



# **Sussex Air Pollution Monitoring Network**

## **Annual Report, 2013**

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# Table of Contents

|                                                                         |           |
|-------------------------------------------------------------------------|-----------|
| <b>EXECUTIVE SUMMARY .....</b>                                          | <b>iv</b> |
| <b>INTRODUCTION .....</b>                                               | <b>v</b>  |
| <b>CHAPTER 1: Results of Continuous Monitoring, 2012.....</b>           | <b>3</b>  |
| Network performance.....                                                | 3         |
| A statistical overview of 2012.....                                     | 5         |
| 2012 in Comparison with the Air Quality Strategy (AQS) Objectives ..... | 11        |
| Indicators of Sustainable Development .....                             | 14        |
| <b>CHAPTER 2: Trends in Pollution Levels, 2001 – 2012.....</b>          | <b>17</b> |
| How the Charts Work.....                                                | 17        |
| PM <sub>10</sub> .....                                                  | 17        |
| SO <sub>2</sub> .....                                                   | 19        |
| NO <sub>2</sub> .....                                                   | 19        |
| O <sub>3</sub> .....                                                    | 21        |
| <b>CHAPTER 3: Review and Assessment Update .....</b>                    | <b>23</b> |
| Air Quality in Adur and Worthing.....                                   | 23        |
| Air Quality in Arun District.....                                       | 24        |
| Air Quality in Brighton and Hove City.....                              | 24        |
| Air Quality in Chichester District .....                                | 25        |
| Air Quality in Crawley Borough .....                                    | 27        |
| Air Quality in Eastbourne Borough .....                                 | 28        |
| Air Quality in Hastings Borough .....                                   | 28        |
| Air Quality in Horsham District .....                                   | 28        |
| Air Quality in Lewes District .....                                     | 28        |
| Air Quality in Rother District.....                                     | 29        |
| Air Quality in Wealden District .....                                   | 29        |

## EXECUTIVE SUMMARY

The Sussex Air Quality Monitoring Network provides a central source of information on air pollution issues of a defined and robust quality and can be used with confidence by members of the public, researchers and local authority officers.

Overall the data capture was good across the network during 2013 with most analysers that were in operation for the whole year meeting the minimum requirement of 75% data capture and most also achieving the stricter network target of 90% valid data capture. The reasons for lower capture rate at certain sites are described in Chapter 1.

Exceedences of the 'Moderate' nitrogen dioxide (NO<sub>2</sub>) banding were recorded at the Crawley Gatwick Airport site during November and December.

As seen each year there were many days of 'moderate' ozone (O<sub>3</sub>) recorded at most network sites monitoring for this pollutant during the summer of 2013. The first widespread incident occurred at the end of March, the last in September.

'Moderate' PM<sub>10</sub> levels were recorded at all sites during 2013, apart from the Adur, Shoreham-by-sea and Lewes, Denton Community Centre.

'Moderate' PM<sub>2.5</sub> levels were recorded at all sites during 2013.

There were no occurrences of 'moderate' sulphur dioxide (SO<sub>2</sub>) recorded during the year.

All network sites, that achieved the necessary data capture, met the PM<sub>10</sub>, PM<sub>2.5</sub>, SO<sub>2</sub> Air Quality Strategy (AQS) objectives. Carbon monoxide (CO) is no longer measured at any network site. Only the Worthing 2, Grove Lodge site failed to meet the NO<sub>2</sub> objective of 40 µgm<sup>-3</sup> measured as an annual mean. The O<sub>3</sub> AQS objective was exceeded at all sites that met the necessary data capture.

The running annual mean concentrations for PM<sub>10</sub> and NO<sub>2</sub> during 2013 remained stable at most sites. O<sub>3</sub> concentrations increased at Chichester Lodsworth, Brighton and Hove Preston Park and Eastbourne Devonshire Park during 2013 and decreased at Brighton and Hove Stanmer Park, Wealden Isfield and at Wealden Lullington Heath.

The air quality sustainability indicator for roadside PM<sub>10</sub> has remained stable since 2012 in Sussex. Unfortunately none of the background sites monitoring PM<sub>10</sub> met the 75% data capture requirement to be included in the calculation for the first indicator. Both UK roadside and UK background PM<sub>10</sub> increased slightly compared to 2012. Roadside PM<sub>10</sub> has shown an overall improvement since 2001.

The air quality sustainability indicators for the UK urban and rural O<sub>3</sub> showed a slight increase in 2013 as did the Sussex urban O<sub>3</sub>. The rural O<sub>3</sub>, in contrast, slightly decreased during 2013.

The progress of each individual Local Authority's Review and Assessment process is reported in Chapter 3.

## INTRODUCTION

The Sussex Air Pollution Monitoring Network was formed in 1995 and has developed into a comprehensive regional monitoring network with 22 continuous monitoring sites in operation in January 2013.

Network sites are placed in a range of locations according to local monitoring requirements and resources. As a network, these individual sites allow an overall view of pollution levels in rural, industrial, urban and roadside parts of Sussex. As all sites are operated to defined network quality standards, each district or borough can augment their own monitoring results with comparable data from other network sites.

This report aims to make the data more accessible by describing the air pollution trends, episodes and standards across Sussex, and providing a freely available source of information for the public, local authorities and those in education.

The network's Internet site contains peak daily readings from each site, updated each day, as well as historical data from the continuous monitoring carried out across the region. There are many other features and data tools to aid interpretation as well as more detailed information about the network and the individual monitoring sites.

A general information section on the health effects of air pollution can also be found.

Network Home page:

<http://www.sussex-air.net>



## CHAPTER 1: Results of Continuous Monitoring, 2013

This chapter describes the results of continuous monitoring which are presented in comparison to national and international standards and guidelines.

The extent and frequency of pollution episodes recorded during 2013 are also reported with some background information as to the cause of each.

Statistics from three London Air Quality Network sites are included at the base of each table for comparison purposes.

'Marylebone Road' is a kerbside site located on a busy six-lane road in central London. 'Kensington & Chelsea' is a background site in central London and 'Greenwich' is a background site in outer London.

Further information on these sites can be found at:

<http://www.londonair.org.uk>

### Network performance

Table 1.1 shows data capture rates for each network analyser during 2013. Low capture rates may be caused by repeated or prolonged analyser or logging system breakdown, on-site communications problems or interruptions in power supply to the monitoring stations.

Overall the data capture was good across the network during 2013 with most analysers that were in operation for the whole year meeting the minimum requirement of 75% data capture and most also achieving the stricter network target of 90% valid data capture. However, the following sites failed to meet the 90% target:

- Adur – Shoreham-by-Sea; the automatic data collection stopped due to problems with the mobile communications until November 2013. Some data was manually downloaded; however ratification has not been possible due to a lack of calibration results. The PM<sub>10</sub> data has also been excluded for the whole year as it has not been possible to calculate correction factors.
- The Chichester – Orchard Street NO<sub>x</sub> analyser suffered from repeated ozoner and bench temperature faults during June to August with repairs carried out during this time. In addition, during October to November a broken connector led to further data loss, the repair being delayed due to a disagreement with the equipment support unit over their contractual obligations.
- Eastbourne – Devonshire Park PM<sub>10</sub> FDMS lost data from August to November due to dryer faults.
- Eastbourne – Holly Place is a national monitoring network site ratified by a third party. Reasons for the PM<sub>10</sub> data loss are not known at this time.
- Horsham – Park Way had PM<sub>10</sub> data loss during February when the TEOM lost its memory and then again due to noisy periods of data from March to April.
- Horsham – Storrington is a national monitoring network site ratified by a third party. Reasons for the PM<sub>10</sub> data loss are not known at this time.
- Hastings – Bulverhythe site was switched off in June 2013 due to electrical problems.

- Rother – Rye Harbour ozone data was lost between December 2012 to July 2013 due to water ingress into the analyser.

A few analysers also fell below the 75% threshold, however, apart from those sites described above, this was due to commissioning dates part way through the year. For these sites annual statistics are generally considered unrepresentative of the full year and results in the following tables are replaced with 'n.a.' where applicable.

| Table 1.1 Analyser capture rates (%) for 2013 |                  |                 |                  |                  |                 |
|-----------------------------------------------|------------------|-----------------|------------------|------------------|-----------------|
| Capture Rate (%)                              | Nitrogen Dioxide | Ozone           | PM <sub>10</sub> | PM <sub>25</sub> | Sulphur Dioxide |
| Adur - Shoreham-by-Sea                        | 0                | -               | 1                | -                | -               |
| Chichester - Lodsworth                        | -                | 95              | -                | -                | -               |
| Wealden - Isfield                             | -                | 99              | -                | -                | -               |
| Brighton and Hove - Preston Park <sup>1</sup> | 97 <sup>1</sup>  | 95 <sup>1</sup> | -                | -                | -               |
| Brighton and Hove -Stanmer Park               | -                | 92              | -                | -                | -               |
| Crawley - Gatwick Airport                     | 99               | -               | -                | -                | -               |
| Chichester - A27 Chichester Bypass            | 93               | -               | 94               | -                | -               |
| Chichester - Orchard Street                   | 76               | -               | -                | -                | -               |
| Eastbourne - Devonshire Park                  | 98               | 99              | 70               | -                | -               |
| Eastbourne - Holly Place <sup>1</sup>         | 95 <sup>1</sup>  | -               | 66 <sup>1</sup>  | 99 <sup>1</sup>  | -               |
| Horsham - Park Way                            | 98               | -               | 88               | -                | -               |
| Horsham - Storrington <sup>1</sup>            | 94 <sup>1</sup>  | -               | 84 <sup>1</sup>  | 91 <sup>1</sup>  | -               |
| Horsham - Cowfold                             | 94               | -               | -                | -                | -               |
| Hastings - Bulverhythe                        | 32               | -               | 43               | -                | -               |
| Wealden - Lullington Heath <sup>1</sup>       | 96 <sup>1</sup>  | 97 <sup>1</sup> | -                | -                | 92 <sup>1</sup> |
| Lewes - Newhaven Denton School <sup>2</sup>   | 36 <sup>2</sup>  | 46 <sup>2</sup> | 44 <sup>2</sup>  | 47 <sup>2</sup>  | -               |
| Lewes - West Street                           | 96               | -               | 94               | -                | -               |
| Lewes - Denton Community Centre <sup>3</sup>  | 42 <sup>3</sup>  | 42 <sup>3</sup> | 40 <sup>3</sup>  | 43 <sup>3</sup>  | -               |
| Rother - Rye Harbour                          | -                | 46              | -                | -                | -               |
| Rother - De La Warr Road                      | 99               | -               | 92               | -                | -               |
| Sussex Mobule Brightwell <sup>4</sup>         | 22 <sup>4</sup>  | -               | 41 <sup>4</sup>  | -                | -               |
| Worthing 2 - Grove Lodge                      | 99               | -               | -                | -                | -               |

<sup>1</sup> AURN

<sup>2</sup> Site moved June 2013

<sup>3</sup> Site installed July 2013

<sup>4</sup> Mobile site, deployed February 2013 to March 2013



## A statistical overview of 2013

Annual mean concentrations are shown in Table 1.2. These statistics are calculated from hourly mean concentrations.

Chapter 2 describes trends in running annual mean concentrations in more detail.

Tables 1.3 shows the number of days in which 'moderate' air pollution was measured at each site. There were no recorded occurrences of 'high' or 'very high' air pollution during 2013 at any of the Sussex sites. The Kensington and Chelsea 1 site in London recorded 'high' PM<sub>2.5</sub> on three days.

The air quality banding system has been set by the Government to help describe pollution levels and their associated health effects.

More information on the Air Quality Banding System can be found at:

<http://londonair.org.uk/london/asp/airpollutionindex.asp?IndexDate=2012>

| Air pollution banding | Value | Accompanying health messages for at-risk groups and the general population                                                                                                                                                                                                                                                               |                                                                                                                                         |
|-----------------------|-------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------|
|                       |       | At-risk individuals *                                                                                                                                                                                                                                                                                                                    | General population                                                                                                                      |
| Low                   | 1-3   | <i>Enjoy</i> your usual outdoor activities.                                                                                                                                                                                                                                                                                              | <i>Enjoy</i> your usual outdoor activities.                                                                                             |
| Moderate              | 4-6   | Adults and children with lung problems, and adults with heart problems, <b>who experience symptoms</b> , should <b>consider reducing</b> strenuous physical activity, particularly outdoors.                                                                                                                                             | <i>Enjoy</i> your usual outdoor activities.                                                                                             |
| High                  | 7-9   | Adults and children with lung problems, and adults with heart problems, should <b>reduce</b> strenuous physical exertion, particularly outdoors, and particularly if they experience symptoms. People with asthma may find they need to use their reliever inhaler more often. Older people should also <b>reduce</b> physical exertion. | Anyone experiencing discomfort such as sore eyes, cough or sore throat should <b>consider reducing</b> activity, particularly outdoors. |
| Very High             | 10    | Adults and children with lung problems, adults with heart problems, and older people, should <b>avoid</b> strenuous physical activity. People with asthma may find they need to use their reliever inhaler more often.                                                                                                                   | <b>Reduce</b> physical exertion, particularly outdoors, especially if you experience symptoms such as cough or sore throat.             |

\* Adults and children with heart or lung problems are at greater risk of symptoms. Follow your doctor's usual advice about exercising and managing your condition.

| <b>Table 1.2 Annual means 2013</b>                            |                         |              |                        |                        |                        |
|---------------------------------------------------------------|-------------------------|--------------|------------------------|------------------------|------------------------|
| <b>Mean concentration</b>                                     | <b>Nitrogen Dioxide</b> | <b>Ozone</b> | <b>PM<sub>10</sub></b> | <b>PM<sub>25</sub></b> | <b>Sulphur Dioxide</b> |
| Adur - Shoreham-by-Sea                                        | (-)                     | -            | (46)                   | -                      | -                      |
| Chichester - Lodsworth                                        | -                       | 57           | -                      | -                      | -                      |
| Wealden - Isfield                                             | -                       | 52           | -                      | -                      | -                      |
| Brighton and Hove - Preston Park                              | 17                      | 54           | -                      | -                      | -                      |
| Brighton and Hove - Stanmer Park                              | -                       | 50           | -                      | -                      | -                      |
| Crawley - Gatwick Airport                                     | 31                      | -            | -                      | -                      | -                      |
| Chichester - A27 Chichester Bypass                            | 32                      | -            | 20                     | -                      | -                      |
| Chichester - Orchard Street                                   | 27                      | -            | -                      | -                      | -                      |
| Eastbourne - Devonshire Park                                  | 17                      | 59           | (27)                   | -                      | -                      |
| Eastbourne - Holly Place                                      | 13                      | -            | (23)                   | 15                     | -                      |
| Horsham - Park Way                                            | 29                      | -            | 22                     | -                      | -                      |
| Horsham - Storrington                                         | 27                      | -            | 23                     | 17                     | -                      |
| Horsham - Cowfold                                             | 25                      | -            | -                      | -                      | -                      |
| Hastings - Bulverhythe                                        | (28)                    | -            | (27)                   | -                      | -                      |
| Wealden - Lullington Heath                                    | 9                       | 50           | -                      | -                      | 1                      |
| Lewes - Newhaven Denton School                                | (14)                    | (54)         | (21)                   | (16)                   | -                      |
| Lewes - West Street                                           | 19                      | -            | 21                     | -                      | -                      |
| Lewes - Denton Community Centre                               | (12)                    | (52)         | (18)                   | (13)                   | -                      |
| Rother - Rye Harbour                                          | -                       | (51)         | -                      | -                      | -                      |
| Rother - De La Warr Road                                      | 26                      | -            | 25                     | -                      | -                      |
| Sussex Mobile Brightwell                                      | (25)                    | -            | (23)                   | -                      | -                      |
| Worthing 2 - Grove Lodge                                      | 41                      | -            | -                      | -                      | -                      |
| Greenwich 4                                                   | 21                      | 38           | (-)                    | (15)                   | 5                      |
| Kens and Chelsea 1                                            | 37                      | 39           | 23                     | 15                     | 2                      |
| Marylebone Road                                               | 85                      | 18           | 33                     | 20                     | 6                      |
| Values shown in brackets have less than 75% data capture rate |                         |              |                        |                        |                        |

**Table 1.3 Number of days 'moderate' air pollution during 2012 (Air Quality Index 4-6)**

|                                    | Nitrogen Dioxide | Ozone | PM <sub>10</sub> | PM <sub>25</sub> | Sulphur Dioxide |
|------------------------------------|------------------|-------|------------------|------------------|-----------------|
| Adur - Shoreham-by-Sea             | (-)              | -     | (0)              | -                | -               |
| Chichester - Lodsworth             | -                | 24    | -                | -                | -               |
| Wealden - Isfield                  | -                | 26    | -                | -                | -               |
| Brighton and Hove - Preston Park   | 0                | 28    | -                | -                | -               |
| Brighton and Hove -Stanmer Park    | -                | 16    | -                | -                | -               |
| Crawley - Gatwick Airport          | 5                | -     | -                | -                | -               |
| Chichester - A27 Chichester Bypass | 0                | -     | 1                | -                | -               |
| Chichester - Orchard Street        | 0                | -     | -                | -                | -               |
| Eastbourne - Devonshire Park       | 0                | 17    | (11)             | -                | -               |
| Eastbourne - Holly Place           | 0                | -     | (8)              | 17               | -               |
| Horsham - Park Way                 | 0                | -     | 2                | -                | -               |
| Horsham - Storrington              | 0                | -     | 6                | 16               | -               |
| Horsham - Cowfold                  | 0                | -     | -                | -                | -               |
| Hastings - Bulverhythe             | (0)              | -     | (2)              | -                | -               |
| Wealden - Lullington Heath         | 0                | 9     | -                | -                | 0               |
| Lewes - Newhaven Denton School     | (0)              | (2)   | (1)              | (7)              | -               |
| Lewes - West Street                | 0                | -     | 0                | -                | -               |
| Lewes - Denton Community Centre    | (0)              | (6)   | (0)              | (2)              | -               |
| Rother - Rye Harbour               | -                | (9)   | -                | -                | -               |
| Rother - De La Warr Road           | 0                | -     | 1                | -                | -               |
| Sussex Mobile Brightwell           | (0)              | -     | (2)              | -                | -               |
| Worthing 2 - Grove Lodge           | 0                | -     | -                | -                | -               |
| Greenwich 4                        | 0                | 6     | (-)              | 8                | 0               |
| Kens and Chelsea 1                 | 0                | 10    | 8                | 14               | 0               |
| Marylebone Road                    | 28               | 0     | 20               | 19               | 0               |

Values shown in brackets have less than 75% data capture rate

There were no days within the 'high' or 'very high' bandings recorded at any network site during 2013.

### **NO<sub>2</sub>**

'Moderate' NO<sub>2</sub> was recorded at the Crawley – Gatwick Airport site on five days in November and December.

### **O<sub>3</sub>**

Widespread 'Moderate' O<sub>3</sub> was recorded on a number of days at almost all the network background and rural sites monitoring for this pollutant. These episodes occur during the warmer sunnier months due to the photochemical reaction of nitrogen oxides with hydrocarbons.

The first widespread incident resulting in 'moderate' O<sub>3</sub> occurred during the end of March, and the last occurred during September.

### **PM<sub>10</sub>**

Defra's Air Pollution Index applies to PM<sub>10</sub> measured by a reference equivalent method such as the Filter Dynamic Measurement System (FDMS). The TEOM PM<sub>10</sub> data has been converted to reference equivalent PM<sub>10</sub> using the Volatile Correction Model (VCM) method developed by King's College London. All TEOM PM<sub>10</sub> data reported on the Sussex-air website prior to the 1<sup>st</sup> January 2004 has been corrected using a gravimetric conversion factor of 1.3. All data reported after the 1<sup>st</sup> January 2004 has been corrected using the Volatile Correction Model (VCM).

Further details about the VCM can be found at:

<http://www.volatile-correction-model.info/>

'Moderate' PM<sub>10</sub> levels were recorded at all sites during 2013, apart from the Adur, Shoreham-by-sea site which had an extremely poor data capture rate and Lewes, Denton Community Centre which was commissioned half way through the year.

### **PM<sub>2.5</sub>**

'Moderate' PM<sub>2.5</sub> levels were recorded at all sites during 2013 from January to April, July to September and again in December.

### **SO<sub>2</sub>**

There were no occurrences of 'moderate' or above SO<sub>2</sub> pollution during 2013 at network sites.

## Significant episodes occurring during 2013

### Particulate Episodes

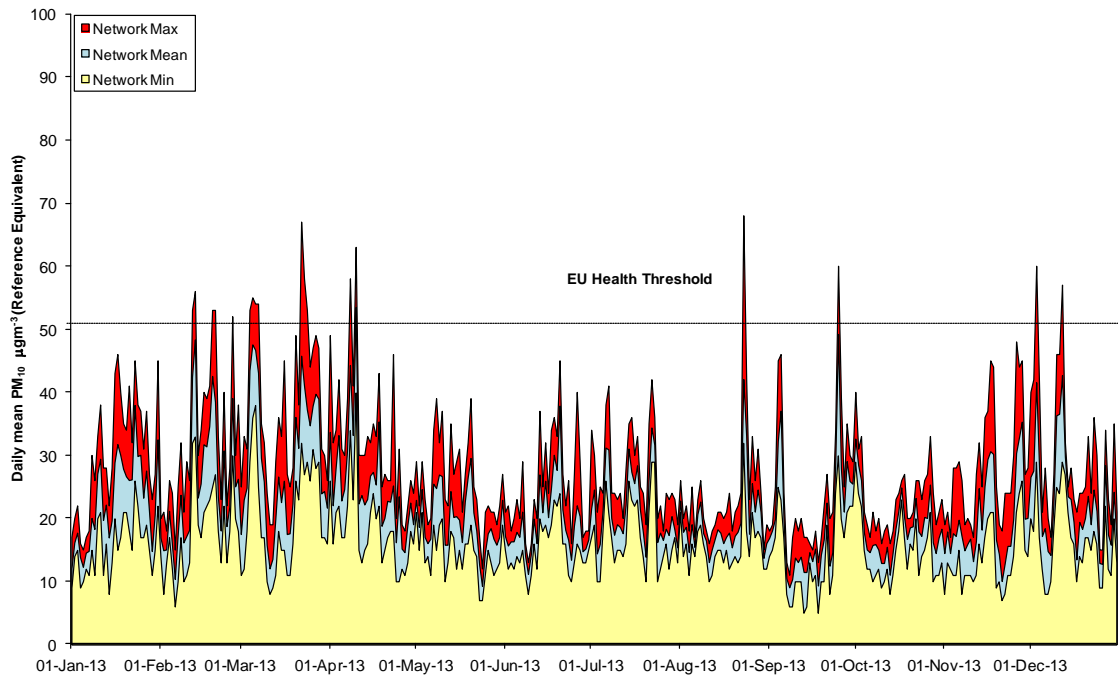
Widespread 'moderate' PM<sub>10</sub> and PM<sub>2.5</sub> episodes occurred from January to April, and again during September 2013 where several sites measured 'moderate' PM<sub>10</sub> and PM<sub>2.5</sub>.

Further, less widespread episodes were recorded during July to September and in December with 'moderate' PM<sub>10</sub> and PM<sub>2.5</sub>.

These episodes were a result of poor dispersal of local emissions combined with pollution being imported from the continent on a south-easterly to easterly airflow.

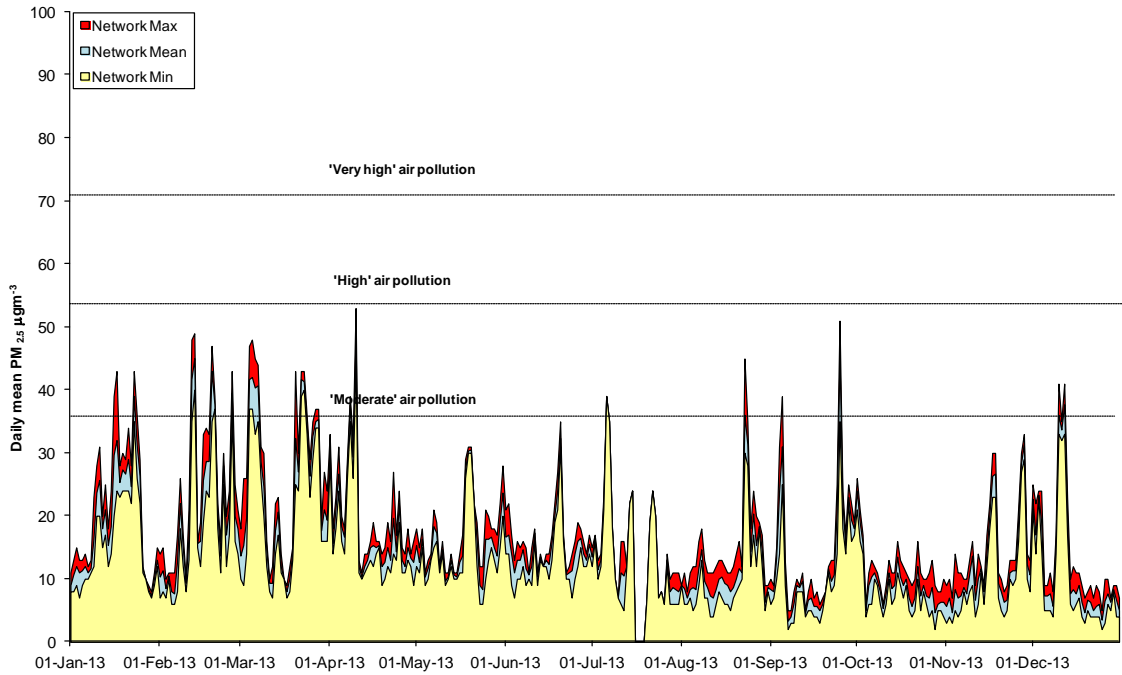
The daily mean PM<sub>10</sub> levels for 2013 are illustrated in Figure 1.

**Figure 1 Daily mean PM<sub>10</sub> levels across the network during 2013**



The daily mean PM<sub>2.5</sub> levels for 2013 are illustrated in Figure 2.

Figure 2 Daily mean PM<sub>2.5</sub> levels across the network during 2013



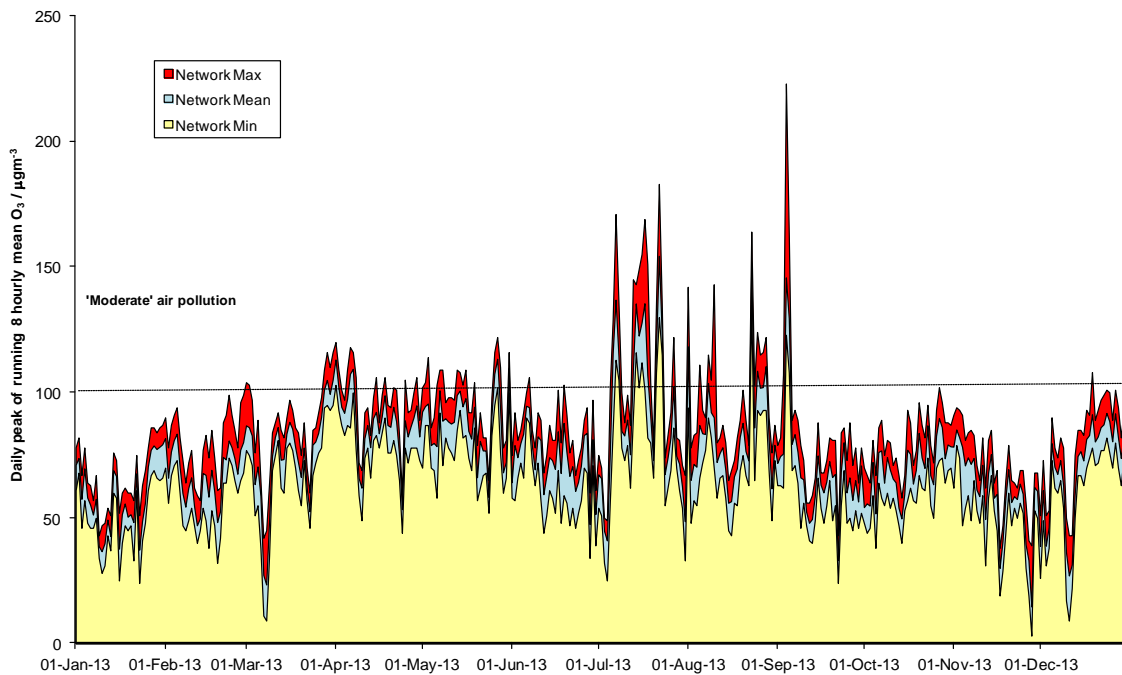
### Summer Photochemical Episodes

Summer photochemical episodes occur annually in Sussex. Their development is due to a complex set of reactions involving NO<sub>x</sub> and hydrocarbons in the presence of sunlight.

Figure 3 illustrates the distribution of photochemical episodes O<sub>3</sub> during 2013.

The first widespread O<sub>3</sub> episode of the year occurred during March and the last in September.

Figure 3 Daily peak hourly mean ozone levels across the network during 2013



## 2013 in Comparison with the Air Quality Strategy (AQS) Objectives

Tables 1.4a and 1.4b compare results of monitoring in 2013 to the Government's AQS objectives. There is often more than one objective per pollutant reflecting the differing health effects of short and long term exposure. Each objective had an achievement date between 2004 and 2010 depending on the pollutant. The PM<sub>2.5</sub> objective has a provisional achievement date of 2020. Where a site did not achieve a minimum of 75% data capture for the year, the measurements cannot be accurately compared to the AQS objectives and are entered as 'not applicable'.

No network sites exceeded either PM<sub>10</sub> or PM<sub>2.5</sub> objectives. The distribution of exceedences of the 50 µg m<sup>-3</sup> daily mean value of PM<sub>10</sub> (equating to the EU Health Threshold) across the network during 2013 is shown in Figure 1.

The O<sub>3</sub> AQS objective was exceeded at all sites that achieved the necessary data capture.

The daily peak hourly mean O<sub>3</sub> levels across the network during 2013 are shown in Figure 3.

Only one site did not meet the NO<sub>2</sub> objective of 40 µg m<sup>-3</sup> measured as an annual mean. Worthing 2, Grove Lodge only just exceeded this at 41 µg m<sup>-3</sup>.

All SO<sub>2</sub> objectives were met.

CO is no longer monitored at any of the Sussex stations.

| Table 1.4a Comparison with Air Quality Strategy Objectives – Achieved ('yes') or Exceeded ('no') |                  |          |                   |                 |         |         |
|--------------------------------------------------------------------------------------------------|------------------|----------|-------------------|-----------------|---------|---------|
|                                                                                                  | PM <sub>10</sub> |          | PM <sub>2.5</sub> | SO <sub>2</sub> |         |         |
|                                                                                                  | A                | B        | C                 | D               | E       | F       |
| Adur - Shoreham-by-Sea                                                                           | n.a              | n.a      | -                 | -               | -       | -       |
| Chichester - Lodsworth                                                                           | -                | -        | -                 | -               | -       | -       |
| Wealden - Isfield                                                                                | -                | -        | -                 | -               | -       | -       |
| Brighton and Hove - Preston Park                                                                 | -                | -        | -                 | -               | -       | -       |
| Brighton and Hove -Stanmer Park                                                                  | -                | -        | -                 | -               | -       | -       |
| Crawley - Gatwick Airport                                                                        | -                | -        | -                 | -               | -       | -       |
| Chichester - A27 Chichester Bypass                                                               | Yes (1)          | Yes (20) | -                 | -               | -       | -       |
| Chichester - Orchard Street                                                                      | -                | -        | -                 | -               | -       | -       |
| Eastbourne - Devonshire Park                                                                     | n.a              | n.a      | -                 | -               | -       | -       |
| Eastbourne - Holly Place                                                                         | n.a              | n.a      | Yes (15)          | -               | -       | -       |
| Horsham - Park Way                                                                               | Yes (2)          | Yes (23) | -                 | -               | -       | -       |
| Horsham - Storrington                                                                            | Yes (6)          | Yes (24) | Yes (17)          | -               | -       | -       |
| Horsham - Cowfold                                                                                | -                | -        | -                 | -               | -       | -       |
| Hastings - Bulverhythe                                                                           | n.a              | n.a      | -                 | -               | -       | -       |
| Wealden - Lullington Heath                                                                       | -                | -        | -                 | Yes (0)         | Yes (0) | Yes (0) |
| Lewes - Newhaven Denton School <sup>2</sup>                                                      | n.a              | n.a      | n.a               | -               | -       | -       |
| Lewes - West Street                                                                              | Yes (1)          | Yes (21) | -                 | -               | -       | -       |
| Lewes - Denton Community Centre                                                                  | n.a              | n.a      | n.a               | -               | -       | -       |
| Rother - Rye Harbour                                                                             | -                | -        | -                 | -               | -       | -       |
| Rother - De La Warr Road                                                                         | Yes (7)          | Yes (25) | -                 | -               | -       | -       |
| Sussex Mobule Brightwell                                                                         | n.a              | n.a      | -                 | -               | -       | -       |
| Worthing 2 - Grove Lodge                                                                         | -                | -        | -                 | -               | -       | -       |
| Greenwich 4                                                                                      | n.a              | n.a      | n.a               | Yes (0)         | Yes (0) | Yes (0) |
| Kens and Chelsea 1                                                                               | Yes (9)          | Yes (23) | Yes (15)          | Yes (0)         | Yes (0) | Yes (0) |
| Marylebone Road                                                                                  | Yes (29)         | Yes (38) | Yes (20)          | Yes (0)         | Yes (0) | Yes (0) |

A: 50 µg m<sup>-3</sup> not to be exceeded more than 35 times a year measured as 24 hr mean. Data is reference equivalent

B: 40 µg m<sup>-3</sup> measured as annual mean. All data is reference equivalent

C: 25 µg m<sup>-3</sup> measured as annual mean. All data is reference equivalent

D: 350 µg m<sup>-3</sup> not to be exceeded more than 24 times a year measured as 1 hour mean.

E: 125 µg m<sup>-3</sup> not to be exceeded more than 3 times a year measured as 24 hour mean.

F: 266 µg m<sup>-3</sup> not to be exceeded more than 35 times a year measured as 15 min.



| <b>Table 1.4b Comparison with Air Quality Strategy Objectives – Achieved ('yes') or Exceeded ('no')</b> |                      |                       |          |
|---------------------------------------------------------------------------------------------------------|----------------------|-----------------------|----------|
|                                                                                                         | <b>O<sub>3</sub></b> | <b>NO<sub>2</sub></b> |          |
|                                                                                                         | <b>A</b>             | <b>B</b>              | <b>C</b> |
| Adur - Shoreham-by-Sea                                                                                  | -                    | n.a                   | n.a      |
| Chichester - Lodsworth                                                                                  | No (24)              | -                     | -        |
| Wealden - Isfield                                                                                       | No (30)              | -                     | -        |
| Brighton and Hove - Preston Park                                                                        | No (27)              | Yes (0)               | Yes (17) |
| Brighton and Hove -Stanmer Park                                                                         | No (19)              | -                     | -        |
| Crawley - Gatwick Airport                                                                               | -                    | Yes (7)               | Yes (31) |
| Chichester - A27 Chichester Bypass                                                                      | -                    | Yes (0)               | Yes(32)  |
| Chichester - Orchard Street                                                                             | -                    | Yes (0)               | Yes (27) |
| Eastbourne - Devonshire Park                                                                            | No (18)              | Yes (0)               | Yes (17) |
| Eastbourne - Holly Place                                                                                | -                    | Yes (0)               | Yes (13) |
| Horsham - Park Way                                                                                      | -                    | Yes (0)               | Yes (30) |
| Horsham - Storrington                                                                                   | -                    | Yes (0)               | Yes (27) |
| Horsham - Cowfold                                                                                       | -                    | Yes (0)               | Yes (25) |
| Hastings - Bulverhythe                                                                                  | -                    | n.a                   | n.a      |
| Wealden - Lullington Heath                                                                              | No (11)              | Yes (0)               | Yes (9)  |
| Lewes - Newhaven Denton School                                                                          | n.a                  | n.a                   | n.a      |
| Lewes - West Street                                                                                     | -                    | Yes (0)               | Yes (19) |
| Lewes - Denton Community Centre                                                                         | n.a                  | n.a                   | n.a      |
| Rother - Rye Harbour                                                                                    | n.a                  | -                     | -        |
| Rother - De La Warr Road                                                                                | -                    | Yes (0)               | Yes (26) |
| Sussex Mobile Brightwell                                                                                | -                    | n.a                   | n.a      |
| Worthing 2 - Grove Lodge                                                                                | -                    | Yes (0)               | No (41)  |
| Greenwich 4                                                                                             | Yes (6)              | Yes (0)               | Yes (21) |
| Kens and Chelsea 1                                                                                      | Yes (10)             | Yes (0)               | Yes (37) |
| Marylebone Road                                                                                         | Yes (0)              | No (59)               | No (85)  |

A: 100 µg m<sup>-3</sup> not to be exceeded more than 10 times a year measured as the daily max of running 8 hour mean.

B: 200 µg m<sup>-3</sup> not to be exceeded more than 18 times a year measured as 1 hour mean.

C: 40 µg m<sup>-3</sup> measured as an annual mean.

## Indicators of Sustainable Development

The UK Government is required by European Union law to publish a number of indicators that can be used to assess whether its aims of sustainable development are being met. The UK Sustainable Development Strategy was released in 1999 and one of the Headline Indicators was air quality. The strategy was updated in 2005 and included two new air quality indicators designed to better reflect the effects on health of long term exposure to lower levels of pollution.

The three indicators are:

- i. Annual average urban PM<sub>10</sub> concentrations (roadside and background),
- ii. Annual average O<sub>3</sub> concentrations (rural and urban background) measured as the daily maximum 8-hour running mean,
- iii. Total number of days in which one or more of the specified pollutants were recorded as 'moderate' or worse air pollution (the old headline indicator) in urban and rural locations.

The third indicator is the most complex and has a number of site requirements to ensure that monitoring data are representative:

- Rural sites should be included if they at least monitor O<sub>3</sub> (ideally PM<sub>10</sub> should also be monitored but this criterion would exclude almost all sites from the Indicator),
- Urban Background sites should be included if they monitor at least PM<sub>10</sub>, O<sub>3</sub> and SO<sub>2</sub>,
- Roadside sites to be included if they monitor at least PM<sub>10</sub>.

Due to the small number of exceedences, it was decided that the absence of monitoring for NO<sub>2</sub> and CO would not result in a significant under-reporting of episodes.

Analysers must record an annual data capture rate of at least 75% to be included in any of the indicator calculations.

Sites demonstrated to be far outliers as a result of local factors in a particular year should be excluded from the analysis.

### Air Quality Sustainability Indicator for Sussex

The following sites meet the criteria for inclusion in the Indicator calculation for 2013:

- Rural AQ Indicator: Chichester - Lodsworth, Wealden - Isfield, Wealden - Lullington Heath, Brighton and Hove – Stanmer Park.
- Urban AQ Indicator: (*background*): Brighton and Hove - Preston Park, Eastbourne - Devonshire Park, Eastbourne – Holly Place.

Urban AQ Indicator (*roadside*): Lewes – West Street, Horsham - Park way, Horsham - Storrington, Chichester - A27 Chichester Bypass, Rother – De La Warr road.

Figure 4 plots the first Sustainability Indicator for long-term monitoring sites in Sussex. Figure 5 shows a similar plot for the second indicator. Table 1.5 shows the third indicator.

Figure 4 First Air Quality Indicator for Sussex 2001 to 2013 (annual mean PM<sub>10</sub>)

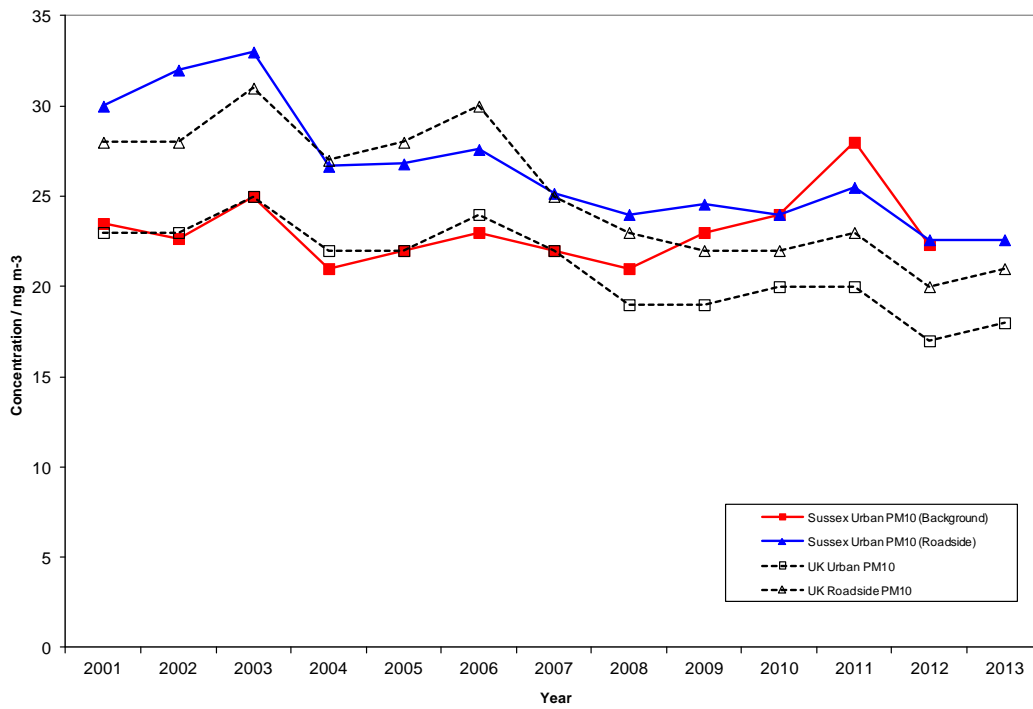
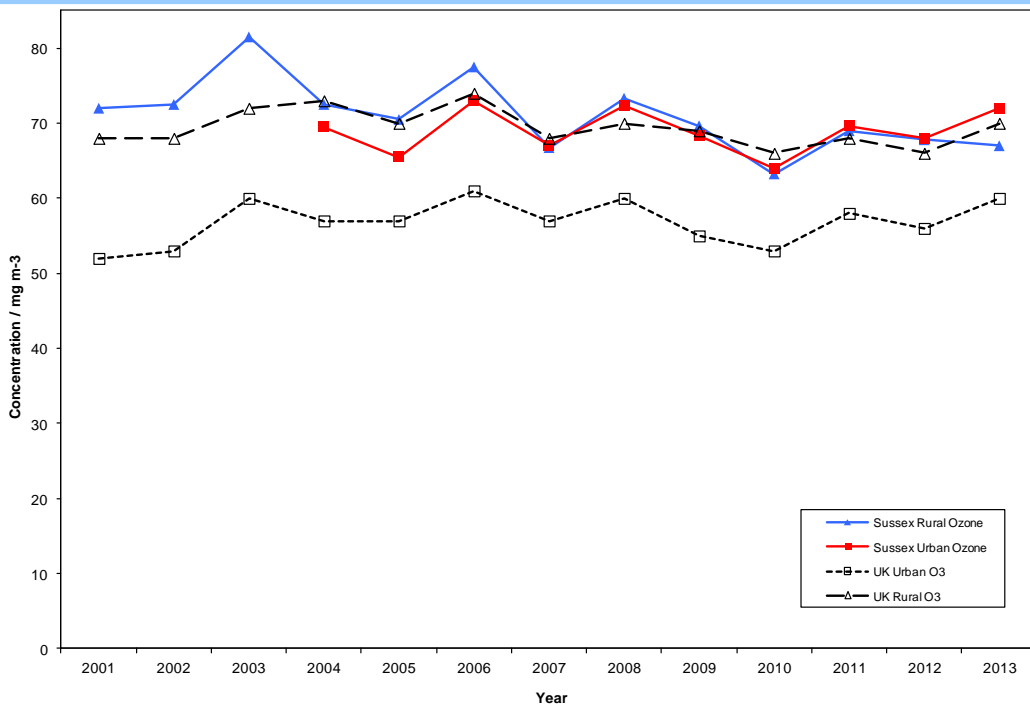


Figure 5 Second Air Quality Indicator for Sussex, 2001 to 2013 (mean daily max running 8hr ozone)



| Table 1.5 Third (original) Air Quality Sustainability Indicator for Sussex |      |      |      |      |      |      |      |      |      |         |         |      |      |
|----------------------------------------------------------------------------|------|------|------|------|------|------|------|------|------|---------|---------|------|------|
| Indicator                                                                  | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010    | 2011    | 2012 | 2013 |
| Chichester Lodsworth                                                       | -    | -    | -    | -    | -    | 71   | 43   | 76   | 39   | 39      | 43      | 13   | 24   |
| Wealden Isfield                                                            | -    | -    | -    | -    | -    | 78   | 24   | -    | -    | 36      | 76      | 16   | 31   |
| Brighton and Hove Stanmer Park                                             | -    | -    | -    | -    | -    | -    | -    | -    | -    | -       | 38      | 19   | 21   |
| Chichester A27 Chichester Bypass                                           | -    | 1    | 14   | 1    | -    | 11   | 9    | 5    | 3    | 1       | 5       | 5    | 1    |
| Horsham Park Way                                                           | -    | -    | -    | -    | 10   | 4    | 12   | 6    | 3    | 0       | 10      | 3    | 2    |
| Horsham Storrington                                                        | -    | -    | -    | -    | -    | -    | -    | -    | -    | 0       | 10      | 7    | 16   |
| Hastings Bulverhythe                                                       | -    | 19   | 41   | 3    | 11   | 12   | 8    | 4    | 6    | 0       | 0       | 1    | -    |
| Hastings Fresh Fields                                                      | -    | -    | -    | -    | -    | -    | -    | -    | 17   | 7       | -       | -    | -    |
| Wealden Lullington Heath                                                   | 50   | 40   | 94   | 56   | 64   | 64   | 27   | 51   | 36   | 10      | 25      | 12   | 12   |
| Telscombe Cliffs Roadside                                                  | 6    | 10   | 8    | -    | 12   | 23   | 28   | 56   | 12   | -       | -       | -    | -    |
| Lewes Commercial Square                                                    | -    | -    | -    | -    | 20   | 13   | 15   | 5    | 4    | 1       | 0       | -    | -    |
| Lewes West Street                                                          | -    | -    | -    | -    | -    | -    | -    | -    | -    | -       | -       | 2    | 0    |
| Rother Rye Harbour                                                         | -    | 47   | 107  | 37   | 26   | 59   | 24   | 44   | 39   | 10      | 37      | 24   | -    |
| Rother De La Warr Road                                                     | -    | -    | -    | -    | -    | -    | 7    | -    | 2    | 0       | 8       | -    | 1    |
| Sussex-Rural                                                               | 50   | 44   | 101  | 47   | 45   | 68   | 30   | 57   | 38   | 24      | 44      | 17   | 22   |
| Sussex-Urban-(Background)                                                  | -    | -    | -    | -    | -    | -    | -    | -    | -    | -       | -       | -    | -    |
| Sussex-Urban-(Roadside)                                                    | 6    | 10   | 21   | 2    | 13   | 13   | 13   | 15   | 7    | 1       | 6       | 4    | 4    |
| UK-Rural-Indicator                                                         | 34   | 32   | 64   | 45   | 40   | 55   | 30   | 45   | 32   | 22 (10) | 30 (17) | 12   | 16   |
| UK-Urban-Indicator                                                         | 23   | 19   | 48   | 22   | 21   | 38   | 23   | 26   | 10   | 8 (15)  | 15 (24) | 17   | 14   |

The 2013 figures in Table 1.5 are based on the revised index. The 2010 and 2011 figures in brackets are also based on the new threshold levels. As can be seen the changes to the thresholds has had a significant effect on the third indicator.

Unfortunately none of the background sites monitoring PM<sub>10</sub> met the 75% data capture requirement to be included in the calculation for the first indicator. The air quality sustainability indicator for roadside PM<sub>10</sub> has remained stable since 2012 in Sussex. Both UK roadside and UK background PM<sub>10</sub> increased slightly compared to 2012. Roadside PM<sub>10</sub> has shown an overall improvement since 2001.

The air quality sustainability indicators for the UK urban and rural O<sub>3</sub> showed a slight increase in 2013 as did the Sussex urban O<sub>3</sub>. The rural O<sub>3</sub>, in contrast, slightly decreased during 2013.

## CHAPTER 2: Trends in Pollution Levels, 2001 – 2013

This chapter uses running annual mean calculations to illustrate trends in pollution levels as recorded by each continuous monitor in the network (see the 'How the charts work' section below for an explanation of running annual means).

Long-term pollution trends may be caused by changes in local emissions, i.e. fewer or cleaner vehicles or industrial processes, or changes in how these emissions are dispersed, i.e. weather patterns. For example, an unusually wet summer can lead to decreased levels of O<sub>3</sub>, a cold settled winter can lead to increased levels of NO<sub>2</sub>. These effects can obscure actual changes in emissions due to traffic management schemes or increased use of a particular road.

The longer a dataset is, i.e., the longer a site has been monitoring for, the more effective the trend analysis is. The effects of unusual weather conditions are smoothed out and sustained patterns due to changes in local emissions become clearer. Many years of monitoring data are required before firm conclusions can be made as to whether pollution levels are increasing or decreasing. For this reason sites that have been in operation for less than three years are not included in this chapter, but will become integrated into the analysis in the future.

### How the Charts Work

The charts appearing in this chapter show running annual mean values (based on monthly mean concentrations) from a specified start date to January 2014. Running annual means are used so that gradual changes can be identified throughout the year, which are not apparent from a single annual figure.

For example, in Figure 2.1 the line for Hastings roadside is calculated in the following way;

- The first data we have for this site are from June 2001, so the first annual mean concentration can be calculated one year later on the 1<sup>st</sup> June 2002.
- The first mean is calculated from 1<sup>st</sup> June 2001 to 1<sup>st</sup> June 2002. The second is calculated from 1<sup>st</sup> July 2001 to 1<sup>st</sup> July 2002 and so on. This is what is meant by a running mean.

A chart showing percentage change is often more informative than simply showing changes in concentrations. In these charts, all sites start at zero, then concentrations are shown as the percentage change since the start date. As a common start date is required for this type of chart, they may show a shorter time period than the concentration charts.

Data from an inner London background site have been included in some charts to provide comparison with the Sussex network data.

### PM<sub>10</sub>

Running annual mean PM<sub>10</sub> trends at all continuous monitoring sites since 2001 are shown in Figure 2.1.

Sites are shown one year after they joined the network, i.e., when the first annual mean calculation is possible. Sites that have not run for a complete year prior to January 2014 do not appear on the graph.

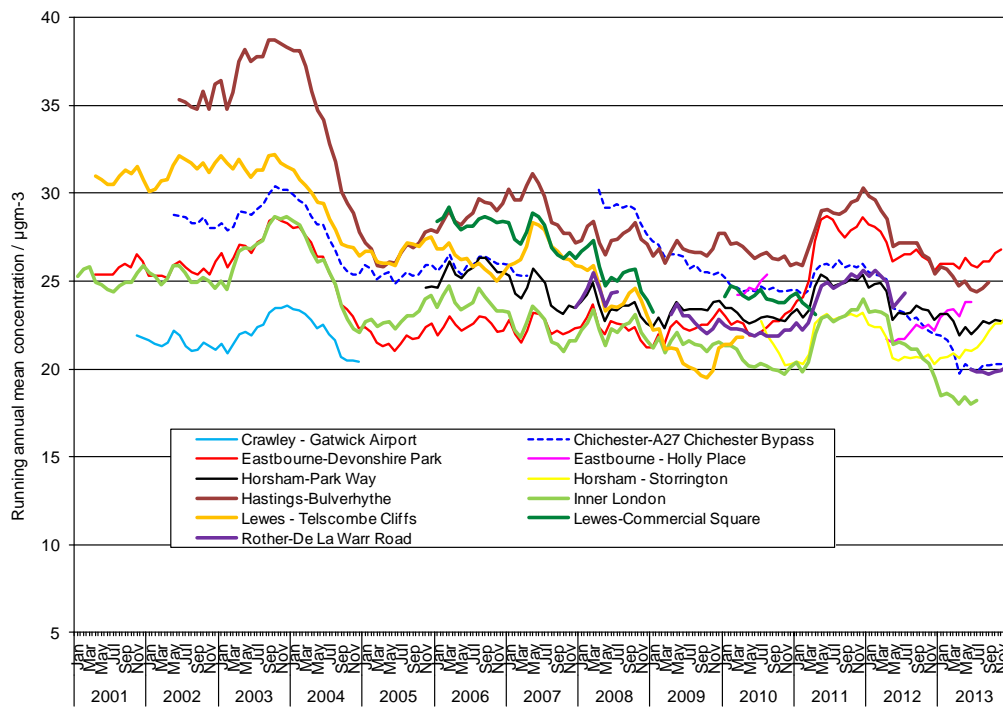
The running annual mean concentration during 2013 remained stable at most sites, apart from Hastings Bulverhythe which showed a decrease.

The overall trend is highlighted further when the percentage change rather than actual change in concentration is traced, as shown in Figure 2.2.

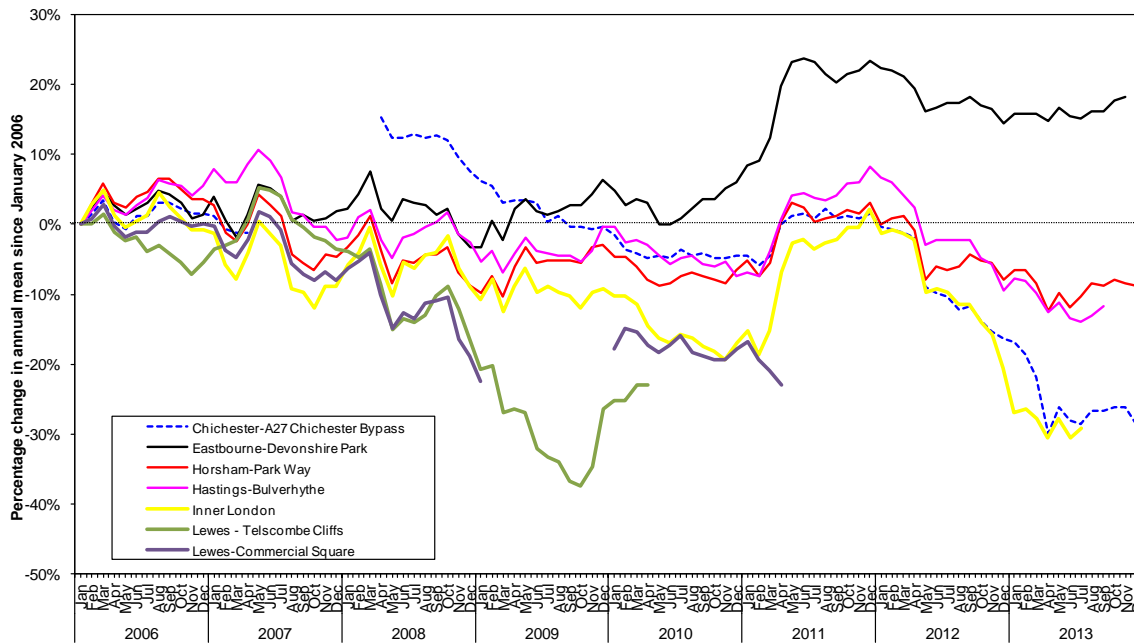
There are a number of sites that are not included in the percentage change plot as it is necessary for all included sites to have a common start date, in this case January 2006, the analysers that have been introduced into the network after this start date are not included.

Roadside sites are generally expected to record higher levels than those monitoring at background locations due to their proximity to the local emission source that is mainly traffic related. However, Eastbourne Devonshire Park, is now measuring levels that are higher than those recorded at the Hastings Bulverhythe site, which was previously the network highest.

**Figure 2.1 Trends in running annual mean PM<sub>10</sub> concentrations, 2001 to 2013**



N.B. The reduction in PM10 concentrations in 2004 can be attributed to TEOM data being corrected using VCM since 1<sup>st</sup> January 2004

Figure 2.2 Percentage change in running annual mean PM<sub>10</sub> since January 2006

## SO<sub>2</sub>

There has been a national downward trend in SO<sub>2</sub> concentrations for several years.

Currently only the Lullington Heath site monitors for SO<sub>2</sub>.

## NO<sub>2</sub>

NO<sub>2</sub> is the most commonly monitored pollutant in the network. Charts of running annual mean concentrations are shown in Figure 2.3. Percentage change over a shorter period at longer-running sites is shown in Figure 2.4. Trends from the inner London background site are included in each chart for comparison.

The Air Quality Standard for annual mean NO<sub>2</sub> is 40 µg m<sup>-3</sup> (21 ppb).

Most sites remained relatively stable during 2013 apart from Rother De La Warr Road which showed a slight decrease over the year.

The levels recorded at the roadside sites are generally higher than those seen at background sites due to their proximity to the traffic which is the primary source of nitrogen dioxide.

Annual mean NO<sub>x</sub> concentrations shown as percentage change since January 2006 show the concentrations were relatively stable during 2013 (Figure 2.5), although Chichester A27 Bypass showed an initial decrease.

Figure 2.3 Running annual mean NO<sub>2</sub> concentrations, 1999 to 2013

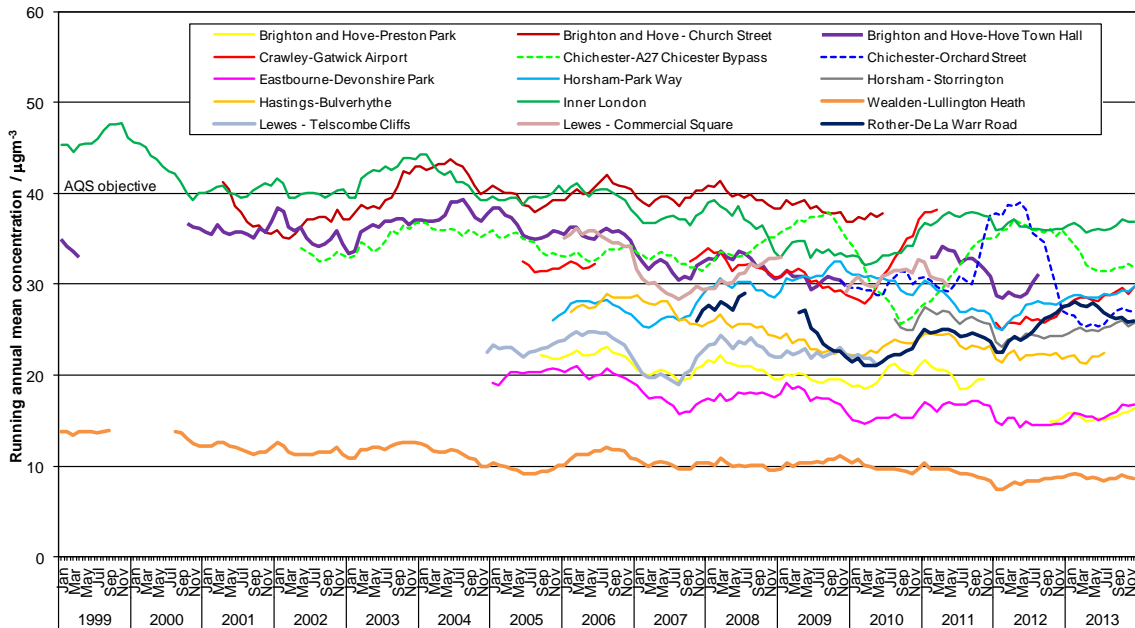


Figure 2.4 Percentage change in running annual mean NO<sub>2</sub> concentrations since January 2006

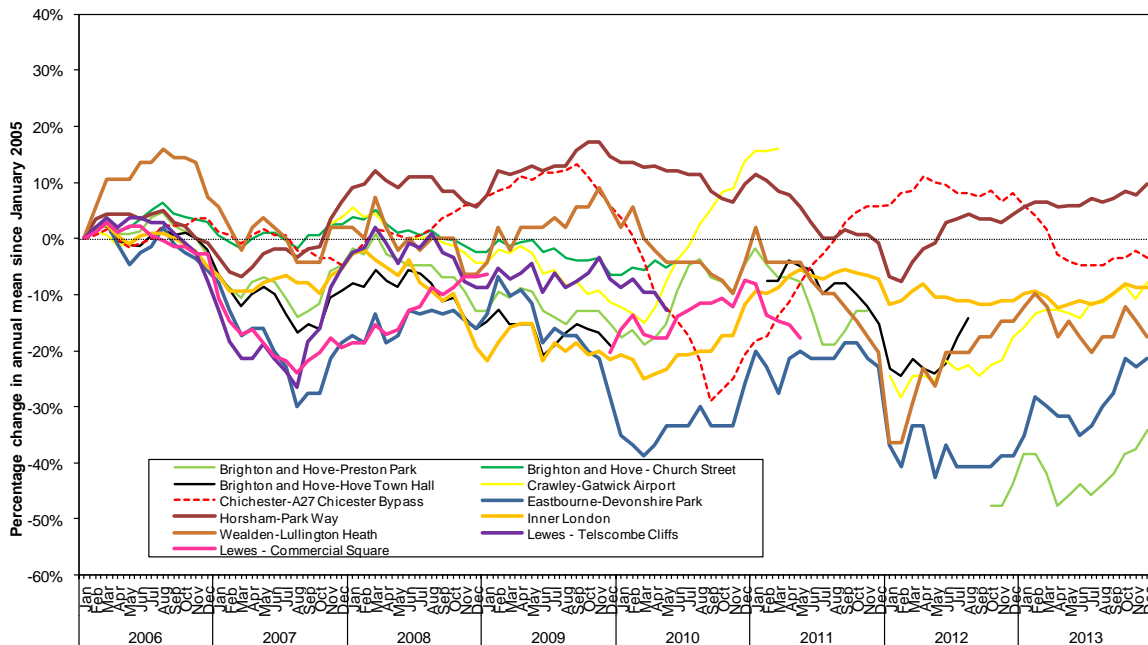
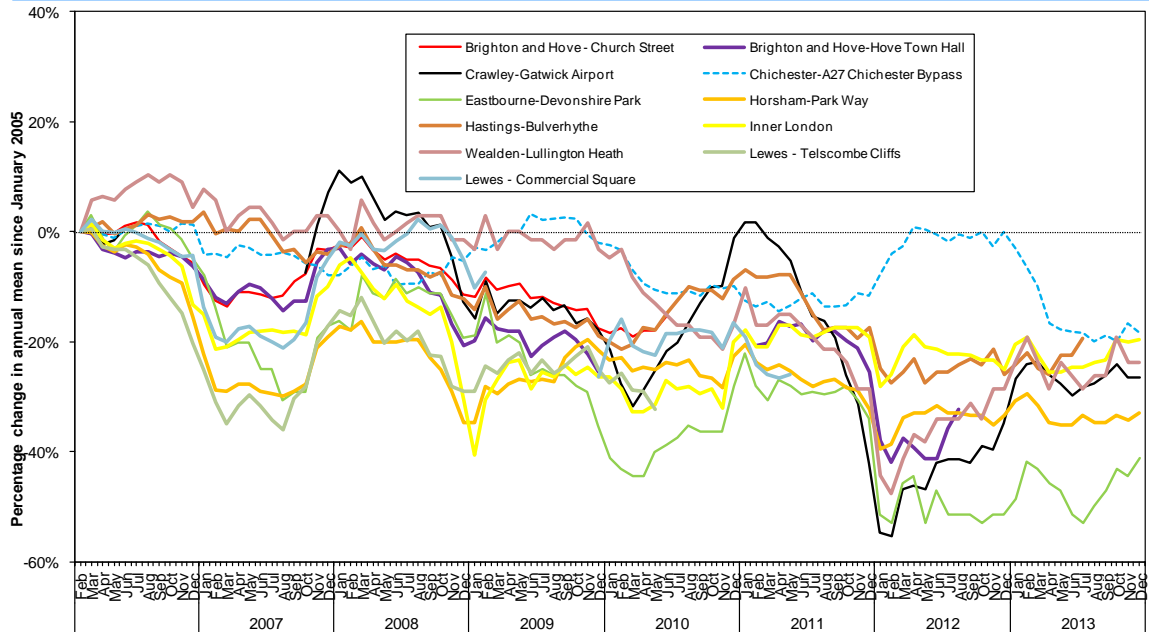




Figure 2.5 Percentage change in running annual mean NOx concentrations since January 2006



### O<sub>3</sub>

O<sub>3</sub> concentrations across most network sites have generally remained stable or shown a slight long term decrease since 1999. The levels increased at Chichester Lodsworth, Brighton and Hove Preston Park and Eastbourne Devonshire Park during 2013. Levels decreased during 2013 at Brighton and Hove Stanmer Park, Wealden Isfield and at Wealden Lullington Heath.

O<sub>3</sub> levels are highly dependent on the weather and the warm sunny summer periods can cause a sharp increase in mean levels. It is also known that a proportion of the O<sub>3</sub> experienced in Sussex is transported from continental Europe under certain meteorological conditions.

The slight changes in O<sub>3</sub> levels throughout the year are also seen in the percentage change plot (figure 2.7).

Figure 2.6 Running annual mean O<sub>3</sub> concentrations, 1999 to 2013

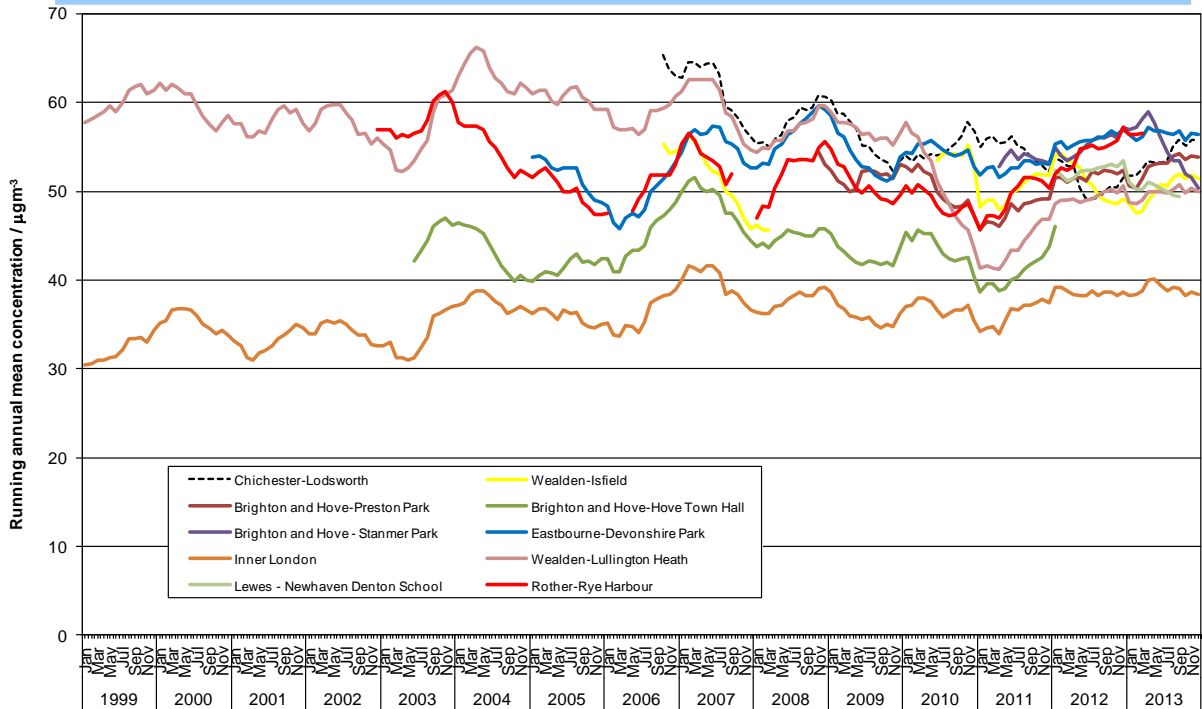
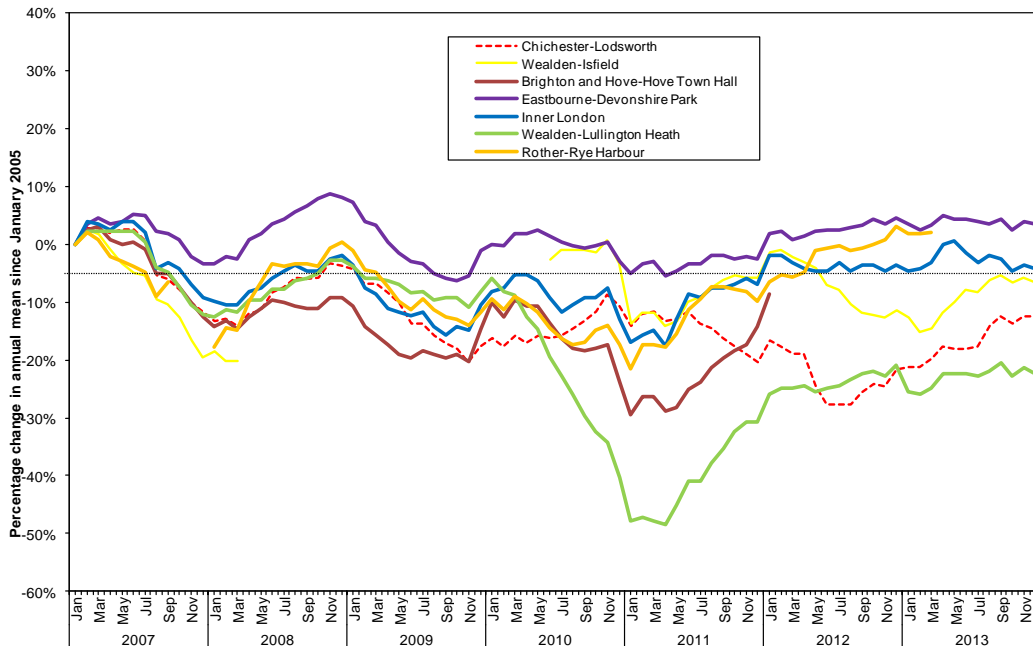


Figure 2.7 Percentage change in running annual mean O<sub>3</sub> concentrations since January 2005



## CHAPTER 3: Review and Assessment Update

This chapter details each Local Authority's progress in the Review and Assessment process. For more information concerning the responsibilities of Local Authorities with regard to local air quality management contact the council direct or visit Defra's web site at

<http://aqma.defra.gov.uk>

A number of acronyms are often used in relation to the Review and Assessment process:

|       |                                                       |
|-------|-------------------------------------------------------|
| Defra | Department of the Environment, Food and Rural Affairs |
| APR   | Annual Progress Report                                |
| AQAP  | Air Quality Action Plan                               |
| AQMA  | Air Quality Management Area                           |
| HA    | Highways Agency                                       |
| LTP   | Local Transport Plan                                  |
| USA   | Updating and Screening Assessment                     |
| DA    | Detailed Assessment                                   |

### Air Quality in Adur and Worthing

The Worthing Borough Council Air Quality Management Area No.1 was declared in July 2010 for a breach of the Nitrogen Dioxide (NO<sub>2</sub>) annual mean objective as specified in the Air Quality Regulations 2000. The Order covers the A27 near the Grove Lodge roundabout and incorporates Upper Brighton Road from First Avenue to the Grove Lodge Roundabout, 22-27 Lamorna Grove and Warren Road from the Grove Lodge Roundabout to the northern slip road of Warren Court.

Monitoring in the vicinity of the Grove Lodge roundabout on the A27 Upper Brighton Road suggested that the annual average air quality objective for nitrogen dioxide (NO<sub>2</sub>) was being breached. Detailed air quality modeling was carried out by the Sussex Air Quality Partnership on behalf of the Council. This and the subsequent Detailed Assessment showed that the NO<sub>2</sub> Annual Mean Objective was being exceeded and was likely to continue to be exceeded, at residential receptors and that an AQMA should therefore be declared.

The Council's 'Updating and Screening Assessment 2009' showed that the objective for annual average NO<sub>2</sub> continued to be exceeded in the vicinity of the Grove Lodge roundabout during 2008 and therefore an AQMA must be declared.

Where an AQMA has been declared, the local authority must produce an Action Plan which sets out the options for working towards improving the air quality. We are working on our Plan which will set out how we intend to work towards reducing levels of nitrogen dioxide in the AQMA. As the elevated levels are primarily caused by traffic, we will be working with the Highways Agency (responsible for the A27) and West Sussex County Council (the other highway authority) to look at ways of reducing levels of nitrogen dioxide.

Following on from the completion of a Review and Assessment of Air Quality at the end of December 2000, we carried out an Updating and Screening Assessment (USA) of Air Quality in May 2003. The conclusions of this USA meant that a further Detailed Assessment (DA) of Air Quality was carried out on certain parts of the District.

This showed that the Air Quality Objective for nitrogen dioxide was likely to be breached in two areas of Adur - High Street, Shoreham-by-Sea and Old Shoreham Road, Southwick, in the vicinity of Kingston Lane. This resulted in two Air Quality Management Areas being declared in December 2005.

See:

<http://www.adur-worthing.gov.uk/environmental-health/pollution/air-quality-and-pollution/local-air-quality-management/#local-aqma>

## **Air Quality in Arun District**

Arun published Stage 1 of its review and assessment in December 1998, which revealed NO<sub>2</sub>, PM<sub>10</sub> and SO<sub>2</sub> all to be significant and in need of further assessment. The main pollutant sources were found to include a number of road sections along the A259 and A27, and a roadstone coating process authorised under the Local Authority Air Pollution Control (LAPC) regime.

The combined Stage 2 and 3 assessment involved the use of models to predict future concentrations of the three pollutants identified in the stage one assessment. The results showed that for NO<sub>2</sub>, PM<sub>10</sub> and SO<sub>2</sub>, concentrations were likely to meet the objective levels within the specified target dates. Therefore it was not necessary for Arun District Council to declare any AQMAs. This decision was upheld by Defra following the submission of a report detailing the results of the assessment.

In 2009, and previously in 2003 and 2006, Arun District Council undertook a USA of local air quality to account for changes to air quality objectives, monitoring data and pollutant sources etc., since the Review and Assessment. The USA did not identify any changes to local air quality which would lead to a risk of any of the air quality objectives being exceeded, and it was therefore not necessary to proceed with DAs. In other years Progress Reports detail any monitoring data collected in the previous year, and summarise any new or potential local developments that are likely to have an impact on air quality. They are also useful for identifying potential areas of poor air quality at an early stage.

It is concluded that air quality objectives were not exceeded in 2012, nor is there a risk of exceedences in 2013, Arun District Council will not therefore be required to undertake any Detailed Assessments of air quality in 2014. Arun District Council will carry out a further LAQM Progress Report in 2014.

You can view or download the reports from:

<http://www.arun.gov.uk/main.cfm?type=AIRQUALITY#LAQM>

## **Air Quality in Brighton and Hove City**

The council declared a new [Air Quality Management Area \(AQMA\)](#) on 30 August 2013. The new AQMA is a quarter the size of the previous one. The council is developing a renewed 2014 air quality action plan targeting this area and welcomes views and

constructive suggestions. You can also download the [legal AQMA document for further information \(PDF 3.7MB\)](#).

Continuous analysis of outdoor air indicates a long term improvement in nitrogen dioxide outside of the AQMA. Improvements are recorded in lower density areas outer roadside locations and suburban neighbourhoods where prevailing air quality is good. In combination with source reductions in lead, benzene and carbon monoxide it is likely that where many people live the air inhaled is more healthy than 10 or 20 years ago.

However monitoring at city centre roadside sites strongly suggests that [nitrogen dioxide concentrations](#) have not improved in the past ten years. At a number of roadside locations NO<sub>2</sub> concentrations are essentially the same as those recorded ten or twelve years ago. Provisional indications suggest this remains the case during 2014. Concentrations continue to be recorded above the NO<sub>2</sub> legal limit within nine metres (30 feet) of confined roads in parts of Brighton, Portslade and Rottingdean.

The existing strategy is linked with the Local Transport Plan and has joint interest with Sussex to initiate a [low emission strategy](#) (LEZ). The 2015 bus LEZ will cover North Street, Churchill Square and Western Road. Brighton & Hove has won funding from department of transport and is investing over one million pounds in the retrofit of older buses in order to target emissions of oxides of nitrogen.

It is recommended that the air quality action plan will promote alternatives to diesel in the new management area for example methane and [electric vehicle use](#) and influence local planning policies regarding the massing and position and use of buildings. The Environmental Protection Team consults on planning applications and air quality is a material consideration for the planning process.

There has been impressive progress in providing travel choice in the city including a doubling in bus patronage since the early 1990s and encouragement of cycling and walking; however a number of other measures require implementation if the EU and English limits for nitrogen dioxide are to be met. The use of electrical vehicles in Brighton & Hove has increased in recent years, but this category remains a tiny contribution to local transport. The local bus company has secured funds for electrical hybrid buses now in daily operation. It is recommended that the city join with partners in West Sussex in order to utilise anaerobic digestion of organic waste to produce biogas (methane) fuel for local transport use.

For further information on air quality in Brighton and Hove and the review and assessment reports go to:

<http://www.brighton-hove.gov.uk/content/environment/air-quality-and-pollution/air-quality-management-city>

## **Air Quality in Chichester District**

The 2013 data for NO<sub>2</sub> showed a lower concentration at the Stockbridge monitoring station and stayed the same at the Orchard Street monitoring station when compared to 2012. At both monitoring stations, the annual average concentrations were compliant with the Objective of 40µg/m<sup>3</sup>. There were no exceedences of the hourly mean at either site and the data capture rates were 93% and 76% respectively. (At Orchard Street a prolonged fault reduced the data capture rate during August 2013).

The diffusion tube data exceeded the annual mean concentration Objective of 40 µg/m<sup>3</sup> at four locations, two of which were in Air Quality Monitoring Areas (AQMA) and two were close to an AQMA. At one other site, the annual concentration exceeded 36µg/m<sup>3</sup>. Monitoring will

continue at all locations in order to establish the trends in the data. The data capture rate was 100%.

The PM10 results for Stockbridge monitoring station showed a decrease from 2012 and are compliant with the relevant National Air Quality Standards and Objectives.

At the rural site of Lodsworth, monitoring of ozone (O3) has continued and the results indicate that the National Air Quality Standard is still being breached at this location. There were 26 days when 'moderate pollution' occurred and no 'high pollution' days. Monitoring will continue at this location in order to establish future trends in this pollutant. The data from our monitoring station is used by ERG in the air-Alert service which has over 500 users.

Implementation of our Air Quality Action Plan continues and a number of projects have progressed in the last year including:

- Our cycling programme has continued and guided rides, bike maintenance courses and cycle confidence training were offered between April – October and will be repeated during 2014,
- Joint working with WSCC has been enhanced by the award of LSTF funding (for 2013-15) which has funded a Bike It officer working in 6 schools in Chichester and a further bid has been made by WSCC for additional funds for the period 2015-16.
- The Chichester Car Club has grown steadily throughout the year and is to be expanded by the addition of two more cars during 2014, funded by LSTF monies.
- We are working with Sussex-air to deliver a £2.4M project to deliver a network of rapid charging points for electric vehicles across Sussex including within Chichester District.

CDC's Local Plan is to be submitted during 2014 and the air quality team wrote a 'Green Infrastructure' appendix to aid in the delivery of high quality infrastructure in support of modal shift (the Local Plan has a target of 7% modal shift across the Plan period).

We have also been involved in the development of conceptual design briefs for the strategic sites to inform the master planning process with a bold vision for smarter choices fostered through the delivery of strategic development locations. The air quality team continues to be consulted on planning applications submitted to CDC and WSCC that have the potential to be significant in air quality terms.

Information is available from:

<http://www.chichester.gov.uk/article/25142/Air-quality-review-and-assessment>

## Air Quality in Crawley Borough

- The 2012 monitoring data for NO<sub>2</sub> identified exceedences of the national air quality objective for annual mean NO<sub>2</sub> at one location with relevant exposure, Tinsley Close, a residential receptor along the A2011. The monitoring data also indicated that there continues to be an upward trend in NO<sub>2</sub> concentrations at this site.
- A Detailed Assessment for the potential AQMA along the A2011, has been submitted to Defra, and we are awaiting a decision on whether an AQMA is required in this location. In the meantime the council has identified the need for additional monitoring sites in the vicinity of the proposed AQMA where roadside levels of NO<sub>2</sub> were found to be very high. Two new sites will be set up at residential locations in this area at: Hazelwick Mill Lane and Hazelwick Avenue.
- The 2012 monitoring results for NO<sub>2</sub> confirmed that there were no exceedences of the AQ Objective at any other monitoring locations in Crawley with relevant public exposure.
- All roadside monitoring sites in Crawley showed a reduction in NO<sub>2</sub> concentrations in 2012 compared to the previous year, possibly due to a decrease in traffic flows during the monitoring period. However, the long term trend continues to be upwards\* and it will take a number of years of consistent reductions in NO<sub>2</sub> concentrations before a change in the trend will be detected. (\*with the exception of one site at Peglar Way)
- In contrast, the majority of background sites\* in Crawley showed an increase in NO<sub>2</sub> concentrations in 2012 compared to the previous year. The long term trend at background sites in Crawley continues to be upwards.(\*one exception Furnace Farm Road)
- NO<sub>2</sub> concentrations at monitoring sites around Gatwick increased or remained the same in 2012. Three of the five sites monitored showed increases: Gatwick Airport (1µg/m<sup>3</sup>), Horley Gardens AQMA(2µg/m<sup>3</sup>) and Poles Lane (5µg/m<sup>3</sup>). The other two sites Michael Crescent, Horley and Gatwick East Crawley, remained the same. The long term trend at the Gatwick sites remained downwards with the exception of the Poles Lane site to the south of the airport in Crawley, which showed an upward trend, perhaps reflecting the increasing frequency of North easterly winds in recent years.
- PM<sub>10</sub> is monitored at three sites around Gatwick Airport. In 2012 PM<sub>10</sub> concentrations at all of the sites decreased compared to the previous year. The long term trend for PM<sub>10</sub> in Crawley continues to be downward.
- A review of the major planned developments for the Crawley was carried out and updated. The list identified sites where the development itself may be the source of the air quality impact, for example large developments that result in increased traffic flows to the area, as well as developments being built close to sources of pollution such as busy roads or industrial processes, which could potentially expose the residents to air quality exceedences. This review of planned development identified two developments for future assessment:
- A new residential development close to the aggregate handling facility in the north east sector of the borough may need to be assessed when building is completed to ensure levels of PM<sub>10</sub> are within acceptable levels.
- The possibility of airport expansion at Gatwick in the future identified the need for additional NO<sub>2</sub> monitoring at residential locations closest to the southern border of the safeguarded airport boundary. The new monitoring sites will be at: Langley Walk (Ifield), Cherry Lane (Langley Green), Radford Road (Tinsley Green) and Steers lane (Tinsley Green)

- The next stage of the ongoing assessment of air quality in Crawley will be the 2014 Progress Report.

The reports can be downloaded from:

[http://www.crawley.gov.uk/pw/Environment\\_and\\_Health/Environmental\\_Health/Pollution/index.htm](http://www.crawley.gov.uk/pw/Environment_and_Health/Environmental_Health/Pollution/index.htm)

### **Air Quality in Eastbourne Borough**

The council completed Air Quality USAs for Eastbourne in 2003 and 2004, following an initial Review and Assessment completed in June 2000.

The initial work in 2000 identified that the National AQS objectives were likely to be met in the required timescales and that no further work was required at that stage.

The reports can be downloaded from:

<http://archive.eastbourne.gov.uk/environment/pollution/air/review/>

### **Air Quality in Hastings Borough**

In December 2003 the Council created an AQMA, due to the higher than normal levels of PM<sub>10</sub> along the A259 (Bexhill Road). This was the first AQMA declaration in Sussex. For further information on Hastings Air Quality progress or reports go to:

[http://www.hastings.gov.uk/environment\\_planning/pollution\\_noise\\_drainage/air/air\\_management/](http://www.hastings.gov.uk/environment_planning/pollution_noise_drainage/air/air_management/)

### **Air Quality in Horsham District**

The area covered by Horsham District Council is primarily agricultural in character and does not incorporate a significant heavy industrial base or major transport hub.

Locally the most significant contributions to poor air quality come from road transport and the air pollutants of most concern are particulate matter and nitrogen dioxide.

The monitoring data for 2013 confirms the results of earlier air quality reports that measured levels of nitrogen dioxide (NO<sub>2</sub>) at Cowfold and Storrington are exceeding the Air Quality Objective for this pollutant. Both villages have previously been declared AQMAs.

On the basis of the 2013 monitoring data for Horsham district, the boundaries of the Storrington and Cowfold AQMAs can remain unchanged, and there is no need to proceed to detailed assessment for any other location or pollutant.

No new or significantly altered road traffic, industrial, commercial or domestic sources have been identified that would require Detailed Assessment.

Further information can be found at:

<http://www.horsham.gov.uk/environmentalhealth/environmental-health/air-quality/air-quality-assessment>

### **Air Quality in Lewes District**

Lewes AQMA remains since declared in 2005.

Reports can be downloaded from:

<http://www.lewes.gov.uk/environment/824.asp>



### **Air Quality in Rother District**

An AQMA does not need to be designated at present. However, the Review and Assessment process for air quality will continue.

Further information can be found at:

<http://www.rother.gov.uk/index.cfm?articleid=760>

### **Air Quality in Wealden District**

Significant changes in emission sources have not been identified within the Council's area. A number of proposed new developments which form part of the local development plan may influence local air quality. The potential effect of these developments on local air quality will be considered in the 2015 Updating and Screening Assessment.

The reports can be found at:

[http://www.wealden.gov.uk/Wealden/Environment/Pollution/Air/PHCS\\_Air\\_Pollution.aspx](http://www.wealden.gov.uk/Wealden/Environment/Pollution/Air/PHCS_Air_Pollution.aspx)