

EXECUTIVE SUMMARY – AIR QUALITY UPDATE

Summary of Purpose and Recommendations:

The purpose of this report is to outline the findings of the Detailed Assessment submitted to DEFRA in April 2004 and to seek Cabinet approval for the declaration of Air Quality Management Areas in Totton and Lyndhurst and for the continuation of the air quality monitoring programme.








The recommendations are that:

- a) The findings of the Detailed Air Quality assessment are accepted
- b) Air Quality Management Areas are declared in respect of NO₂ for Lyndhurst and Totton
- c) The real time monitor for NO₂ at Ringwood be relocated to Lyndhurst but that monitoring for NO₂ at Ringwood continue with diffusion tubes
- d) The Ringwood monitoring site be decommissioned but reinstated should further air quality problems be detected
- e) The monitoring programme be continued in accordance with DEFRA’s requirements to review and assess air quality in the district

Cost to Council: Likely to be minimal but TBA

Within existing budget? Yes

Contribution to Corporate Plan (Minor/Moderate/Major/Neutral):

	+		-		+		-
	Minor			Priorities			
	Major			Clean Streets and Public Space		Neutral	
	Minor			Crime and Disorder		Neutral	
		Neutral		Housing		Neutral	
	Major			Managing our Finances		Neutral	

Comments on Impacts on Corporate Objectives and Priorities:

Partnership working with local businesses, residents, Town and Parish Councils and colleagues in Planning and Transportation is key to the declaration of an Air Quality Management Area (AQMA) and the formulation and implementation of the AQ Action Plan.

The continuous monitoring and assessment of Air Quality and the declaration of AQMA’s in the district seeks to promote environmental well being by ensuring that the Air Quality objectives for defined pollutants are achieved.



AIR QUALITY UPDATE

1. INTRODUCTION

- 1.1 The 1995 Environment Act places a statutory duty on local authorities to assess air quality in their area in terms of the air quality objectives. These objectives have been set out in the National Air Quality Strategy for seven defined pollutants, namely sulphur dioxide, nitrogen dioxide, benzene, lead, carbon monoxide, 1,3 Butadiene and particulates known as PM₁₀.
- 1.2 The Act goes on to require local authorities to identify those parts of its area where the prescribed air quality objectives will not or are unlikely to be met by the relevant year. In such cases the local authority has a statutory duty under Section 83 (1) of the Act to declare an Air Quality Management Area (AQMA).
- 1.3 With this strategy in mind DEFRA has produced a timetable for the submission of annual air quality reports by each local authority.

2. BACKGROUND

- 2.1 Air quality was previously reported to the Environment Review Panel on the 19th March and 11th September 2003. The former report related to sulphur dioxide levels (SO₂) in Fawley and the likelihood of needing to declare an Air Quality Management Area (AQMA) and the latter gave a general update of air quality within the New Forest at that time.
- 2.2 The Updating and Screening Assessment of Air Quality in the New Forest (one of the required annual reports by DEFRA) was completed in May 2003 and identified that a Detailed Assessment was required for the following pollutants:
 - Nitrogen dioxide (NO₂) in relation to the 2005 annual mean objective (Lyndhurst and Totton)
 - SO₂ in relation to the 2005 15 minute mean objective (Waterside)
 - Benzene in relation to the 2010 annual mean objective (Hardley and Hythe)
- 2.3 This report to Cabinet outlines the findings of the Detailed Assessment submitted to DEFRA in April 2004, the current situation with regard to the air quality monitoring sites and other recent developments.

3.0 DETAILED ASSESSMENT

3.1 Nitrogen Dioxide

- 3.1.1 There are two UK air quality objectives for nitrogen dioxide both of which are to be achieved by the end of 2005, namely:
- an annual mean concentration of $40 \mu\text{g}/\text{m}^3$ and
 - a 1 hour mean concentration of $200 \mu\text{g}/\text{m}^3$ not to be exceeded more than 18 times per year.
- 3.1.2 Following this Authority's updating and screening assessment in 2003 it was concluded that a detailed assessment was required for nitrogen dioxide (NO_2) concentrations in the High Street, Lyndhurst and in the vicinity of the railway crossing in Junction Road, Totton. In both cases the source of NO_2 is primarily from road traffic.
- 3.1.3 The detailed assessment is with regard to the 2005 annual mean objective of $40 \mu\text{g}/\text{m}^3$ and monitoring was undertaken during 2003 at both sites using diffusion tubes, the results of which are detailed in Appendix A.
- 3.1.4 The monitoring has shown that NO_2 concentrations in three locations in Lyndhurst High Street and five in the vicinity of Junction Road, Totton currently exceed the 2005 annual mean objective and it has been predicted that there is unlikely to be a significant reduction in these levels in the foreseeable future.
- 3.1.5 The Detailed Assessment recently submitted to DEFRA recommended that monitoring should continue at these sites using real time monitors (as opposed to diffusion tubes) so that a more accurate picture could be obtained of the NO_2 levels in terms of both objectives mentioned in paragraph 3.1.1. It is not possible to accurately assess the 1 hour mean concentrations using diffusion tubes.
- 3.1.6 However, DEFRA have not accepted this recommendation as they are of the view that sufficient evidence is currently available to suggest the likely exceedance of the 2005 annual mean objective and have stated that an AQMA in respect of both sites should be declared. This is discussed further in section 4 of this report.

3.2 Sulphur Dioxide

- 3.2.1 The UK has adopted three objectives with regard to SO_2 , namely:
- 15 -minute mean objective of $266 \mu\text{g}/\text{m}^3$ which is not to be exceeded more than 35 times in a year by the end of 2005

- 1-hour mean objective of $350 \mu\text{g}/\text{m}^3$ not to be exceeded more than 24 times a year and to be achieved by 2004
 - 24 hour objective of $125 \mu\text{g}/\text{m}^3$ not to be exceeded more than 3 times a year and to be achieved by the end of 2004
- 3.2.2 The detailed assessment was required for SO_2 concentrations in Fawley (sources arising from industry and shipping), Hythe and Marchwood villages (sources arising from shipping as opposed to industry).
- 3.2.3 Monitoring using real time analysers was undertaken at sites in Fawley and Holbury and this was complemented by modelling of data to cover these sites and the whole of the Waterside, including Marchwood and Hythe. Both exercises were designed to assess the SO_2 levels in terms of the 15 minute mean objective as this was considered to be the most likely of the three objectives to be exceeded.
- 3.2.4 The results of the monitoring (as opposed to the modelling) for Fawley and Holbury for 2003 are contained in Appendix B. Based on the monitoring and the results of the modelling it is now considered that the 15 minute mean objective is likely to be met and this conclusion has been accepted by DEFRA following the submission of the Detailed Assessment.
- 3.2.5 The report to the Panel on the 11th September 2003 gave consideration to the likely need to declare an AQMA for SO_2 in Fawley village. However, the monitoring and modelling results have shown that this is now looking unlikely due to a significant fall in the number of exceedances of the 15 minute mean objective, the reasons for which are unknown.
- 3.2.6 Our recommendation to DEFRA, which has been agreed, is that we should continue with the SO_2 monitoring using the real time analysers at Fawley and Holbury and keep a 'watching brief' on the situation.
- 3.2.7 At the present time there is no need to declare an AQMA for this pollutant in Fawley village.

3.3 Benzene

- 3.3.1 The Government has adopted a running annual mean concentration of $16.25 \mu\text{g}/\text{m}^3$ (5ppb) as the objective for the standard to be reached by the end of 2003 but this has been tightened to an annual mean concentration of $5 \mu\text{g}/\text{m}^3$ (1.5ppb) to be achieved by the end of 2010.

- 3.3.2 The main source of benzene is from petroleum storage and processing. The detailed assessment focused on the more stringent 2010 annual mean objective of $5 \mu\text{g}/\text{m}^3$ (1.5 ppb) and was undertaken by both monitoring and modelling. The monitoring used diffusion tubes placed in the vicinity of the petrol storage terminal at Hardley but the modelling of data extended to the industries on the waterside and surrounding areas. The monitoring results for 2003/04 are contained in Appendix C.
- 3.3.3 The monitoring and modelling around the storage terminal at Hardley confirmed that the 2010 objective was unlikely to be exceeded. However, the wider modelling exercise predicted a potential exceedance of the 2010 objective in the vicinity of Fawley village.
- 3.3.4 The results of the modelling were reflected in our recommendation to DEFRA that further monitoring using diffusion tubes should be undertaken in Fawley village and that no further monitoring was required elsewhere. This recommendation has since been accepted by DEFRA.

4.0 AIR QUALITY MANAGEMENT AREA

- 4.1 As previously mentioned, The Environment Act 1995 imposes a duty on local authorities to declare an AQMA where air quality objectives will not or are unlikely to be met on time. These areas have to be designated officially by means of an 'order'.
- 4.2 In the case of Lyndhurst and Totton this process will now follow and there are prescribed procedures as to how this should be undertaken. One of the first steps before making the official order is to define the boundaries and identify the geographical extent of the AQMA in respect of both sites. This will necessitate consultation with interested parties such as Parish/Town Councils, local residents, businesses, members, Hampshire County Council, Planning colleagues etc. DEFRA guidance suggests that the time frame between deciding to declare and actually making the order is around four months.
- 4.3 The extent of an AQMA can be confined to a small area, such as named streets, or can extend to the whole of the parish/town or even to the whole area of the New Forest District Council, although this latter option would not be recommended in these circumstances.
- 4.4 With regard to Totton the plans for the redevelopment of the Town Centre will have to be taken into account when defining the extent of the AQMA as any alterations to traffic flows could affect NO_2 concentrations.

- 4.5 Once the boundaries have been defined and the order made then an Air Quality Action Plan has to be drawn up within 12 to 18 months of the order being made, with the aim of reducing the pollutant levels to within the relevant objective. It is foreseen that traffic management will form a key role. However, it should be noted that the AQMA can be revoked if necessary at any time in the future.

5.0 CURRENT SITUATION

- 5.1 The monitoring of the air quality in the New Forest is a continuous process and following the Detailed Assessment we are required by DEFRA to produce a Progress Report in April 2005. As part of this ongoing process we currently operate the four real time monitoring sites indicated below, with the pollutants monitored shown in brackets:
- Fawley (SO₂)
 - Holbury (PM₁₀ and SO₂)
 - Ringwood (PM₁₀ and NO₂)
 - Totton (NO₂)
- 5.2 Due to teething problems the Totton site is yet to be fully commissioned but should be fully operational by August 2004.
- 5.3 In view of the conclusion reached in respect of the likely exceedance of the NO₂ 2005 annual mean objective in Lyndhurst High Street, it is proposed to relocate the NO₂ analyser from Ringwood to a first floor office near to the traffic lights in Lyndhurst High Street. As previously mentioned this real time monitor will enable more accurate data to be collected in respect of both the annual mean and 1 hour objective. It is anticipated that this site will be commissioned by September 2004.
- 5.4 With regard to the Ringwood monitoring site, three years of data have been collated in respect of NO₂ and PM₁₀ during which time neither pollutant has shown any indication that the relevant objective is likely to be exceeded. The relocation of the NO₂ analyser to Lyndhurst will therefore make better use of available equipment and, subject to the views of the Portfolio Holder and Cabinet, it is recommended that the PM₁₀ monitor be shut down. This site could always be re-commissioned at a later date if the current objectives are made more stringent. In any event monitoring for NO₂ concentrations at Ringwood will continue using diffusion tubes and in this way any changes in the pollutant levels will be detected at any early stage.
- 5.5 Therefore, by September 2004 the real time monitoring sites mentioned above will still number four but Ringwood will be replaced by the Lyndhurst site, monitoring NO₂ only.
- 5.6 In addition to the real time monitors, diffusion tubes are extensively used throughout the district to determine monthly NO₂ concentrations. These can be easily relocated and are an inexpensive way of highlighting problem areas.

- 5.7 Following our recommendation to DEFRA, monitoring for benzene concentrations in Fawley village is due to commence at the end of July 2004. This will involve exposing diffusion tubes for a period of a month, for three consecutive months during the summer and again during the winter.
- 5.8 Funding has been obtained from Hampshire County Council to produce an air quality website making access to the data from the real time monitoring sites and diffusion tubes more widely available. This is currently being produced by Kings College, London and will be linked to the corporate site and should be available by the Autumn.
- 5.9 In accordance with best practice guidance issued by DEFRA all our data is now ratified and validated by Kings College and the intention is to also arrange for external auditing of the monitoring sites by the National Physical Laboratory. In this way all our data will be quality assured.

6.0 ENVIRONMENTAL IMPLICATIONS

- 6.1 There are clearly environmental implications for areas within Totton and Lyndhurst in terms of the likely exceedance of the 2005 annual mean objective for NO₂. The declaration of an AQMA for both areas should, in the long term, lead to a reduction in NO₂ levels and a consequent improvement in air quality.
- 6.2 Through the continuing assessment of air quality within the district, any future problems will be addressed with the aim of ensuring that all the defined pollutants are within the objectives set. As such this process will only have positive environmental outcomes.

7.0 FINANCIAL IMPLICATIONS

- 7.1 The maintenance of and quality assurance of the data produced from the four monitoring sites referred to above, including the use of the diffusion tubes, can all be undertaken within budget.
- 7.2 If the Portfolio Holder and Cabinet consider that the Ringwood site should not be decommissioned and should continue to monitor PM₁₀ concentrations then it is estimated that additional funding of £5,000 will be required for this current financial year. However, for the 2005/06 financial year it is likely that the five sites could be maintained within budget and without additional funding as the costs associated with the relocation of the NO₂ analyser would not be incurred next year.
- 7.3 It is not envisaged at this stage that there will be any direct financial implications associated with the declaration of an AQMA. Traffic management will be a key factor in the AQ Action Plan and as such it is likely that the financial burden of such improvements will fall to the

County. However, this remains to be clarified. Any additional costs at this stage are likely to be associated with consultation with interested parties, entailing increased officer time to seek views. There is also likely to be a cost associated with printing advisory leaflets etc, which will form part of the consultation exercise. These additional costs will however, be absorbed in the current budget.

8.0 CRIME AND DISORDER IMPLICATIONS

8.1 None

9.0 CONCLUSIONS

9.1 The conclusions are based on the findings of the Detailed Assessment submitted to DEFRA in April 2004, namely:

- Monitoring for NO₂ using diffusion tubes has shown that concentrations in the High Street, Lyndhurst and in the vicinity of Junction Road, Totton are likely to exceed the 2005 annual mean objective
- Declaration of an AQMA in respect of both Lyndhurst and Totton is required for NO₂
- Based on the results of monitoring and modelling there is no need at present to declare an AQMA for either SO₂ or benzene
- Modelling for benzene has shown a need for further monitoring using diffusion tubes in Fawley village to assess concentrations in terms of the 2010 objective
- Monitoring programme to be continued in accordance with DEFRA's requirements to review and assess air quality in the district

9.2 Whilst not part of the Detailed Assessment it has been concluded that based on three years of data the concentrations for both NO₂ and PM₁₀ at Ringwood are unlikely to exceed the relevant objective and as such this site can be decommissioned.

10. PORTFOLIO HOLDER COMMENTS

10.1 The Portfolio Holder noted the contents of the report and realised the hard work involved in the assessment of the air quality in the district. The need to declare an AQMA in Totton and Lyndhurst was welcomed because of the positive outcomes that would ensue with regard to the long term improvement in air quality.

10.2 The potential financial implications were understood but as traffic management was key to air quality improvements in both areas, this would involve early discussions with Hampshire County Council and it was envisaged that the main financial burden would rest with them, although this matter was still to be clarified.

10.3 The recommendations are supported but the Portfolio Holder queries the value of the additional recommendation put forward by the Environment Review Panel with regard to referral to the Corporate Overview Panel.

11. COMMENTS BY THE ENVIRONMENT REVIEW PANEL

11.1 The Environment Review Panel support the recommendations but in addition recommend to Cabinet that the matter should be referred to the Corporate Overview Panel.

12. RECOMMENDATIONS

12.1 It is therefore recommended that:

- a) The findings of the Detailed Assessment are accepted
- b) Air Quality Management Areas are declared in respect of NO₂ for Lyndhurst and Totton
- c) That the real time monitor for NO₂ should be relocated from Ringwood to Lyndhurst but that monitoring in Ringwood for NO₂ should continue with diffusion tubes
- d) That the Ringwood monitoring site should be decommissioned but reinstated should future problems be detected
- e) Monitoring programme to be continued in accordance with DEFRA's requirements to review and assess air quality in the district

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Background Papers:

Environment Act 1995
DEFRA Policy Guidance on Local
Air Quality Management
LAQM.PG(03)

New Forest District Council Detailed
Assessment – Report to DEFRA
April 2004, as amended

APPENDIX A

Projected Nitrogen Dioxide Annual Mean for Lyndhurst Based on 2003 Data

Grid Ref	SU298083	SU298083	SU298082	SU299082	SU300082	SU299082	SU299083	SU299083
Dates	Lyndhurst (1)	Lyndhurst Bakery (2)	Lyndhurst (Jewellery) (5)	Lyndhurst (Tea Shop) (28)	Lyndhurst (Tea Shop) (29)	Lyndhurst (Health Shop) (31)	Romsey Rd B&B (32)	Romsey Road (33)
2003 Measured annual mean ($\mu\text{g}/\text{m}^3$)	28.11	47.15	49.69	33.24	31.92	41.35	25.56	29.49
Annual Mean Using BIAS adj Factor A of 1.04	29.23	49.04	51.68	34.57	33.20	43.00	26.58	30.67
Projected Annual Mean for 2005 using correction factor 0.941	27.71	46.48	48.99	32.77	31.47	40.76	25.19	29.07
2005 Annual mean objective of 40 ($\mu\text{g}/\text{m}^3$).	below	above	above	below	below	above	below	below

Showing Projected Nitrogen Dioxide Annual Mean for Totton

Grid Ref	SU362130	SU363130	SU362131	SU362131	SU362132	SU359132	SU358133	SU361135
Dates	Rumbridge St (16)	Junction Rd 1 (17)	Junction Rd 2 (18)	Junction Rd 2 (19)	Junction Rd 3 (20)	Asda (21)	Esso (22)	Totton Library (23)
2003 Measured annual mean ($\mu\text{g}/\text{m}^3$)	33.82	44.11	49.57	45.62	39.19	37.88	39.78	28.25
Annual mean Using BIAS adj Factor A of 1.04	35.17	45.88	51.56	47.44	40.76	39.39	41.38	29.38
Projected Annual Mean for 2005 using correction factor 0.941	33.34	43.49	48.87	44.97	38.64	37.34	39.22	27.85
2005 Annual mean objective of 40 ($\mu\text{g}/\text{m}^3$).	below	above	above	above	below	below	below	below

APPENDIX B

2003 Monitored SO₂ Exceedances of National Air Quality Objectives

NATIONAL AIR QUALITY OBJECTIVE	HOLBURY Urban Background	FAWLEY Industrial
SULPHUR DIOXIDE 15 min mean <i>35 exceedances permitted</i>	15 Exceedances	19 Exceedances
SULPHUR DIOXIDE 1 hour mean <i>24 exceedances permitted</i>	No Exceedances	No Exceedances
SULPHUR DIOXIDE 24 hour mean <i>3 exceedances permitted</i>	No Exceedances	No Exceedances
DATA CAPTURE	>90 %	>90 %

APPENDIX C

Monitored Benzene Results for 2003 / 04

Benzene (parts per billion)	Brackenly (1)	Brackenly (2)	237 Long Lane (3)	Vine Cottage (4)	Rockbourne (5)
Grid reference	SU 4290 0488	SU 4290 0488	SU 4290 0488	SU 4290 0485	RURAL
Exposure periods	(ppb)	(ppb)	(ppb)	(ppb)	(ppb)
1/7/03 - 28/7/03	0.97	1.04	1.53	0.95	0.76
1/8/03 - 29/8/03	0.36	0.4	0.31	0.31	0.17
2/9/03 - 29/9/03	1.3	1.35	0.4	0.37	1.07
Summer Average	0.88	0.93	0.75	0.54	0.67

2/12/2004 - 5/1/04	0.74	0.69	0.59	0.73	0.32
5/1/04 - 2/2/04	0.39	0.41	0.37	0.48	0.21
2/2/04 - 2/3/04	0.51	0.49	0.39	0.27	0.22
Winter Average	0.55	0.53	0.45	0.49	0.25

<i>Annual Average 2003/2004 (ppb)</i>	0.71	0.73	0.60	0.52	0.46
2010 Objective 1.5ppb (5µgm³)	Below	Below	Below	Below	Below