

## Cannock Chase DC Air Quality Monitoring Results

### National Air Quality Objectives

The National air quality objectives have been defined in legislation and set out limits (objectives) for seven specified pollutants. These are:

Pollutant	Concentration		Measured as
Benzene	16.25 $\mu\text{g}/\text{m}^3$		Running annual mean
	5.00 $\mu\text{g}/\text{m}^3$		Annual mean
1,3-Butadiene	2.25 $\mu\text{g}/\text{m}^3$		Running annual mean
Carbon monoxide	10.0 $\text{mg}/\text{m}^3$		Running 8-hour mean
Lead	0.5 $\mu\text{g}/\text{m}^3$		Annual mean
	0.25 $\mu\text{g}/\text{m}^3$		Annual mean
Nitrogen dioxide	200 $\mu\text{g}/\text{m}^3$ not to be exceeded more than 18 times a year		1-hour mean
	40 $\mu\text{g}/\text{m}^3$		Annual mean
Particles (PM <sub>10</sub> ) (gravimetric)	50 $\mu\text{g}/\text{m}^3$ , not to be exceeded more than 35 times a year		24-hour mean
	40 $\mu\text{g}/\text{m}^3$		Annual mean
Sulphur dioxide	350 $\mu\text{g}/\text{m}^3$ , not to be exceeded more than 24 times a year		1-hour mean
	125 $\mu\text{g}/\text{m}^3$ , not to be exceeded more than 3 times a year		24-hour mean
	266 $\mu\text{g}/\text{m}^3$ , not to be exceeded more than 35 times a year		15-minute mean

## Monitoring Sites

Air quality monitoring is undertaken for those pollutants most likely to cause exceedence of the national air quality objectives. Automatic monitoring provides accurate and detailed results and helps to assess pollutant levels against short and long averaging periods. Non-automatic monitoring provides inexpensive results suitable for measuring long-term levels and trends, and allows greater geographical coverage.

**Table 1-1: Automatic monitoring Sites**

Site ID	Location	OS Grid Ref	Pollutants monitored	Description	Within Air Quality Management Area?
BTMS	Watling Street, Bridgtown.	X 398009 Y 308563	Nitrogen dioxide (NO <sub>2</sub> ), Sulphur dioxide (SO <sub>2</sub> ), Fine Particulates (PM <sub>10</sub> ).	Roadside location adjacent to busy trunk road. Represents similar conditions to the façade of local domestic properties.	Y
BLNC*	Betty's Lane, Norton Canes	X 401349 Y 312196	Nitrogen dioxide (NO <sub>2</sub> ), Sulphur dioxide (SO <sub>2</sub> ), Fine Particulates (PM <sub>10</sub> ).	Adjacent to quiet local road on the edge of Norton Canes. Representative of local semi-urban ambient conditions.	N
Stile Cop**	Stile Cop Road, Rugeley	Approx. X 403840 Y 316100	Nitrogen dioxide (NO <sub>2</sub> ), Sulphur dioxide (SO <sub>2</sub> ).	Operated by Rugeley Power Station. Rural location outside of Rugeley. Location where power station plumes may occasionally ground under adverse conditions.	N

*BLNC discontinued 2010*

*\*\* Operated by Rugeley Power Station*

**Table 1-2: Non-Automatic Monitoring Sites**

Site Name	Site Type	OS Grid Ref	In AQMA?	Distance to kerb of nearest road (N/A if not applicable)	Worst-case Location?
Hislop Drive ('Hislop')	Urban Background	X 404125 Y 316903	N	N/A	N
Mayflower Drive ('May')	Urban Background	X 403467 Y 318101	N	N/A	N
Mortuary ('Mort')	Urban Background	X 397589 Y 309724	N	N/A	N
Betty's Lane, Norton Canes ('BLNC')	Suburban / Special	X 401349 Y 312196	N	6.3m	N
Norton Canes High School ('NCHS')	Urban Background	X 402363 Y 309051	N	N/A	N
Attingham Drive*	Urban Background	X 401618 Y 309916	N	N/A	N
Deavall Farm* ('DF')	Urban Background	X 399688 Y 310686	N	N/A	N
Oxford Road ('OxRd')	Urban Background	X 398529 Y 309529	N	N/A	N
Bridgtown Traffic Lights ('BTL')	Roadside	X 397589 Y 308584	Y	2.5m	Y
Domestic Property at Bridgtown Traffic Lights ('BTL-B')	Roadside	X 397952 Y 308567	Y	5m	Y
67 Watling Street ('67WS')	Roadside	X 398051 Y 308512	Y	7.8m	N
54 Watling Street ('54WS')	Roadside	X 398250 Y 308428	Y	5.1m	Y
Bridgtown Monitoring Station ('BTMS')	Roadside	X 398009 Y 308563	Y	6.8m	N
Horsefair, Rugeley ('HF')	Roadside	X 404465 Y 317741	N	7 m	Y

Adjacent to 268 Watling Street, Norton Canes ('268WS')	Roadside	X 400731 Y 307419	N	3.8 m	Y
--	----------	----------------------------	---	-------	---

NB All non-automatic monitoring sites monitor for NO2

## Results

### Automatic Monitoring Sites

#### **Nitrogen Dioxide**

The following charts demonstrate results for nitrogen dioxide, sulphur dioxide and fine particulates measured at automatic monitoring sites in the district. Cannock Chase Council currently operate 'BTMS' within the air quality management area, and 'BLNC' until 2010, when operation of the site was ceased. Data for 'Stile Cop' is kindly provided by Rugeley Power Station. The data is presented in a format directly comparable with the national air quality objectives.

It should be noted that the objectives only relate to external locations where people are likely to be exposed to pollution for the relevant averaging period. For example, the external façade of domestic properties is representative of annual mean exposure and footpaths can be representative of exposure to the 1-hour nitrogen dioxide objective. As such, not monitoring results showing values above the relevant objective values are representative of an exceedence.

**Figure 1: Nitrogen Dioxide Monitoring, 2007 to 2010**

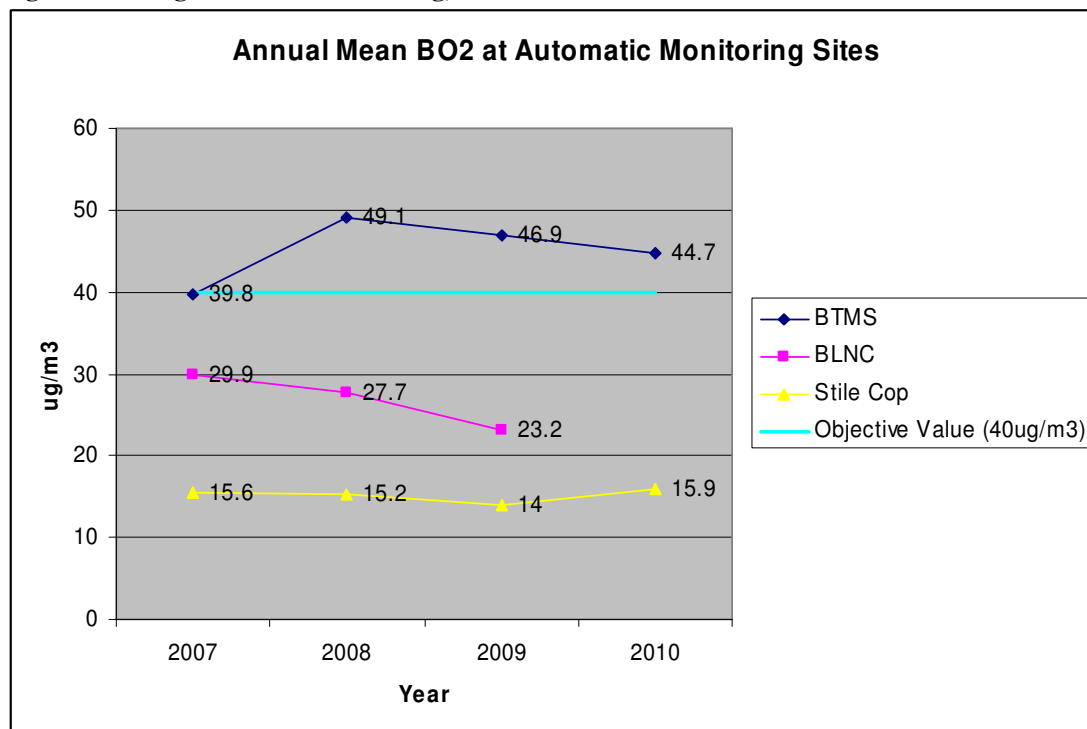
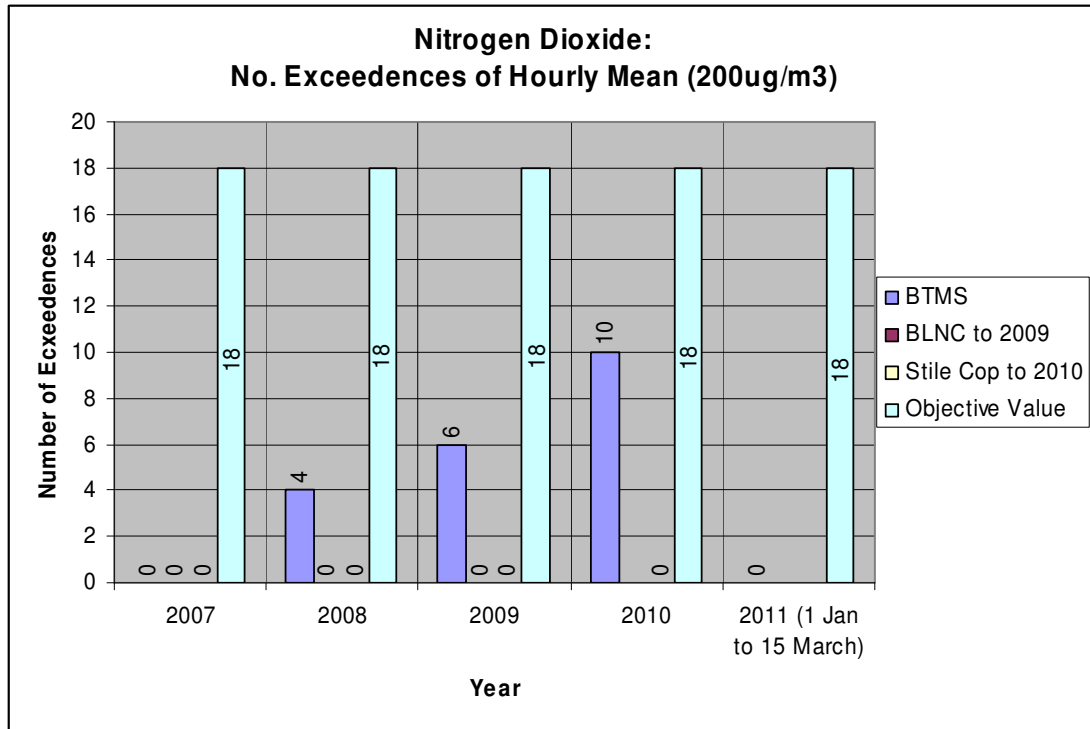


Figure 2: Automatic nitrogen dioxide monitoring, number of hourly episodes greater than 200 ug/m3



## Sulphur Dioxide

**Table 1-3: Exceedences of National Sulphur Dioxide Objectives 2007 to 2010**

Site ID	Location	Within AQMA?	Number of Exceedences of: ( $\mu\text{g}/\text{m}^3$ ), 2007 to 2011 (to 15 March)		
			15-minute Objective (266 $\mu\text{g}/\text{m}^3$ )  Not to be exceeded more than <b>35</b> times	1-hour Objective (350 $\mu\text{g}/\text{m}^3$ )  Not to be exceeded more than <b>24</b> times	24-hour Objective (125 $\mu\text{g}/\text{m}^3$ )  Not to be exceeded more than <b>3</b> times
BTMS	Watling Street, Bridgtown.	Y	2007 = 0 2008 = 0 2009 = 0 2010 = 0 2011 = 0	2007 = 0 2008 = 0 2009 = 0 2010 = 0 2011 = 0	2007 = 0 2008 = 0 2009 = 0 2010 = 0 2011 = 0
BLNC*	Betty's Lane, Norton C	N	2007 = 0 2008 = 0 2009 = 0	2007 = 0 2008 = 0 2009 = 0	2007 = 0 2008 = 0 2009 = 0
Stile Cop	Stile Cop, Rugeley	N	2007 = 0 2008 = 0 2009 = 0 2010 = 0	2007 = 0 2008 = 0 2009 = 0 2010 = 0	2007 = 0 2008 = 0 2009 = 0 2010 = 0

\* ceased 19/9/10

## Fine Particulate Matter (PM10)

Figure 3: Fine Particulate Matter (PM10), Exceedences of 24-hour mean objective

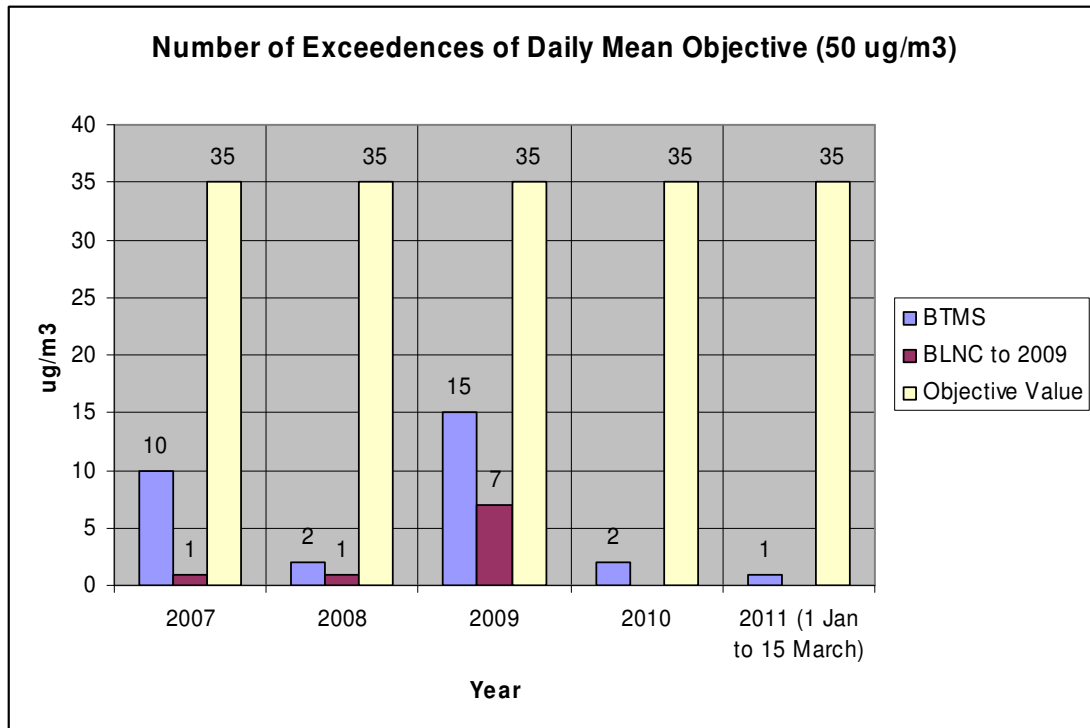
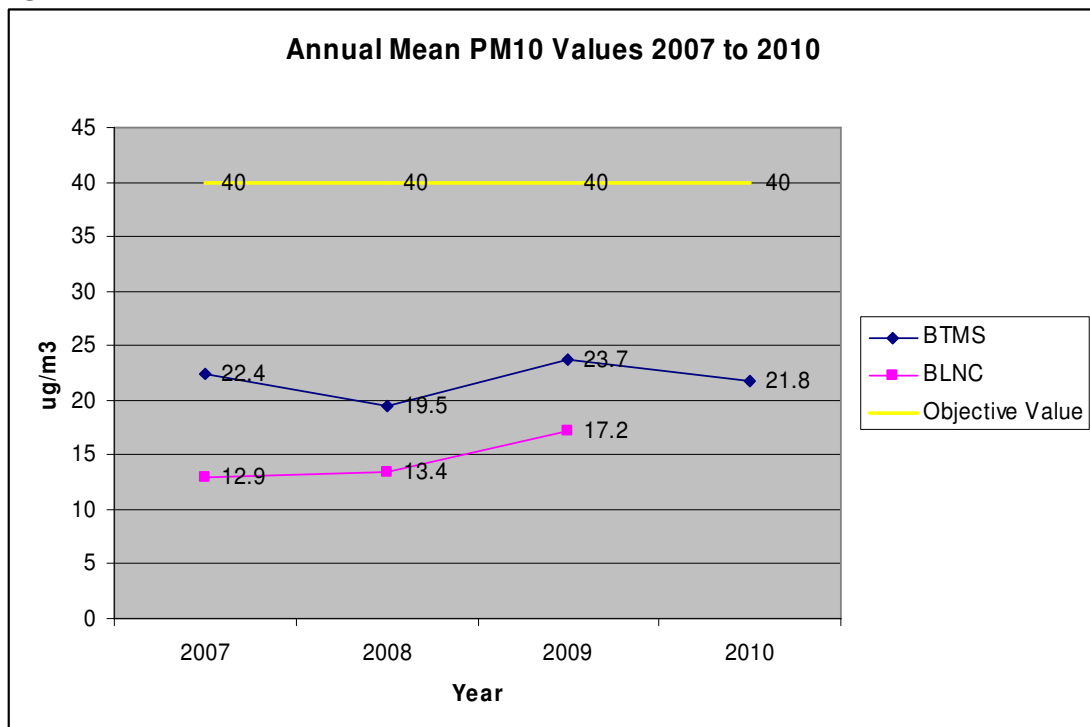


Figure 4: Fine Particulate Matter (PM10), Annual Mean Results



## Non-Automatic Monitoring Results

Figure 5: Nitrogen Dioxide; Non-Automatic Results for Background Monitoring Locations

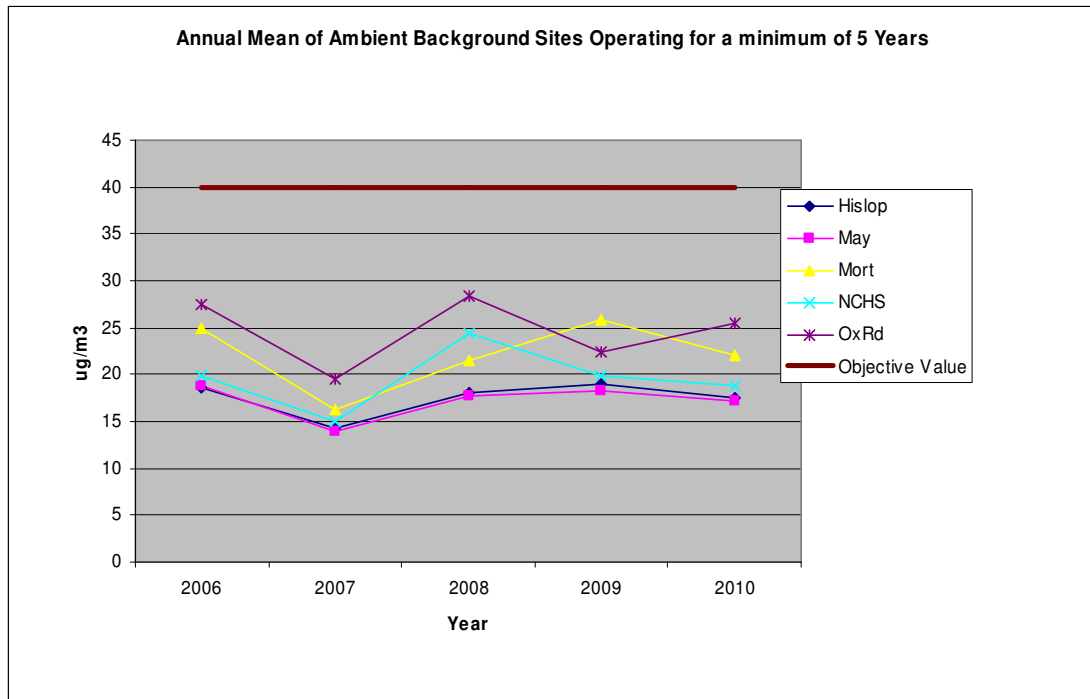
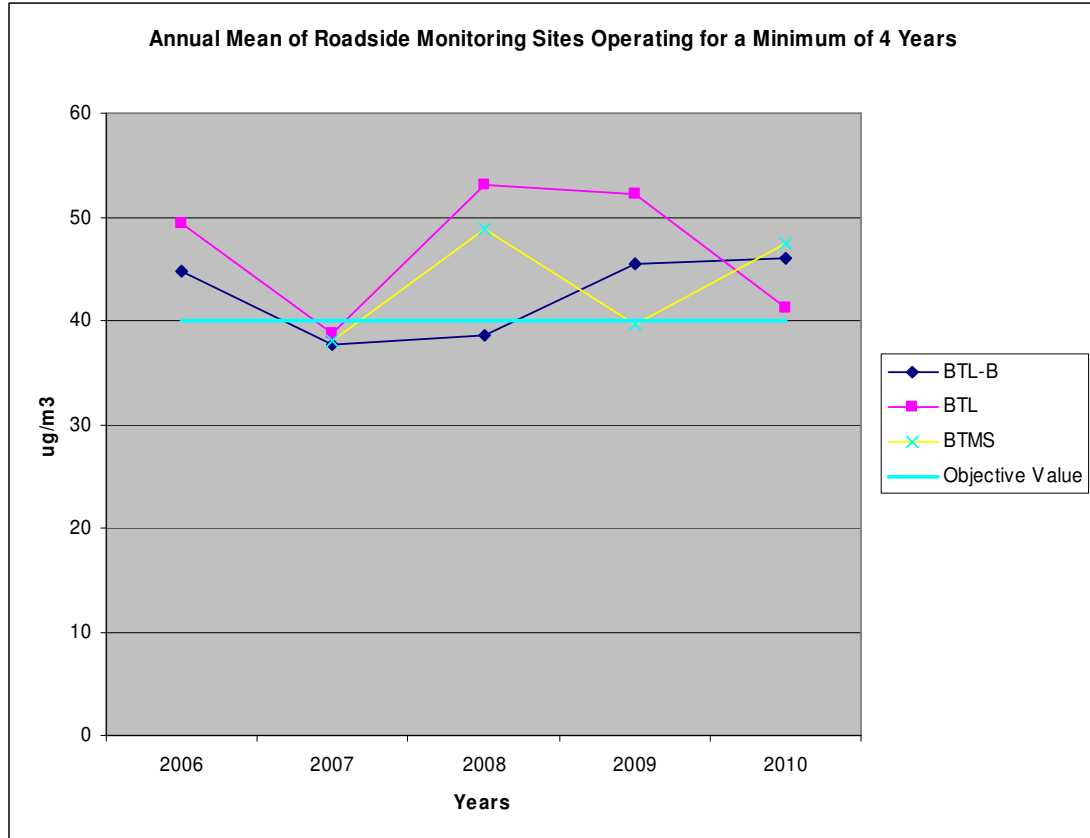


Figure 6: Nitrogen Dioxide; Non-Automatic Results for Roadside Locations





**Table 4: Nitrogen Dioxide: Annual Mean Results from Non-Automatic Monitoring**

Site ID	Annual mean concentrations ( $\mu\text{g}/\text{m}^3$ )				
	2006	2007	2008	2009	2010
Hislop	18.7	14.3	18.1	18.9	17.5
May	18.8	14	17.7	18.2	17.2
Mort	24.9	16.2	21.5	25.9	22.1
BTL	<b>49.4</b>	38.8	<b>53.1</b>	<b>52.2</b>	<b>41.3</b>
BLNC	26.3	19.7	24.3	23.9	23.9
NCHS	19.9	15	24.4	19.8	18.8
DF				20.6	20.1
OxRd	27.4	19.6	28.4	22.4	25.4
BTL-B	<b>44.7</b>	37.7	38.5	<b>45.4</b>	<b>46</b>
BTMS		38	<b>48.8</b>	39.6	<b>47.4</b>
BLNC		19.3	24.3	23.9	
67WS			29.3	31.7	32.6
54WS			35.7	<b>45.3</b>	<b>44.1</b>
268WS				34.9	<b>46.9</b>
HF				31.4	35.7