



2014 Air Quality Progress Report for East Dorset District Council

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

June 2014

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Executive Summary

An assessment of the current air quality situation within the administrative area of East Dorset District Council has been undertaken in line with the Defra LAQM Technical Guidance TG (09).

The report has assessed all available air quality monitoring data within the District against the air quality objectives, as well as any significant changes within the District since the last round of review and assessment that could impact on local air quality. These could include changes to the local road network, new industrial installations or new local development which could result in increased human exposure to the pollutants listed in the Air Quality Strategy 2007.

No significant changes or developments were identified since the 2012 Updating and Screening Assessment or the 2013 Progress Report which were considered likely to lead to significant increases in any pollutant prescribed in the Air Quality Strategy 2007.

The aim of the Progress Reports is to report progress in achieving or maintaining local air quality management below the air quality objectives by reviewing new monitoring results and examining new local developments that might affect air quality.

This progress report shows that air quality within East Dorset is being maintained below the air quality objectives and that no new local developments are considered to impact on air quality.

East Dorset District Council will proceed to the next round of review and assessment in 2015.

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1 Introduction

1.1 Description of Local Authority Area

East Dorset District Council is situated in the south west of England within the County of Dorset and covers 355 km² (137 square miles) and is a medium sized authority. The population stands at 85,900 (2008 mid year Census estimate). Most of the area of East Dorset is rural, with 45% covered by the Cranborne Chase and West Wiltshire Downs Area of outstanding Natural Beauty. Most residents live however, in the towns and larger villages to the south and east of the District - Ferndown, Wimborne Minster, Verwood, West Moors, Corfe Mullen and St Leonards and St Ives.

The District is bordered on the east by the River Avon and its valley, which borders the New Forest. The River Stour runs through the southern half of the District forming the boundary with the coastal towns of Christchurch, Poole and Bournemouth. The main routes through the area are the, A31, A354, A350 and the A338. The primary source of local emissions of the pollutants listed in the air quality strategy is road traffic, with no other significant sources.

1.2 Purpose of Progress Report

This report fulfils the requirements of the Local Air Quality Management (LAQM) process as set out in Part IV of the Environment Act (1995), the Air Quality Strategy for England, Scotland, Wales and Northern Ireland 2007 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 exceedences are considered likely, the local authority must then 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.

Progress Reports are required in the intervening years between the three-yearly Updating and Screening Assessment reports. Their purpose is to maintain continuity in the LAQM process.

They are not intended to be as detailed as Updating and Screening Assessment Reports, or to require as much effort. However, if the Progress Report identifies the risk of exceedence of an Air Quality Objective, the Local Authority (LA) should undertake a Detailed Assessment immediately, and not wait until the next round of Review and Assessment.

1.3 Air Quality Objectives

The air quality objectives applicable to LAQM **in England** are set out in the Air Quality (England) Regulations 2000 (SI 928), The Air Quality (England) (Amendment) Regulations 2002 (SI 3043), and are shown in Table 1.1. This table shows the objectives in units of microgrammes per cubic metre $\mu\text{g}/\text{m}^3$ (milligrammes per cubic metre, mg/m^3 for carbon monoxide) with the number of exceedences in each year that are permitted (where applicable).

Table 1.1 Air Quality Objectives included in Regulations for the purpose of LAQM in England

Pollutant	Air Quality Objective		Date to be achieved by
	Concentration	Measured as	
Benzene	16.25 µg/m ³	Running annual mean	31.12.2003
	5.00 µg/m ³	Annual mean	31.12.2010
1,3-Butadiene	2.25 µg/m ³	Running annual mean	31.12.2003
Carbon monoxide	10 mg/m ³	Running 8-hour mean	31.12.2003
Lead	0.50 µg/m ³	Annual mean	31.12.2004
	0.25 µg/m ³	Annual mean	31.12.2008
Nitrogen dioxide	200 µg/m ³ not to be exceeded more than 18 times a year	1-hour mean	31.12.2005
	40 µg/m ³	Annual mean	31.12.2005
Particulate Matter (PM ₁₀) (gravimetric)	50 µg/m ³ , not to be exceeded more than 35 times a year	24-hour mean	31.12.2004
	40 µg/m ³	Annual mean	31.12.2004
Sulphur dioxide	350 µg/m ³ , not to be exceeded more than 24 times a year	1-hour mean	31.12.2004
	125 µg/m ³ , not to be exceeded more than 3 times a year	24-hour mean	31.12.2004
	266 µg/m ³ , not to be exceeded more than 35 times a year	15-minute mean	31.12.2005

1.4 Summary of Previous Review and Assessments

Round one of the Review and Assessment process was split into four staged reports, with each being more detailed than the last. East Dorset District Council completed its first round of Review and Assessment in November 2000 and concluded it was likely that all air quality objectives would be met.

Subsequent rounds of the review process have followed the current requirement for an Updating and Screening Assessment followed by a detailed assessment where required or a progress report where a detailed assessment is not required, until the next stage of the review process.

Table 1.2 below summarises the reports submitted and their conclusions since the second round review and assessment process.

Table 2.2 Summary of submitted reports and their conclusions.

Report	Conclusion
Updating and Screening Assessment 2003	No detailed assessments required
Progress Report 2004	No detailed assessments required
Progress Report 2005	No detailed assessments required
Updating and Screening Assessment 2006	No detailed assessments required
Progress Report 2007	No detailed assessments required
Progress Report 2008	No detailed assessments required
Updating and Screening Assessment 2009	No detailed assessments required
Progress Report 2010	No detailed assessments required
Progress Report 2011	No detailed assessments required
Updating and Screening Assessment 2012	No detailed assessments required
Progress Report 2013	No detailed assessment required

2 New Monitoring Data

2.1 Summary of Monitoring Undertaken

2.1.1 Automatic Monitoring Sites

There are no automatic air quality monitoring sites within the District.

2.1.2 Non-Automatic Monitoring Sites

The council operates 15 NO₂ diffusion tubes sites within its district. These locations are shown in Figures 1 to 4, with site details given in Table 2.1.

Figure 1 NO2 Tube Locations- A31

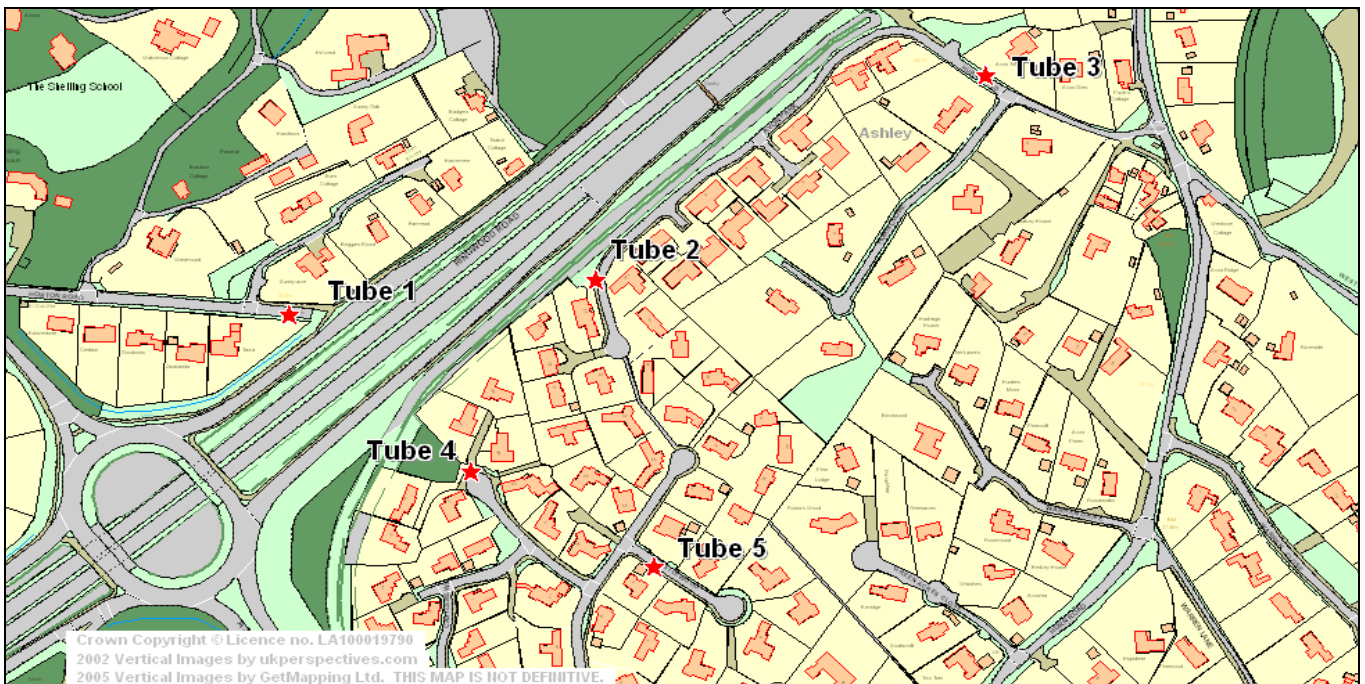


Figure 5: NO2 Tube Locations- Ashley Heath

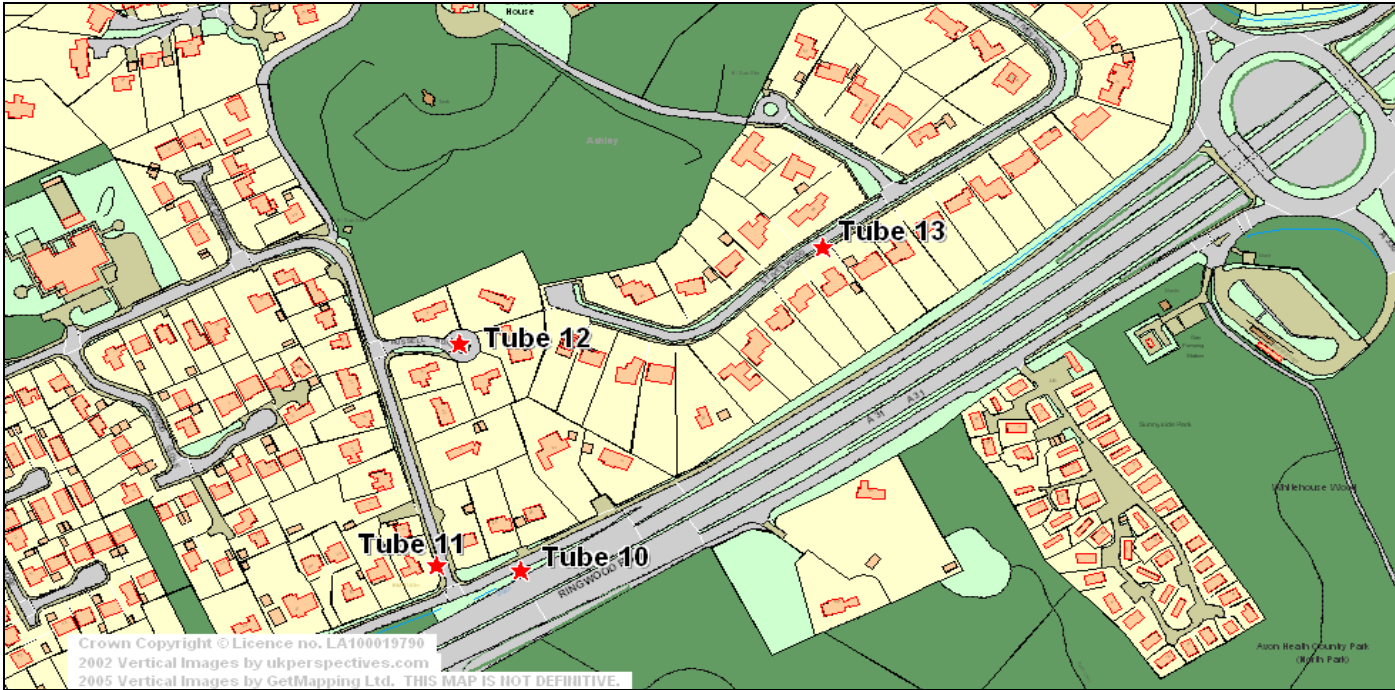


Figure 6: NO2 Tube Locations- Ferndown

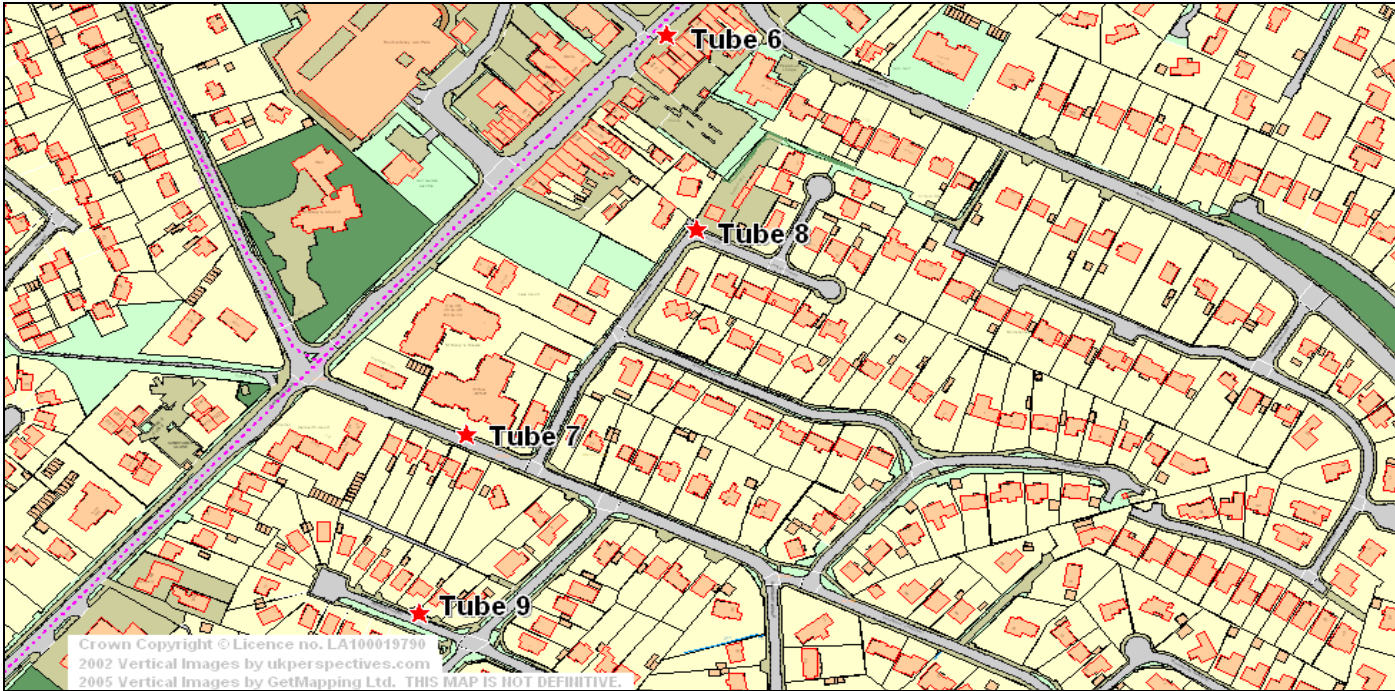


Figure 7: NO2 Tube Locations- West Parley

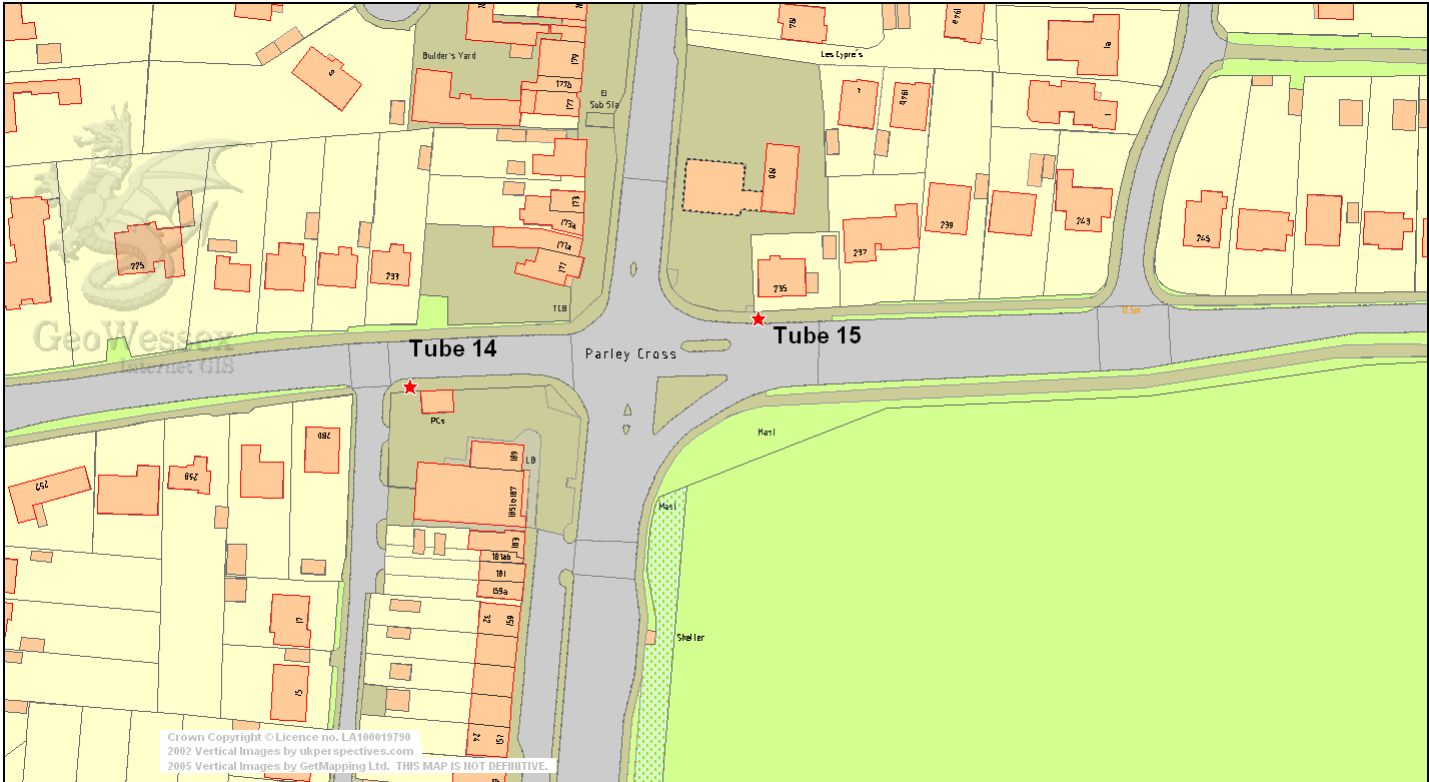


Table 2.1 Details of Non- Automatic Monitoring Sites

Site ID	Site Type	OS Grid Ref	Pollutants Monitored	In AQMA?	Relevant Exposure? (Y/N with distance (m) to relevant exposure)	Distance to kerb of nearest road (N/A if not applicable)	Worst-case Location?
1	Roadside	413298, 104528	NO ₂	N/A	Y	40m (1.1m)*	Y
2	Roadside	413488, 104543	NO ₂	N/A	Y	50m (0.8m)*	Y
3	Intermediate	413686, 104709	NO ₂	N/A	Y	60m (0.5m)*	Y
4	Background	413425, 104429	NO ₂	N/A	N	0.5m	n/a
5	Background	413521, 104368	NO ₂	N/A	N	0.9m	n/a
6	Roadside	407785, 100135	NO ₂	N/A	N	1.3m	Y**
7	Intermediate	407668, 99889	NO ₂	N/A	N	1.4m	Y**
8	Background	407804, 100016	NO ₂	N/A	N	0.9m	n/a
9	Background	407650, 99763	NO ₂	N/A	N	0.4m	n/a
10	Roadside	412782, 104118	NO ₂	N/A	N	1.3m	Y**
11	Intermediate	412733, 104127	NO ₂	N/A	Y	30m (1.2m)*	Y
12	Background	412749, 104262	NO ₂	N/A	N	0.8m	n/a
13	Background	412978, 104339	NO ₂	N/A	N	1.4m	n/a
14	Roadside	40838, 97986	NO ₂	N/A	Y	1.0m	Y
15	Roadside	408468, 98002	NO ₂	N/A	Y	1.0m	Y

*the distance provided is that to the main polluting road link relevant to the receptor. The distance in brackets is that to the nearest actual road, which in this case is a minor residential access road.

**the monitoring site is closer to the road link than the nearest relevant receptor.

2.2 Comparison of Monitoring Results with Air Quality Objectives

In order to assess the measured concentrations against the annual mean nitrogen dioxide air quality objective, both the tubes and the data need to be subject to quality assurance/quality control protocols. These allow for inherent uncertainty in the measured concentrations to be minimised. All details of the QA/QC procedures that have been applied to the diffusion tube monitoring are given in Appendix A.

2.2.1 Nitrogen Dioxide (NO₂)

The two air quality objectives that ambient concentrations of NO₂ need to be assessed against are as follows:

- An annual mean of 40 µg/m³; and
- The number of exceedences of the 1 hour mean of 200 µg/m³ (18 allowable exceedences in total).

It should be noted that it is only possible to directly assess against the 1 hour objective if hourly monitoring data is available. As all local monitoring within the District is conducted with diffusion tubes the approach suggested in LAQM. TG(09) has been adopted. The approach, based on empirical studies suggest that where the annual mean is less than 60 µg/m³, exceedences of the short term objective are unlikely.

2.2.2 Diffusion Tube Monitoring Data

The Council has been monitoring NO₂ using passive diffusion tubes for a number of years at 13 sites and in July 2009 added a further 2 sites in kerbside locations to establish baseline data to determine whether sites to assess relevant exposure in this area should be identified.

The 2013 bias adjusted results for all 15 locations, including data capture percentages, are given in Table 2.2. The full bias adjusted data for all sites from 2007 is given in Table 2.3. Uncorrected monthly results for each diffusion tube site are given in appendix B.

Table 2.2 Results of Nitrogen Dioxide Diffusion Tubes 2013

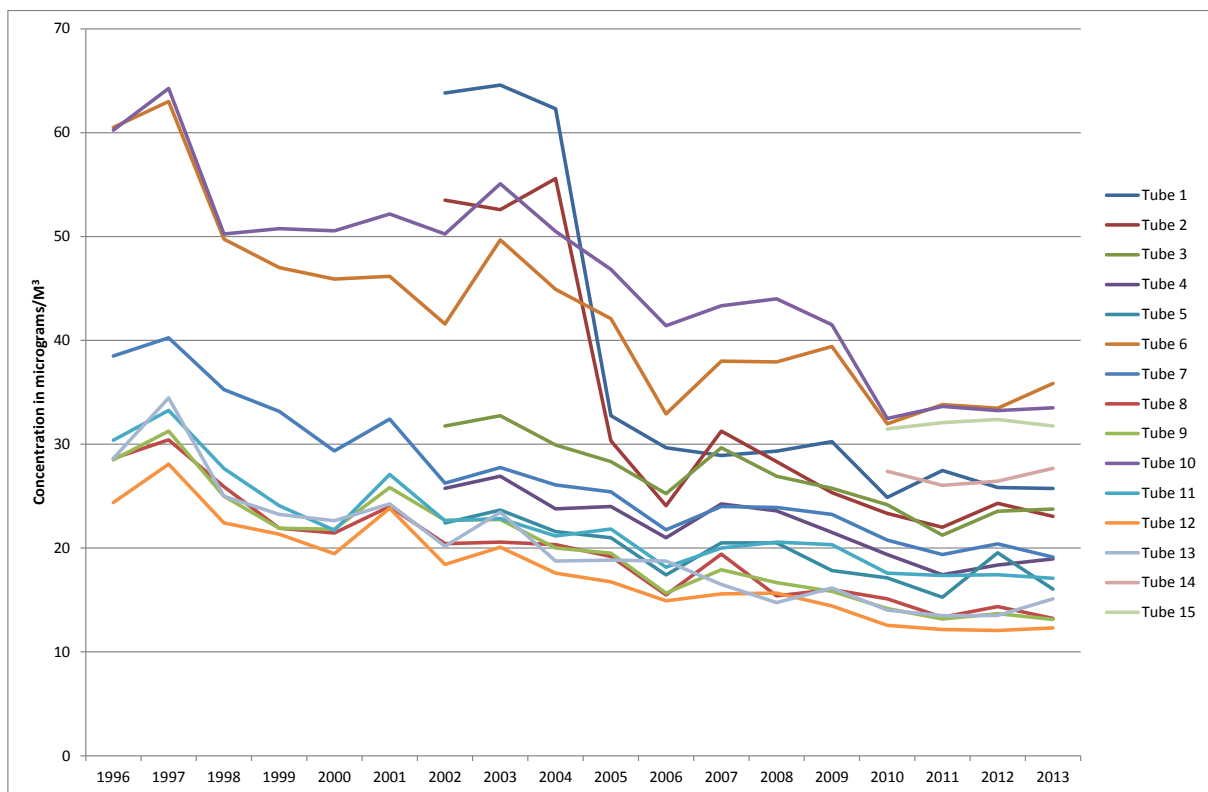
Site ID	Location	Type	Within AQMA?	Data Capture 2013 %	Annual mean concentrations 2013 ($\mu\text{g}/\text{m}^3$) adjusted for bias*
1	Tawa, Horton Road, Ringwood	Kerbside	N	100	26
2	22, Avon Park Ringwood	Kerbside	N	100	23
3	3, Hurn Road, Ringwood	Intermediate	N	100	24
4	45, Davids Lane, Ringwood	Background	N	100	19
5	9, Castlewood, Ringwood	Background	N	100	16
6	392, Ringwood Road, Ferndown	Roadside	N	100	36
7	47, Dudsbury Avenue, Ferndown	Intermediate	N	100	19
8	11, Fernlea Close, Ferndown	Background	N	92	13
9	2, Melbury Close, Ferndown	Background	N	100	13
10	24, Ringwood Road, St Ives	Kerbside	N	100	34
11	32 Ringwood Road, St Ives	Intermediate	N	100	17
12	3, Russell Gardens, St Ives	Background	N	100	12
13	14 St Ives Wood, St Ives	Background	N	100	15
14	Public conveniences, Christchurch Road, West Parley	Kerbside	N	100	28
15	235 Christchurch Road, West Parley	Kerbside	N	100	32

* Bias adjustment factor 1.00 <http://laqm.defra.gov.uk/bias-adjustment-factors/national-bias.html>

Table 2.3 Results of Nitrogen Dioxide Diffusion Tubes 2008 to 2013

Site ID	Location	Type	Within AQMA?	Annual mean concentrations ($\mu\text{g}/\text{m}^3$) adjusted for bias					
				2008	2009	2010	2011	2012	2013
Tube 1	Tawa, Horton Road, Ringwood	Kerbside	N	29	33	25	27	26	26
Tube 2	22, Avon Park Ringwood	Kerbside	N	28	27	23	22	24	23
Tube 3	3, Hurn Road, Ringwood	Intermediate	N	27	28	24	21	24	24
Tube 4	45, Davids Lane, Ringwood	Background	N	23	23	19	17	18	19
Tube 5	9, Castlewood, Ringwood	Background	N	20	19	17	15	20	16
Tube 6	392, Ringwood Road, Ferndown	Roadside	N	38	43	32	34	33	36
Tube 7	47, Dudsbury Avenue, Ferndown	Intermediate	N	23	25	21	19	20	19
Tube 8	11, Fernlea Close, Ferndown	Background	N	15	16	15	13	14	13
Tube 9	2, Melbury Close, Ferndown	Background	N	17	16	14	13	14	13
Tube 10	24, Ringwood Road, St Ives	Kerbside	N	44	47	32	34	33	34
Tube 11	32 Ringwood Road, St Ives	Intermediate	N	20	22	18	17	17	17
Tube 12	3, Russell Gardens, St Ives	Background	N	16	15	13	12	12	12
Tube 13	14 St Ives Wood, St Ives	Background	N	15	17	14	13	14	15
Tube 14	Public conveniences, Christchurch Road, West Parley	Kerbside	N		30	27	26	26	28
Tube 15	235 Christchurch Road, West Parley	Kerbside	N		39	31	32	32	32

Figure 8. Trends in Annual Mean Nitrogen Dioxide Concentration Measured at Diffusion Tube Monitoring Sites.



2.2.3 Particulate Matter (PM₁₀)

There are no PM10 monitoring sites in the District.

2.2.4 Sulphur Dioxide (SO₂)

There are no sulphur dioxide monitoring sites in the District.

2.2.5 Benzene

There are no benzene monitoring sites in the District.

2.2.6 Summary of Compliance with AQS Objectives

East Dorset District Council has examined the results from monitoring in the district. Concentrations are all below the objectives, therefore there is no need to proceed to a Detailed Assessment.

3 New Local Developments

East Dorset District Council confirms that there are no new or newly identified local developments which may have an impact on air quality within the Local Authority area.

3.1 Road Traffic Sources

East Dorset District Council confirms that there are no new or newly identified road traffic sources.

3.2 Other Transport Sources

East Dorset District Council confirms that there are no new or newly identified non-road traffic sources.

3.3 Industrial Sources

East Dorset District Council confirms that there are no new or newly identified industrial sources.

3.4 Commercial and Domestic Sources

East Dorset District Council confirms that there are no new or newly identified commercial and domestic sources.

3.5 New Developments with Fugitive or Uncontrolled Sources

East Dorset District Council confirms that there are no new or newly identified developments with fugitive or uncontrolled sources that will impact upon air quality.

East Dorset District Council confirms that there are no new or newly identified local developments which may have an impact on air quality within the Local Authority area.

East Dorset District Council confirms that all the following have been considered:

- **Road traffic sources**
- **Other transport sources**
- **Industrial sources**
- **Commercial and domestic sources**
- **New developments with fugitive or uncontrolled sources.**

4 Planning Applications

There are currently no planning applications which have yet to be approved which are considered likely to impact upon air quality

5 Local Transport Plans and Strategies

The local transport plan for Dorset has for the first time been written jointly between the Dorset County Council and the unitary authorities of Bournemouth and Poole. The plan, LPT3, came into force in April 2011 and remains in force until 2026.

Five key goals guide the approach to transport across Dorset:

1. Supporting economic growth
2. Tackling climate change
3. Equality of opportunity
4. Better safety, security and health
5. Improved quality of life

Within each of these 5 key goals, the key challenges and key solutions are identified and air quality is targeted in two of the goals.

In goal 4 a key challenge is identified as;

To reduce / minimise the number of areas declared as having poor air quality as a result of road transport emissions.

And the key solution for this is;

Working with Environmental Health Officers to improve monitoring of air quality and to develop effective air quality and noise action plans in those areas where air quality and/or noise has been identified as a problem attributed to transport.

In goal 5 a key challenge is identified as;

HGV use for freight and minerals extraction on unsuitable routes causes noise, vibration and air quality issues for local communities.

And the key solution for this is;

Managing HGV movements efficiently, including reviewing routing and direction signing to minimise impacts on local communities affected by noise, vibration and poor air quality.

The plan has 7 key approaches;

1. Reducing the need to travel
 - by locating and designing new homes, offices and other development in ways that people can access services with less need to travel, and in sustainable ways
 - by encouraging services, such as health and education, to be planned and delivered in ways that promote sustainable travel patterns
2. Managing and maintaining the existing network more efficiently
 - by keeping our transport infrastructure well-maintained, safe and resilient for all users
 - by making better use of our transport network to maximise its efficiency for all forms of travel
3. Active travel and “greener” travel choices
 - which widen opportunities for healthy lifestyles and provide supporting infrastructure for walking and cycling
 - which promote Smarter Choices and support “green technology” to encourage low carbon travel behaviour and transfer to non-car alternatives
 - which are supported through creating attractive public realm and streetscapes
4. Public transport alternatives to the car
 - which build upon existing public transport to improve the availability, quality, reliability and punctuality of services
 - which develop a fully integrated public transport system which is easier to use for everyone
 - which improve local accessibility for vulnerable users and in rural areas
5. Car parking measures

- which balance supporting our local economy with encouraging the use of alternatives to the car, particularly for single occupancy commuter trips
6. Travel safety measures
- which use engineering, education and enforcement solutions to create safer travelling environments
 - which improve community safety and security
7. Strategic infrastructure improvements
- which provide targeted, major improvements to our transport infrastructure to strengthen connections and support regeneration and growth (financial and environmental constraints limit what is achievable)

Throughout the life of LTP3 there will be implementation plans each covering a three year period. These plans will detail specific projects and schemes and will be prioritised based upon their contribution to the goals. Through this structure and local cross boundary liaison, improvements to air quality are recognised as a priority and will be addressed during the design and planning phases and successes measured through on-going monitoring.

6 Conclusions and Proposed Actions

6.1 Conclusions from New Monitoring Data

Previous review and assessments have not demonstrated any exceedances or likely exceedances of the air quality objectives. The East Dorset District Council has not therefore had to proceed to a detailed assessment and no AQMA have been declared.

New monitoring data has been obtained on levels of NO₂ across the East Dorset District Council using diffusion tube monitoring. Analysis of the 2013 data reveals that no sites have exceeded the NO₂ annual mean objective. A detailed assessment is not therefore required for NO₂.

6.1 Conclusions relating to New Local Developments

No new local developments have been identified since the 2013 Updating and Screening Assessment which are likely to lead to significant increases in any pollutant prescribed in the Air Quality Strategy, therefore a detailed assessment is not required.

6.2 Proposed Actions

New monitoring data has not identified the need to proceed to a detailed assessment for any pollutant or of the need for additional monitoring or changes to the existing monitoring programme.

East Dorset District Council will proceed to the next round of Review and Assessment in 2014.

7 References

East Dorset District Council, Updating and Screening Assessment, 2003.

East Dorset District Council, Progress Report, 2004.

East Dorset District Council, Progress Report, 2005.

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East Dorset District Council, Progress Report, 2007.

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East Dorset District Council, Progress Report, 2011

East Dorset District Council, Updating and Screening Assessment, 2012.

East Dorset District Council, Progress Report, 2013

Defra, Part IV of the Environmental Act 1995 Local Air Quality Management Technical Guidance LAQM.TG(09), 2009.

Defra, Part IV of the Environmental Act 1995 Local Air Quality Management Policy Guidance LAQM.PG(09), 2009.

Defra web site – bias adjustment spreadsheet;

http://laqm.defra.gov.uk/documents/Database_Diffusion_Tube_Bias_Factors-v03_14-Final-v2.xls

Defra web site QA/QC scheme ; <http://laqm.defra.gov.uk/diffusion-tubes/qa-qc-framework.html>

Appendix A: QA:QC Data

Factor from Local Co-location Studies

No local co-location studies are available and so national diffusion tube bias adjustment factors are used as detailed below.

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 03_14 of the spreadsheet was used and can be accessed on-line at;

http://laqm.defra.gov.uk/documents/Database_Diffusion_Tube_Bias_Factors-v03_14-Final-v2.xls

For Gradko International with a tube preparation method of 50% TEA/acetone the bias adjustment factor for 2013 is 1.00.

QA/QC of automatic monitoring

East Dorset District Council does not carry out any automatic monitoring.

QA/QC of diffusion tube monitoring

Analysis of East Dorset District Councils passive diffusion tube monitors is carried out by Gradko International Ltd. The laboratory is accredited by UKAS for the analysis of nitrogen dioxide by colorimetric determination (UV spectrophotometry).

The Workplace Analysis Scheme for Proficiency (WASP) tests the performance of laboratories measuring exposure to substances in ambient air. The scheme is administered by the Health and Safety Laboratory on behalf of DEFRA. Gradko International Ltd participate in the WASP scheme and have achieved a satisfactory level of compliance indicating confidence in the analysis of the diffusion tubes submitted to it.

Appendix B: Uncorrected monthly NO₂ diffusion tube results

	Tube 1	Tube 2	Tube 3	Tube 4	Tube 5	Tube 6	Tube 7	Tube 8	Tube 9	Tube 10	Tube 11	Tube 12	Tube 13	Tube 14	Tube 15
Jan-13	28	30	27	25	22	40	25	16	20	41	17	17	18	34	35
Feb-13	23	26	26	20	18	35	21	15	16	33	18	13	15	31	28
Mar-13	34	27	24	22	21	44	22	17	19	44	24	17	19	36	34
Apr-13	26	23	20	15	12	27	16	10	10	30	15	10	12	24	25
May-13	19	20	24	17	12	30	15	9	9	26	12	8	4	23	26
Jun-13	20	21	22	15	14	31	16	11	10	30	15	9	10	24	27
Jul-13	31	20	22	15	12	35	18	10	10	36	15	10	12	28	36
Aug-13	27	15	23	19	15	49	16	12	10	32	14	11	33	26	34
Sep-13	26	24	25	20	17	39	21	Missing	14	36	20	15	17	31	32
Oct-13	23	23	21	16	13	34	17	12	11	31	15	12	12	24	32
Nov-13	20	32	33	27	24	38	26	20	19	34	18	15	16	34	35
Dec-13	34	22	21	22	18	32	22	16	16	36	22	15	16	23	40