



2016 Air Quality Annual Status Report (ASR)

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

November 2016

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Executive Summary: Air Quality in Our Area

The 2016 Annual Status Report is designed to provide the public with information relating to local air quality in East Dorset, to fulfil East Dorset District Council's statutory duty to review and assess air quality within its area as required by Part IV of the Environment Act 1985, and to determine whether or not the air quality objectives are likely to be achieved.

Air Quality in East Dorset 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 billion³.

East Dorset is considered to be largely rural in nature and has the principal town of Wimborne as its administrative centre. East Dorset is dissected by the A31 trunk road which is considered a main west-east artery.

Traffic emissions are the most significant source of air pollution within the district with large traffic flows at peak times experienced at Canford Bottom Wimborne (A31), Ferndown, cross roads (A348), and Parley Cross Roads.

Monitoring results in East Dorset District Council area demonstrate that between 2010 and 2015 there has been no discernible upward or downward trend in concentrations for this 5 year period.

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

Actions to Improve Air Quality

East Dorset District Council has continued to facilitate non-car travel by requiring the incorporation of infrastructure into new residential development through the planning regime. Contributions from developers have been secured towards junction improvements and non-car travel infrastructure beyond the boundary of their development through use of section 106 agreements.

The Council has embarked upon a programme of 'smarter' working for its staff, all staff have been equipped with 'hybrid' laptops and software has been put in place to enable staff to work remotely. Many staff now work from home and this has reduced considerably the normal home to work mileage.

The Council has worked closely with the Dorset County Council Highways Section on several schemes, notably the provision of a shared walking & cycling route from Leeson Drive, Ferndown to Cobham Road, and the proposals to construct a shared footway/cycleway from Hampreston cross to Canford Bottom, Wimborne.

Details of the Leeson Drive scheme:

https://www.dorsetforyou.gov.uk/media/183907/Leeson-Drive-to-Cobham-RoadFerndown/pdf/Leeson_Drive_plan_for_website.pdf

Details of the proposed scheme for Hampreston Cross:

<https://www.dorsetforyou.gov.uk/article/376520/Ham-Lane-Hampreston---Hampreston-Cross-to-Canford-Bottom-roundabout-footway>



Dorset County Council, together with the Borough of Poole and, Bournemouth Borough Council jointly secured £723,000 from the UK Government Office for Low Emission Vehicles (OLEV) to provide 15 electric vehicle charging points throughout the region.

The overall aim of the scheme being to provide sufficient charging points throughout the country to reassure drivers that electric vehicles can be used for longer journeys, and to encourage more motorists to drive them.

Electric vehicle charging points have already been installed in two of the partnership's car parks following a joint funding

venture with SSE.

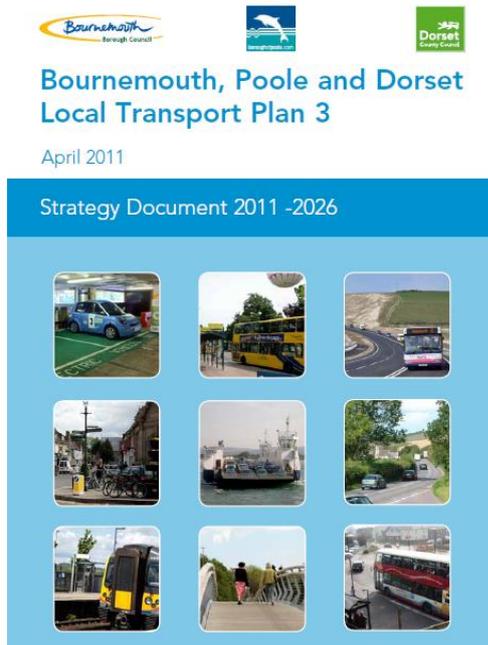
Dorset County Council have submitted a bid to the Department of Transport for provision of a Cooperative Intelligent Transport System for the A31 to decrease congestion and in particular reduce levels of emissions from freight vehicles.

<https://www.dorsetforyou.gov.uk/travel-dorset/roads-and-driving/road-information/road-and-transport-improvement-schemes/schemes-in-east-dorset>

The partnership obtained grant funding from Dorset County Council as part of the Three Towns Travel Project together with supplementary funding from the Governments 'Plug in car grant' towards the purchase of two Nissan Leaf Electric Vehicles for use by the partnerships Civil Enforcement Officers.



Local Priorities and Challenges



1. The main challenge remains the reduction of congestion at Canford Bottom Wimborne (A31), Ferndown, cross roads (A348), and Parley Cross Roads. The scope for highway improvements is limited, but the council continues to work with Dorset County Council to assess whether junction/signalling improvements can bring about reductions in congestion in these areas, details of proposals can be found in 'The Bournemouth, Poole & Dorset Transport Plan'

<https://www.dorsetforyou.gov.uk/article/417819/View-the-Local-Transport-Plan>

How to Get Involved

There are a number of ways members of the public can help to improve local air quality:

- Walk or cycle around the area instead of driving;
- Dorset County Council together with local authorities have launched a car sharing website, [Carsharedorset.com \(opens in a new window\)](http://Carsharedorset.com) is a free service that links up drivers and passengers to enable them to share car journeys. You can give a lift or get a lift for journeys to work, school, the shops, for leisure or work-related trips anywhere in Dorset, Bournemouth and Poole, and beyond - the system is linked to a national database of journeys.
- General travel planning advice is available at <https://www.dorsetforyou.gov.uk/> (including walking, cycling and bus maps and timetables).

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1 Local Air Quality Management

This report provides an overview of air quality in East Dorset District Council during 2016. 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 East 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 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 the objectives.

East Dorset District Council currently does not have any AQMAs.

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

East Dorset District Council has taken forward a number of measures during the current reporting year of 2015 in pursuit of improving local air quality. Details of all measures completed, in progress or planned are set out in Table 2.1.

Table 2.1 – Progress on Measures to Improve Air Quality

Measure No.	Measure	EU Category	EU Classification	Lead Authority	Planning Phase	Implementation Phase	Key Performance Indicator	Target Pollution Reduction in the AQMA	Progress to Date	Estimated Completion Date	Comments
1	Carsharedorset	Alternatives to private vehicle use	Car & Lift sharing schemes	Dorset County Council	N/A	2012	Number of users	Unknown	Ongoing	N/A	
2	Rapid Charging Point Installation	Promoting Low emission transport	EV recharging	East Dorset District Council	2013	2014	Number of users	Unknown	Complete One further point to be installed	2016	
3	Smarter working	Promoting Travel Alternatives	Encourage/ Facilitate Homeworking	East Dorset District Council	2014	2015/6	Reduction in mileage	Unknown	Complete	2016	
4	Civil Enforcement vehicle procurement	Promoting Low Emission Transport	Public Vehicle Procurement- Prioritising uptake of low emission vehicles	East Dorset District Council	2014	2015	Vehicle Fleet efficiency-reduced CO	Unknown	Complete evaluation phase	2015	
5	project to visualise the link between air quality and health	Control	Regional Groups Co-Ordinating programmes to develop area wide strategies to reduce emissions and improve air quality	Dorset Pollution Group	2015	2017	<ul style="list-style-type: none"> •Provide comparison with the Air Quality Objective for PM2.5 at the completion of the project •Evaluate air quality against appropriate air quality indicators 	Unknown	Funding bid being prepared	N/A	

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.

East Dorset District Council is taking the following measures to address PM_{2.5}:

We are part of the Dorset Pollution Group along with the 8 other Dorset authorities and are currently putting together a bid for funding from Dorset Public Health in relation to a project to visualise the link between air quality and health.

The intention is to use satellite imagery's to produce mapping of PM_{2.5} by Southampton University. The project would put analysers on the ground to measure gas & particles to verify that satellite data (& Defra's background). This would be within areas affected by air quality related illnesses as identified by Dorset Public Health.

Project Objectives:

1. Build a Dorset-Wide Air Quality Monitoring Network
2. Create an air quality evidence base for Dorset
3. Link health outcome data to air quality indicators / evidence base
4. Enhance existing understandings of air quality and health, and communicate outcomes
5. Enhance current partnerships and consider where opportunities arise for additional partnerships.

2.3.1 Problem that this project is addressing:

The Public Health Outcomes Framework for England includes an indicator of mortality associated with air pollution. The data used for this indicator is based upon modelled concentrations of PM_{2.5}. The project will produce data on concentrations of PM_{2.5} throughout Dorset, and both urban and rural locations. Our data will then be

East Dorset District Council

compared to the most up to date health data regarding hospital admissions / GP attendances. Pollution episodes, and admissions / attendances are thought to be comparable.

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

East Dorset District Council did not operate any automatic (continuous) monitoring sites during 2015. There are no national monitoring sites (e.g. AURN) within the East Dorset District Council area.

3.1.2 Non-Automatic Monitoring Sites

East Dorset District Council undertook non- automatic (passive) monitoring of NO₂ at 15 sites during 2015, table 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) and bias adjustment for the diffusion tubes are included in Appendix C.

3.2 Individual Pollutants

3.2.1 Nitrogen Dioxide (NO₂)

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

There have been no exceedances of the air quality objectives for NO₂ in the East Dorset District Council area.

Table A.2 in Appendix A compares the ratified and adjusted monitored NO₂ annual mean concentrations for the past 5 years with the air quality objective of 40µg/m³.

For diffusion tubes, the full dataset of monthly mean values is provided in Appendix B.

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)
1	Tawa, Horton Road, Ringwood	Roadside	413298	104528	NO ₂	N		40m (1.1m)*		
2	22, Avon Park Ringwood	Roadside	413488	104543	NO ₂	N		50m (0.8m)*		
3	3, Hurn Road, Ringwood	Intermediate	413686	104709	NO ₂	N		60m (0.5m)*		
4	45, Davids Lane, Ringwood	Background	413425	104429	NO ₂	N		0.5m		
5	9, Castlewood, Ringwood	Background	413521	104368	NO ₂	N		0.9m		
6	392, Ringwood Road, Ferndown	Roadside	407785	100135	NO ₂	N		1.3m		
7	47, Dudsbury Avenue, Ferndown	Intermediate	407668	99889	NO ₂	N		1.4m		

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)
8	11, Fernlea Close, Ferndown	Background	407804	100016	NO ₂	N		0.9m		
9	2, Melbury Close, Ferndown	Background	407650	99763	NO ₂	N		0.4m		
10	24, Ringwood Road, St Ives	Roadside	412782	104118	NO ₂	N		1.3m		
11	32 Ringwood Road, St Ives	Intermediate	412733	104127	NO ₂	N		30m (1.2m)*		
12	3, Russell Gardens, St Ives	Background	412749	104262	NO ₂	N		0.8m		
13	14 St Ives Wood, St Ives	Background	412978	104339	NO ₂	N		1.4m		
14	Public conveniences, Christchurch Road, West Parley	Roadside	40838	97986	NO ₂	N		1.0m		

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)
15	235 Christchurch Road, West Parley	Roadside	408468	98002	NO ₂	N		1.0m		

(1) 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.2 – Annual Mean NO₂ Monitoring Results

Site ID	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) ⁽¹⁾	Valid Data Capture 2015 (%) ⁽²⁾	NO ₂ Annual Mean Concentration (µg/m ³) ⁽³⁾				
					2011	2012	2013	2014	2015
1	Roadside	Diffusion Tube		100%	27	26	26	28	23
2	Roadside	Diffusion Tube		100%	22	24	23	22	21
3	Intermediate	Diffusion Tube		92%	21	24	24	23	22
4	Background	Diffusion Tube		100%	17	18	19	20	16
5	Background	Diffusion Tube		100%	15	20	16	18	17
6	Roadside	Diffusion Tube		100%	34	33	36	34	31
7	Intermediate	Diffusion Tube		83%	19	20	19	19	18
8	Background	Diffusion Tube		100%	13	14	13	13	12

Site ID	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) ⁽¹⁾	Valid Data Capture 2015 (%) ⁽²⁾	NO ₂ Annual Mean Concentration (µg/m ³) ⁽³⁾				
					2011	2012	2013	2014	2015
9	Background	Diffusion Tube		100%	13	14	13	11	12
10	Roadside	Diffusion Tube		100%	34	33	34	33	32
11	Intermediate	Diffusion Tube		83%	17	17	17	15	16
12	Background	Diffusion Tube		92%	12	12	12	11	11
13	Background	Diffusion Tube		100%	13	14	15	13	12
14	Roadside	Diffusion Tube		100%	26	26	28	25	25
15	Roadside	Diffusion Tube		100%	32	32	32	32	28

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

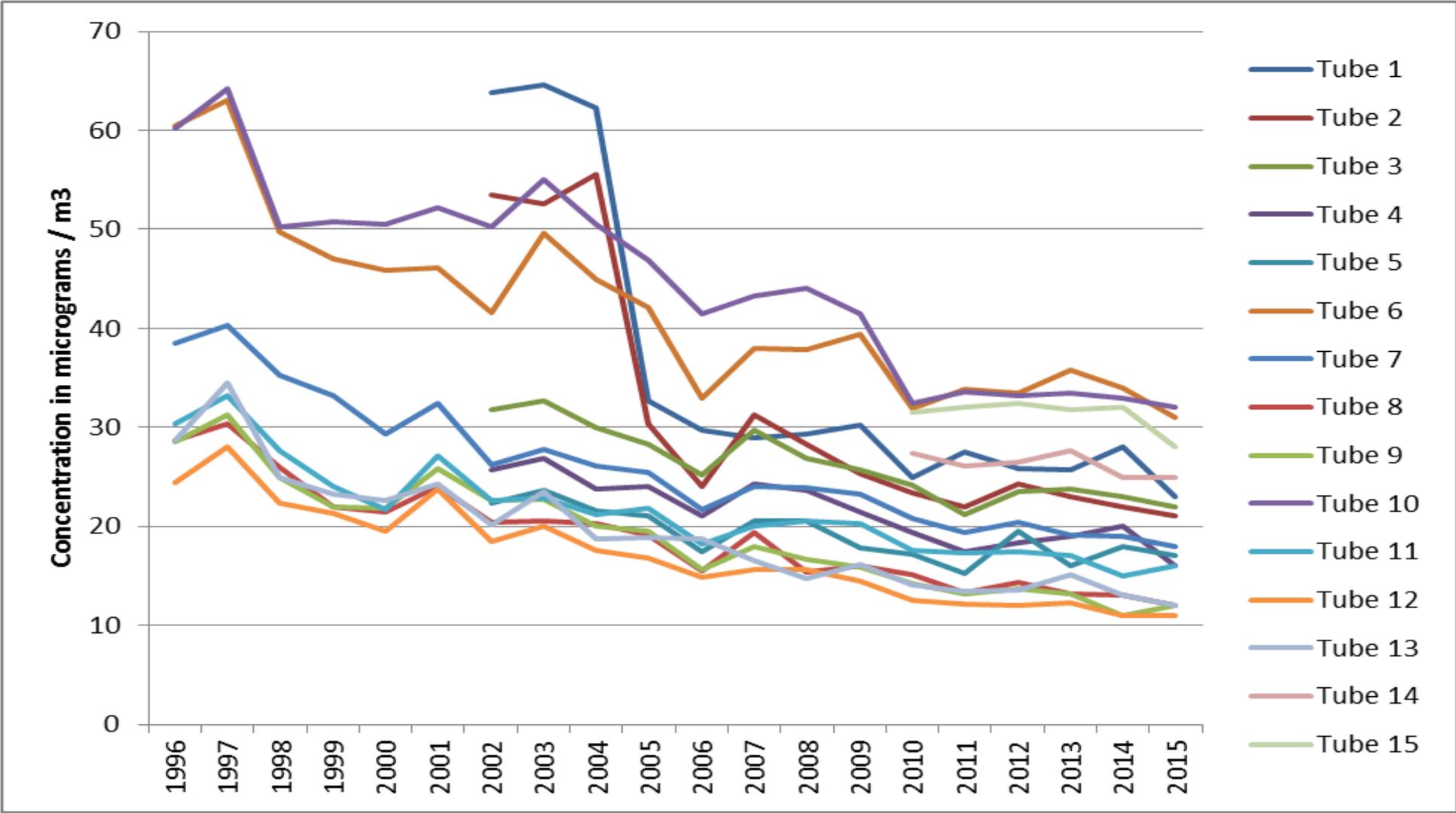
NO₂ annual means exceeding 60µg/m³, indicating a potential exceedance of the NO₂ 1-hour mean objective are shown in **bold and underlined**.

(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 Technical Guidance LAQM.TG16 if valid data capture for the full calendar year is less than 75%. See Appendix C for details.

Figure 1 Trends in annual mean nitrogen dioxide concentration measured at diffusion tube monitoring sites



Appendix B: Full Monthly Diffusion Tube Results for 2015

Table B.1 – NO₂ Monthly Diffusion Tube Results - 2015

Site ID	NO ₂ Mean Concentrations (µg/m ³)												Annual Mean	
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Raw Data	Bias Adjusted ⁽¹⁾
	1	22	25	24	32	20	19	24	27	22	20	23		
2	28	23	24	22	16	23	17	22	24	25	20	12	22	21
3	31	28	28	22	19	21	20		23	25	20	11	23	22
4	22	22	20	18	13	16	16	19	17	17	17	12	17	16
5	20	21	17	15	11	11	33	14	13	37	14	10	18	17
6	31	32	37	33	25	26	33	32	32	37	39	26	32	31
7	24	20	19	19	13	15			20	23	20	17	19	18
8	17	17	15	13	7	9	10	11	13	16	14	11	13	12
9	17	16	12	13	8	8	8	11	13	16	14	11	12	12
10	31	33	35	37	30	22	34	33	35	37	40	34	33	32
11	18	18	18	19	12			15	17	18	18	16	17	16
12	15	12	12	13	8	8	11		12	12	7	11	11	11
13	16	14	13	14	9	10	13	12	12	16	16	13	13	12
14	30	26	28	28	21	21	23	25	32	33	23	16	26	25

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 ⁽¹⁾
15	34	30	26	34	11	26	30	31	30	31	33	31	29	28

(1) See Appendix C for details on bias adjustment

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

Diffusion Tube Bias Adjustment Factors

Bias adjustment is effectively a calculated factor which shows whether diffusion tubes are over or under reading ambient concentrations and therefore allows for a correction to be made.

As there is no local automatic monitoring, East Dorset District Council uses a national factor as given in a spreadsheet on the review and assessment web site for Gradko Laboratories using a preparation method of 50%TEA/acetone. Version 09_16 of the spreadsheet was used and can be accessed on-line at;

http://laqm.defra.gov.uk/documents/Database_Diffusion_Tube_Bias_Factors_v09_16-Final.xls

For Gradko International with a tube preparation method of 50% TEA/acetone the bias adjustment factor for 2015 is 0.96

Appendix D: Map(s) of Monitoring Locations

The council operates 15 NO₂ diffusion tubes sites within its district. These locations are shown in Figures 2 to 5, with site details given in Table 2.1.

Figure 2 NO2 Tube Locations- A31

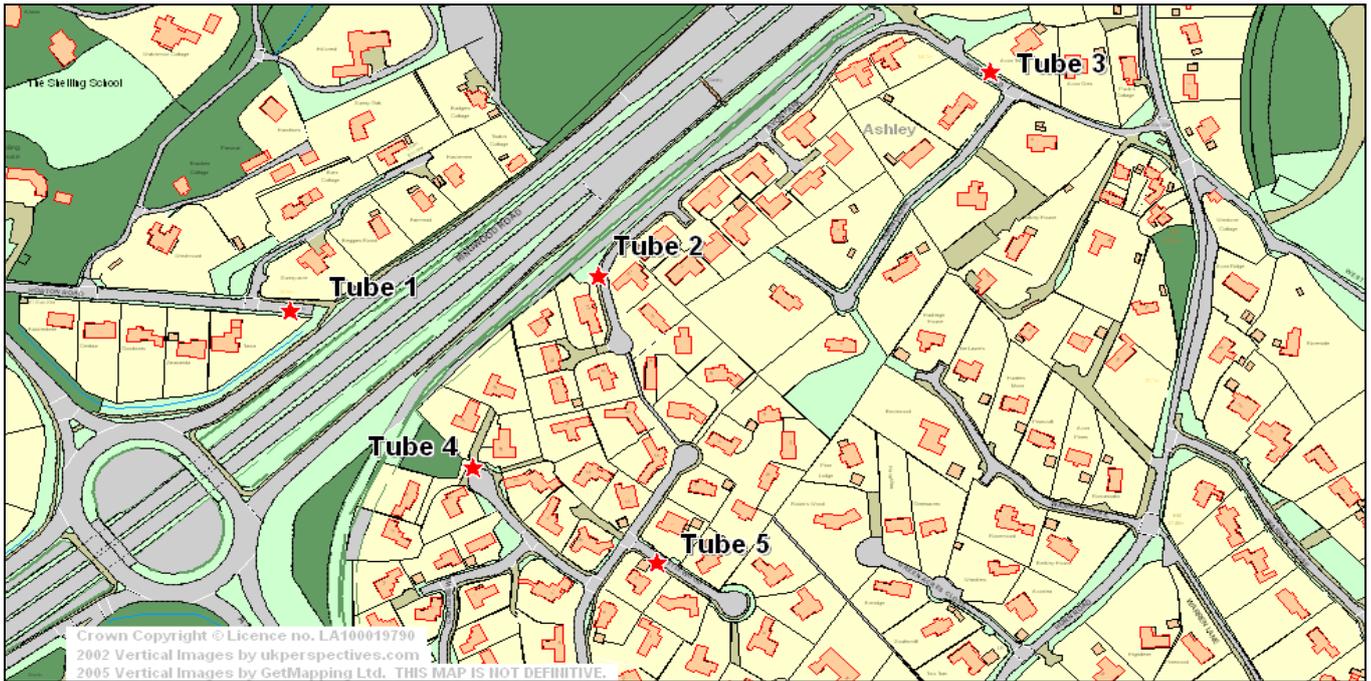


Figure 3 NO2 Tube Locations- Ashley Heath

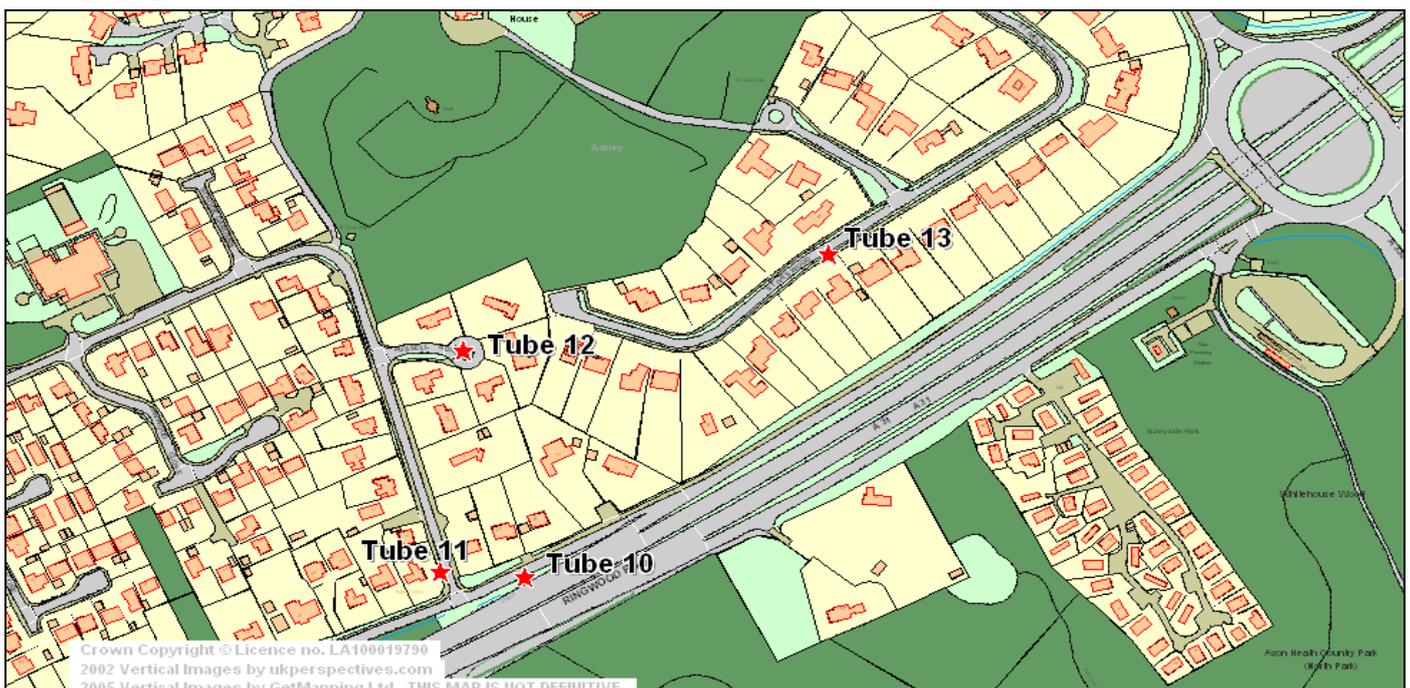


Figure 4 NO2 Tube Locations- Ferndown

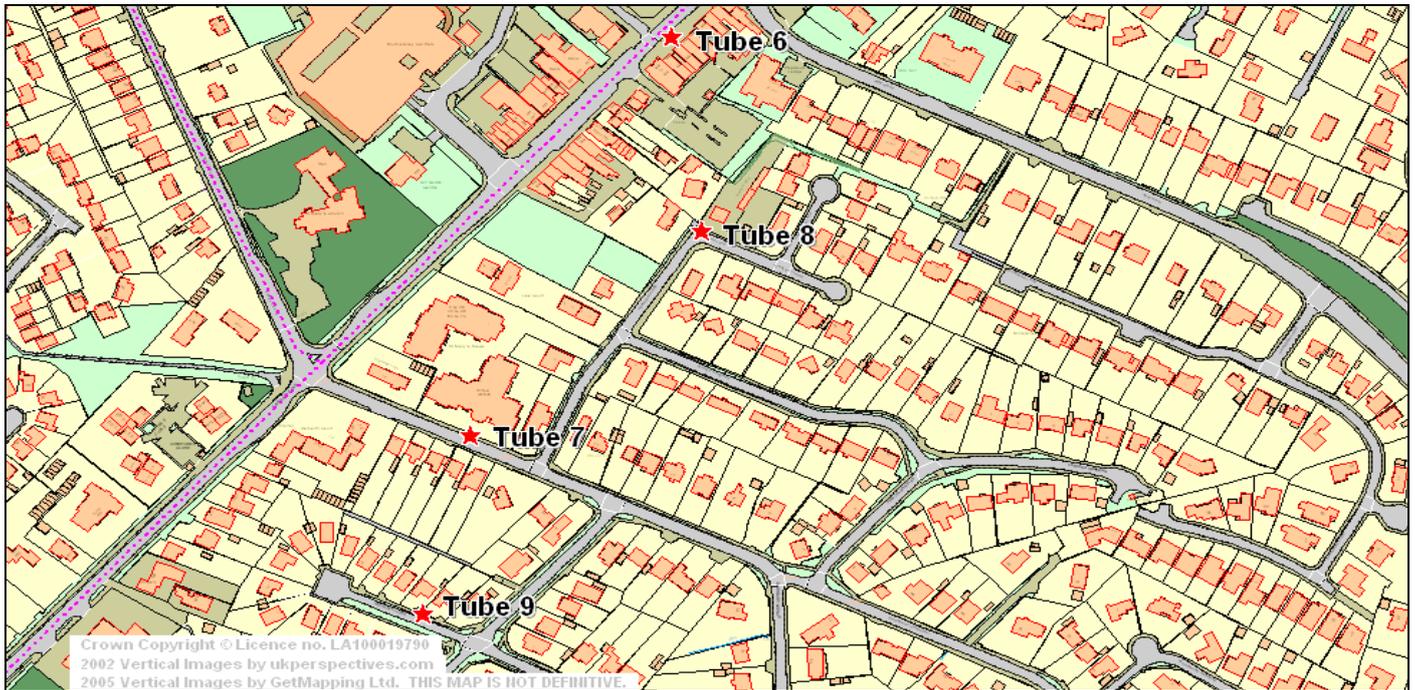
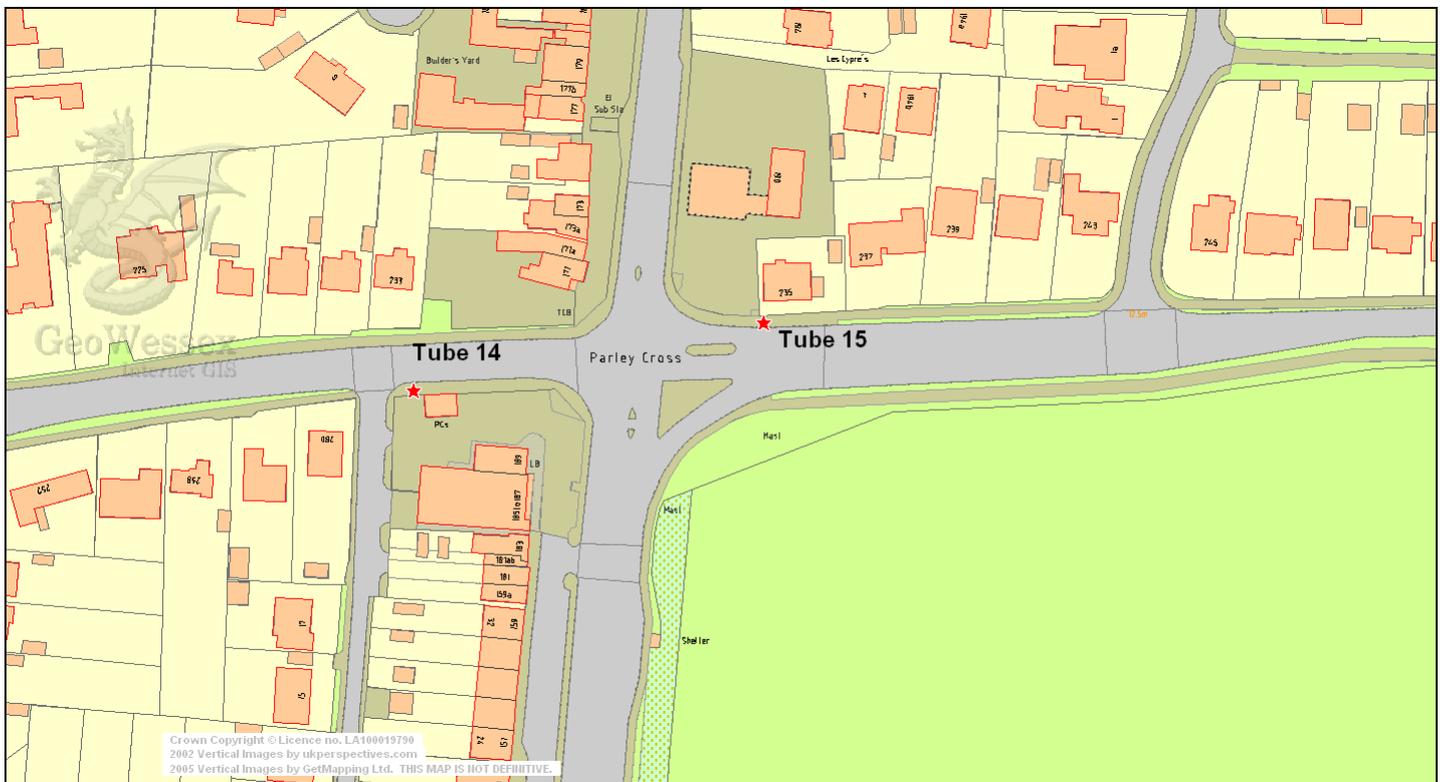


Figure 5 NO2 Tube Locations- West Parley



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/m³).

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

Bournemouth, Poole and Dorset Local Transport Plan 2011 – 2026

<https://www.dorsetforyou.gov.uk/article/417819/View-the-Local-Transport-Plan>

Dorset County Council, Ham Lane, Hampreston – Hampreston Cross to Canford Bottom Roundabout Footway.

<https://www.dorsetforyou.gov.uk/article/376520/Ham-Lane-Hampreston---Hampreston-Cross-to-Canford-Bottom-roundabout-footway>

Funding for Innovation Cooperative Intelligent Transport Systems Application Form

<https://www.dorsetforyou.gov.uk/travel-dorset/roads-and-driving/road-information/road-and-transport-improvement-schemes/schemes-in-east-dorset>

Carshare Dorset

<https://liftshare.com/uk/community/dorset>

Dorset County Council Travel Planning Advice

<https://mapping.dorsetforyou.gov.uk/TravelDorset>

DEFRA Diffusion Tube Bias Factor Spreadsheet V0916

http://laqm.defra.gov.uk/documents/Database_Diffusion_Tube_Bias_Factors_v09_16-Final.xls