

Air Quality Assessment

1.1 PM 10

Bristol has not exceeded annual mean or daily EU limit values for PM₁₀ in 2011 or recent years. Annual mean concentrations are shown in Table 1 and compliance with the daily mean objectives in Table 2.

Site ID	Site Type	Valid Data Capture for monitoring Period	Valid Data Capture 2011	Annual Mean Concentration µg/m ³				
				2007	2008	2009	2010	2011
Old Market - 213	Roadside	88.3	88.3	21.9	22.2	19.4	19.3	21.2
AURN St. Pauls – 452	Urban Background	73.2	73.2	19.5	20.5	18.8	20.3	23.4

Table 1 Results of pm10 automatic monitoring: comparison with annual mean objective

Site ID	Site Type	Valid Data Capture for monitoring Period	Valid Data Capture 2011	Number of Exceedences of 24-Hour Mean (50 µg/m ³)				
				2007	2008	2009	2010	2011
Old Market - 213	Roadside	88.3	88.3	20	16	4	2	8 (63.1)
AURN St. Pauls – 452	Urban Background	73.2	73.2	13	16	7	4	13 (73.3)

Table 2 Results of pm10 automatic monitoring: comparison with daily mean objective. Numbers in brackets are the 90.4 percentile.

1.2 Ozone

Bristol has not exceeded the EU limit values for ozone in 2010 or recent years.

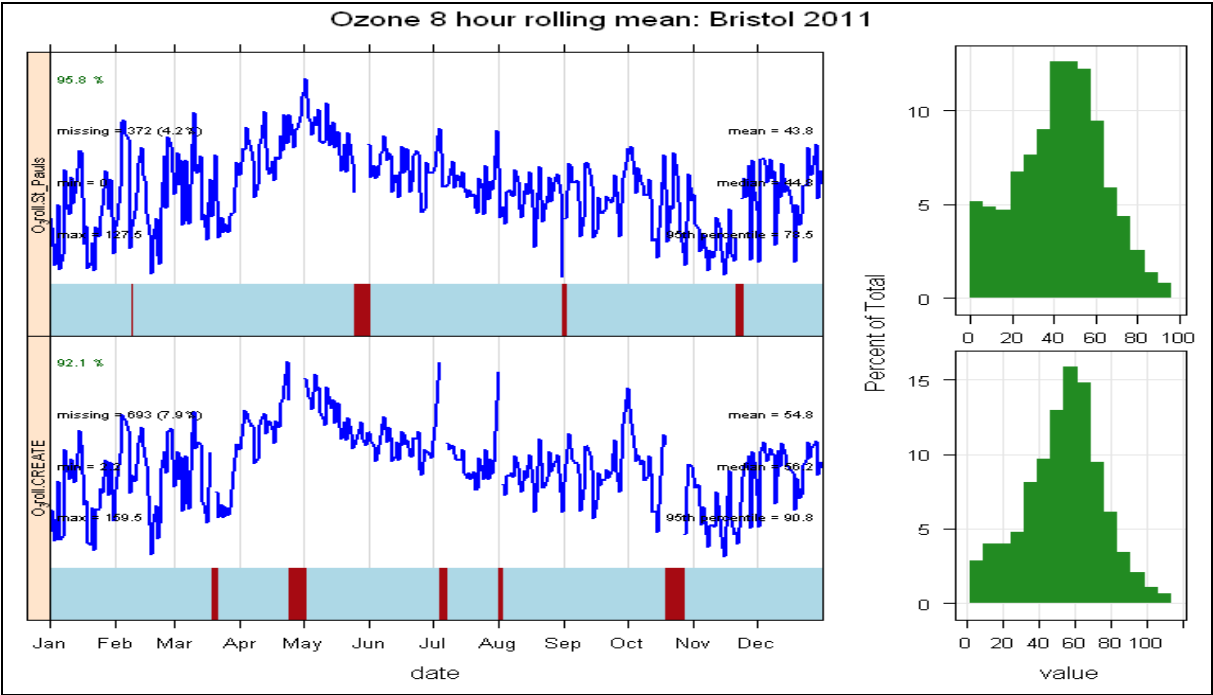


Figure 1 Summary plot of ozone in Bristol: 2011

1.3 Nitrogen Dioxide

The NO_x continuous monitors are located in the AQMA to monitor the areas most likely to experience exceedences. Data from these are shown in Table 3.

Site ID	Site	Valid Data Capture 2011 %	Annual Mean Concentration $\mu\text{g}/\text{m}^3$				
			2007	2008	2009	2010	2011
203	Brislington Depot	98	34.5	34.8	34.7	37.1	34.5
206	Rupert Street	78	99.5	101.5	98.5	94.3	86.2
213	Old Market	99	61.0	62.4	64.0	62.8	58.5
215	Parson Street School	92	49.8	50.5	50.3	50.5	48.2
270	Wells Road	90	49.6	49.2	50.2	47.3	42.3
375	Newfoundland Road Police Station	86	56.3	58.4	59.1	54.3	53.8
395	A420 (Shiners)	98	41.3	40.8	40.7	44.3	40.7

Site ID	Site	Valid Data Capture 2011 %	Annual Mean Concentration $\mu\text{g}/\text{m}^3$				
			2007	2008	2009	2010	2011
447	Bath Road	95	39.0	37.4	37.0	40.1	36.2
452	AURN St. Pauls	98	31.0	32.5	30.5	30.6	27.2
459	Cheltenham Road	n/a	-	31.6	33.1	35.9	-
463	Fishponds Road	94	-	-	44.2	44.4	42.2

Table 3 Results of automatic monitoring for nitrogen dioxide in the air quality management area: comparison with annual mean objective

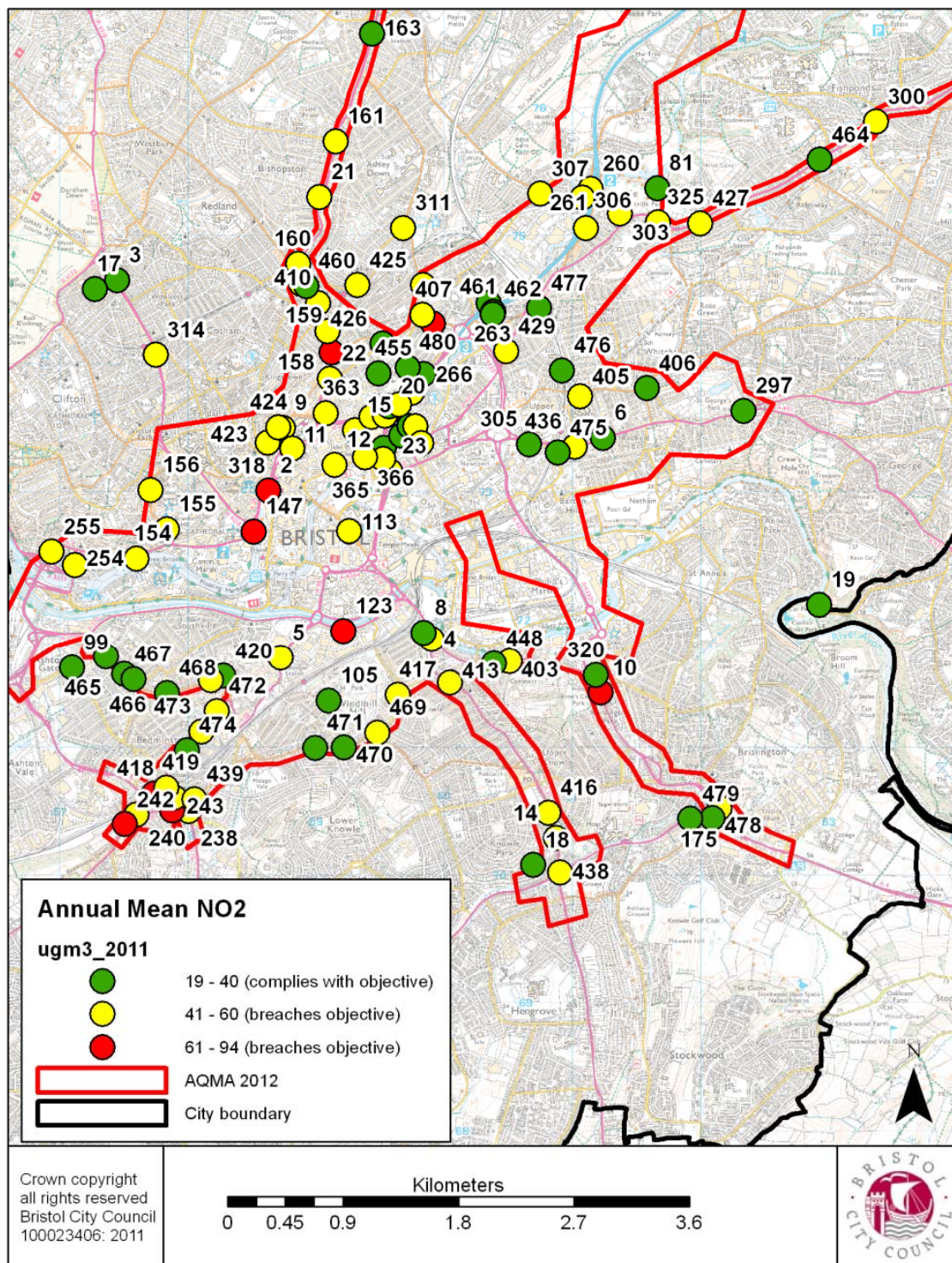


Figure 2 Map showing locations of NO₂ diffusion tube monitoring sites (central)

1.4 PM2.5

Under the UK Air Quality Strategy, local authorities have no duty to manage PM_{2.5}. In the UK it is considered as a regional pollutant and is managed nationally.

PM_{2.5} is measured at one location in Bristol, the national (AURN) site at St. Pauls. The annual mean concentration at this site in 2010 was 14.2 µgm⁻³. Data from this site is shown in Figure 3.

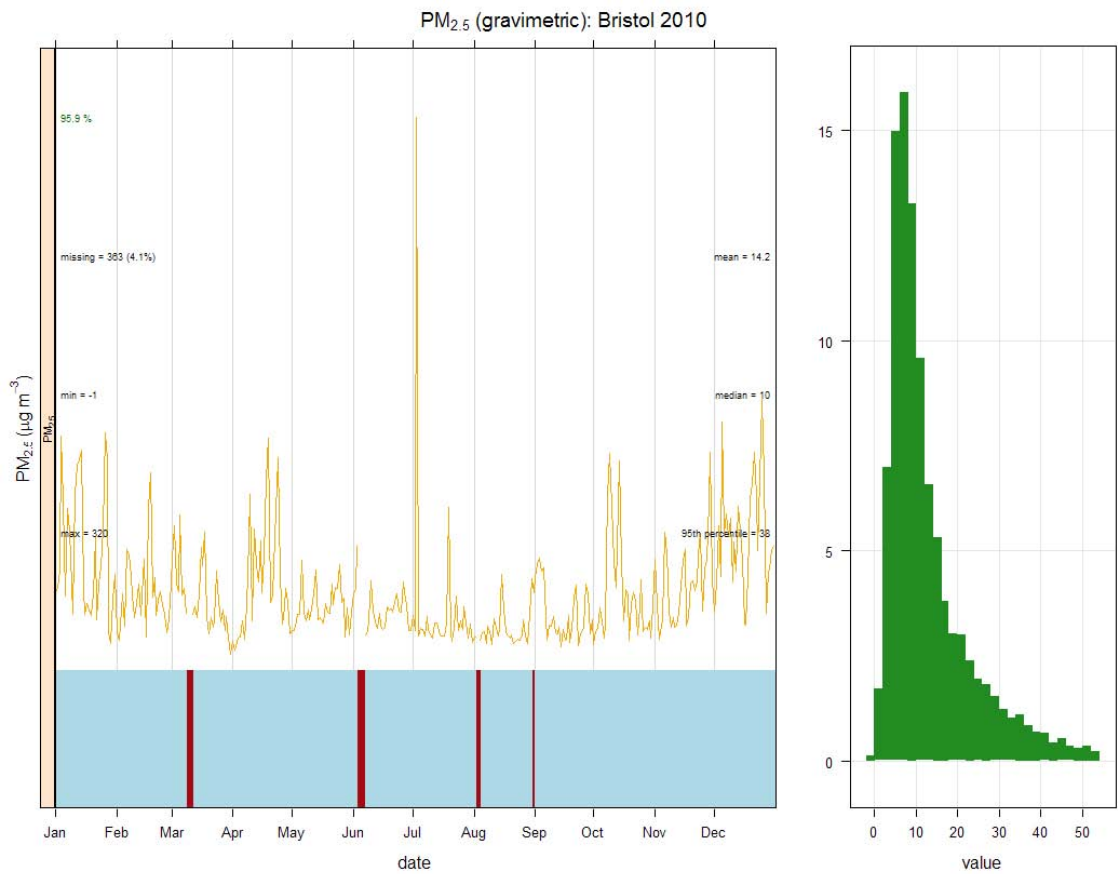


Figure 3 Summary plot of PM2.5 at Bristol St. Pauls (AURN) site: 2010

1.5 Air Quality Objectives

Bristol has one of the most comprehensive air quality monitoring networks in the UK. It is focused on monitoring the key road traffic pollutants of nitrogen dioxide and PM₁₀. Monitoring sites are located in worst-case locations where there is residential exposure, in line with national guidance.

Pollutant	Concentration	Measured as	Date to be achieved by	Achieved?
Benzene	16.25 µg/m ₃	Running annual mean	31.12.2003	YES
	5.00 µg/m ₃	Running annual mean	31.12.2010	YES
1,3-Butadiene	2.25 µg/m ₃	Running annual mean	31.12.2003	YES
Carbon monoxide	10.0 mg/m ₃	Running 8hour mean	31.12.2003	YES
Lead	0.5 µg/m ₃	Annual mean	31.12.2004	YES
	0.25 µg/m ₃	Annual mean	31.12.2008	YES
Nitrogen dioxide	200 µg/m ₃ not to be exceeded more than 18 times a year	1-hour mean	31.12.2005	NO
	40 µg/m ₃	Annual mean	31.12.2005	NO
Particles (PM₁₀) gravimetric	50 µg/m ₃ , not to be exceeded more than 35 times a year	24-hour mean	31.12.2004	YES
	40 µg/m ₃	Annual mean	31.12.2004	YES
Sulphur dioxide	350 µg/m ₃ , not to be exceeded more than 24 times a year	1-hour mean	31.12.2004	YES
	125 µg/m ₃ , not to be exceeded more than 3 times a year	24-hour mean	31.12.2004	YES
	266 µg/m ₃ , not to be exceeded more than 35 times a year	15-minute mean	31.12.2005	YES

Table 4 Summary of UK air quality objectives and their status in Bristol

1.6 Trends in NO₂ concentrations

During the period 2006 – 2011 traffic flows in the central area declined and congestion reduced. These achievements should have resulted in improved air quality. However, national factors such as the increased penetration of diesel in the fleet and the under-performance of EURO standards for specific engine types means that NO₂ levels have been static in the city.

The trends in roadside nitrogen dioxide concentrations from 2001 – 2010 are shown below in Figure 4.

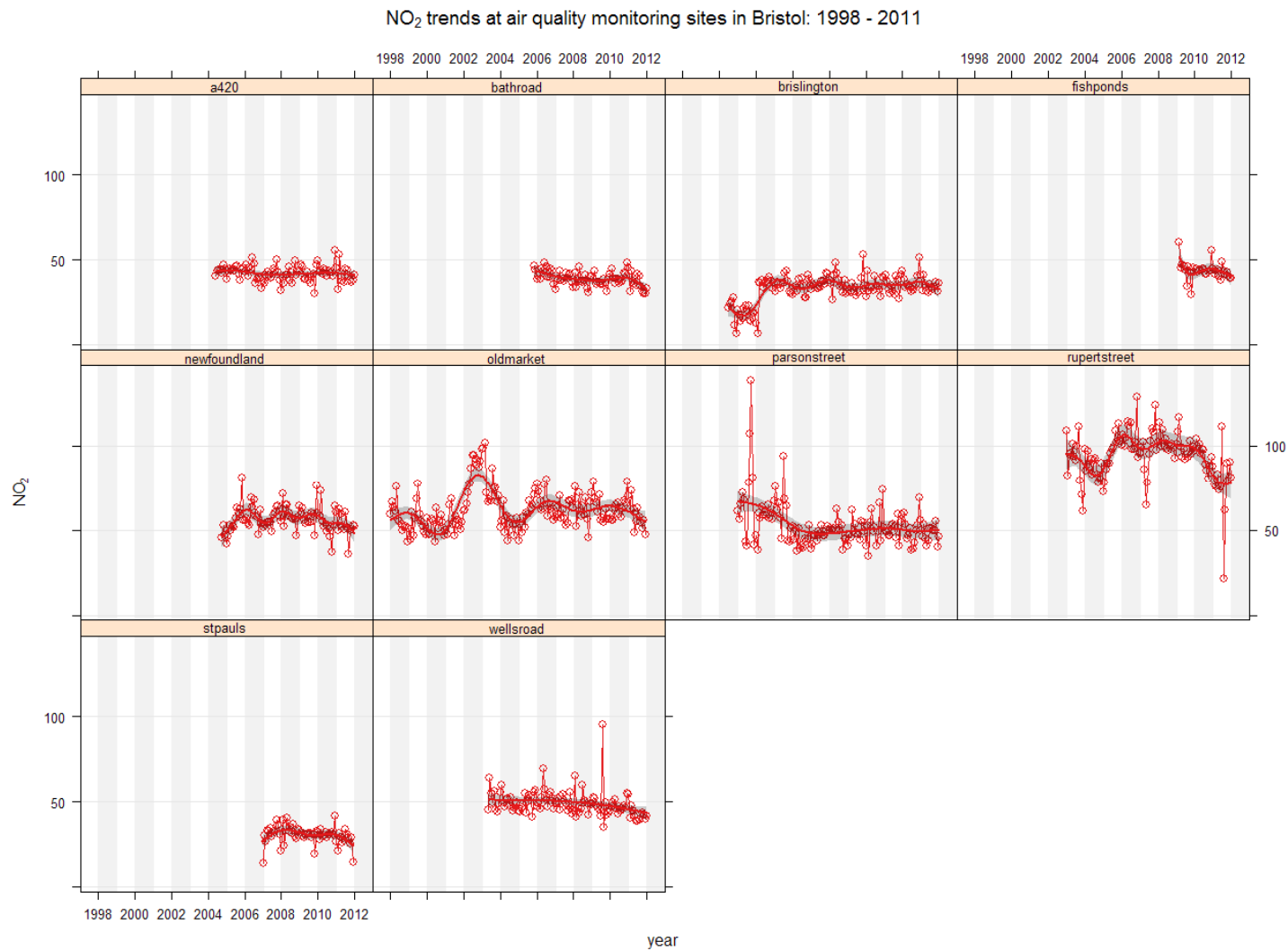


Figure 4 Trends in annual mean nitrogen dioxide concentration measured at automatic monitoring sites