

Air Quality Monitoring

Portfolio – Community	
Ward(s) Affected:	All

Purpose

To enable members to be aware of air quality results and to make recommendations to the Executive as appropriate.

Background

1. The Council is statutorily required to submit an annual report to central government on air quality throughout the Borough. The latest Progress Report was submitted in July 2014. It concluded full compliance at long term publicly accessible areas of the Borough with all of the seven pollutants identified in the Air Quality Objectives (Annex A).
2. In 2002, the Council designated an area of land adjacent to the motorway an Air Quality Management Area. (AQMA). The AQMA is comprised of a 20 metre wide strip both sides of the edge of the M3 from J4 at the Frimley Road flyover to just north of the Ravenswood Roundabout. An Air Quality Action Plan was required to seek compliance within this area.
3. The Air Quality Action Plan was implemented in 2005 and detailed measures that would help bring down the pollution levels in this area adjacent to the motorway.

Current Position

4. Thirty Five nitrogen dioxide diffusion tubes are used across the Borough for ambient air monitoring. The single continuous analyser provides real time measurements of both nitrogen dioxide and dust within the AQMA.
5. A summary of the air quality monitoring results over the past fifteen to twenty years for our diffusion tubes and five for our continuous analyser is contained within this report (Annex B Charts 1 and 2).
6. Since 2008 the council has undertaken continuous monitoring in the AQMA at the Camberley Castle Road site for nitrogen dioxide (NO₂). The site is 17 metres closer to the motorway than the nearest relevant residential receptor. Monitored NO₂ concentrations here are therefore worst-case and higher than those at the locations of relevant residential exposure in the vicinity.
7. The measured annual mean NO₂ concentration for this site in 2014 was 50.0µg/m³, which is above the annual mean NO₂ objective of

40µg/m³. Further analysis, with the appropriate façade and distance calculations applied, identified that the annual mean and one hour air quality objectives for nitrogen dioxide were exceeded at the nearest locations of relevant exposure (42.5µg/m³). A trend chart of NO₂ annual mean concentrations at the Camberley Castle Road site over the past five years (2010-2014) is shown within Annex B as Chart 2, and show an upward trend in measured concentrations.

8. Preliminary results up to the end of July 2015 reveal that this figure has fallen from 50µg/m³ to 45µg/m³.
9. Monitoring results determine that there were just two monitored exceedances of the hourly NO₂ objective (200µg/m³) in 2014, which is within the allowed 18 occurrences per year.
10. The Council has also been monitoring PM₁₀ (Dust) since October 2006 at the Castle Road site. In 2014 the measured annual mean PM₁₀ concentration was 19.1µg/m³. Since 2010 there have been no exceedances of the annual mean PM₁₀ objective of 40µg/m³.
11. Results of the latest daily exceedances indicate that PM₁₀ concentrations are well below the corresponding PM₁₀ objectives of no more than 35 daily incidences of levels above 50ug/m³.
12. Assessment of the passive monitoring results showed there to be nine sites in 2013 where the annual mean objective for nitrogen dioxide (NO₂) was exceeded. The majority of these sites are located in the current Air Quality Management Area. The locations of all the tubes throughout the Borough are shown at Annex A Table 1.
13. None of these nine sites were at locations of relevant residential exposure. At such locations, the calculated concentrations were well below the annual mean NO₂ objective.
14. Up to the end of July 2015, results indicate that now only two are above 40µg/m³. Both are next to the M3 in the AQMA, and when adjusted for distance to residential, no exceedence is anticipated.
15. The monitoring results showed that exceedances of the relevant PM₁₀ and N₀2 objectives are unlikely at any relevant receptors in the Borough.

Proposals

16. Our proposal, due to an upward trend in annual mean NO₂ concentrations, and in the knowledge of ongoing widening work on the M3, is to continue with the current monitoring programme, retain the existing AQMA, and review the situation in the future 2016 Air Quality Updating and Screening Assessment/Progress Reports.

Options

17. The Committee may accept, reject or amend the proposal.

Recommendations

18. It is recommended that the Committee advises the Executive to maintain the current air quality monitoring programme and that this be reviewed following the conclusions of future statutory Air Quality reports submitted to DEFRA.

Annexes

Annex A -National Air Quality Objectives
Table 1. Diffusion tube locations.

Annex B
Chart 1. Graph of 21 Year Pollution Level Trends
Chart 2. No2 trends from automatic site
Table 2. Diffusion Tube Results 2010-14

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Executive Head

Tim Pashen – Executive Head of Community

Objectives included in the Air Quality Regulations 2000 and (Amendment) Regulations 2002 for the purpose of Local Air Quality Management. This table shows the objectives in units of microgrammes per cubic metre $\mu\text{g}/\text{m}^3$ with the number of exceedences in each year that are permitted (where applicable).

Pollutant	Air Quality Objective Concentration	Measured as
Benzene		
All authorities	16.25 $\mu\text{g m}^{-3}$	running annual mean
Authorities in England and Wales only	5.00 $\mu\text{g m}^{-3}$	annual mean
1,3-Butadiene	2.25 $\mu\text{g m}^{-3}$	running annual mean
Carbon monoxide		maximum daily running 8-hour mean
Authorities in England, Wales and Northern Ireland only	10.0 mg m^{-3}	
Lead	0.5 $\mu\text{g m}^{-3}$	annual mean
	0.25 $\mu\text{g m}^{-3}$	annual mean
Nitrogen dioxide	200 $\mu\text{g m}^{-3}$ not to be exceeded more than 18 times a year	1 hour mean
	40 $\mu\text{g m}^{-3}$	annual mean
Particles (PM₁₀) (gravimetric)^b	50 $\mu\text{g m}^{-3}$ not to be exceeded more than 35 times a year	24 hour mean
All authorities	40 $\mu\text{g m}^{-3}$	annual mean
Sulphur dioxide	350 $\mu\text{g m}^{-3}$ not to be exceeded more than 24 times a year	1 hour mean
	125 $\mu\text{g m}^{-3}$ not to be exceeded more than 3 times a year	24 hour mean
	266 $\mu\text{g m}^{-3}$ not to be exceeded more than 35 times a year	15 minute mean

Table 1

REFERENCE	LOCATION OF TUBE
SH1	A30 Bagshot
SH2	Windle Valley Daycare Centre
SH3	Snows Ride School Windlesham
SH4	Shaftesbury Road Bisley
SH5	Chestnut Avenue
SH6	Church Lane Bisley
SH7	M3 Brickhill roadside
SH8	M3 Brickhill 150m back
SH9	A30 Jolly Farmer
SH10	A30 Homebase
SH11	Watchetts School Camberley
SH12	High Street Camberley
SH13	Le Marchant Road
SH14	Badgers Copse
SH15	Castle Road AQM
SH16	Wood Road
SH17	Guildford Road, Bisley
SH20	Deepcut Bridge Road
SH21	Benner Lane
SH22	Castle Road AQM
SH23	Red Road/Maultway
SH24	High Street, Chobham
SH25	Castle Road AQM
SH26	College Ride, Camberley
SH27	361 Guildford Road, Bisley
SH28	Queens Road, Bisley
SH29	Classic Joinery, Bisley
SH30	Focus, Frimley Road
SH31	Old Pond Close
SH32	Two Hoots, Old Pond Close
SH33	Wood Road Garages
SH34	Brackendale Road
SH35	Prior End
SH36	Youlden Drive
SH37	Crawley Drive
SH38	Swift Lane

ANNEX B

Pollution Levels in Surrey Heath over Time

Chart 1.

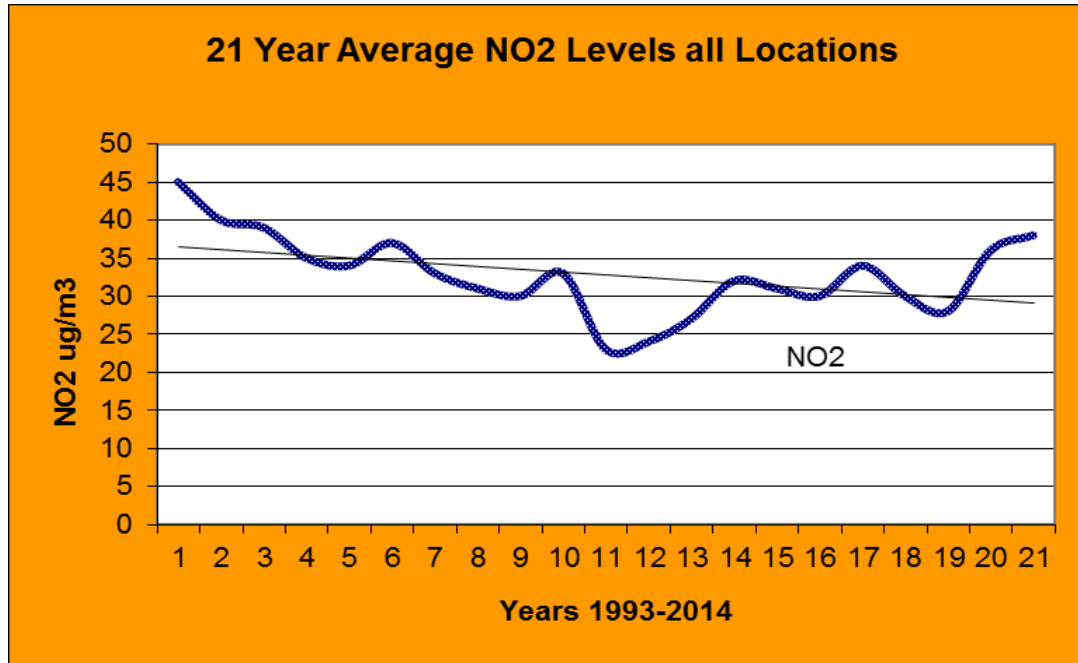


Chart 2. Trends in Annual Mean NO₂ Concentrations Measured at Automatic Monitoring Site

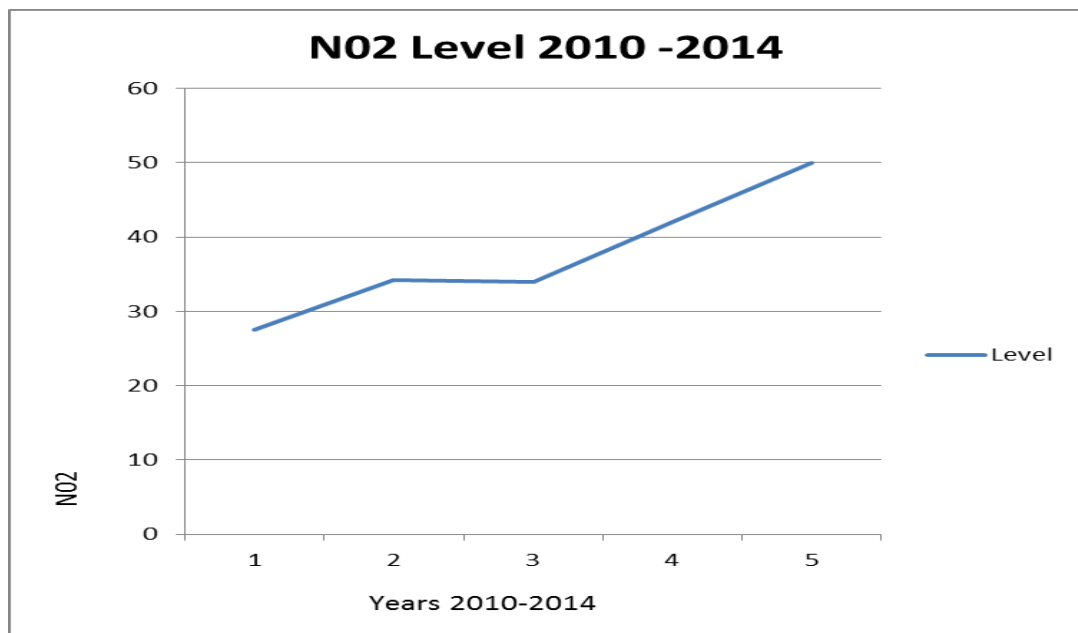


Table 2 NO2 Diffusion Tube Results 2010-2014 (Jan-Aug 2015 Results)

Site ID	Location	Site Type	Within AQMA?	Annual Mean Concentration ($\mu\text{g}/\text{m}^3$) - Adjusted for Bias				
				2010 (Bias Adjustment Factor = 1.06)	2011 (Bias Adjustment Factor = 1.06)	2012 (Bias Adjustment Factor = 0.91)	2013 (Bias Adjustment Factor = 1.06)	2014 (Bias Adjustment Factor = 1.38)
SH1	A30 Bagshot	Roadside	N	28.5	29.6	23.4	31.1	33.0 (25)
SH2	Windle Valley Daycare Centre	Roadside	N	27.2	23.3	22.5	30.5	30.8 (27)
SH3	Snows Ride School Windlesham	Urban Background	N	22.3	19.1	17.6	23.9	24.0 (21)
SH4	Shaftesbury Road Bisley	Urban Background	N	27.0	16.3	15.3	19.4	23.3 (17)
SH5	Chestnut Avenue	Roadside	N	27.1	32.4	28.1	37.8	45.2 (29)

Site ID	Location	Site Type	Within AQMA?	Annual Mean Concentration ($\mu\text{g}/\text{m}^3$) - Adjusted for Bias				
				2010 (Bias Adjustment Factor = 1.06)	2011 (Bias Adjustment Factor = 1.06)	2012 (Bias Adjustment Factor = 0.91)	2013 (Bias Adjustment Factor = 1.06)	2014 (Bias Adjustment Factor = 1.38)
SH6	Church Lane Bisley	Roadside	N	30.3	25.7	23.5	37.5 ^a	34.0 (29)
SH7	M3 Brickhill roadside	Roadside	N	71.8	71.4	59.7	41.1^a	71.6^a (48)
SH8	M3 Brickhill 60m back	Roadside	N	31.0	32.2	28.0 ^b	31.7 ^b	39.1 ^b (26)
SH9	A30 Jolly Farmer	Roadside	N	34.9	25.3	35.5	47.3	42.2 (27)
SH10	A30 Homebase	Roadside	N	41.7	32.9	32.2	46.1	46.5 (33)

Site ID	Location	Site Type	Within AQMA?	Annual Mean Concentration ($\mu\text{g}/\text{m}^3$) - Adjusted for Bias				
				2010 (Bias Adjustment Factor = 1.06)	2011 (Bias Adjustment Factor = 1.06)	2012 (Bias Adjustment Factor = 0.91)	2013 (Bias Adjustment Factor = 1.06)	2014 (Bias Adjustment Factor = 1.38)
SH11	Watchetts School Camberley	Roadside	N	34.9	30.3	28.9	35.5	38.8 (31)
SH12	High Street Camberley	Roadside	N	32.9	31.0	25.5	34.0	35.9 (33)
SH13	Le Marchant Road	Kerbside	N	47.8	23.7	26.2	32.7	33.6 (30)
SH14	Badgers Copse	Kerbside	Y	34.3	30.2	29.9	39.5	40.7 (36)
SH16	Wood Road	Roadside	N	37.1	37.7	32.2	40.8	48.0 (39)

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				2010 (Bias Adjustment Factor = 1.06)	2011 (Bias Adjustment Factor = 1.06)	2012 (Bias Adjustment Factor = 0.91)	2013 (Bias Adjustment Factor = 1.06)	2014 (Bias Adjustment Factor = 1.38)
SH17	Guildford Road, Bisley	Roadside	N	45.1	23.3	20.1	26.4	27.3 (21)
SH20	Deepcut Bridge Road	Roadside	N	26.7	24.7	23.1	29.8	31.7 (27)
SH21	Benner Lane	Urban Background	N	24.1	19.7	18.2	26.8	24.2 (22)
SH23	Red Road/Maultway	Kerbside	N	37.9	35.2	34.0	44.0	38.1 (38)
SH24	High Street, Chobham	Roadside	N	34.4	27.6	24.2	34.2	43.1 (38)

Site ID	Location	Site Type	Within AQMA?	Annual Mean Concentration ($\mu\text{g}/\text{m}^3$) - Adjusted for Bias				
				2010 (Bias Adjustment Factor = 1.06)	2011 (Bias Adjustment Factor = 1.06)	2012 (Bias Adjustment Factor = 0.91)	2013 (Bias Adjustment Factor = 1.06)	2014 (Bias Adjustment Factor = 1.38)
SH26	College Ride	Urban Background	N	29.7	28.6	26.2	29.8	39.0 (29)
SH27	361 Guildford Road, Bisley	Roadside	N	34.9	21.6	20.5	28.4	29.6 (30)
SH28	Queens Road, Bisley	Roadside	N	30.9	25.4	27.6	31.9	33.5 (30)
SH29	Classic Joinery, Bisley	Roadside	N	25.8	17.2	16.8	22.3	21.6 ^a (29)
SH30	Focus, Frimley Road	Roadside	N	40.6	37.1	38.7	44.0	43.5 (39)

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				2010 (Bias Adjustment Factor = 1.06)	2011 (Bias Adjustment Factor = 1.06)	2012 (Bias Adjustment Factor = 0.91)	2013 (Bias Adjustment Factor = 1.06)	2014 (Bias Adjustment Factor = 1.38)
SH31	Old Pond Close	Roadside	N	35.0	33.3	27.4	37.6	44.2 (36)
SH32	Two Hoots, Old Pond Close	Roadside	N	27.7	27.8	29.7	34.7	39.3 (33)
SH33	Wood Road Garages	Roadside	N	23.2	33.5	31.6	47.3	50.3 (42)
SH34	Brackendale Road	Roadside	Y	32.3	29.6	26.4	46.4^a	33.9 ^a (35)
SH35	Prior End	Roadside	Y	33.7	26.6	26.2	32.9	33.8 (31)

Site ID	Location	Site Type	Within AQMA?	Annual Mean Concentration ($\mu\text{g}/\text{m}^3$) - Adjusted for Bias				
				2010 (Bias Adjustment Factor = 1.06)	2011 (Bias Adjustment Factor = 1.06)	2012 (Bias Adjustment Factor = 0.91)	2013 (Bias Adjustment Factor = 1.06)	2014 (Bias Adjustment Factor = 1.38)
SH36	Youlden Drive	Roadside	Y	32.1	29.2	26.8	33.7	35.2 (30)
SH37	Crawley Drive	Roadside	Y	35.7	33.0	31.4	34.5	42.9 (38)
SH38	Swift Lane	Urban	N	36.5	29.3	26.8	36.4	39.9 (35)
SH15	Castle Road, Camberley	Roadside	Y	35.2	32.3	36.6	42.0	49.0 (36)
SH22	Castle Road, Camberley	Roadside	Y	35.6	42.2	33.5	40.9	47.6 (38)

Site ID	Location	Site Type	Within AQMA?	Annual Mean Concentration ($\mu\text{g}/\text{m}^3$) - Adjusted for Bias				
				2010 (Bias Adjustment Factor = 1.06)	2011 (Bias Adjustment Factor = 1.06)	2012 (Bias Adjustment Factor = 0.91)	2013 (Bias Adjustment Factor = 1.06)	2014 (Bias Adjustment Factor = 1.38)
SH25	Castle Road, Camberley	Roadside	Y	34.6	38.6	34.7	42.6	48.9 (36)