Sussex Air Pollution Monitoring Network

Annual Report, 2017

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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 2017 with most analysers that were in operation for the whole year meeting the minimum requirement of 75% data capture. The reasons for lower capture rate at certain sites are described in Chapter 1.

As seen each year there were many days of 'moderate' ozone (O_3) recorded at most network sites monitoring for this pollutant during the summer of 2017. The first widespread incident occurred in May, the last near the end of August. Three sites also recorded 'high' levels on June 21st.

'Moderate' PM_{10} levels, where measured for the entire year, were recorded at all sites during 2017, apart from Lewes – West Street, but this site did record one day of 'high' pollution on 22nd January.

'Moderate', 'High' and 'Very High' $PM_{2.5}$ levels were recorded at both Eastbourne – Holly Place and Horsham – Storrington during January. Eastbourne – Holly Place recorded further moderate levels during February, March and September.

There were no occurrences of 'moderate' sulphur dioxide or 'moderate' nitrogen dioxide recorded during the year.

All network sites, that achieved the necessary data capture, met the PM_{10} and $PM_{2.5}$, NO_2 and SO_2 Air Quality Strategy (AQS) objectives. Carbon monoxide (CO) is no longer measured at any network site.

The O_3 AQS objective was exceeded at all sites that achieved the necessary data capture, apart from at Brighton and Hove – Preston Park and at Wealden – Lullington Heath.

The 2017 running annual mean concentrations for PM_{10} and $PM_{2.5}$ showed increased levels when compared with 2016 data.

NO_2 and O_3 concentrations across most network sites have generally remained stable during 2017 following an initial increase for NO_2 and decrease for O_3.

The air quality sustainability indicator for roadside PM_{10} in Sussex has increased in 2017 when compared to the previous year. Unfortunately, there were no background sites meeting the criteria for the first indicator in Sussex during 2017.

The air quality sustainability indicators for the Sussex urban O_3 showed a decrease in 2017, while the rural O_3 showed a slight increase.

INTRODUCTION

The Sussex Air Pollution Monitoring Network was formed in 1995 and has developed into a comprehensive regional monitoring network with twenty continuous monitoring sites in operation in January 2017.

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, 2017

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 2017 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 2017. 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.

The majority of analysers that were in operation for the whole year met the minimum requirement of 75% data capture. However, the following sites failed to meet the stricter network target of 90% valid data capture:

- Adur – Shoreham-by-Sea, NO_x and PM_{10}; the analysers were switched off during June 2016 as the site was overheating and the air conditioning unit deemed unrepairable. New equipment was installed in May 2018, so there was no data capture for the whole of 2017.

- Eastbourne – Holly Place, PM_{10}; a national monitoring network site ratified by a third party. The PM_{10} monitor was decommissioned in January 2017.

- Horsham – Park Way, PM_{10}; suffered a flow fault for several weeks between April and May. Although a repair callout was active during this period the equipment maintenance unit was unable to obtain the required part immediately.

- Horsham – Storrington, PM_{10} and $PM_{2.5}$; again, a national monitoring network site ratified by a third party. The PM_{10} and $PM_{2.5}$ monitors were decommissioned in January 2017

- Wealden – Lullington Heath, SO_2; a national monitoring network site ratified by a third party. Reasons for the data loss are not known at this time.

- Lewes – West Street, PM_{10}; from August the data logger was flagging intermittent faults accompanied by abnormal readings not correlating with those from similar nearby sites.

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 2017

Capture Rate (%)	Nitrogen Dioxide	Ozone	PM_{10}	PM_{25}	Sulphur Dioxide
Adur - Shoreham-by-Sea	0	-	0	-	-
Chichester - Lodsworth	-	99	-	-	-
Wealden - Isfield	-	99	-	-	-
Brighton and Hove - Preston Park [1]	98[1]	95[1]	-	-	-
Brighton and Hove -Stanmer Park[2]	-	27[2]	-	-	-
Crawley - Gatwick Airport	98	-	-	-	-
Chichester - A27 Chichester Bypass	100	-	100	-	-
Chichester – Orchard Street	100	-	-	-	-
Eastbourne - Devonshire Park[3]	74[3]	74[3]	60[3]	-	-
Eastbourne - Holly Place[1]	99[1]	-	0[1]	96[1]	-
Horsham - Park Way	100	-	87	-	-
Horsham - Storrington [1]	97[1]	-	6[1]	6[1]	-
Horsham - Cowfold	97	-	-	-	-
Hastings - Bulverhythe	97	-	96	-	-
Wealden - Lullington Heath[1]	98[1]	94[1]	-	-	85[1]
Lewes - West Street	92	-	89	-	-
Lewes - Denton Community Centre[3]	47[4]	12[4]	45[4]	-	-
Rother - De La Warr Road	99	-	99	-	-
Rother – Rye Harbour	-	95	-	-	-
Worthing 2 - Grove Lodge	99	-	-	-	-

[1] AURN
[2] Site decommissioned April 2017
[3] New equipment installed April 2017
[4] Site decommissioned June 2017

A statistical overview of 2017

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 to 1.5 show the number of days in which 'moderate', 'high' and 'very high' air pollution were measured at each site.

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	***Enjoy*** your usual outdoor activities.	***Enjoy*** your usual outdoor activities.
Moderate	4-6	Adults and children with lung problems, and adults with heart problems, ***who experience symptoms***, should ***consider*** **reducing** strenuous physical activity, particularly outdoors.	***Enjoy*** your usual outdoor activities.
High	7-9	Adults and children with lung problems, and adults with heart problems, should ***reduce*** 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 ***reduce*** physical exertion.	Anyone experiencing discomfort such as sore eyes, cough or sore throat should ***consider reducing*** activity, particularly outdoors.
Very High	10	Adults and children with lung problems, adults with heart problems, and older people, should ***avoid*** strenuous physical activity. People with asthma may find they need to use their reliever inhaler more often.	***Reduce*** 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.

Table 1.2 Annual means 2017					
Mean concentration	**Nitrogen Dioxide**	**Ozone**	**PM_{10}**	**PM_{25}**	**Sulphur Dioxide**
Adur - Shoreham-by-Sea	(n.a)	-	(n.a)	-	-
Chichester - Lodsworth	-	51	-	-	-
Wealden - Isfield	-	50	-	-	-
Brighton and Hove - Preston Park [1]	17[1]	46[1]	-	-	-
Brighton and Hove -Stanmer Park[2]	-	(49)[2]	-	-	-
Crawley - Gatwick Airport	28	-	-	-	-
Chichester - A27 Chichester Bypass	33	-	19	-	-
Chichester – Orchard Street	23	-	-	-	-
Eastbourne - Devonshire Park[3]	(13)[3]	(58)[3]	(17)[3]	-	-
Eastbourne - Holly Place[1]	13[1]	-	(n.a)[1]	11[1]	-
Horsham - Park Way	26	-	18	-	-
Horsham - Storrington [1]	24[1]	-	(29)[1]	(24)[1]	-
Horsham - Cowfold	30	-	-	-	-
Hastings - Bulverhythe	18	-	22	-	-
Wealden - Lullington Heath[1]	8[1]	55[1]	-	-	1[1]
Lewes - West Street	21	-	20	-	-
Lewes - Denton Community Centre[3]	(13)[4]	(40)[4]	(18)[4]	-	-
Rother - De La Warr Road	22	-	21	-	-
Rother – Rye Harbour	-	54	-	-	-
Worthing 2 - Grove Lodge	37	-	-	-	-
Greenwich 4	19	38	19	13	2
Kens and Chelsea 1	33	40	21	12	2
Marylebone Road	84	16	27	-	7
Values shown in brackets have less than 75% data capture rate					

[1] AURN
[2] Site decommissioned April 2017
[3] New equipment installed April 2017
[4] Site decommissioned June 2017

Table 1.3 Number of days 'moderate' air pollution during 2017 (Air Quality Index 4-6)					
	Nitrogen Dioxide	Ozone	PM_{10}	PM_{25}	Sulphur Dioxide
Adur - Shoreham-by-Sea	(n.a)	-	(n.a)	-	-
Chichester - Lodsworth	-	14	-	-	-
Wealden - Isfield	-	16	-	-	-
Brighton and Hove - Preston Park [1]	0[1]	8[1]	-	-	-
Brighton and Hove -Stanmer Park[2]	-	(0)[2]	-	-	-
Crawley - Gatwick Airport	0	-	-	-	-
Chichester - A27 Chichester Bypass	0	-	1	-	-
Chichester – Orchard Street	0	-	-	-	-
Eastbourne - Devonshire Park[3]	(0)[3]	(16)[3]	(0)[3]	-	-
Eastbourne - Holly Place[1]	0[1]	-	(n.a)[1]	9[1]	-
Horsham - Park Way	0	-	2	-	-
Horsham - Storrington [1]	0[1]	-	(2)[1]	(3)[1]	-
Horsham - Cowfold	0	-	-	-	-
Hastings - Bulverhythe	0	-	4	-	-
Wealden - Lullington Heath[1]	0[1]	8[1]	-	-	0[1]
Lewes - West Street	0	-	0	-	-
Lewes - Denton Community Centre[3]	(0)[4]	(0)[4]	(1)[4]	-	-
Rother - De La Warr Road	0	-	4	-	-
Rother – Rye Harbour	-	11	-	-	-
Worthing 2 - Grove Lodge	0	-	-	-	-
Greenwich 4	0	7	3	6	0
Kens and Chelsea 1	1	7	0	7	0
Marylebone Road	18	0	10	-	0
Values shown in brackets have less than 75% data capture rate					

[1] AURN
[2] Site decommissioned April 2017
[3] New equipment installed April 2017
[4] Site decommissioned June 2017

Table 1.4 Number of days 'high' air pollution during 2017 (Air Quality Index 7-9)					
	Nitrogen Dioxide	Ozone	PM_{10}	PM_{25}	Sulphur Dioxide
Adur - Shoreham-by-Sea	(n.a)	-	(n.a)	-	-
Chichester - Lodsworth	-	1	-	-	-
Wealden - Isfield	-	1	-	-	-
Brighton and Hove - Preston Park [1]	0[1]	1[1]	-	-	-
Brighton and Hove -Stanmer Park[2]	-	(0)[2]	-	-	-
Crawley - Gatwick Airport	0	-	-	-	-
Chichester - A27 Chichester Bypass	0	-	0	-	-
Chichester – Orchard Street	0	-	-	-	-
Eastbourne - Devonshire Park[3]	(0)[3]	(0)[3]	(0)[3]	-	-
Eastbourne - Holly Place[1]	0[1]	-	(n.a)[1]	0[1]	-
Horsham - Park Way	0	-	0	-	-
Horsham - Storrington [1]	0[1]	-	(0)[1]	(1)[1]	-
Horsham - Cowfold	0	-	-	-	-
Hastings - Bulverhythe	0	-	0	-	-
Wealden - Lullington Heath[1]	0[1]	0[1]	-	-	0[1]
Lewes - West Street	0	-	1	-	-
Lewes - Denton Community Centre[3]	(0)[4]	(0)[4]	(0)[4]	-	-
Rother - De La Warr Road	0	-	0	-	-
Rother – Rye Harbour	-	0	-	-	-
Worthing 2 - Grove Lodge	0	-	-	-	-
Greenwich 4	0	0	1	1	0
Kens and Chelsea 1	0	1	0	1	0
Marylebone Road	0	0	1	-	0
Values shown in brackets have less than 75% data capture rate					

[1] AURN
[2] Site decommissioned April 2017
[3] New equipment installed April 2017
[4] Site decommissioned June 2017

Table 1.5 Number of days 'very high' air pollution during 2017 (Air Quality Index 10)					
	Nitrogen Dioxide	Ozone	PM_{10}	PM_{25}	Sulphur Dioxide
Adur - Shoreham-by-Sea	(n.a)	-	(n.a)	-	-
Chichester - Lodsworth	-	0	-	-	-
Wealden - Isfield	-	0	-	-	-
Brighton and Hove - Preston Park [1]	0[1]	0[1]	-	-	-
Brighton and Hove -Stanmer Park[2]	-	(0)[2]	-	-	-
Crawley - Gatwick Airport	0	-	-	-	-
Chichester - A27 Chichester Bypass	0	-	0	-	-
Chichester – Orchard Street	0	-	-	-	-
Eastbourne - Devonshire Park[3]	(0)[3]	(0)[3]	(0)[3]	-	-
Eastbourne - Holly Place[1]	0[1]	-	(n.a)[1]	1[1]	-
Horsham - Park Way	0	-	0	-	-
Horsham - Storrington [1]	0[1]	-	(0)[1]	(1)[1]	-
Horsham - Cowfold	0	-	-	-	-
Hastings - Bulverhythe	0	-	0	-	-
Wealden - Lullington Heath[1]	0[1]	0[1]	-	-	0[1]
Lewes - West Street	0	-	0	-	-
Lewes - Denton Community Centre[3]	(0)[4]	(0)[4]	(0)[4]	-	-
Rother - De La Warr Road	0	-	0	-	-
Rother – Rye Harbour	-	0	-	-	-
Worthing 2 - Grove Lodge	0	-	-	-	-
Greenwich 4	0	0	0	1	0
Kens and Chelsea 1	0	0	0	2	0
Marylebone Road	0	0	0	-	0
Values shown in brackets have less than 75% data capture rate					

[1] AURN
[2] Site decommissioned April 2017
[3] New equipment installed April 2017
[4] Site decommissioned June 2017

Nitrogen Dioxide (NO_2) and Sulphur Dioxide (SO_2)

There were no occurrences of 'moderate' or above NO_2 or SO_2 pollution during 2017 at network sites.

Ozone (O_3)

Widespread 'Moderate' O_3 was recorded on a number of days at all the network sites monitoring for this pollutant apart Brighton and Hove - Stanmer Park and at Lewes – Denton Community Centre which were only operational for part of the year. 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_3 occurred in May, and the last near the end of August.

Three sites, Chichester – Lodsworth, Wealden – Isfield and Brighton and Hove – Preston Park reached 'High' levels on the 21st June.

PM_{10} Particulates

Defra's Air Pollution Index applies to PM_{10} measured by a reference equivalent method such as the Filter Dynamic Measurement System (FDMS). The TEOM PM_{10} data has been converted to reference equivalent PM_{10} using the Volatile Correction Model (VCM) method developed by King's College London. All TEOM PM_{10} data reported on the Sussex-air website prior to the 1st January 2004 has been corrected using a gravimetric conversion factor of 1.3. All data reported after the 1st 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_{10} levels, where measured for the entire year, were recorded at all sites during 2017, apart from Lewes – West Street, but which did record one day of 'high' pollution on 22nd January.

$PM_{2.5}$ Particulates

'Moderate', 'High' and 'Very High' $PM_{2.5}$ levels were recorded at both Eastbourne – Holly Place and Horsham – Storrington during January. Eastbourne – Holly Place recorded further moderate levels during February, March and September.

Significant episodes occurring during 2017

Particulate Episodes

Widespread 'moderate' PM_{10} and $PM_{2.5}$ episodes occurred in January and February 2017. 'High' and 'Very High' levels of $PM_{2.5}$ were also recorded at and Horsham – Storrington and Eastbourne – Holly Place, respectively.

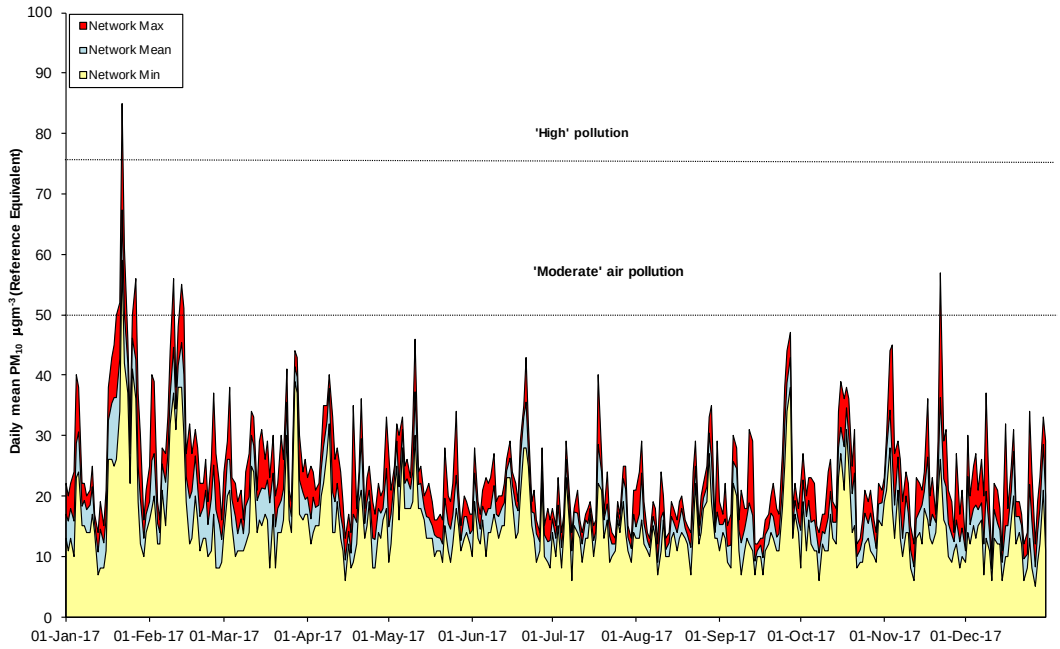
The January episodes were a result of poor dispersal of local emissions during cold calm weather conditions. Analysis has shown that a large contribution was from wood burning as could be seen from the large $PM_{2.5}$ levels measured on Sunday 22nd.

Analysis of the February episodes suggests a fairly large contribution from long range transport from continental Europe.

Further episodes of 'moderate' PM_{10} and $PM_{2.5}$ were recorded in March, September and November at the Rother – De La Warr Road, Hastings – Bulverhythe and Eastbourne – Holly Place sites.

The daily mean PM_{10} levels for 2017 are illustrated in Figure 1.

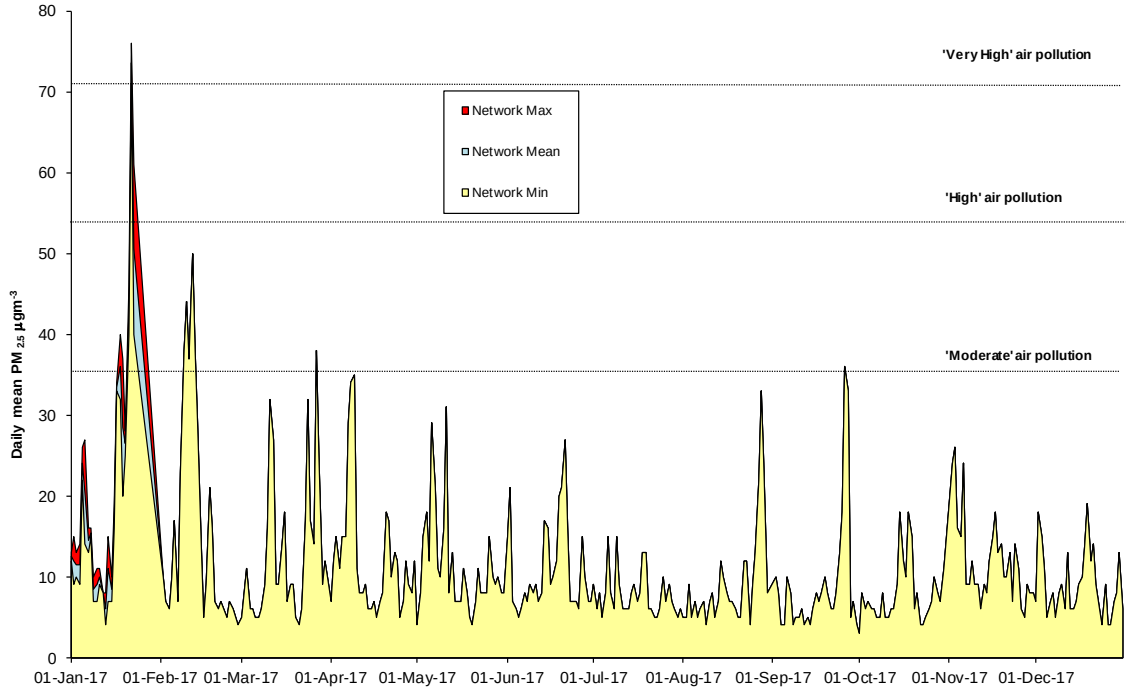
Figure 1 Daily mean PM_{10} levels across the network during 2017



The daily mean $PM_{2.5}$ levels for 2017 are illustrated in Figure 2.

The Horsham – Storrington sire was decommissioned in January 2017, thereafter the data shown is from the Eastbourne – Holly Place site only.

Figure 2 Daily mean $PM_{2.5}$ levels across the network during 2017



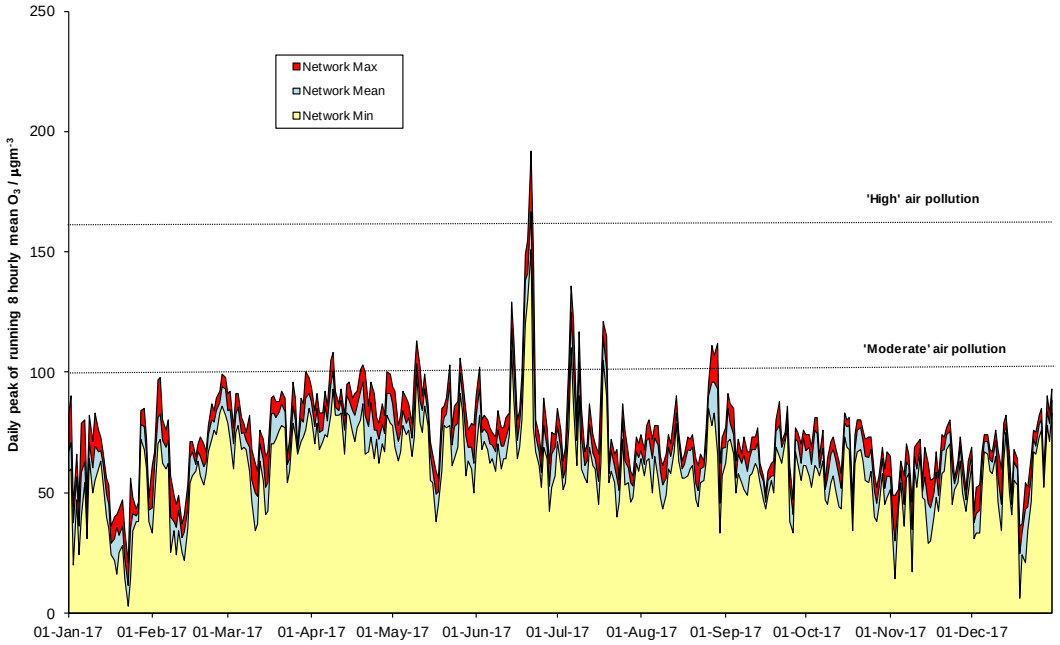
Summer Photochemical Episodes

Figure 3 illustrates the distribution of photochemical episodes O_3 during 2017.

Summer photochemical episodes occur annually in Sussex. Their development is due to a complex set of reactions involving NO_x and hydrocarbons in the presence of sunlight.

The first widespread O_3 episode of the year occurred in May and the last towards the end of August with 'High' levels recorded on 21st June at three sites.

Figure 3 Daily peak of running 8 hourly mean ozone levels across the network during 2017



2017 in Comparison with the Air Quality Strategy (AQS) Objectives

Tables 1.6a and 1.6b compare results of monitoring in 2017 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 $PM_{2.5}$ objective has an 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_{10} or $PM_{2.5}$ objectives. The distribution of exceedances of the 50 μgm^{-3} daily mean value of PM_{10} (equating to the EU Health Threshold) across the network during 2017 is shown in Figure 1.

All sites also met the NO_2 and SO_2 objectives (SO_2 measured at only one site).

The O_3 AQS objective was exceeded at all sites that achieved the necessary data capture, apart from at Brighton and Hove – Preston Park and at Wealden – Lullington Heath.

The daily peak hourly mean O_3 levels across the network during 2017 are shown in Figure 3.

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

Table 1.6a Comparison with Air Quality Strategy Objectives – Achieved ('yes') or Exceeded ('no')						
	PM_{10}		$PM_{2.5}$		SO_2	
	A	B	C	D	E	F
Adur – Shoreham-by-Sea	n.a	n.a	-	-	-	-
Chichester - Lodsworth	-	-	-	-	-	-
Wealden - Isfield	-	-	-	-	-	-
Brighton and Hove - Preston Park [1]	-	-	-	-	-	-
Brighton and Hove -Stanmer Park[2]	-	-	-	-	-	-
Crawley - Gatwick Airport	-	-	-	-	-	-
Chichester - A27 Chichester Bypass	Yes (1)	Yes (19)	-	-	-	-
Chichester – Orchard Street	-	-	-	-	-	-
Eastbourne - Devonshire Park[3]	n.a[3]	n.a[3]	-	-	-	-
Eastbourne - Holly Place[1]	n.a[1]	n.a[1]	Yes (11)[1]	-	-	-
Horsham - Park Way	Yes (2)	Yes (18)	-	-	-	-
Horsham - Storrington [1]	n.a[1]	n.a[1]	n.a[1]	-	-	-
Horsham - Cowfold	-	-	-	-	-	-
Hastings - Bulverhythe	Yes (4)	Yes (22)	-	-	-	-
Wealden - Lullington Heath[1]	-	-	-	Yes (0)[1]	Yes (0)[1]	Yes (0)[1]
Lewes - West Street	Yes (1)	Yes (20)	-	-	-	-
Lewes - Denton Community Centre[3]	n.a[4]	n.a[4]	-	-	-	-
Rother - De La Warr Road	Yes (4)	Yes (21)	-	-	-	-
Rother – Rye Harbour	-	-	-	-	-	-
Worthing 2 - Grove Lodge	-	-	-	-	-	-
Greenwich 4	Yes (4)	Yes (19)	Yes (12)	Yes (0)	Yes (0)	Yes (0)
Kens and Chelsea 1	Yes (0)	Yes (21)	Yes (12)	Yes (0)	Yes (0)	Yes (0)
Marylebone Road	Yes (12)	Yes (27)	-	Yes (0)	Yes (0)	Yes (0)

[1] AURN
[2] Site decommissioned April 2017
[3] New equipment installed April 2017
[4] Site decommissioned June 2017

A: 50 μg m^{-3} not to be exceeded more than 35 times a year measured as 24 hr mean. Data is reference equivalent

B: 40 μg m^{-3} measured as annual mean. All data is reference equivalent

C: 25 μg m^{-3} measured as annual mean. All data is reference equivalent

D: 350 μg m^{-3} not to be exceeded more than 24 times a year measured as 1 hour mean.

E: 125 μg m^{-3} not to be exceeded more than 3 times a year measured as 24 hour mean.

F: 266 μg m^{-3} not to be exceeded more than 35 times a year measured as 15 min.

Table 1.6b Comparison with Air Quality Strategy Objectives – Achieved ('yes') or Exceeded ('no')			
	O_3	NO_2	
	A	B	C
Adur – Shoreham-by-Sea	-	n.a	n.a
Chichester - Lodsworth	No (15)	-	-
Wealden - Isfield	No (17)	-	-
Brighton and Hove - Preston Park [1]	Yes (9)[1]	Yes (0)[1]	Yes (17)[1]
Brighton and Hove -Stanmer Park[2]	n.a[2]	-	-
Crawley - Gatwick Airport	-	Yes (0)	Yes (28)
Chichester - A27 Chichester Bypass	-	Yes (0)	Yes (33)
Chichester – Orchard Street	-	Yes (0)	Yes (23)
Eastbourne - Devonshire Park[3]	n.a[3]	n.a[3]	n.a[3]
Eastbourne - Holly Place[1]	-	Yes (0)[1]	Yes (13)[1]
Horsham - Park Way	-	Yes (0)	Yes (26)
Horsham - Storrington [1]	-	Yes (0)[1]	Yes (24)[1]
Horsham - Cowfold	-	Yes (0)	Yes (30)
Hastings - Bulverhythe	-	Yes (0)	Yes (18)
Wealden - Lullington Heath[1]	Yes (8)[1]	Yes (0)[1]	Yes (8)[1]
Lewes - West Street	-	Yes (0)	Yes (21)
Lewes - Denton Community Centre[3]	n.a[4]	n.a[4]	n.a[4]
Rother - De La Warr Road	-	Yes (0)	Yes (22)
Rother – Rye Harbour	No (11)	-	-
Worthing 2 - Grove Lodge	-	Yes (0)	Yes (36)
Greenwich 4	Yes (7)	Yes (0)	Yes (19)
Kens and Chelsea 1	Yes (8)	Yes (1)	Yes (33)
Marylebone Road	Yes (0)	No (38)	No (84)

[1] AURN
[2] Site decommissioned April 2017
[3] New equipment installed April 2017
[4] Site decommissioned June 2017

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

B: 200 μg m^{-3} not to be exceeded more than 18 times a year measured as 1 hour mean.

C: 40 μg m^{-3} 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_{10} concentrations (roadside and background),

ii. Annual average O_3 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_3 (ideally PM_{10} should also be monitored but this criterion would exclude almost all sites from the Indicator),

- Urban Background and Roadside sites should be included if they monitor at least PM_{10}

Due to the small number of exceedances, it was decided that the absence of monitoring for NO_2 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 2017:

- Rural AQ Indicator: Chichester - Lodsworth, Wealden – Isfield, Wealden – Lullington Heath, Rother – Rye Harbour.

- Urban AQ Indicator *(background):* Brighton and Hove – Preston Park

- Urban AQ Indicator *(roadside):* Hastings – Bulverhythe, Horsham – Park Way, Chichester - A27 Chichester Bypass, Lewes – West Street, 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 1.7 shows the third indicator.

Figure 4 First Air Quality Indicator for Sussex 2001 to 2017 (annual mean PM_{10})

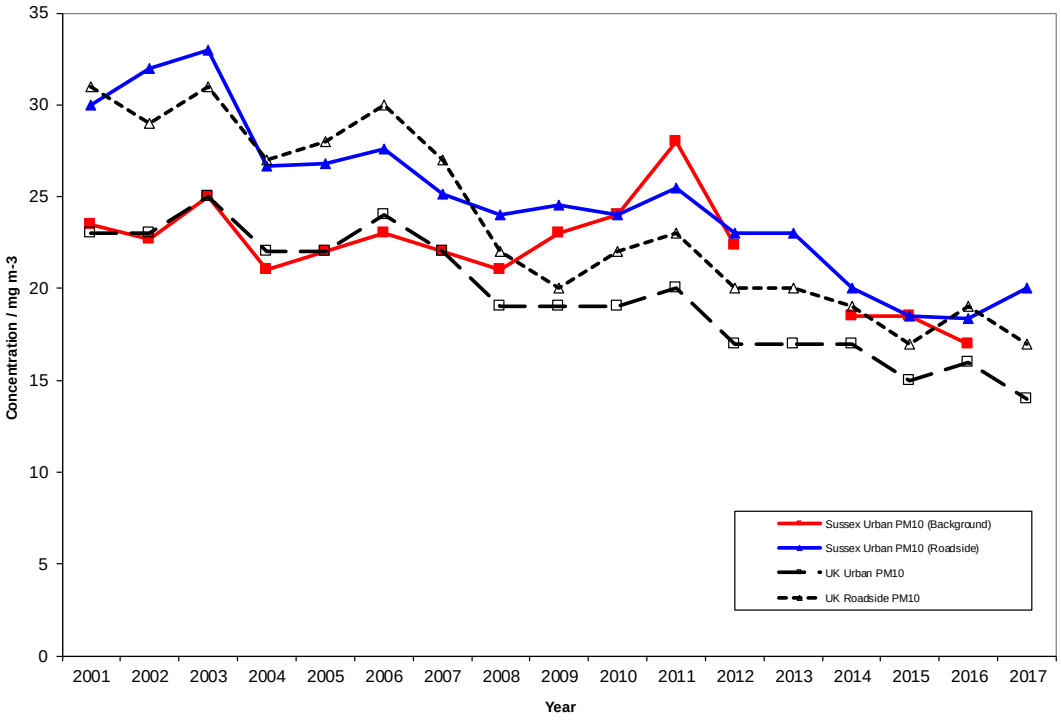


Figure 5 Second Air Quality Indicator for Sussex, 2001 to 2017 (mean daily max running 8hr ozone)

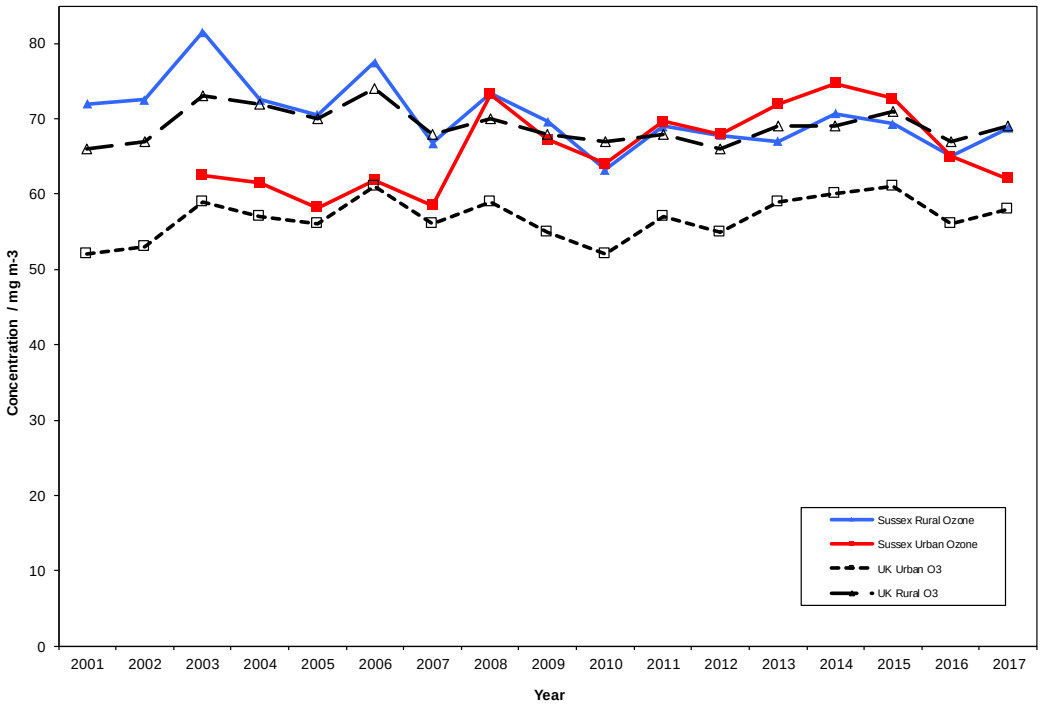


Table 1.7 Third (original) Air Quality Sustainability Indicator for Sussex																	
Indicator	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**
Chichester Lodsworth	-	-	-	-	-	71	43	76	39	39	43	13	24	18	7	16	15
Wealden Isfield	-	-	-	-	-	78	24	-	-	36	76	16	31	12	16	14	20
Brighton and Hove Stanmer Park	-	-	-	-	-	-	-	-	-	-	38	19	21	-	-	8	-
Chichester A27 Chichester Bypass	-	1	14	1	-	11	9	5	3	1	5	5	1	3	1	2	1
Eastbourne Holly Place	-	-	-	-	-	-	-	-	-	-	-	11	-	3	3	2	-
Horsham Park Way	-	-	-	-	10	4	12	6	3	0	10	3	2	4	-	4	2
Horsham Storrington	-	-	-	-	-	-	-	-	-	0	10	7	16	-	1	3	-
Hastings Bulverthythe	-	19	41	3	11	12	8	4	6	0	0	1	-	-	3	0	4
Hastings Fresh Fields	-	-	-	-	-	-	-	-	17	7	-	-	-	-	-	-	-
Wealden Lullington Heath	50	40	94	56	64	64	27	51	36	10	25	12	12	6	12	16	10
Telscombe Cliffs Roadside	6	10	8	-	12	23	28	56	12	-	-	-	-	-	-	-	-
Lewes Commercial Square	-	-	-	-	20	13	15	5	4	1	0	-	-	-	-	-	-
Lewes Denton Community Centre	-	-	-	-	-	-	-	-	-	-	-	-	-	30	14	17	-
Lewes West Street	-	-	-	-	-	-	-	-	-	-	-	2	0	1	-	0	1
Rother Rye Harbour	-	47	107	37	26	59	24	44	39	10	37	24	-	-	-	-	12
Rother De La Warr Road	-	-	-	-	-	-	7	-	2	0	8	-	1	-	-	-	2
Sussex-Rural	50	44	101	47	45	68	30	57	38	24	44	17	22	12	12	14	14
Sussex-Urban-(Background)	-	-	-	-	-	-	-	-	-	-	-	11	-	17	9	10	-
Sussex-Urban-(Roadside)	6	10	21	2	13	13	13	15	7	1	6	4	4	3	2	2	2
UK-Rural-Indicator	*34*	*32*	*64*	*45*	*40*	*55*	*30*	*45*	*32*	*22 (10)*	*30 (17)*	*14*	*17*	*9*	*11*	*12*	*9*
UK-Urban-Indicator	*23*	*19*	*48*	*22*	*21*	*38*	*23*	*26*	*10*	*8 (15)*	*15 (24)*	*18*	*14*	*12*	*10*	*8*	*7*

The 2017 figures in Table 1.7 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.

Although a general improvement has been seen for both roadside and background PM_{10} since 2001, the air quality sustainability indicator for roadside PM_{10} in Sussex has increased in 2017 when compared to the previous year. Unfortunately, there were no background sites meeting the criteria for the first indicator in Sussex during 2017.

The UK roadside and background PM_{10} both decreased slightly in 2017.

The air quality sustainability indicators for the Sussex urban O_3 showed a decrease in 2017, while the rural O_3 showed a slight increase, although the general trend since 2001 remains fairly stable.

The UK urban and rural O_3 indicators showed a slight increase in 2017.

CHAPTER 2: Trends in Pollution Levels, 2001 – 2017

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_3, a cold settled winter can lead to increased levels of NO_2. 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 2016. 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 Bulverhythe 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 1st June 2002.
- The first mean is calculated from 1st June 2001 to 1st June 2002. The second is calculated from 1st July 2001 to 1st 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_{10} Particulates

Running annual mean PM_{10} 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 2017 do not appear on the graph.

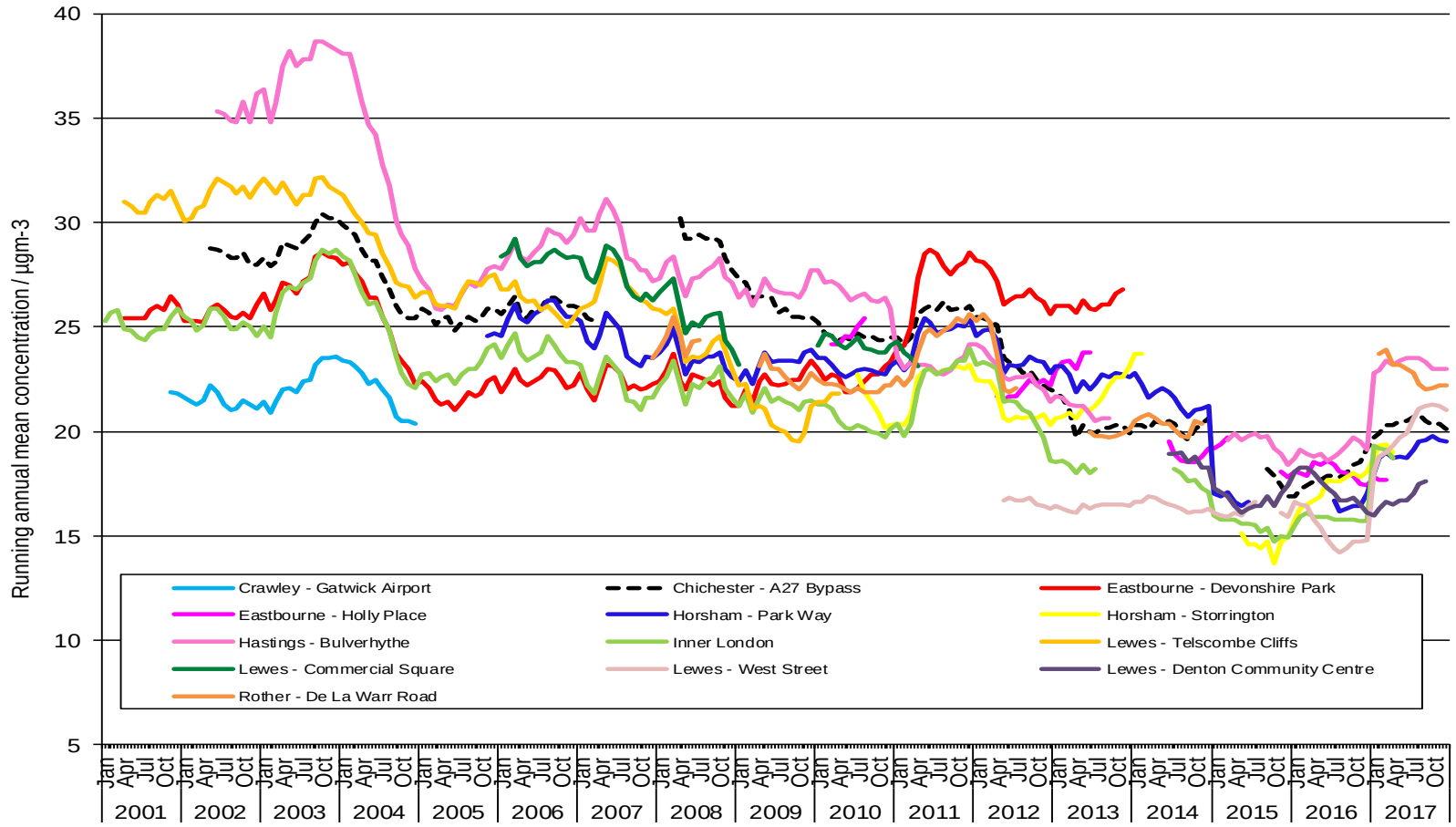
The running annual mean concentration during 2017 showed a general increase.

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.

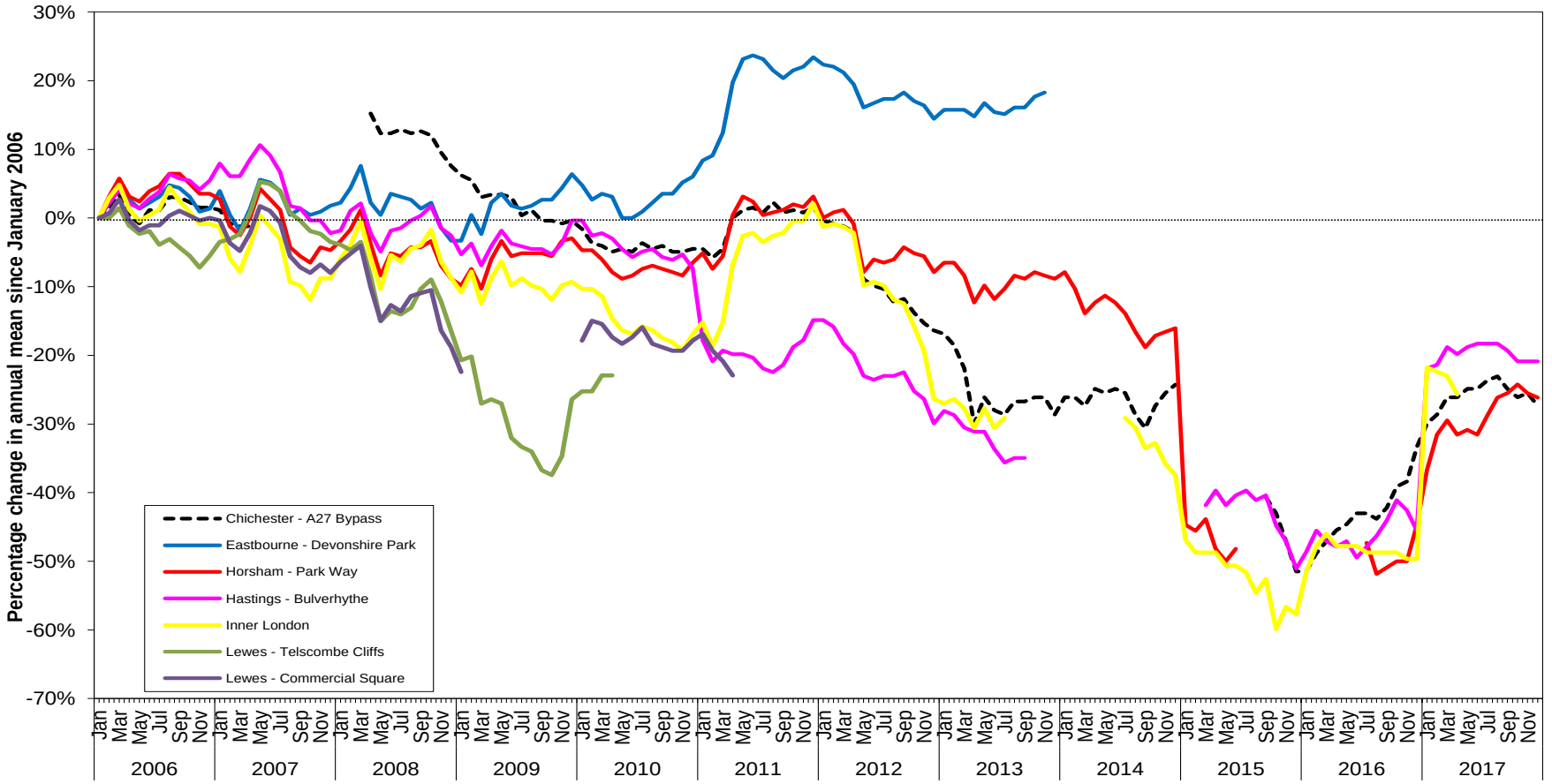
Roadside sites are generally expected to record higher levels than those monitoring at background locations due to their proximity to the local emission source that is mainly traffic related.

Figure 2.1 Trends in running annual mean PM_{10} concentrations, 2001 to 2017



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

Figure 2.2 Percentage change in running annual mean PM_{10} since January 2006



$PM_{2.5}$ Particulates

$PM_{2.5}$ is measured at Eastbourne – Holly Place and up to the start of 2017 was also measured at Horsham - Storrington.

During 2017 the levels decreased following an initial rise.

The running annual mean concentrations are shown in Figure 2.3 and the percentage change plot in Figure 2.4.

Figure 2.3 Trends in running annual mean $PM_{2.5}$ concentrations, 2010 to 2017

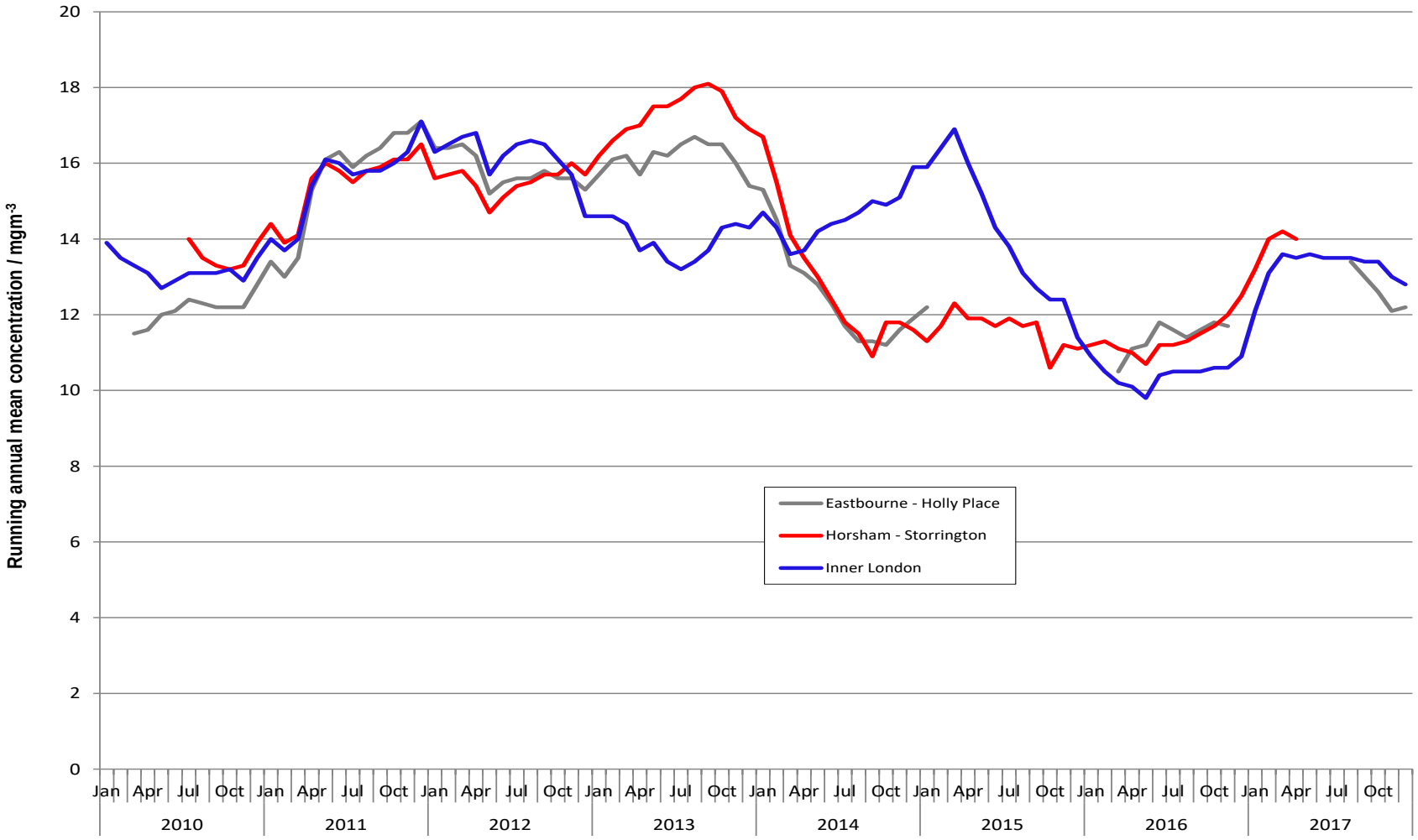
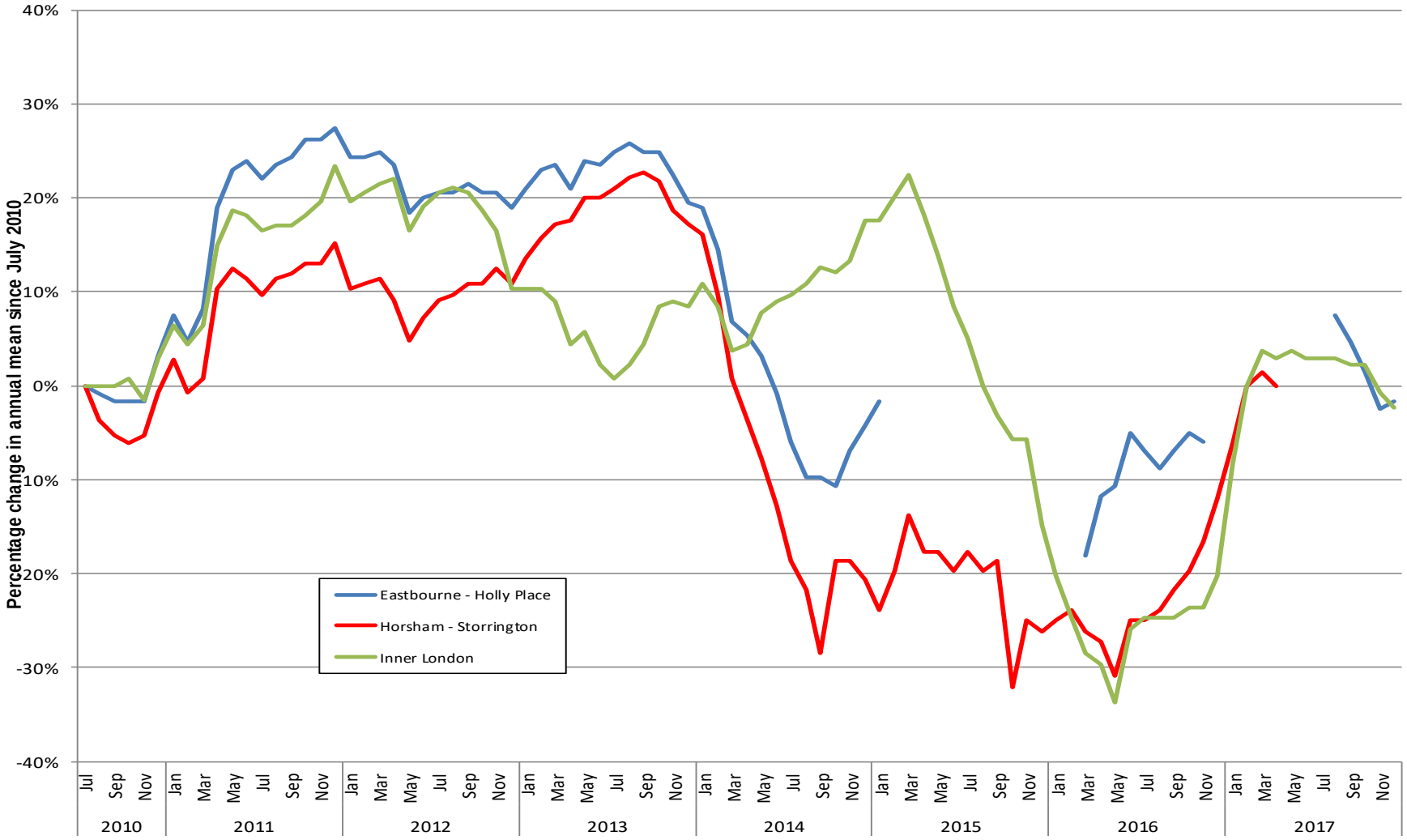


Figure 2.4 Percentage change in running annual mean $PM_{2.5}$ since July 2010



Sulphur Dioxide (SO_2)

There has been a national downward trend in SO_2 concentrations for several years.

Currently only the Lullington Heath site monitors for SO_2.

Nitrogen Dioxide (NO_2)

NO_2 is the most commonly monitored pollutant in the network. Charts of running annual mean concentrations are shown in Figure 2.5. Percentage change over a shorter period at longer-running sites is shown in Figure 2.6. Trends from the inner London background site are included in each chart for comparison.

The Air Quality Standard for annual mean NO_2 is 40 μgm^{-3} (21 ppb).

Most sites remained relatively stable during 2017 after an initial increase, apart from Worthing Grove Lodge, which showed a decrease during the year. Again, the trend is highlighted in Figure 2.6 showing the percentage change since February 2006.

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.

Figure 2.5 Running annual mean NO_2 concentrations, 1999 to 2017

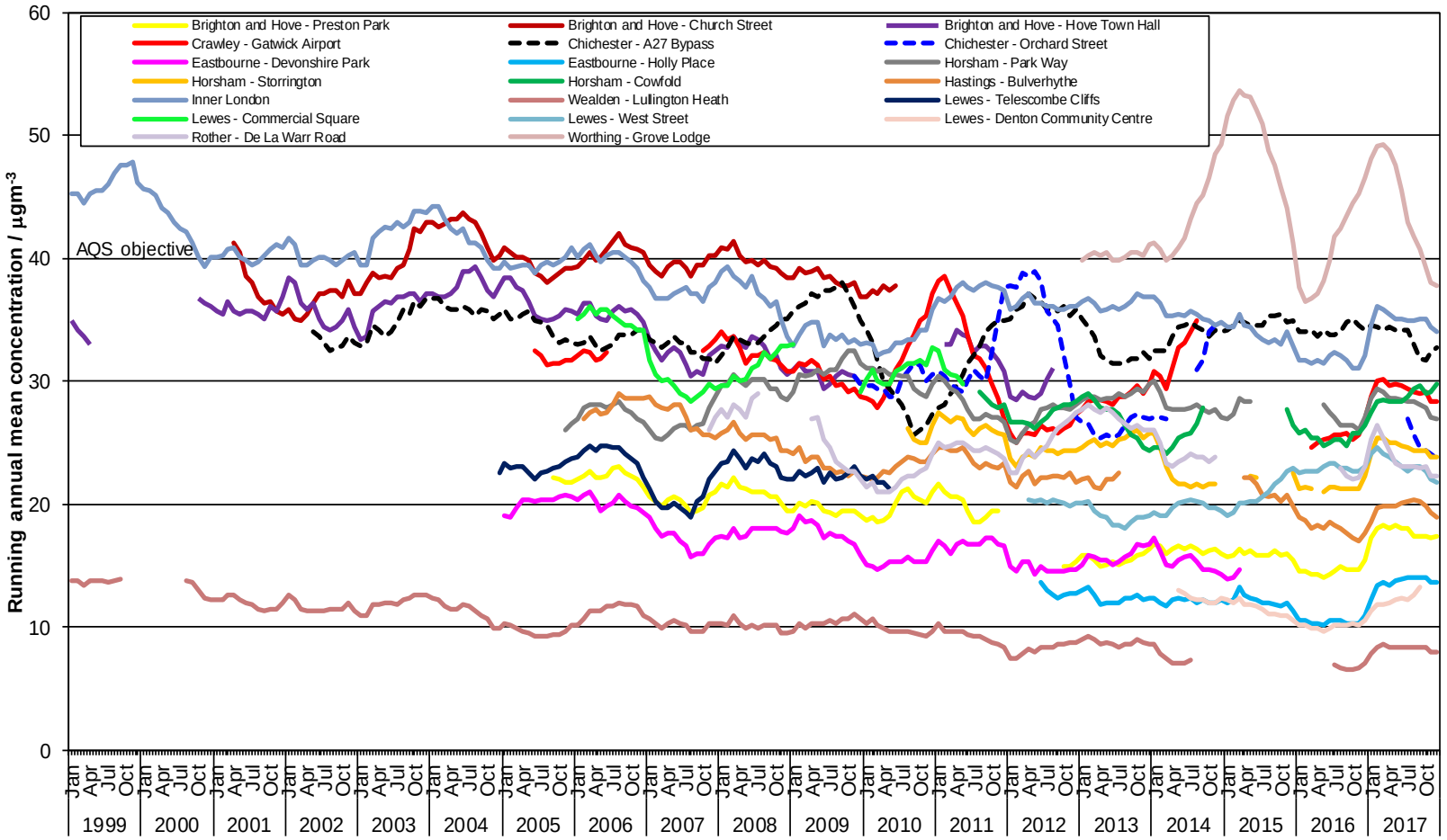


Figure 2.6 Percentage change in running annual mean NO_2 concentrations since February 2006

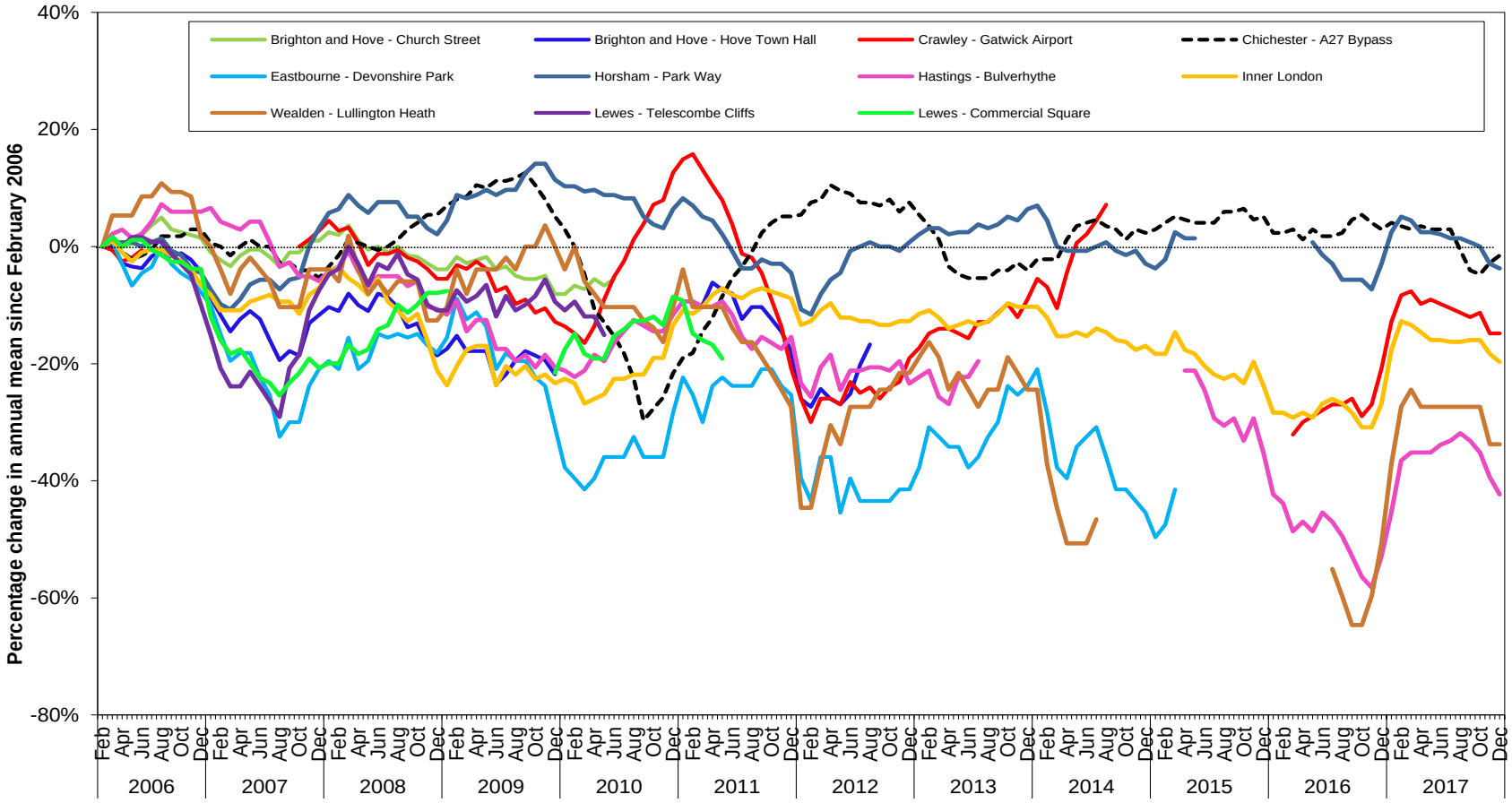
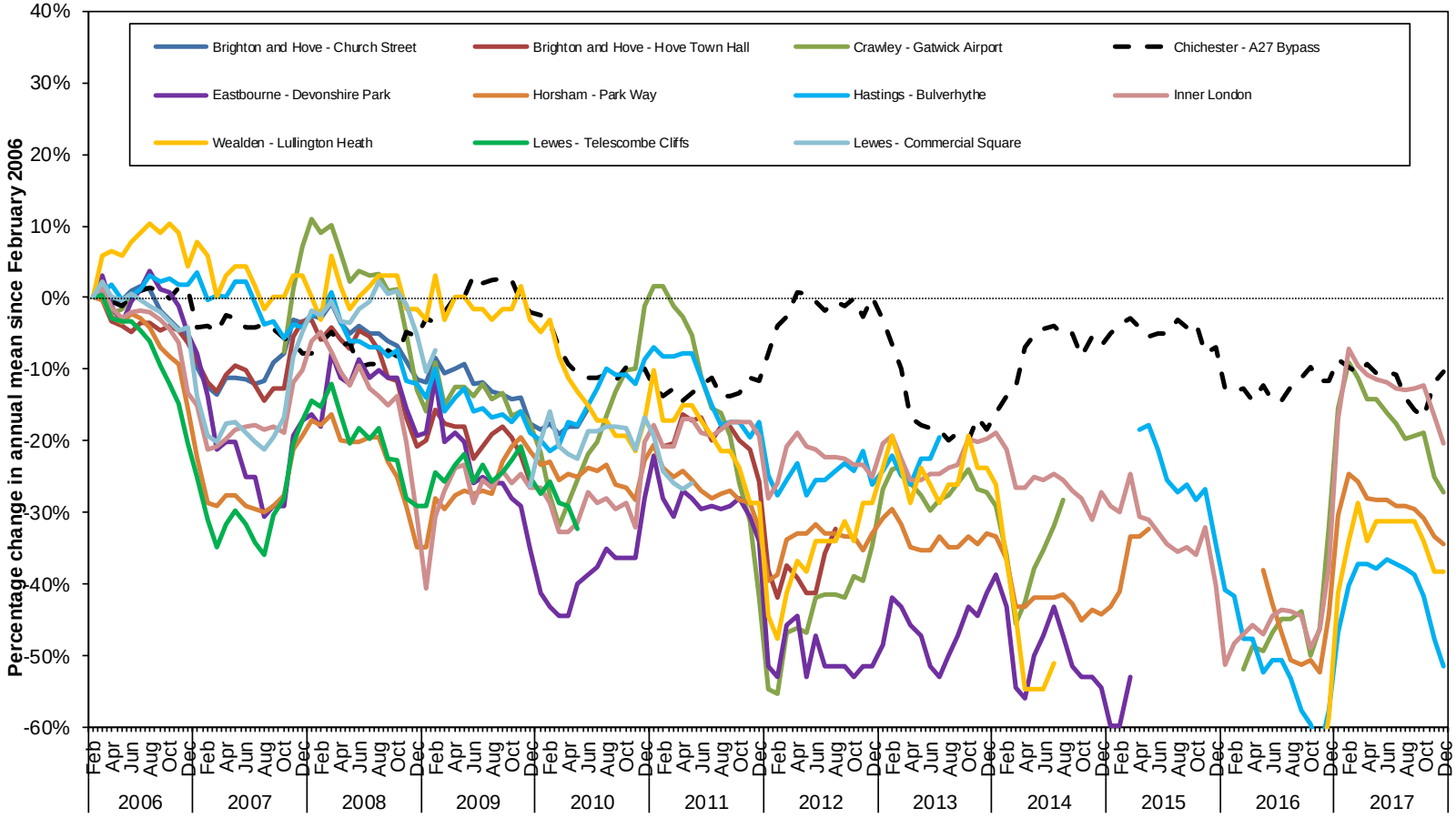


Figure 2.7 Percentage change in running annual mean NOx concentrations since February 2006



Ozone (O_3)

O_3 concentrations across most network sites have generally remained stable following an initial decrease.

O_3 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_3 experienced in Sussex is transported from continental Europe under certain meteorological conditions.

The slight changes in O_3 levels throughout the year are also seen in the percentage change plot (figure 2.9).

Figure 2.8 Running annual mean O_3 concentrations, 1999 to 2017

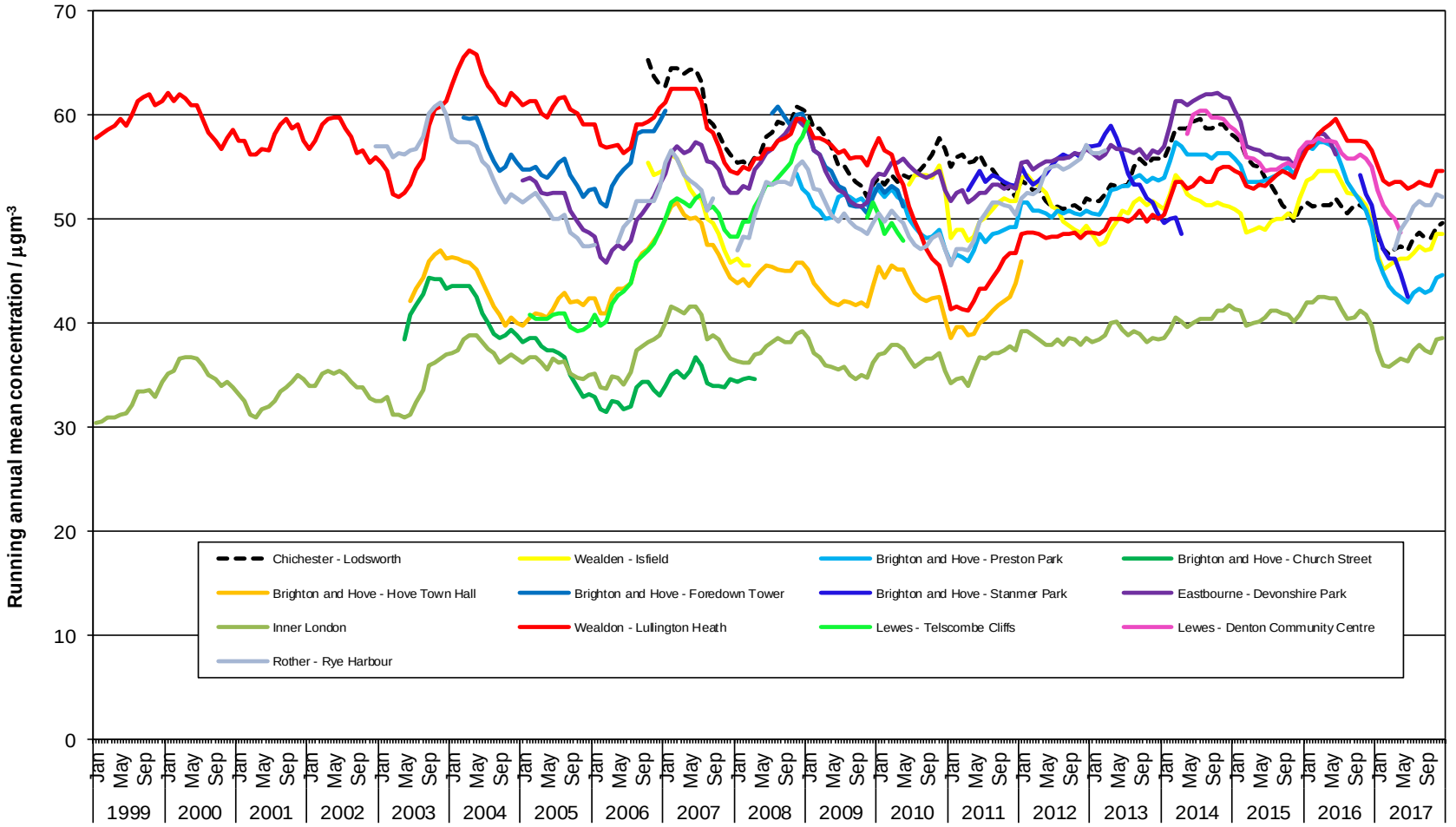
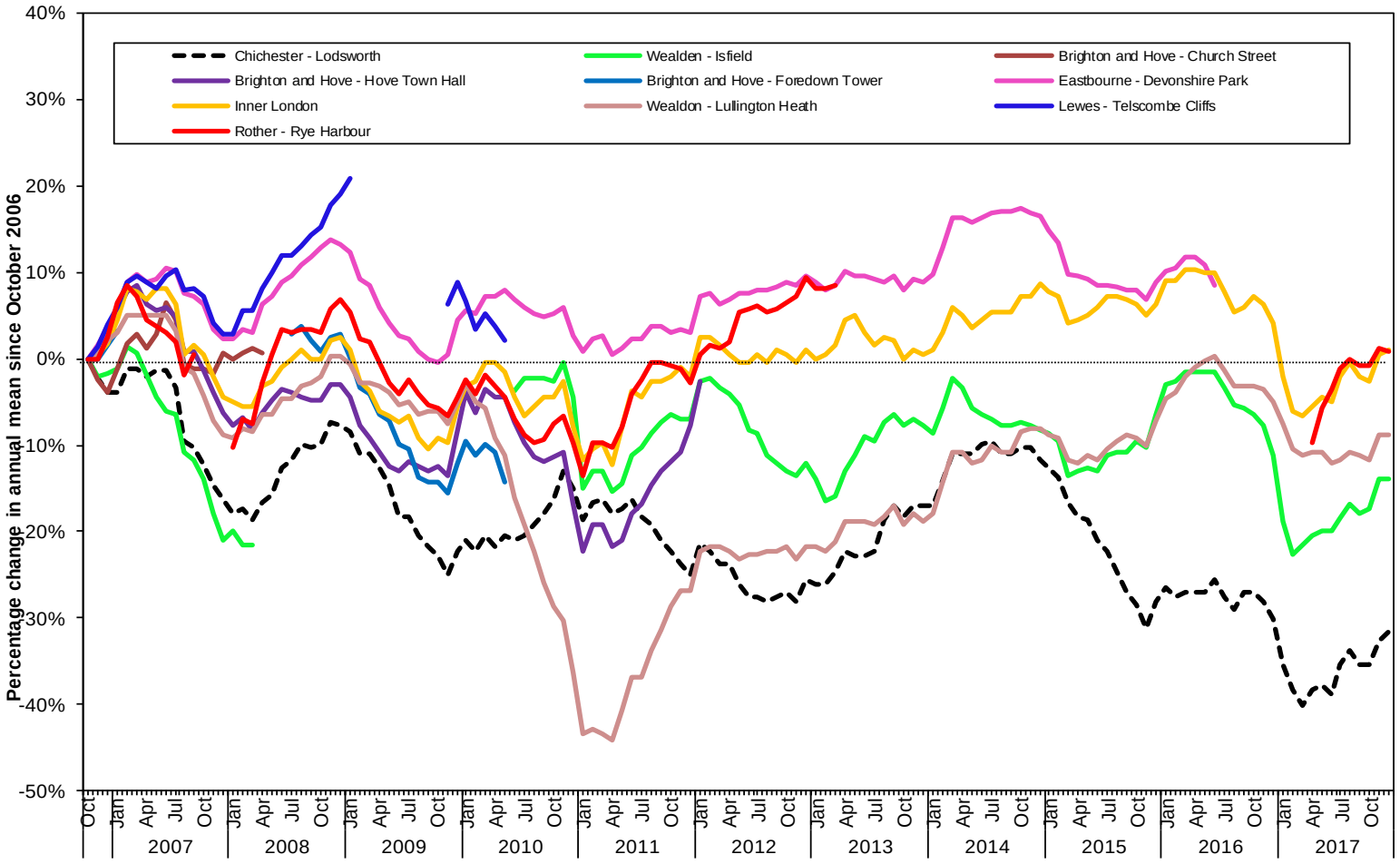


Figure 2.9 Percentage change in running annual mean O_3 concentrations since October 2006



CHAPTER 3: Air Quality Review and Annual Status Updates

This chapter details each Local Authority's progress in the air quality review process. Since 2016 each council is required to produce an Annual Status Report on air quality and any developments which may affect it. 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: https://uk-air.defra.gov.uk/aqma/

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

Local Air Quality Management Areas (AQMA) in Adur and Worthing:

- A27 Upper Brighton Road, Worthing

Council monitoring shows that levels at Lyons Farm and Grove Lodge continue to be elevated above the national annual mean objective for Nitrogen Dioxide (NO2) of 40µg/m3. A Further Assessment of air quality in and around the Grove Lodge AQMA, prepared by Sussex-air for the Council, confirmed that levels of NO2 are predicted to continue to exceed the annual average objective for NO2 in the area around Lyons Farm, Grove Lodge (A27) and Offington Corner (A27/A24 junction).

Consequently, following a period of consultation the existing Grove Lodge Air Quality Management Area (AQMA) was extended. The 'Worthing Borough Council Air Quality Management Area No.2' came into force on 15th December 2014. The designated area incorporates:

- the eastern end of Crockhurst Hill from the eastern boundary of Durrington Cemetery towards Offington Corner Roundabout
- Offington Corner Roundabout
- Warren Road
- 1-3 Warren Farm Place
- 1 Links Road
- Hill Barn Lane
- 17 Mansfield Court Sanditon Way
- Grove Lodge Roundabout
- Grove Lodge
- 1-2 Grove Lodge Cottages
- 22-27 Lamorna Grove
- Upper Brighton Road leading onto the Sompting Bypass, up to and including the Downlands Retail Centre

- and Lyons Way

- High Street (A259), Shoreham-by-Sea and Old Shoreham Road (A270), Southwick

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/

Air Quality in Arun District

Arun published Stage 1 of its review and assessment in December 1998, which revealed Nitrogen Dioxide, PM10 and Sulphur Dioxide 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 road stone coating process authorised under the Local Authority Air Pollution Control (LAPC) regime.

The combined Stage 2 and 3 assessments involved the use of models to predict future concentrations of the three pollutants identified in the stage one assessment. The results showed that for Nitrogen dioxide, PM10 and Sulphur dioxide, 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 Air Quality Management Areas. This decision was upheld by the Department of Environment, Food and Rural Affairs (DEFRA) following the submission of a report detailing the results of the assessment.

You can view or download the reports from:

http://www.arun.gov.uk/air-quality-including-bonfires

Air Quality in Brighton and Hove City

Continuous analysis of outdoor air shows improvement in nitrogen dioxide. Improvements are recorded at the majority of monitoring locations including those at roadside. In combination with source reductions in particulate, lead, benzene and carbon monoxide, it is likely that where many people live the air inhaled is more healthy than past decades.

Monitoring at some city centre roadside sites in the AQMA suggests that current nitrogen dioxide concentrations are similar to 2002 with improvements since 2010 and 2013. At a number of roadside locations, nitrogen dioxide concentrations have not changed on those recorded 15 years ago. Concentrations continue to be recorded above the nitrogen dioxide legal limit within nine metres (30 feet) of confined roads in parts of Brighton and Portslade. Recent monitoring suggests compliance is within the limit in Rottingdean, but this needs to be confirmed with 2016 and 2017 monitoring results.

The Air Quality Action Plan relates to the Local Transport Plan and has joint interest to initiate a low emission strategy (LEZ). The 2015 bus LEZ covers North Street, Churchill Square and Western Road. We have 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.

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 in the past 20 years and increase in active travel such as 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 small contribution to local transport. The local bus company has secured funds for electrical hybrid buses. Vehicles with exhaust retrofits and regenerative breaking are now in daily operation.

Local Air Quality Management (LAQM) reports for the Department of the Environment (DEFRA) must be produced on regular basis. This is one of the council's statutory duties required under part IV of the Environment Act 1995.

Where specific airborne pollutant standards are exceeded local authorities have to designate these geographical areas as Air Quality Management Areas (AQMAs).

Particulates in the city

PM10s are fine airborne particles (less than ten microns). When inhaled the microscopic particles can penetrate deep into the lungs. Fine particles in the air can travel long distances between regions, that said emissions from local diesel engines have some influence on location concentrations.

In 2013 concentration on North Street close to the Ship Street junction were monitored close to 26 µg/m3. Three days (24-hour average) had concentrations > 50 µg/m3. These monitoring results are based on 90.8% data capture through the calendar year. From 2014/15 particulate matter less than 2.5 microns is monitored at North Street and Lewes Road in Brighton and results will be valuable to assess the health impacts of local air pollution. PM2.5 shows an improving trend in Preston Park. Slightly higher levels are recorded on North Street.

Nitrogen dioxide in the city

During recent years up to 2015 concentrations remain above the legal limit at some certain roadside locations: in Brighton, parts of Portslade and Rottingdean High Street.

The problem of nitrogen dioxide is similar to other small cities with historical centres such as York, Oxford and Cambridge. It is also comparable with Portsmouth, Reading, Nottingham and Sheffield. With a population approaching half a million the Brighton-Worthing conurbation is one of the least industrialised in Europe (in terms of large combustion processes and factories). It has been certain for more than a decade that poorer air quality in Brighton is dominated by near ground level emissions and local transport sources. Due to economy and transport policies some local road counters show a decline in total traffic tallies between 2008 and 2012. Levels of nitrogen dioxide have not improved in some places near roads due to the following contributory factors:

- A higher proportion of diesel vehicles that show a lack of real-world performance improvement in emissions of nitrogen dioxide
- Diesel particulate filters that can become clogged with soot following repetitive urban driving
- Exhaust traps designed to mitigate particles can emit additional nitrogen dioxide from the tail pipe
- Older petrol vehicles with catalytic converters that perform less well with time
- Internal combustion engine and emission abatement technologies that are not suited to; stop-start mileage, congested intersections, intermittent acceleration and sharp hill climbs

- Narrow street ways that are less favourable for dispersion of emissions and entrainment of fresher ventilation from open spaces such as parks and the sea

- Eddie and wake effects sometimes resulting in slower flow of wind one or two city blocks inland from the sea front

- A seasonal pattern in ambient nitrogen dioxide points to a lack of vertical dispersion above the street in the wintertime

- A recorded decline in regional background pollutant levels emphasise the importance of local road traffic emissions

The most concentrated pollution is not always found adjacent to the highest volumes of traffic. Road intersections and enclosed streets have a limited spatial capacity before air quality is likely to become an issue. Relatively few vehicles with modest emissions totals can cause long term ambient nitrogen dioxide concentrations to exceed legal target levels in confined spaces. Most of these urban street environments have very high population density with considerable retail activity and associated frequent pedestrian foot fall.

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

In general, air quality within Chichester district is generally good however there are areas where elevated concentrations of pollutants occur. The main source of air pollution is from road transport particularly on roads in and adjacent to Chichester and also on one road in the centre of Midhurst. The principal pollutant of concern is nitrogen dioxide (NO2). Concentrations of NO2 show a slight decrease over the last 5 years but there are still hotspots in Chichester and Midhurst where exceedances of the national air quality Objective for NO2 occur. The hotspots in Chichester principally occur within or close to the Air Quality Management Areas (AQMAs) and in Midhurst there is a new area of exceedance within the town centre. AQMAs have been declared at three locations as follows:

• Stockbridge roundabout at the junction with the A27 and A286

• Orchard Street, Chichester

• St Pancras, Chichester. Our current Air Quality Action Plan (AQAP) was adopted in 2015

Air quality is seen by the Council as an important public health issue, but it is not something we can improve on our own. We are working actively with other services within the Council, partners at West Sussex County Council (WSCC) including the Public Health team and the Sussex Air Quality Partnership (SAQP) to tackle this issue.

Since our first AQAP dated 2008, we have won in excess of £290k of grant monies from a variety of sources. Key projects that have been delivered include Chichester's first car club, installation of two electric vehicle charging points, 140 additional bike parking spaces in the city centre, delivered training to over 150 cyclists to ride more confidently/maintain their bikes and provided data to the air-Alert forecasting service (coordinated by SAQP).

In September 2017 we were awarded Department for Transport (Dft) funded support to assist in the production of a Local Cycling and Walking Infrastructure Plan (LCWIP). We are working with neighbouring authorities and WSCC to deliver this project and the detailed work is programmed to commence in September 2018. We will be undertaking the initial work during the summer of 2018 to

enable us to be at stage 3 of the project by September. Once produced, the LCWIP will inform our Infrastructure Development Plan which enables infrastructure provision across the district. CDC is also reviewing its Local Plan and we are working with our policy planning team to ensure that air quality policies in the Plan are robust and suitably ambitious.

Actions to Improve Air Quality

We have worked with partners on a number of projects over the last year including:

- Delivery of an upgrade to a section of path to dual use within one of the City's parks (Jubilee Gardens) completed in April 2018

- Replacement of two electric vehicle charging points outside the Council offices, completed January 2018.

- We delivered a programme of cycling initiatives such as guided rides, cycle confidence training and bike maintenance courses to encourage people. During 2017 over 70 people accessed at least one of these initiatives.

- We are working with the Council's Parking Services to deliver additional electric vehicle (EV) charging points across the district.

- We have worked with a number of Council services to produce a business case for replacement of fleet vehicles with electric vehicles. This strategy has been adopted by the Council and it is anticipated that our Parking Service will replace up to two of their vehicles with electric vehicles during 2018.

Conclusions and Priorities

This year's NO2 monitoring shows no exceedances of Air Quality Standards at either of the monitoring stations. There are two diffusion tube locations where the air quality objective of 40 µg/m3 was exceeded, namely:

- St Pancras, within the St Pancras AQMA, Chichester

- Rumbold's Hill, Midhurst - not within an AQMA. This tube has been in place for 30 months. Additional monitoring has been implemented near this location in order to determine the extent of the exceedance of the Objective.

The above two diffusion tube locations showed similar trends last year. In response to feedback from DEFRA regarding last year's ASR, additional monitoring commenced in December 2017 (at one location in Midhurst near the existing site) and further diffusion tubes were installed in Chichester and Midhurst in January 2018. This additional monitoring will be reported in the ASR for 2019 when a full years' data is available. It is intended to commission detailed modelling of both Chichester and Midhurst in 2019 in order to determine the need to either alter the existing AQMAs and/or declare an AQMA at Midhurst and The Hornet, Chichester.

At the other 9 diffusion tube locations not within AQMAs there were no exceedances of the air quality objective of 40 µg/m3 (although the result at The Hornet is close to the Objective at 38.3 µg/m3 .

We are currently working on a number of actions to improve air quality across the district, and our priorities for the coming year to address air quality include:

- Delivery of a new air quality monitoring station in Chichester during 2018 to provide additional data. The location of the station has been chosen in order to monitor the impact of increasing traffic on the eastern side of the City.

- Finalising a policy for inclusion within the revised Local Plan to enable air quality to be weighed appropriately within the land use planning process.

- To understand and respond to potentially significant changes to the local road network, including; possible future improvements to the A27 and the Southern Gateway redevelopment and also trips related to any published new Local Plan housing numbers.

- Production of a Local Cycling and Walking Infrastructure Plan for Chichester city. Detailed work on this project will commence in September 2018 and the project is expected to be completed by December 2019.

Local Engagement and How to get Involved

The Council was represented on a community group working up an option to present to Highways England to improve the A27 Chichester bypass. Consultants were employed to facilitate this process and the findings were presented to Highways England in June 2018. A final decision has not been made on a preferred route and Government funding has not yet been committed.

The public can get involved by supporting behavioural change initiatives (e.g. joining the Car Club, car sharing and walking, cycling or using public transport wherever possible. Further information can be obtained by emailing: airquality@chichester.gov.uk

The Chichester and District Cycle Forum provides information on local cycling opportunities and campaigns on behalf of cyclists. The Forum is open to the public and further information can be obtained by emailing cycle@chichester.gov.uk

See link: http://www.chichester.gov.uk/pollutioncontrolairquality

Air Quality in Crawley Borough

The Council has a legal duty to monitor air quality in the town. The monitoring has shown that the average nitrogen dioxide concentration at a number of points along Crawley Avenue and around the Hazelwick roundabout exceeds the annual average Air Quality Objective for nitrogen dioxide. Following consultation that was undertaken in 2015 an Air Quality Management Area (AQMA) has now been formally declared in the affected area.

More detailed information is included in an annual technical report that is provided to Government, which can be obtained in the links below.

http://www.crawley.gov.uk/pw/Environment_and_Health/Environmental_Health/Pollution/index.htm

Air Quality in Eastbourne Borough

The air quality objectives were met by Eastbourne Borough Council in 2017 and there are currently no Air Quality Management Areas (AQMAs) declared within the local authority area

The reports can be downloaded from:

http://www.sussex-air.net/ImprovingAQ/AQManagement/Reports.aspx?LA=Eastbourne

Air Quality in Hastings Borough

The quality of air across the majority of Hastings & St Leonards reaches the national standard. However, on a small part of the Bexhill road, levels of Particulate Matter (PM) were

historically above the required standard and as a result, an Air Quality Management Area (AQMA) was declared and an Air Quality Action Plan (AQAP) prepared.
PM is a very fine dust and comes from industry, various road traffic debris, sea salt and biological particles.
However, since 2011 PM concentrations have reduced and have remained below annual air quality limit values. Additionally, the Bexhill to Hastings Link road opened in 2015, as detailed in our AQAP, has helped improve air quality in this area further. Therefore, the AQMA was revoked earlier this year.

For further information go to:

http://www.hastings.gov.uk/environment_planning/pollution_noise_drainage/air/air_management/

Air Quality in Horsham District

Horsham district is primarily agricultural in character and does not incorporate a significant heavy industrial base or major transport hubs. The main source of air pollution locally are road traffic emissions from major roads, notably the A24, which intersects the district north – south; A264 to the north of Horsham; A272 and A281 at Cowfold; and A283 at Storrington. Two Air Quality Management Areas (AQMAs) have been declared in the district in the village of Cowfold and town centre of Storrington, both for the exceedances of the annual mean objective for nitrogen dioxide (NO2). A draft Air Quality Action Plan (AQAP) was prepared for both AQMAs; the Storrington AQAP was submitted to Defra in 2012 and the Cowfold AQAP in 2013.

Although the work under the Local Air Quality Management (LAQM) is the legal obligation of district councils, actions aimed at improving air quality most of the time require the cooperation of various departments and organisations. Horsham District Council (HDC) works in cooperation with other stakeholders, such as planning, Public Health England, West Sussex County Council (WSCC) highways, neighbouring districts, Sussex-Air Partnership and the Environment Agency. The assessment and implementation of the identified traffic management schemes is done in cooperation with WSCC as they are the authority responsible for roads and transport management. Steering groups were set up for each of the AQMAs. The steering groups have contributed to the development of the Action Plans and are the decision making body for the action plan measures to be taken forward. The Council is consulted by the Environment Agency upon the granting of environmental permits for 'PartA1' processes and liaises with the Agency regarding any issues concerning those permits.

Regarding nitrogen dioxide, the air quality objective for annual mean NO2 has been exceeded at three diffusion tube sites in 2016, all located within the existing AQMAs: Storrington 1,2 (Manleys Hill) and Storrington 19n (jct of Manley's Hill and School Hill) in the Storrington AQMA, and Cowfold 7n (3 Huntscroft Gardens, Bolney Road) within the Cowfold AQMA. Based on the results, the boundaries of the Storrington and Cowfold AQMAs can remain unchanged.

The annual mean NO2 concentration recorded at the new diffusion tube site set up near the Gatwick airport boundary was well below the objective, which indicates that exceedances of the objective in that area are unlikely.

The results from NO2 monitoring within Horsham district show that concentrations increased slightly in 2016 as compared with the two previous years. Nonetheless, there is still a distinct overall downward trend in measured concentrations of NO2 over the ten-year monitoring period. This can be attributed to decreasing background concentrations and is also indicative of a gradual improvement in fleet emissions.

There were no exceedances of the PM10 objectives at the two monitoring sites in the district. Both sites showed a slight increase in the annual mean concentrations and in the number of exceedances of the daily mean concentration objective when compared to the 2015 data. Still, the overall trend in the recent years is decreasing for both sites.

Monitoring in 2016 has not identified any potential or actual exceedances at relevant locations outside existing AQMAs, and it is not therefore necessary to proceed to detailed assessment at any additional locations.

Further information can be found at:

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

Air Quality in Lewes District

In 2005 an Air Quality Management Area (AQMA) was declared in Lewes town centre for nitrogen dioxide.

Due to the traffic levels on the Newhaven gyratory (A259) locally high concentrations of air pollution have been measured.

In 2014 an Air Quality Management Area (AQMA) was declared for the Newhaven gyratory (A259) for nitrogen dioxide.

Reports can be downloaded from:

http://www.sussex-air.net/ImprovingAQ/AQManagement/Reports.aspx?LA=Lewes

Air Quality in Rother District

In recent years, local monitoring has identified elevated levels of NO2 at three roadside locations (Rye South Undercliff, High Street Flimwell and A2100 Beauport Park). NO2 levels at these locations in 2013 and 2014 exceeded or were close to exceeding the UK Air Quality Objective for annual mean NO2. In 2015, all monitoring locations in the District achieved the objective, with concentrations lower than 40 µg/m3 . In 2016 however, concentrations exceeded the objective at A2100 Beauport Park and High Street Flimwell.

PM10 is monitored in Rother at De La Warr Road, Bexhill, and in recent years concentrations have been generally low (well below the UK annual mean objectives), with no significant increasing or decreasing tendency, although there is some year on year variability.

As in other suburban and rural areas of East Sussex, ozone (O3) is of considerable concern. Ozone is monitored at Rye Harbour, where high levels have been monitored since 2011.

A large area of the countryside in the District is within the High Weald Area of Outstanding Natural Beauty (AONB). The impact of traffic-related air pollution on some of these areas has been assessed in past years. Current and future traffic flows are not expected to put the Pevensey Levels Special Area of Conservation (SAC) at risk from excessive nitrogen deposition.

Monitoring has shown that air quality in Rother District continues to meet the air quality objectives at locations of relevant exposure, although Rother District is committed to taking action to nonetheless improve air quality, in particular through involvement with the Sussex Air Quality Partnership. Priority measures and actions for the District include the roll-out and expansion of electric charging points via the Energise Network, collaboration between departments on health improvement, climate change, environment and transport, and maintaining and updating the website, airAlert scheme and monitoring network.

The main challenge for air quality management in Rother District is likely to be the careful management of planning applications and developments through detailed and rigorous air quality assessments, particularly where multiple developments may occur close together, in order to help

maintain the generally good levels of local air quality that are currently experienced across the District.

Further information can be found at:

http://www.rother.gov.uk/article/193/Air-quality

Air Quality in Wealden District

In recent years, local monitoring has identified high levels of NO2 at two roadside locations (A267 East of Cross in Hand, and West of Boship Roundabout), in areas where members of the public are not affected. NO2 levels at these locations have been decreasing steadily since 2010. In 2016, concentrations at the nearest sensitive receptors for both locations achieved the UK Air Quality Objective for annual mean NO2, with concentrations lower than 40 µg/m3 . There is evidence that NO2 concentrations are increasing in the town centres of Crowborough, Polegate and Hailsham, and particularly in Uckfield; however, the levels in these areas remain below the objective.

PM10 and PM2.5 are not monitored in Wealden District, but data from neighbouring Eastbourne suggest concentrations are consistently low (well below the UK annual mean objectives), decreasing slightly but with significant year-to-year variations. The number of days with high PM10 concentrations (above the 24-hour objective) has decreased between 2012 and 2016.

As in other suburban and rural areas of East Sussex, ozone (O3) is of considerable concern. O3 is monitored in two locations in Wealden: Isfield and Lullington Heath. Annual average O3 levels at Lullington Heath have increased since 2011 but remain below the objective. Levels at Isfield have been stable and have been above the objective except in 2014. The number of days with high ozone concentrations (above the 8-hour objective) has decreased since 2011, with significant year-to-year variability.

Sulphur dioxide (SO2) is also measured at the Lullington Heath station. However, in recent years there have been no exceedances of any of the three UK Air Quality Objectives (15-minute, 1-hour and 24-hour).

Two-thirds of the District is designated as the High Weald and Sussex Downs Areas of Outstanding Natural Beauty (AONB) with 34 other conservations areas. The impact of traffic-related air pollution on some of these areas has been assessed in past years. Current or future traffic flows predicted from development plans are not expected to put the Pevensey Levels Special Area of Conservation (SAC) at risk from excessive nitrogen deposition. The impact of traffic on the Ashdown Forest Special Protection Area (SPA) and SAC is currently being monitored, and the results will be examined in future years.

Further information can be found at:

http://www.wealden.gov.uk/Wealden/Residents/Environment_and_Pollution/Pollution/Protectingandimprovingtheenvironment/Airquality/PHCS_Monitoring_Air_Quality.aspx