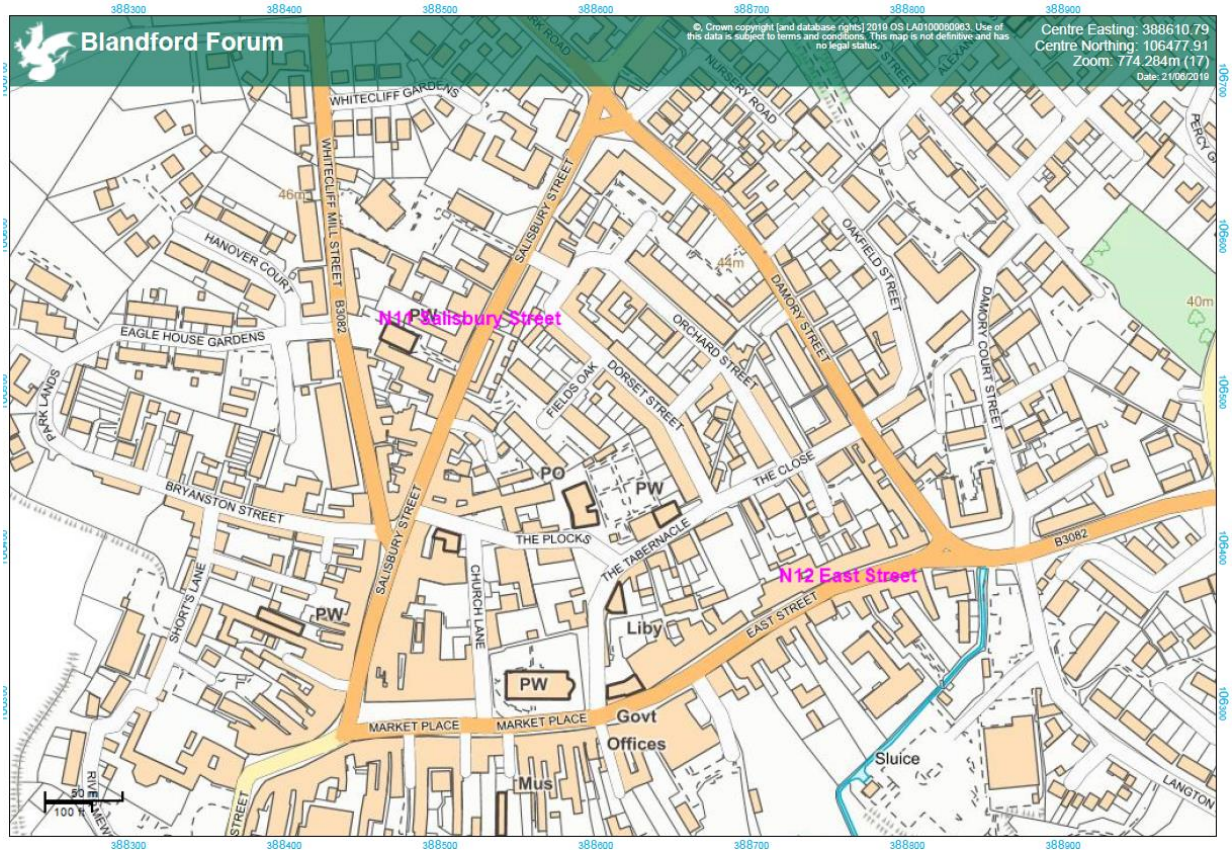


Figure 34 - Monitoring Locations within Blandford Forum

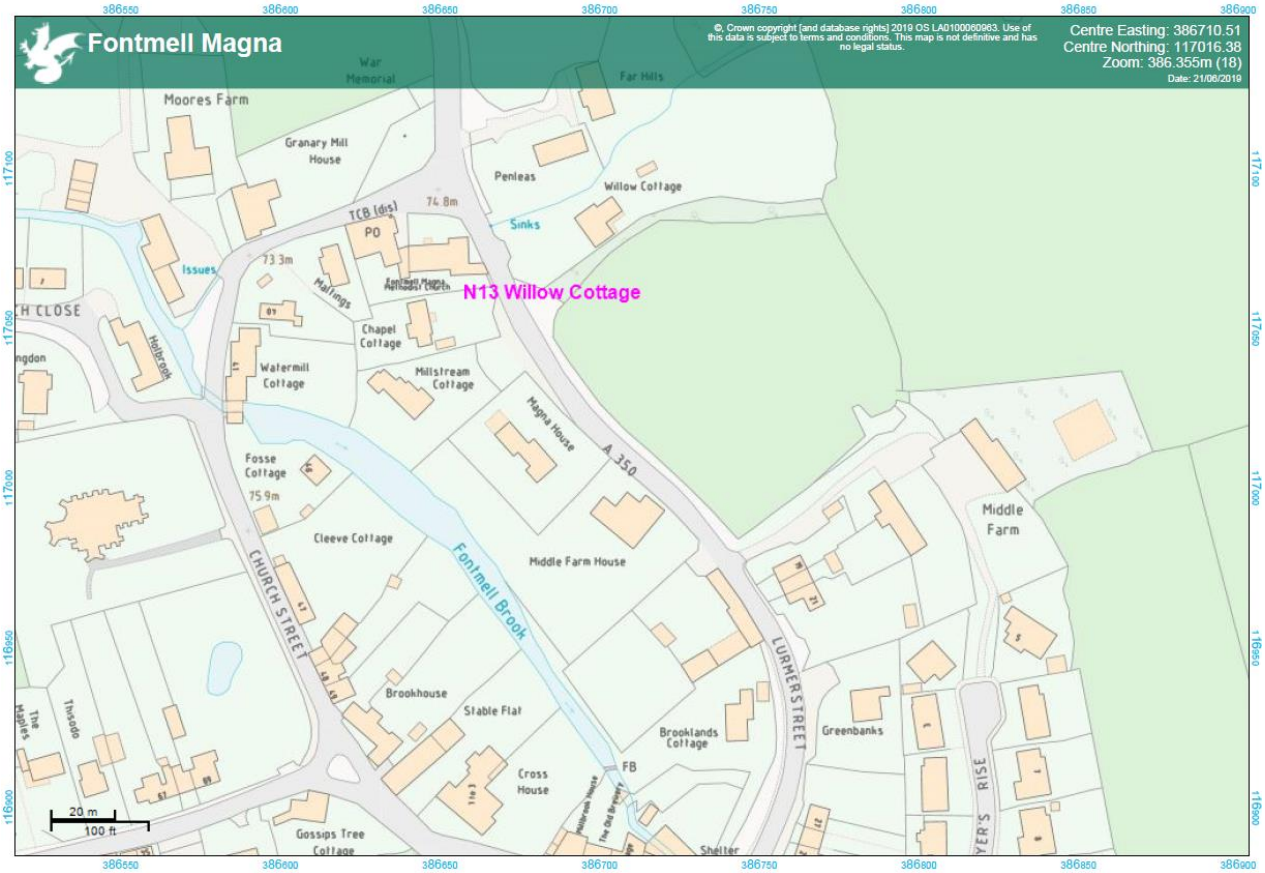


Figure 35 - Monitoring Location within Fontmell Magna

Appendix E: Summary of Air Quality Objectives in England

Table E.1 – Air Quality Objectives in England

Pollutant	Air Quality Objective[4]	
	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

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

Glossary of Terms

Abbreviation	Description
AQAP	Air Quality Action Plan - A detailed description of measures, outcomes, achievement dates and implementation methods, showing how the local authority intends to achieve air quality limit values'
AQMA	Air Quality Management Area – An area where air pollutant concentrations exceed / are likely to exceed the relevant air quality objectives. AQMAs are declared for specific pollutants and objectives
ASR	Air quality Annual Status Report
Defra	Department for Environment, Food and Rural Affairs
DMRB	Design Manual for Roads and Bridges – Air quality screening tool produced by Highways England
EU	European Union
FDMS	Filter Dynamics Measurement System
LAQM	Local Air Quality Management
NO_2	Nitrogen Dioxide
NO_x	Nitrogen Oxides
PM_{10}	Airborne particulate matter with an aerodynamic diameter of 10µm (micrometres or microns) or less
$PM_{2.5}$	Airborne particulate matter with an aerodynamic diameter of 2.5µm or less
QA/QC	Quality Assurance and Quality Control
SO_2	Sulphur Dioxide

References

1. Local Air Quality Management Technical Guidance (TG09)

2. Local Air Quality Management Technical Guidance (TG16)

3. North Dorset District Council Annual Status Report 2018 and Annual Status Report Appraisal https://www.dorsetcouncil.gov.uk/environmental-health/pollution/air-quality-in-north-dorset.aspx

4. Travel Dorset https://www.dorsetcouncil.gov.uk/travel/travel.aspx

5. Low Carbon Dorset https://www.lowcarbondorset.org.uk/

6. Climate Emergency https://news.dorsetforyou.gov.uk/2019/06/04/dorset-council-makes-statement-on-climate-emergency/

7. Local Transport Plan 3 https://www.dorsetcouncil.gov.uk/roads-highways-maintenance/transport-planning/local-transport-plan/local-transport-plan-3.aspx

8. Local Planning Policy – North Dorset https://www.dorsetcouncil.gov.uk/planning-buildings-land/planning-policy/north-dorset/local-planning-policy-north-dorset.aspx

9. Car Share Dorset https://liftshare.com/uk/community/dorset

10. Public Health Dorset Profile (Tableau) https://public.tableau.com/profile/public.health.dorset#!/vizhome/AirPollution_10/AirPollutionStory

11. ARUN and Public Health Dorset Network https://public.tableau.com/profile/public.health.dorset#!/vizhome/ARUNandPHDnetwork/ARUNandPHDnetowrk

12. QAQC framework http://laqm.defra.gov.uk/diffusion-tubes/qa-qc-framework.html

13. Bias Adjustment Factor http://laqm.defra.gov.uk/diffusion-tubes/precision.html

14. North Dorset Local Plan https://www.dorsetcouncil.gov.uk/planning-buildings-land/planning-policy/north-dorset/the-north-dorset-local-plan/the-north-dorset-local-plan.aspx

15. Blandford to Shaftesbury - A350 and C13 route management scheme https://www.dorsetcouncil.gov.uk/roads-highways-maintenance/highway-improvements/blandford-to-shaftesbury-a350-and-c13-route-management-scheme.aspx