



## Chester Air Quality Monitoring

On the 30<sup>th</sup> March 2007 TRL installed a monitoring station on behalf of ING Real Estate Development UK Ltd at Hunter Street, Chester, to monitor oxides of nitrogen (NO<sub>x</sub>) and particulate (PM<sub>10</sub>) concentrations. NO<sub>x</sub> is being monitored by an API200E analyser, and PM<sub>10</sub> by a BAM. This is the first three monthly report on data collected during 30<sup>th</sup> March 2007 to 30<sup>th</sup> June 2007.



### UK Air Quality Objectives

Air quality standards and objectives are set out in the Air Quality (England) Regulations 2000 (as amended 2002) and the Air Quality Strategy (AQS). The limits contained within the AQS are based upon concentrations over a given time period that are considered to be acceptable, judged on the basis of the most recent information on the effects of each pollutant on human health and the environment. Table 1 outlines the Air Quality Objectives for NO<sub>2</sub> and PM<sub>10</sub> as set out in the regulations and provisional objectives for Greater London as set out in an Addendum to the National Air Quality Strategy published in February 2003.

Table 1. Air Quality objectives

Objective	Compliance date
<b>UK objectives for NO<sub>2</sub> set in regulations</b>	
Hourly average concentration of 200 µg/m <sup>3</sup> (105 ppb) not to be exceeded more than 18 times a year.	31 December 2005
Annual mean of 40 µg/m <sup>3</sup> (21ppb)	31 December 2005
<b>UK objectives for NO<sub>x</sub> not set in regulations (vegetation based directives; targets met)</b>	
Annual average concentration of 30 µg/m <sup>3</sup> (16 ppb).	31 December 2000
<b>UK objectives for PM<sub>10</sub> set in regulations</b>	
Hourly average concentration of 50 µg/m <sup>3</sup> not to be exceeded more than 35 times a year.	1 January 2005
Annual mean of 40 µg/m <sup>3</sup>	1 January 2005
<b>London provisional objectives for PM<sub>10</sub></b>	
24-hour mean concentration of 50 µg/m <sup>3</sup> not to be exceeded more than 10 times a year.	31 December 2010
Annual mean of 23 µg/m <sup>3</sup>	31 December 2010

Results for NO<sub>x</sub> and PM<sub>10</sub> at Hunter Street, Chester.

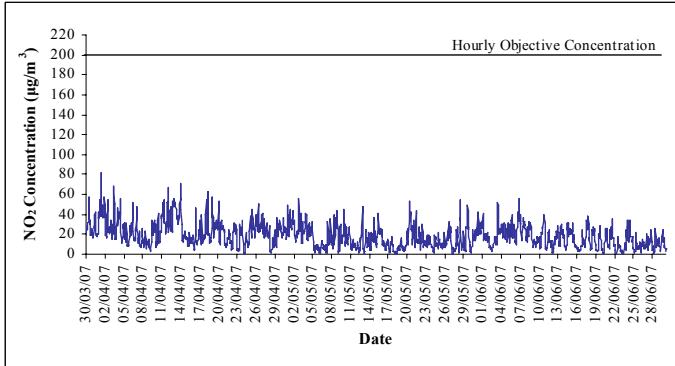


Figure 1: NO<sub>2</sub> hourly data

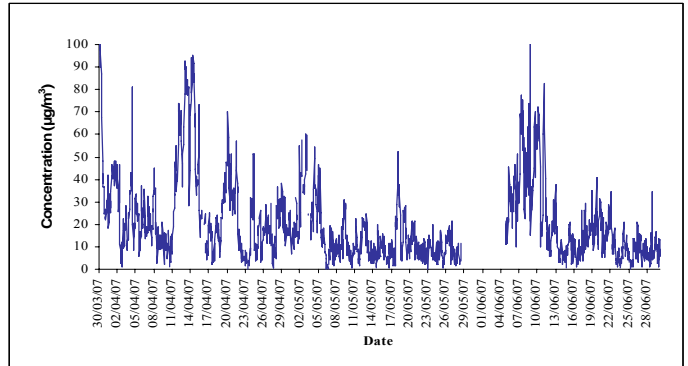


Figure 2: PM<sub>10</sub> hourly data

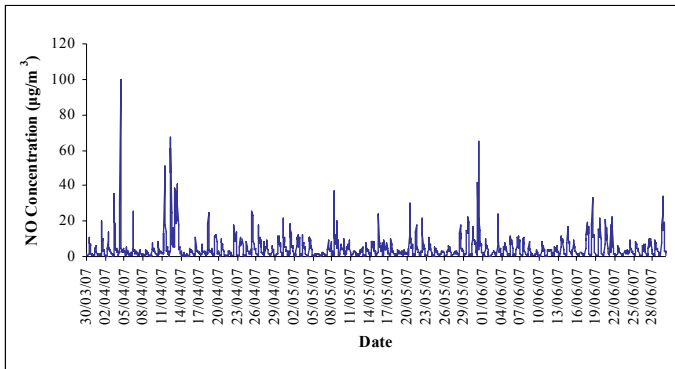


Figure 3: NO hourly data

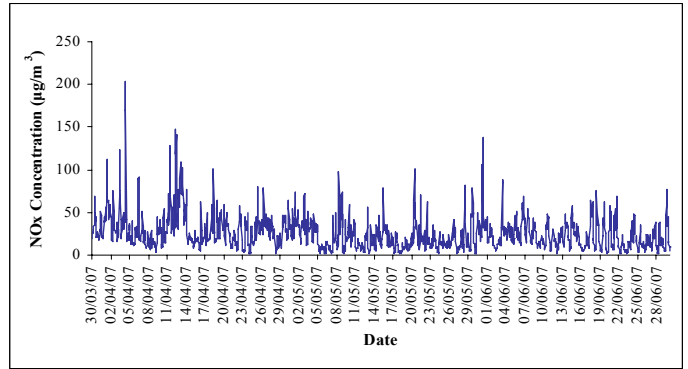


Figure 4: NO<sub>x</sub> hourly data

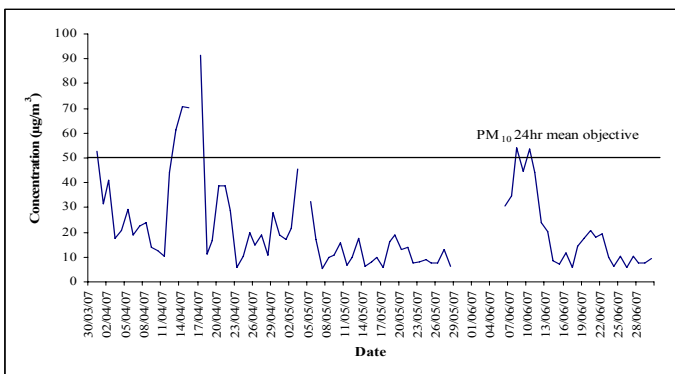


Figure 5: PM<sub>10</sub> 24-hr average



Table. 2. Statistics for NO<sub>x</sub> and PM<sub>10</sub> at Hunter Street, Chester.

	NO	NO <sub>2</sub>	NO <sub>x</sub>	PM <sub>10</sub> (adjusted)
<b>NO<sub>2</sub> 1 hour mean objective (200 µg/m<sup>3</sup>; 18 exceedences)</b>	-	<b>0</b>	-	-
<b>NO<sub>2</sub> annual mean objective (40 µg/m<sup>3</sup>)</b>	-	<b>18.6</b>	-	-
<b>PM<sub>10</sub> 24 hour mean objective (50 µg/m<sup>3</sup>; 35 exceedences)</b>	-	-	-	<b>7</b>
<b>PM<sub>10</sub> annual mean objective (40 µg/m<sup>3</sup>)</b>	-	-	-	<b>20.7</b>
Minimum (µg/m <sup>3</sup> )	0.0	0.3	1.1	0
Average (µg/m <sup>3</sup> )	4.3	18.6	25.1	20.7
Standard deviation (µg/m <sup>3</sup> )	6.3	12.2	18.8	18.5
Median (µg/m <sup>3</sup> )	2.3	16.5	20.7	15
Maximum (µg/m <sup>3</sup> )	100.2	91.3	203.9	158.4
Data capture (%)	99.7	99.7	99.7	90.2

## Discussion

Air Quality Monitoring began at Hunter Street on the 30<sup>th</sup> March 2007. This first report presents the data collected during the period 30<sup>th</sup> March to 30<sup>th</sup> June 2007. Data capture for was high for both NO<sub>x</sub> (99.7%) and PM<sub>10</sub> (90.2%).

During the period 30<sup>th</sup> March to 30<sup>th</sup> June one of the four NO<sub>2</sub> and PM<sub>10</sub> objective concentrations were breached at the Hunter Street site. Seven exceedences of the PM<sub>10</sub> hourly mean objective were recorded. The seven exceedences occurred on the 31<sup>st</sup> March, 13<sup>th</sup>/14<sup>th</sup>/15<sup>th</sup>/17<sup>th</sup> April, and 8<sup>th</sup>/10<sup>th</sup> June 2007.