



Office of
Environment
& Heritage

New South Wales Annual Compliance Report 2013

**National Environment Protection
(Ambient Air Quality) Measure**

With the exception of photographs, the State of NSW and Office of Environment and Heritage are pleased to allow this material to be reproduced in whole or in part for educational and non-commercial use, provided the meaning is unchanged and its source, publisher and authorship are acknowledged. Specific permission is required for the reproduction of photographs.

The Office of Environment and Heritage (OEH) has compiled this report in good faith, exercising all due care and attention. No representation is made about the accuracy, completeness or suitability of the information in this publication for any particular purpose. OEH shall not be liable for any damage which may occur to any person or organisation taking action or not on the basis of this publication. Readers should seek appropriate advice when applying the information to their specific needs. This document may be subject to revision without notice and readers should ensure they are using the latest version.

Every effort has been made to ensure that the information in this document is accurate at the time of publication. However, as appropriate, readers should obtain independent advice before making any decision based on this information.

Published by:

Office of Environment and Heritage
59 Goulburn Street, Sydney NSW 2000
PO Box A290, Sydney South NSW 1232
Phone: (02) 9995 5000 (switchboard)
Phone: 131 555 (environment information and publications requests)
Phone: 1300 361 967 (national parks, general environmental enquiries, and publications requests)
Fax: (02) 9995 5999
TTY users: phone 133 677, then ask for 131 555
Speak and listen users: phone 1300 555 727, then ask for 131 555
Email: info@environment.nsw.gov.au
Website: www.environment.nsw.gov.au

Report pollution and environmental incidents

Environment Line: 131 555 (NSW only) or info@environment.nsw.gov.au
See also www.environment.nsw.gov.au

ISBN 978 1 74359 802 3
OEH 2014/0658
November 2014

Contents

| | |
|--|-----------|
| Acronyms, abbreviations and glossary | iv |
| Overview | 1 |
| Ozone | 1 |
| Particulates | 1 |
| Section A – Monitoring summary | 3 |
| Current AAQ NEPM Monitoring network | 3 |
| Types of monitoring stations | 3 |
| New sites and site closures during 2013 | 3 |
| Station siting and exposure | 7 |
| Monitoring methods | 7 |
| NATA accreditation | 8 |
| Pollutant screening criteria | 8 |
| Section B – Assessment of compliance with standards and goals | 9 |
| Assessment against standards and goals | 9 |
| Categories used to assess compliance | 10 |
| Calculation and reporting methods | 10 |
| Data losses during 2013 | 11 |
| Carbon monoxide | 11 |
| Nitrogen dioxide | 12 |
| Ozone | 13 |
| Sulfur dioxide | 14 |
| Particles as PM ₁₀ | 15 |
| Particles as PM _{2.5} | 16 |
| Lead | 17 |
| Section C – Analysis of air quality | 18 |
| Data availability rates | 18 |
| Air quality data tables | 19 |
| Carbon monoxide | 19 |
| Nitrogen dioxide | 20 |
| Ozone | 21 |
| Sulfur dioxide | 23 |
| Particles as PM ₁₀ | 25 |
| Particles as PM _{2.5} | 27 |
| Assessment of progress towards achieving the goal | 1 |
| Air Quality Management in the Sydney Greater Metropolitan Region and Regional NSW | 1 |
| Section D – Data analysis | 4 |
| Carbon monoxide | 4 |
| Nitrogen dioxide | 8 |
| Ozone | 15 |
| Sulfur dioxide | 32 |
| Particles as PM ₁₀ | 41 |
| Particles as PM _{2.5} | 49 |

Acronyms, abbreviations and glossary

Following is a list of acronyms, abbreviations and terms used in this report.

| | |
|--------------------|--|
| AAQ NEPM | Ambient Air Quality National Environment Protection Measure |
| Ambient air | The external air environment (does not include the air environment inside buildings or structures) |
| ARS | Advisory Reporting Standard |
| AS | Australian Standards |
| BAM | Beta attenuation monitor |
| CO | Carbon monoxide |
| EPA | Environment Protection Authority |
| FRM | Federal Reference Method (USEPA) |
| GMR | Greater Metropolitan Region |
| ICP-AES | Inductively coupled plasma – atomic emission spectroscopy |
| Monitoring station | A facility for measuring the concentration of one or more pollutants in the ambient air in a region or sub-region |
| NATA | National Association of Testing Authorities |
| NEPC | National Environment Protection Council |
| NEPM | National Environment Protection Measure |
| NO ₂ | Nitrogen dioxide |
| NO _x | Oxides of nitrogen |
| O ₃ | Ozone |
| OEH | Office of Environment and Heritage (NSW) |
| Pb | Lead |
| PM _{2.5} | Particulate matter with an aerodynamic diameter of 2.5 microns or less |
| PM ₁₀ | Particulate matter with an aerodynamic diameter of 10 microns or less |
| ppm | Parts per million– parts of pollutant per million parts of air by volume |
| RAAS TM | Reference Ambient Air Sampler |
| SO ₂ | Sulfur dioxide |
| TEOM | Tapered element oscillating microbalance |
| USEPA | United States Environmental Protection Agency |
| µg/m ³ | Microgram of pollutant (1 millionth of a gram) per cubic metre of air, referenced to a temperature of 0 °C and an absolute pressure of 101.325 kPa |
| VOCs | Volatile organic compounds – compounds that vaporise (i.e. become a gas) at normal atmospheric temperatures |

Overview

This report, required under clause 18 of the National Environment Protection (Ambient Air Quality) Measure (AAQ NEPM), presents the results of air quality monitoring in New South Wales for the 2013 calendar year and assesses them against the requirements of the AAQ NEPM. These data are also routinely available on the [NSW Office of Environment and Heritage \(OEH\) public website](#).

The AAQ NEPM establishes:

- requirements for monitoring air quality
- air quality standards that are levels of specified pollutants against which air quality can be assessed
- a goal that the air quality standards are met by 2008 to the extent specified in the NEPM. Recognizing that certain events can affect air quality, the NEPM specifies a maximum number of days on which it is permissible to exceed the standard.

Monitoring in the AAQ NEPM monitoring network (a subset of OEH's total ambient air quality monitoring network) was performed in accordance with the New South Wales AAQ Monitoring Plan, AAQ NEPM Technical Papers and OEH's National Association of Testing Authorities (NATA) accreditation.

Monitoring at the designated NEPM monitoring stations in NSW during 2013 showed no exceedences of the AAQ NEPM standards for carbon monoxide (CO), nitrogen dioxide (NO₂) and sulfur dioxide (SO₂). Note that monitoring for lead (Pb) ceased in 2004 because ambient concentrations were extremely low.

In 2013 NSW felt the influence of a major bushfire emergency event (17 October to 11 November), which affected the number of exceedences of particle and ozone standards and goals. The following exceedences of the AAQ NEPM standards and goals were recorded in the AAQ NEPM monitoring network during 2013:

Ozone

The 1-hour and 4-hour standards were exceeded on four and six distinct calendar days, respectively, within the NEPM network.

All three Illawarra region stations did not meet the NEPM goals for the 1-hour and 4-hour ozone standards. These recorded exceedences on three distinct calendar days: twice during the bushfire emergency period and once during hot summer conditions.

In the Sydney region, Camden and St Marys had four and two calendar days, respectively, when the 4-hour NEPM goal was not met. The 1-hour goal was met at all Sydney sites.

Particulates

The 24-hour particle standard (as PM₁₀) was exceeded on 39 calendar days, with 12 of these occurring during the widespread bushfire emergency. Two sites

(Wollongong and Wagga Wagga North) did not comply with the NEPM goal of five allowable exceedence days.

At Wollongong, the 24-hour PM_{10} standard was exceeded on six days of the year; three of these were during the bushfire emergency. At Wagga Wagga North, a large number of exceedence days were recorded (a total of 15), only one of which occurred during the bushfire emergency (19 October). Fire records suggest that grass fires nearby coincided with about half of the remainder of the exceedence days.

Fine particles (as $PM_{2.5}$) were measured in 2013 by using beta attenuation monitors (BAMs) exclusively. All sites in the network recorded concentrations in excess of the 24-hour $PM_{2.5}$ Advisory Reporting Standard (ARS). A total of 20 calendar days were in exceedence of the ARS, and most occurred during the bushfire emergency (13 days). Five exceedence days were observed exclusively at Richmond outside the bushfire emergency period.

Annual average $PM_{2.5}$ concentrations in excess of the 1-year ARS were found at three Sydney sites (Chullora, Liverpool and Richmond) and one Lower Hunter site (Beresfield).

Section A – Monitoring summary

Current AAQ NEPM Monitoring network

The [NSW AAQ NEPM Monitoring Plan](#) gives details of the monitoring that NSW performs to assess compliance with the AAQ NEPM. The majority of monitoring occurs in the highly populated regions of Sydney, Newcastle and Wollongong, which contain over 60% of the NSW population. Campaign monitoring is also performed at a number of rural population centres.

The AAQ NEPM monitoring network is part of an overall 40-station air monitoring network operated by the Office of Environment and Heritage (OEH). The AAQ NEPM network is designed to characterise general air quality and frequently will pick up individual pollutant events. This approach ensures that there is adequate coverage of the populated areas and of the broad differences in pollutant distribution within a region. The choice of stations in each region was made to optimise both population coverage and representation of the occurrences of higher pollutant concentrations.

Types of monitoring stations

OEH characterises the air quality to which the general population is exposed in a region by monitoring all air pollutants of interest at a network of *trend* stations. These stations capture the majority of pollution events that occur from time to time, but their work is supplemented by that of additional permanent upper bound stations (*performance* stations) where selected pollutants are monitored to ensure that all major pollutant events are captured and reported. *Campaign monitoring* is also done in regional centres at Albury, Wagga Wagga North, Bathurst and Tamworth.

In total, the AAQ NEPM network in NSW currently monitors pollutants at 22 stations (Table 1 and Figures 1 and 2). The eight *trend* stations monitor the majority of pollutants and the six *performance* stations monitor selected individual pollutants. Selected pollutants are monitored on a *campaign* basis at a further eight stations in Sydney, the Central Coast, the Lower Hunter and regional New South Wales.

In addition, OEH maintains a number of air quality monitoring stations that are not designated for NEPM reporting, and some stations designated as NEPM stations for particular pollutants are not designated for other pollutants. For instance, St Marys is designated as an NEPM station for ozone, but nitrogen dioxide and PM₁₀ are also measured at this station. Data from stations designated as non-NEPM stations for a particular pollutant are not presented in this report.

New sites and site closures during 2013

No changes were made to the AAQ NEPM network during 2013.

Table 1. NSW AAQ NEPM monitoring network

| Station | Station type ¹ | Year est. | No. of parameters | Ozone | NO | PM ₁₀ | PM _{2.5} | CO | SO ₂ |
|--------------------------------|---------------------------|-----------|-------------------|-------|----|------------------|-------------------|----|-----------------|
| Sydney | | | | | | | | | |
| Bringelly | T | 1992 | 4 | X | X | X | | | X |
| Camden ² | P | 2012 | 5 | X | X | X | X | X | |
| Campbelltown West ³ | T | 2012 | 5 | X | X | X | | X | X |
| Chullora ³ | T | 2003 | 6 | X | X | X | X | X | X |
| Earlwood | C | 1998 | 1 | | | | X | | |
| Liverpool | C | 1990 | 5 | X | X | X | X | X | |
| Oakdale | P | 1996 | 2 | X | | X | | | |
| Prospect ⁴ | T | 2007 | 5 | X | X | X | | X | X |
| Richmond | T | 1992 | 5 | X | X | X | X | | X |
| Rozelle | T | 1978 | 4 | X | X | X | | X | |
| St Marys | P | 1992 | 1 | X | | | | | |
| Central Coast | | | | | | | | | |
| Wyong ² | P | 2012 | 6 | X | X | X | X | X | X |
| Lower Hunter | | | | | | | | | |
| Beresfield | C | 1993 | 2 | | | X | X | | |
| Newcastle | T | 1992 | 5 | X | X | X | | X | X |
| Wallsend | C | 1992 | 4 | X | X | | X | | X |
| Illawarra | | | | | | | | | |
| Albion Park South | P | 2005 | 4 | X | X | X | | | X |
| Kembla Grange | P | 1994 | 2 | X | | X | | | |
| Wollongong | T | 1993 | 6 | X | X | X | X | X | X |
| Regional NSW | | | | | | | | | |
| Albury | C | 2000 | 1 | | | X | | | |
| Bathurst ⁵ | C | 2000 | 2 | X | | X | | | |
| Tamworth | C | 2000 | 1 | | | X | | | |
| Wagga Wagga North | C | 2011 | 1 | | | X | | | |

¹ P denotes performance; T denotes trend; C denotes campaign

² New station opened in September–October 2012

³ Replaced the Macarthur trend station from September 2012

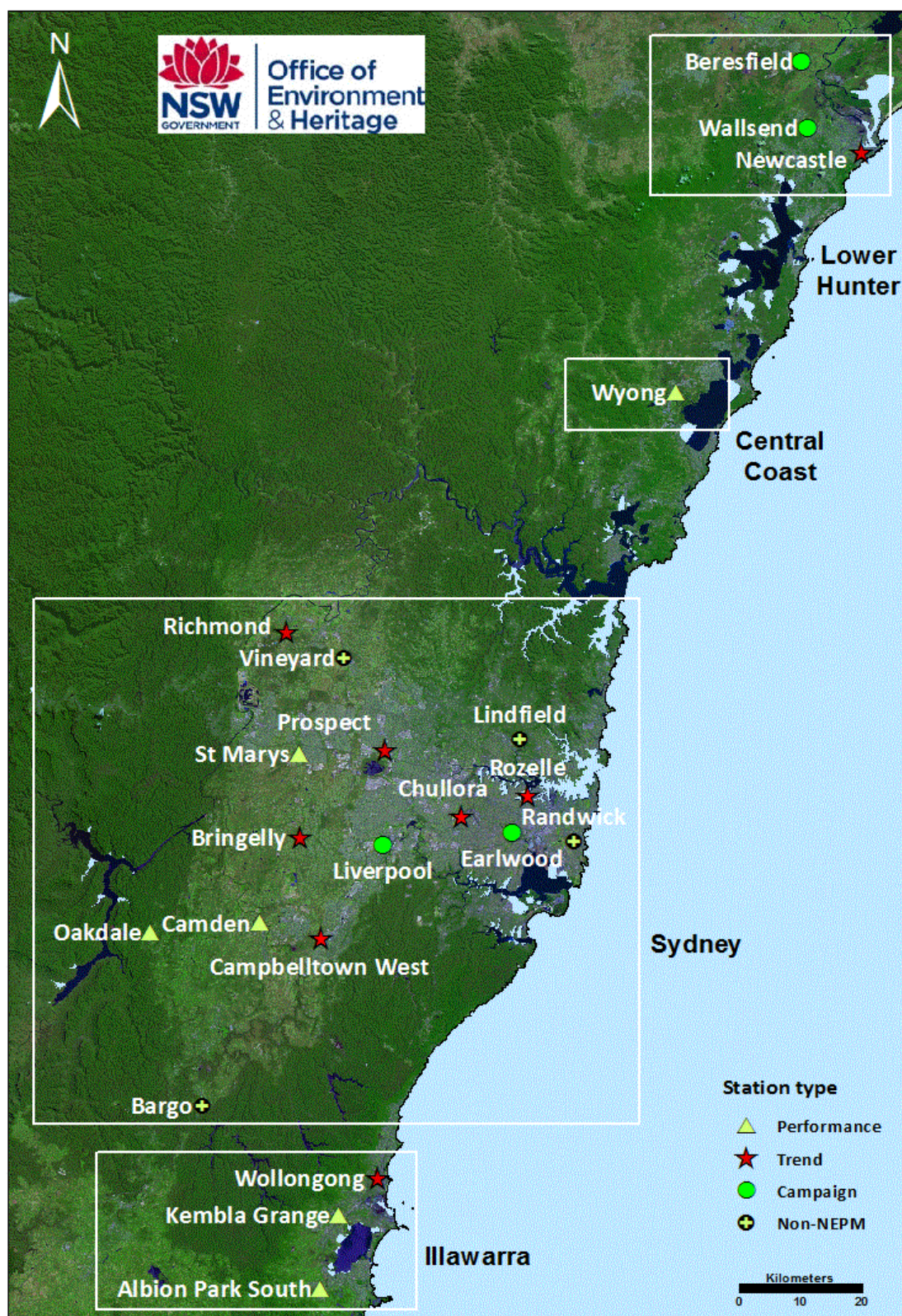
⁴ Replaced Blacktown station from 2007

⁵ Bathurst ozone analyser was removed in August 2007 because the ozone monitoring campaign program was finalised.

Figure 1. Ambient air quality monitoring regions, including regional New South Wales (four campaign-type stations) and the Greater Metropolitan Region or GMR (Sydney, Illawarra, Central Coast, Lower Hunter and the Upper Hunter). All regions except for the Upper Hunter include NEPM-designated stations.



Figure 1. Ambient air quality monitoring stations in the New South Wales Greater Metropolitan Region, including designated NEPM stations.



Station siting and exposure

All stations within the network, with the exception of Earlwood, Liverpool, Rozelle and Tamworth, meet all of the AAQ NEPM siting and exposure criteria (see Table 2 for further details).

Table 2. Stations not complying with all siting and exposure criteria

| Station | Siting criteria not met | Comments |
|----------|--|--|
| Chullora | Less than 20 m from trees | Trees have grown since establishment of station |
| Earlwood | Clear sky angle <120°. Less than 20 m from trees | Trees have grown since establishment of station |
| Rozelle | Clear sky angle <120°. Less than 20 m from trees | Trees have grown since establishment of station |
| Tamworth | Less than 20 m from trees | Best location in urban area specifically targeted for monitoring |

Monitoring methods

The NSW network comprises instruments that are in accordance with the relevant Australian standard (see Table 3 for further details). Note that, in the case of PM₁₀, the tapered element oscillating microbalance (TEOM) method is used for NEPM monitoring and reporting. PM₁₀ data from the TEOM are presented as measured and unadjusted for temperature. For PM_{2.5}, BAMs were used.

Table 3. Instruments used in NSW for NEPM monitoring

| Pollutant | Standard | Title | Method used |
|--------------------------------|------------------------|---|--|
| Carbon monoxide | AS3580.7.1-2011 | Ambient Air – Determination of Carbon Monoxide – Direct Reading Instrument Method | Gas filter correlation/ infra-red |
| Nitrogen dioxide | AS3580.5.1-2011 | Ambient Air – Determination of Oxides of Nitrogen – Chemiluminescence Method | Gas-phase chemiluminescence |
| Photochemical oxidant (ozone) | AS3580.6.1-2011 | Ambient Air – Determination of Ozone – Direct Reading Instrument Method | Non-dispersive ultra-violet |
| Sulfur dioxide | AS3580.4.1-2008 | Ambient Air – Determination of Sulfur Dioxide – Direct Reading Instrument Method | Pulsed fluorescence |
| Lead ¹ | AS2800 -1985 | Ambient Air – Determination of Particulate Lead – High Volume Sampler – Gravimetric Method | Atomic absorption |
| Particles as PM ₁₀ | AS3580.9.8-2008 | Determination of Suspended Particulate Matter – PM ₁₀ continuous direct mass method using a TEOM | Tapered element oscillating microbalance (TEOM) ² |
| Particles as PM _{2.5} | AS/NZS 3580.9.12 2013 | Determination of Suspended Particulate Matter - PM _{2.5} Beta Attenuation Monitors | Beta attenuation monitor (BAM) ³ |
| | AS/NZS 3580.9.10:2006. | Determination of Suspended Particulate Matter – PM _{2.5} low volume sampler – Gravimetric method | FRM Partisol ⁴ |
| | | | FRM Reference Ambient Air Sampler (RAAS) ^{TM4} |

¹ No longer measured in New South Wales

² Instrument output conforms to USEPA equivalence designation (offset 3.0, scaling factor 1.03)

³ TEOM monitors at all sites were replaced by BAM PM_{2.5} monitors (Federal Equivalent Method) during 2012. Before this, TEOMs were modified for use in the PM_{2.5} Equivalence Program and at the monitoring stations, in accordance with the NEPM Technical Paper.

⁴ Both Partisol and RAASTM are [USEPA Federal Reference Methods](#) (FRMs).

NATA accreditation

As required under Clause 12 of the AAQ NEPM, OEH is accredited by NATA for the measurement of all AAQ NEPM parameters (accreditation number 14209). The last biennial reassessment of the Air Quality Monitoring Laboratory and associated monitoring stations by NATA was completed in late 2012.

Pollutant screening criteria

Clause 14(2) of the AAQ NEPM allows for fewer **performance** monitoring stations where it can be demonstrated that pollutant levels are reasonably expected to be consistently lower than the AAQ NEPM standards. These screening criteria have been used for carbon monoxide, nitrogen dioxide, ozone, sulfur dioxide and lead at several regions in NSW. More detailed information regarding screening of pollutants for specific regions is given in the [NSW AAQ NEPM Monitoring Plan](#).

Section B – Assessment of compliance with standards and goals

Assessment against standards and goals

Air quality is assessed against the standards and goals as specified in Schedule 2 of the AAQ NEPM.

The **standards** against which air quality is assessed are concentrations in parts per million (ppm) or micrograms per cubic metre ($\mu\text{g}/\text{m}^3$), as per column 3 of Table 4.

The **goal** of the AAQ NEPM is to achieve the Standards as assessed in accordance with the monitoring protocol within 10 years of commencement (i.e. 2008) to the extent specified in Schedule 2 of the AAQ NEPM. The extent is expressed as a maximum allowable number of exceedences per year, for each standard (column 4 in Table 4). These are set to account for unusual meteorological conditions and, in the case of particles, natural events (such as dust storms and bushfires) that can't be controlled through normal air quality management programs.

The AAQ NEPM also specifies advisory reporting standards for $\text{PM}_{2.5}$ (see Table 4). The goal in the case of $\text{PM}_{2.5}$ is to collect sufficient data to facilitate a review of the $\text{PM}_{2.5}$ standards.

Table 4. NEPM standards and goals specified in Schedule 2 of the AAQ NEPM

| Pollutant | Averaging period | AAQ NEPM standard (maximum concentration) | AAQ NEPM goal (maximum number of allowable exceedences) |
|---|------------------------|---|---|
| Carbon monoxide | 8-hour rolling average | 9.0 ppm | 1 day a year |
| Nitrogen dioxide | 1-hour average | 0.120 ppm | 1 day a year |
| | 1-year average | 0.030 ppm | None |
| Photochemical oxidants – as ozone | 1-hour average | 0.100 ppm | 1 day a year |
| | 4-hour rolling average | 0.080 ppm | 1 day a year |
| Sulfur dioxide | 1-hour average | 0.200 ppm | 1 day a year |
| | 1-day average | 0.080 ppm | 1 day a year |
| | 1-year average | 0.020 ppm | None |
| Particles as PM_{10} | 1-day average | $50.0 \mu\text{g}/\text{m}^3$ | 5 days a year |
| Lead | 1-day average | $0.50 \mu\text{g}/\text{m}^3$ | None |
| Particles as $\text{PM}_{2.5}$ ¹ | 1-day average | $25.0 \mu\text{g}/\text{m}^3$ | Gather sufficient data nationally to facilitate a review of the Advisory Reporting Standard |
| | 1-year average | $8.0 \mu\text{g}/\text{m}^3$ | |

¹ Reporting standard only

Tables 5 to 10a summarize compliance with the AAQ NEPM standards and goals. The following are given for each pollutant monitored at each monitoring station:

- data availability rate (quarterly and annual)
- the annual mean (where an annual standard exists)

- an assessment of compliance, including the number of days when standards were exceeded.

Categories used to assess compliance

The categories MET, NOT MET and ND are used to indicate assessment of compliance.

A station's performance is assessed as **complying with the NEPM (i.e. 'MET')** if the number of exceedences is no more than the number specified in Schedule 2 of the AAQ NEPM and data availability was at least 75% in each quarter of 2013.

A station's performance is assessed as **not complying with the NEPM (i.e. 'NOT MET')** if there is more than the number of exceedences specified in Schedule 2 of the AAQ NEPM, even if the data availability rates meet the 75% requirement.

A station's performance is assessed as **'NOT DEMONSTRATED' (ND)** if it has data availability rates less than 75% in any quarter, even if it records no exceedences or the number of exceedence days is allowable. This may be due to instrument failures, temporary closures for upgrading, or closures to allow relocation of the station.

A region demonstrates compliance with the NEPM when either all stations in the region demonstrate compliance or when the region meets approved **pollutant screening criteria**.

Calculation and reporting methods

The calculation and reporting methods used comply with the requirements described in *National Environment Protection (Ambient Air Quality) Measure Technical Paper No. 8: Annual Reports* (NEPC Peer Review Committee 2002). Daily averages are calculated by using hours 1 to 24, as described in the *National Environment Protection (Ambient Air Quality) Measure Technical Paper No. 5: Data Collection and Handling* (NEPC Peer Review Committee 2001).

There may be minor differences in the trend data included in this year's report compared with those in reports before 2008 owing to the way in which OEH's new air quality database performs its internal calculations, especially in relation to percentiles.

An internal correction factor for USEPA equivalency has been applied to PM₁₀ TEOM data, but there has been no subsequent treatment or temperature adjustment.

PM_{2.5} measurements were made by using BAMs (a Federal Equivalent Method). Where presented for pre-2012, TEOM PM_{2.5} data do not include the internal correction for USEPA PM₁₀ equivalency or any subsequent treatment or adjustment for temperature.

All days where a particular standard for a pollutant were exceeded are listed. Also listed are the stations that recorded exceedences of the standard on that day, and (for averaging periods of less than 24 hours) the number of daily averaging periods in which the standard was exceeded.

Where possible, a brief comment is given for particular pollution events. Events that have been clearly influenced by extraordinary natural events, such as bushfires and dust storms, are highlighted. Note that the absence of a comment does not necessarily indicate the absence of such influences; instead, no clear information may be available. In some cases it is likely that there has been some influence, but the extent of this influence cannot be absolutely determined.

Data losses during 2013

All stations complied with the data coverage requirement (at least 75% per quarter) during 2013.

Carbon monoxide

Table 5. 2013 Compliance summary for CO in New South Wales

| AAQ NEPM standard and goal 9.0 ppm (8-hour average, 1 day/year) | | | | | | | |
|--|-------------------------------------|------|------|------|--------|------------------------------------|--|
| Region/ Performance monitoring station | Data availability rate (% of hours) | | | | | Number of exceedences (days) | Performance against the standard and goal |
| | Q1 | Q2 | Q3 | Q4 | Annual | | |
| Sydney | | | | | | | |
| Camden | 95.4 | 94.0 | 95.4 | 94.6 | 94.9 | 0 | Met |
| Campbelltown West | 93.8 | 95.5 | 95.2 | 93.1 | 94.4 | 0 | Met |
| Chullora | 94.2 | 91.2 | 92.6 | 95.0 | 93.3 | 0 | Met |
| Liverpool | 93.1 | 95.2 | 95.1 | 95.4 | 94.7 | 0 | Met |
| Prospect | 83.8 | 92.8 | 93.9 | 93.5 | 91.0 | 0 | Met |
| Rozelle | 85.0 | 92.1 | 90.6 | 93.4 | 90.3 | 0 | Met |
| Central Coast | | | | | | | |
| Wyang | 94.7 | 95.2 | 95.3 | 93.0 | 94.6 | 0 | Met |
| Illawarra | | | | | | | |
| Wollongong | 93.2 | 94.1 | 95.5 | 89.5 | 93.1 | 0 | Met |
| Lower Hunter | | | | | | | |
| Newcastle | 95.0 | 95.7 | 91.7 | 94.8 | 94.3 | 0 | Met |

During 2013 no exceedences of the carbon monoxide standard were recorded in NSW (Table 5). Compliance with the AAQ NEPM goal was demonstrated at all sites in the Sydney, Illawarra and Lower Hunter regions.

Nitrogen dioxide

Table 6. 2013 Compliance summary for NO₂ in New South Wales

AAQ NEPM standards and goals
0.120 ppm (1-hour average, 1 day/year)
0.030 ppm (Annual average)

| Region/ Performance monitoring station | Data availability rate (% of hours) | | | | | Number of exceedences (days) | Annual mean (ppm) | Performance against standards and goals | |
|--|-------------------------------------|------|------|------|--------|------------------------------------|-------------------------|---|--------|
| | Q1 | Q2 | Q3 | Q4 | Annual | | | 1-hour | 1-year |
| Sydney | | | | | | | | | |
| Bringelly | 93.8 | 90.1 | 95.0 | 92.8 | 92.9 | 0 | 0.005 | Met | Met |
| Camden | 95.7 | 94.0 | 95.4 | 91.3 | 94.1 | 0 | 0.011 | Met | Met |
| Campbelltown West | 93.8 | 95.5 | 95.0 | 95.5 | 95.0 | 0 | 0.004 | Met | Met |
| Chullora | 93.0 | 91.2 | 95.4 | 89.2 | 92.2 | 0 | 0.013 | Met | Met |
| Liverpool | 89.2 | 89.4 | 94.5 | 95.4 | 92.1 | 0 | 0.010 | Met | Met |
| Prospect | 83.3 | 92.9 | 91.1 | 87.9 | 88.8 | 0 | 0.011 | Met | Met |
| Richmond | 95.0 | 93.4 | 92.7 | 88.9 | 92.5 | 0 | 0.005 | Met | Met |
| Rozelle | 87.5 | 92.1 | 93.3 | 92.9 | 91.5 | 0 | 0.011 | Met | Met |
| Central Coast | | | | | | | | | |
| Wyang | 95.0 | 95.3 | 95.5 | 92.9 | 94.7 | 0 | 0.005 | Met | Met |
| Illawarra | | | | | | | | | |
| Albion Park South | 93.2 | 94.1 | 95.6 | 86.8 | 92.4 | 0 | 0.004 | Met | Met |
| Wollongong | 78.7 | 92.1 | 95.5 | 90.3 | 89.2 | 0 | 0.008 | Met | Met |
| Lower Hunter | | | | | | | | | |
| Newcastle | 94.5 | 95.7 | 95.0 | 94.9 | 95.0 | 0 | 0.008 | Met | Met |
| Wallsend | 95.4 | 93.8 | 84.5 | 93.7 | 91.8 | 0 | 0.008 | Met | Met |

No exceedences of the nitrogen dioxide 1-hour and annual standards were recorded in NSW during 2013 (Table 6). Compliance with the AAQ NEPM goal was met at all sites in the Sydney, Illawarra and Lower Hunter regions.

Ozone

Table 7. 2013 Compliance summary for O₃ (ozone) in New South Wales

AAQ NEPM standards and goals
0.100 ppm (1-hour average, 1 day/year)
0.080 ppm (4-hour average, 1 day/year)

| Region/ Performance monitoring station | Data availability rate (% of hours) | | | | | Number of exceedences (days) | | Performance against standards and goals | |
|--|--|------|------|------|--------|------------------------------------|----------|---|----------------|
| | Q1 | Q2 | Q3 | Q4 | Annual | 1-hour | 4-hour | 1-hour | 4-hour |
| Sydney | | | | | | | | | |
| Bringelly | 93.8 | 95.1 | 95.1 | 95.2 | 94.8 | 1 | 1 | Met | Met |
| Camden | 95.4 | 89.1 | 89.1 | 93.8 | 93.1 | 1 | 4 | Met | Not Met |
| Campbelltown West | 90.5 | 95.6 | 95.6 | 94.2 | 93.9 | 0 | 1 | Met | Met |
| Chullora | 95.2 | 93.6 | 93.6 | 95.1 | 94.8 | 1 | 1 | Met | Met |
| Liverpool | 93.1 | 95.5 | 95.5 | 94.4 | 94.2 | 1 | 1 | Met | Met |
| Oakdale | 94.5 | 92.8 | 92.8 | 93.2 | 94.0 | 0 | 1 | Met | Met |
| Prospect | 84.4 | 92.9 | 92.9 | 94.7 | 91.5 | 1 | 1 | Met | Met |
| Richmond | 95.0 | 93.5 | 93.5 | 94.1 | 94.3 | 0 | 0 | Met | Met |
| Rozelle | 90.7 | 92.1 | 92.1 | 92.3 | 92.4 | 0 | 0 | Met | Met |
| St Marys | 91.3 | 92.8 | 95.2 | 93.9 | 93.3 | 1 | 2 | Met | Not Met |
| Central Coast | | | | | | | | | |
| Wyong | 94.9 | 91.8 | 91.8 | 86.6 | 92.2 | 0 | 0 | Met | Met |
| Illawarra | | | | | | | | | |
| Albion Park South | 93.3 | 95.5 | 95.5 | 88.4 | 93.2 | 3 | 3 | Not Met | Not Met |
| Kembla Grange | 94.3 | 93.8 | 93.8 | 95.5 | 93.8 | 2 | 2 | Not Met | Not Met |
| Wollongong | 93.1 | 94.1 | 94.1 | 91.3 | 92.7 | 2 | 2 | Not Met | Not Met |
| Lower Hunter | | | | | | | | | |
| Newcastle | 90.2 | 95.7 | 95.7 | 94.8 | 93.9 | 0 | 0 | Met | Met |
| Wallsend | 95.4 | 93.8 | 93.8 | 95.3 | 92.2 | 0 | 0 | Met | Met |

Bold font indicates AAQ NEPM goal that was not met.

Ozone levels above the 1-hour and 4-hour standards were recorded in Sydney and the Illawarra during 2013 (Table 7). High ozone levels were widespread in both regions on 21 October during the bushfire emergency and also on 20 December during hot summer conditions.

None of the Illawarra region stations met either the 1-hour or the 4-hour standards and goals, and two western Sydney sites (Camden and St Marys) failed to meet the 4-hour ozone NEPM goal.

Sulfur dioxide

Table 8. 2013 Compliance summary for SO₂ in New South Wales

AAQ NEPM standards and goals
 0.200 ppm (1-hour average, 1 day/year)
 0.080 ppm (24-hour average, 1 day/year)
 0.020 ppm (1-year average)

| Region/ Performance monitoring station | Data availability rate (% of hours) | | | | | Number of exceedences (days) | | Annual mean (ppm) | Performance against standards and goals | | |
|--|--|------|------|------|--------|------------------------------------|---------|-------------------------|--|---------|--------|
| | Q1 | Q2 | Q3 | Q4 | Annual | 1-hour | 24-hour | | 1-hour | 24-hour | 1-year |
| Sydney | | | | | | | | | | | |
| Bringelly | 93.0 | 95.0 | 95.0 | 95.2 | 94.5 | 0 | 0 | 0.000 | Met | Met | Met |
| Campbelltown West | 93.7 | 95.6 | 95.3 | 95.5 | 95.0 | 0 | 0 | 0.001 | Met | Met | Met |
| Chullora | 94.2 | 93.6 | 95.4 | 88.5 | 92.9 | 0 | 0 | 0.001 | Met | Met | Met |
| Prospect | 84.4 | 91.7 | 93.9 | 93.7 | 90.9 | 0 | 0 | 0.001 | Met | Met | Met |
| Richmond | 95.0 | 93.5 | 94.4 | 94.1 | 94.2 | 0 | 0 | 0.000 | Met | Met | Met |
| Central Coast | | | | | | | | | | | |
| Wyang | 95.0 | 95.3 | 95.6 | 93.1 | 94.7 | 0 | 0 | 0.001 | Met | Met | Met |
| Illawarra | | | | | | | | | | | |
| Albion Park South | 89.3 | 93.0 | 89.1 | 87.0 | 89.6 | 0 | 0 | 0.001 | Met | Met | Met |
| Wollongong | 93.1 | 92.4 | 93.9 | 90.4 | 92.4 | 0 | 0 | 0.001 | Met | Met | Met |
| Lower Hunter | | | | | | | | | | | |
| Newcastle | 95.0 | 95.7 | 95.0 | 94.9 | 95.1 | 0 | 0 | 0.001 | Met | Met | Met |
| Wallsend | 95.4 | 93.8 | 85.5 | 94.2 | 92.2 | 0 | 0 | 0.001 | Met | Met | Met |

The 1-hour, 24-hour and annual standards for sulfur dioxide were not exceeded in NSW during 2013 (Table 8). Compliance with the AAQ NEPM goal was met throughout the Sydney, Lower Hunter and Illawarra regions.

Particles as PM₁₀

Table 9. 2013 Compliance summary for PM₁₀ in New South Wales

| AAQ NEPM standard and goal 50.0 µg/m ³ (24-hour average, 5 days/year) | | | | | | | |
|---|------------------------------------|------|------|------|--------|------------------------------------|--|
| Region/ Performance monitoring station | Data availability rate (% of days) | | | | | Number of exceedences (days) | Performance against standard and goal |
| | Q1 | Q2 | Q3 | Q4 | Annual | | |
| Sydney | | | | | | | |
| Bringelly | 98.2 | 99.4 | 99.7 | 99.8 | 99.5 | 3 | Met |
| Camden | 97.5 | 99.7 | 99.4 | 98.9 | 98.9 | 2 | Met |
| Campbelltown West | 99.4 | 98.7 | 99.9 | 99.2 | 99.2 | 1 | Met |
| Chullora | 99.5 | 99.6 | 99.7 | 98.7 | 99.5 | 4 | Met |
| Liverpool | 97.4 | 95.9 | 99.4 | 98.5 | 97.5 | 3 | Met |
| Oakdale | 99.4 | 99.9 | 99.8 | 99.3 | 99.6 | 4 | Met |
| Prospect | 92.3 | 96.8 | 97.3 | 98.1 | 94.5 | 4 | Met |
| Richmond | 95.4 | 99.0 | 97.1 | 99.3 | 97.8 | 5 | Met |
| Rozelle | 94.6 | 97.3 | 98.0 | 99.1 | 96.7 | 3 | Met |
| Central Coast | | | | | | | |
| Wyong | 98.1 | 99.6 | 98.6 | 98.0 | 98.6 | 1 | Met |
| Illawarra | | | | | | | |
| Albion Park South | 98.8 | 99.7 | 99.6 | 88.9 | 96.7 | 2 | Met |
| Kembla Grange | 99.3 | 99.2 | 99.8 | 99.5 | 99.7 | 4 | Met |
| Wollongong | 99.1 | 99.7 | 99.4 | 95.9 | 98.9 | 6 | Not Met |
| Lower Hunter | | | | | | | |
| Beresfield | 92.8 | 98.9 | 99.3 | 97.0 | 95.9 | 5 | Met |
| Newcastle | 98.1 | 99.6 | 99.3 | 99.8 | 98.9 | 4 | Met |
| Regional | | | | | | | |
| Albury | 94.4 | 99.8 | 99.5 | 99.8 | 98.6 | 2 | Met |
| Bathurst | 99.4 | 99.6 | 99.7 | 99.8 | 99.7 | 3 | Met |
| Tamworth | 99.0 | 99.3 | 99.0 | 99.5 | 98.4 | 0 | Met |
| Wagga Wagga North | 98.4 | 99.6 | 98.6 | 99.8 | 98.9 | 15 | Not Met |

Bold font indicates AAQ NEPM goal that was not met.

In 2013, the AAQ NEPM goal for 24-hour PM₁₀ was met at all NEPM sites except for Wollongong and Wagga Wagga North (Table 9). Although PM₁₀ particle levels above the national standard were recorded at most monitoring stations, only Wagga Wagga North (15 days) and Wollongong (6 days) recorded levels above the standard on more than five NEPM allowable days.

Particles as PM_{2.5}

Table 10. Summary of 2013 PM_{2.5} concentrations in New South Wales

Advisory Reporting Standard (ARS)
25.0 µg/m³ (24-hour average)
8.0 µg/m³ (Annual average)

| Region/Performance monitoring station | Data availability rate (% of hours) | | | | | Days above ARS | Annual mean (µg/m ³) |
|---------------------------------------|-------------------------------------|------|------|------|--------|----------------|----------------------------------|
| | Q1 | Q2 | Q3 | Q4 | Annual | | |
| Sydney | | | | | | | |
| Camden | 97.1 | 95.2 | 96.6 | 94.8 | 95.9 | 3 | 6.5 |
| Chullora | 97.6 | 97.4 | 97.0 | 94.9 | 96.7 | 3 | 8.4 |
| Earlwood | 98.3 | 71.1 | 94.5 | 97.6 | 90.4 | 4 | 7.9 |
| Liverpool | 88.8 | 90.4 | 89.4 | 91.2 | 90.0 | 2 | 9.5 |
| Richmond | 92.2 | 95.5 | 90.4 | 95.9 | 93.5 | 14 | 8.4 |
| Central Coast | | | | | | | |
| Wyong | 85.1 | 88.0 | 90.4 | 92.3 | 89.0 | 1 | 6.6 |
| Illawarra | | | | | | | |
| Wollongong | 93.5 | 92.4 | 88.0 | 88.5 | 90.6 | 4 | 7.7 |
| Lower Hunter | | | | | | | |
| Beresfield | 88.7 | 95.5 | 97.1 | 91.7 | 93.3 | 1 | 8.3 |
| Wallsend | 94.3 | 96.1 | 87.0 | 96.8 | 93.6 | 6 | 7.7 |

Bold font indicates values in excess of the AAQ NEPM advisory reporting standard.

Daily PM_{2.5} levels above the advisory reporting standard of 25 µg/m³ were recorded at all PM_{2.5} monitoring stations (Table 10). Richmond recorded 14 days above the standard, all as a result of prevalent bushfires. Annual average PM_{2.5} levels above the ARS (8 µg/m³) were recorded at a number of stations.

Whereas the above data (Table 10) were collected by using BAM, Table 10a presents PM_{2.5} data that were measured by using a Federal Reference Method (FRM). OEH performs FRM measurements at its Chullora station only. The differences in PM_{2.5} annual averages between BAM and FRM reflect inter-method differences, as FRM provides only one sample in three days, whereas BAM is an automated technique provides continuous data.

Table 10a. Summary of PM_{2.5} concentrations in New South Wales (2013) – FRM method

| Advisory Reporting Standard (ARS) | | | | | | | |
|--|--|------|------|------|--------|----------------|----------------------------------|
| 25.0 µg/m ³ (24-hour average) | | | | | | | |
| 8.0 µg/m ³ (Annual average) | | | | | | | |
| Region/Performance monitoring station | Data availability rate ¹ (% of hours) | | | | | Days above ARS | Annual mean (µg/m ³) |
| | Q1 | Q2 | Q3 | Q4 | Annual | | |
| Sydney | | | | | | | |
| Chullora | 66.7 | 43.3 | 73.3 | 83.3 | 65.8 | 2 | 7.2 |

¹ Data availability rates are based on a 1-day-in-3 sampling regime.

Lead

The primary source of lead in air was eliminated with the complete ban on lead in petrol. Changes to fuel formulation brought marked reductions in the levels of lead in the atmosphere. Annual averages throughout New South Wales are now typically less than 0.03 µg/m³, with many 24-hour average samples below the minimum detection limit for lead (0.007 µg/m³ using ICP-AES (inductively coupled plasma-atomic emission spectroscopy)). Since 2002 the highest annual average recorded in NSW was only 18% of the standard (0.09 µg/m³ at Wallsend in 2003).

OEH phased out ambient lead monitoring for the AAQ NEPM during 2004. The case for cessation of lead monitoring was approved by the National Environment Protection Council (NEPC).

Section C – Analysis of air quality

Data availability rates

Data availability rates are presented as either percentages of valid data or numbers of valid days.

When presented as a percentage, the value is the number of averaging periods in which the data are valid, divided by the total number of averaging periods in the year (or quarter, as appropriate).

When presented as the number of valid days, the value represents the number of days during the year when at least 75% of averaging periods during the day are valid. A valid day has at least 18 valid hours. If we hypothesize that on each day throughout the year we had **exactly** 18 valid hours, then annual data availability would be 75%. The number of valid days would be 365.

Calibration hour

For gaseous pollutants, the calibration hour is included in the calculation of data availability rates.

OEH does daily automated instrument calibration checks for carbon monoxide, nitrogen dioxide, ozone and sulfur dioxide during the early morning, and data obtained during the calibration check are considered invalid. Hence for these pollutants the maximum number of valid 1-hour averages in a day is 23. However, all calculations for data availability given in this report **include** the invalid calibration hour (i.e. calculations assume that there are 24 **possible** valid hours in a day). Therefore, for gaseous pollutants, the maximum annual 1-hour data availability can be only 96%.

Data availability rates of reporting periods

Each reporting period (e.g. quarter) and NEPM standard averaging period has at least a 75% data availability rate.

For example, the carbon monoxide NEPM standard is based on 8-hour rolling averages. A valid hour is calculated as the average of the valid 1-hour averages over the preceding 8 hours, when at least six of those hours (75%) hold valid data.

Data availability rates for pollutants reported against more than one standard

For pollutants reported against more than one AAQ NEPM standard, data availability rates may not be the same for each standard.

For instance, when ozone is measured, 1 hour of each day is lost during calibration checks. This affects data availability rates for reporting against the 1-hour standard for the associated hour, but it may not affect data availability rates for reporting against the 4-hour standard. Thus the maximum data availability rate is only 96% for the 1-hour standard, but it can be 100% for the 4-hour standard.

Daily maxima

As an NEPM requirement for standards with averaging periods of less than 24 hours, the daily maxima are reported regardless of the number of valid hours on the day.

As example, the highest 1-hour daily average for NO₂ during a given year at a site may have occurred on a day on which the 75% data requirement was not met. In reporting percentile distributions of the annual 1-hour maxima for the site, however, at least 75% of valid hours must be available for the associated day. If not, the subsequent day that has the highest 1-hour daily average from the year's dataset and meets the 75% data requirement will be used.

Air quality data tables

Tables 11 to 22a summarize the air quality data for each indicator and their relationship to the AAQ NEPM standards.

Carbon monoxide

Table 11. Summary for CO: Daily maximum rolling 8-hour average concentrations (2013)

| Region/Performance monitoring station | Data availability rate (%) | Number of valid days | Maximum values (ppm) | | | |
|---------------------------------------|----------------------------|----------------------|----------------------|------------------|-------------|---------------------|
| | | | Highest | Date of highest | 2nd highest | Date of 2nd highest |
| Sydney | | | | | | |
| Camden | 99.0 | 357 | 1.9 | 21/10/2013 13:00 | 1.2 | 17/07/2013 17:00 |
| Campbelltown West | 98.6 | 356 | 3.0 | 21/10/2013 13:00 | 1.4 | 13/05/2013 11:00 |
| Chullora | 97.3 | 351 | 2.5 | 12/06/2013 03:00 | 2.0 | 11/06/2013 23:00 |
| Liverpool | 98.7 | 357 | 2.1 | 04/07/2013 02:00 | 2.0 | 21/10/2013 12:00 |
| Prospect | 94.7 | 338 | 1.6 | 14/07/2013 02:00 | 1.4 | 12/06/2013 02:00 |
| Rozelle | 93.8 | 334 | 1.8 | 05/01/2013 18:00 | 1.7 | 06/01/2013 01:00 |
| Central Coast | | | | | | |
| Wyang | 98.6 | 356 | 0.8 | 03/11/2013 09:00 | 0.4 | 01/06/2013 02:00 |
| Illawarra | | | | | | |
| Wollongong | 97.3 | 351 | 2.7 | 19/10/2013 08:00 | 1.1 | 21/10/2013 13:00 |
| Lower Hunter | | | | | | |
| Newcastle | 98.3 | 356 | 1.4 | 13/07/2013 02:00 | 1.1 | 05/06/2013 02:00 |

AAQ NEPM standard: 9.0 ppm (rolling 8-hour average)

Carbon monoxide levels in all regions were substantially below the AAQ NEPM standard (Table 11). The highest recorded during the 2013 bushfire season (3.0 ppm, Campbelltown West) was only 30% of the NEPM standard.

Nitrogen dioxide

Table 12. Summary for NO₂: Daily maximum 1-hour average concentrations (2013)

| Region/Performance monitoring station | Data availability rate (%) | Number of valid days | Maximum values (ppm) | | | |
|---------------------------------------|----------------------------|----------------------|----------------------|------------------|-------------|---------------------|
| | | | Highest | Date of highest | 2nd highest | Date of 2nd highest |
| Sydney | | | | | | |
| Bringelly | 92.9 | 352 | 0.037 | 18/04/2013 15:00 | 0.036 | 12/01/2013 12:00 |
| Camden | 94.1 | 358 | 0.036 | 21/10/2013 08:00 | 0.025 | 08/05/2013 19:00 |
| Campbelltown West | 94.9 | 362 | 0.054 | 21/10/2013 08:00 | 0.046 | 23/09/2013 21:00 |
| Chullora | 92.2 | 352 | 0.055 | 05/09/2013 20:00 | 0.053 | 21/10/2013 10:00 |
| Liverpool | 92.2 | 343 | 0.056 | 30/09/2013 20:00 | 0.049 | 05/09/2013 20:00 |
| Prospect | 88.8 | 331 | 0.049 | 23/09/2013 23:00 | 0.048 | 22/10/2013 19:00 |
| Richmond | 92.5 | 349 | 0.032 | 10/05/2013 19:00 | 0.027 | 06/09/2013 20:00 |
| Rozelle | 91.5 | 345 | 0.070 | 08/11/2013 11:00 | 0.061 | 02/11/2013 12:00 |
| Central Coast | | | | | | |
| Wyong | 94.7 | 358 | 0.041 | 22/06/2013 05:00 | 0.039 | 05/09/2013 20:00 |
| Illawarra | | | | | | |
| Albion Park South | 92.4 | 350 | 0.039 | 30/08/2013 17:00 | 0.037 | 09/12/2013 16:00 |
| Wollongong | 89.2 | 339 | 0.050 | 23/09/2013 20:00 | 0.049 | 05/09/2013 19:00 |
| Lower Hunter | | | | | | |
| Newcastle | 95.0 | 360 | 0.042 | 10/10/2013 22:00 | 0.041 | 07/09/2013 19:00 |
| Wallsend | 91.8 | 349 | 0.043 | 05/09/2013 19:00 | 0.040 | 15/04/2013 19:00 |

AAQ NEPM standard: 0.120 ppm (1-hour average)

Within NSW, levels of nitrogen dioxide were well below the NEPM standard (Table 12). The highest recorded 1-hour average in 2013 was 0.070 ppm at the Rozelle station.

Ozone

Table 13. Summary for O₃: Daily maximum 1-hour average concentrations (2013)

| Region/Performance monitoring station | Data availability rate (%) | Number of valid days | Maximum values (ppm) | | | |
|---------------------------------------|----------------------------|----------------------|----------------------|------------------|-------------|---------------------|
| | | | Highest | Date of highest | 2nd highest | Date of 2nd highest |
| Sydney | | | | | | |
| Bringelly | 94.8 | 362 | 0.108 | 21/10/2013 11:00 | 0.086 | 04/12/2013 16:00 |
| Camden | 93.1 | 353 | 0.110 | 12/01/2013 14:00 | 0.100 | 20/12/2013 17:00 |
| Campbelltown West | 93.9 | 358 | 0.094 | 21/10/2013 11:00 | 0.090 | 04/12/2013 15:00 |
| Chullora | 94.8 | 362 | 0.105 | 21/10/2013 12:00 | 0.080 | 20/12/2013 15:00 |
| Liverpool | 94.2 | 358 | 0.117 | 21/10/2013 12:00 | 0.088 | 08/11/2013 11:00 |
| Oakdale | 94.0 | 358 | 0.095 | 11/01/2013 18:00 | 0.090 | 12/01/2013 16:00 |
| Prospect | 91.5 | 343 | 0.111 | 21/10/2013 13:00 | 0.086 | 20/12/2013 18:00 |
| Richmond | 94.3 | 358 | 0.095 | 20/12/2013 18:00 | 0.086 | 29/10/2013 11:00 |
| Rozelle | 92.4 | 348 | 0.073 | 02/11/2013 11:00 | 0.071 | 20/12/2013 13:00 |
| St Marys | 93.7 | 355 | 0.110 | 21/10/2013 14:00 | 0.093 | 20/12/2013 19:00 |
| Central Coast | | | | | | |
| Wyong | 92.2 | 348 | 0.079 | 20/12/2013 14:00 | 0.075 | 04/12/2013 14:00 |
| Illawarra | | | | | | |
| Albion Park South | 93.2 | 354 | 0.120 | 20/12/2013 14:00 | 0.109 | 21/10/2013 14:00 |
| Kembla Grange | 93.8 | 357 | 0.126 | 20/12/2013 14:00 | 0.102 | 21/10/2013 14:00 |
| Wollongong | 92.7 | 351 | 0.112 | 20/12/2013 13:00 | 0.111 | 02/11/2013 13:00 |
| Lower Hunter | | | | | | |
| Newcastle | 93.9 | 355 | 0.081 | 18/01/2013 16:00 | 0.070 | 20/12/2013 12:00 |
| Wallsend | 92.2 | 352 | 0.084 | 18/01/2013 16:00 | 0.083 | 20/12/2013 15:00 |

Bold font indicates values that exceed the AAQ NEPM standard.
AAQ NEPM standard: 0.100 ppm (1-hour average)

Table 14. Summary for O₃: Daily maximum rolling 4-hour average concentrations (2013)

| Region/Performance monitoring station | Data availability rate (%) | Number of valid days | Maximum values (ppm) | | | |
|---------------------------------------|----------------------------|----------------------|----------------------|------------------|-------------|---------------------|
| | | | Highest | Date of highest | 2nd highest | Date of 2nd highest |
| Sydney | | | | | | |
| Bringelly | 98.9 | 362 | 0.102 | 21/10/2013 14:00 | 0.078 | 01/01/2013 15:00 |
| Camden | 97.0 | 353 | 0.090 | 21/10/2013 17:00 | 0.087 | 04/12/2013 18:00 |
| Campbelltown West | 97.8 | 358 | 0.082 | 04/12/2013 17:00 | 0.079 | 21/10/2013 13:00 |
| Chullora | 98.7 | 361 | 0.094 | 21/10/2013 14:00 | 0.076 | 20/12/2013 16:00 |
| Liverpool | 98.2 | 358 | 0.110 | 21/10/2013 14:00 | 0.077 | 20/12/2013 19:00 |
| Oakdale | 97.9 | 358 | 0.081 | 11/01/2013 20:00 | 0.077 | 12/01/2013 16:00 |
| Prospect | 95.2 | 343 | 0.104 | 21/10/2013 16:00 | 0.078 | 20/12/2013 19:00 |
| Richmond | 98.3 | 358 | 0.076 | 20/12/2013 19:00 | 0.072 | 21/10/2013 13:00 |
| Rozelle | 96.0 | 348 | 0.063 | 20/12/2013 14:00 | 0.059 | 18/01/2013 14:00 |
| St Marys | 97.6 | 354 | 0.101 | 21/10/2013 15:00 | 0.081 | 20/12/2013 20:00 |
| Central Coast | | | | | | |
| Wyong | 96.1 | 348 | 0.072 | 20/12/2013 15:00 | 0.067 | 08/11/2013 14:00 |
| Illawarra | | | | | | |
| Albion Park South | 97.1 | 354 | 0.100 | 20/12/2013 16:00 | 0.099 | 21/10/2013 15:00 |
| Kembla Grange | 97.8 | 356 | 0.103 | 20/12/2013 15:00 | 0.088 | 21/10/2013 15:00 |
| Wollongong | 96.5 | 350 | 0.091 | 20/12/2013 15:00 | 0.089 | 21/10/2013 15:00 |
| Lower Hunter | | | | | | |
| Newcastle | 98.0 | 355 | 0.075 | 18/01/2013 17:00 | 0.064 | 23/10/2013 18:00 |
| Wallsend | 96.1 | 352 | 0.078 | 20/12/2013 16:00 | 0.078 | 18/01/2013 17:00 |

Bold font indicates values that exceed the AAQ NEPM standard.
AAQ NEPM standard: 0.080 ppm (rolling 4-hour average)

Ozone events in the Sydney and Illawarra regions are highly variable in terms of both frequency and severity. This is largely the result of the annual variability of meteorological conditions, which most strongly affects measures of frequency but can also have some influence on measures of peak concentration. In the Sydney region, emissions of ozone precursors (nitrogen oxides [NO_x] and volatile organic compounds [VOCs]) are sufficient to generate concentrations of ozone well above the AAQ NEPM standards (EPA Emissions Inventory 2008).

During 2013, there were four and six days of exceedence, respectively, of the 1-hour 4-hour NEPM ozone standards (Tables 13 to 16). There were two large-scale events on two calendar days (21 October and 20 December) that saw exceedences at multiple stations in the Sydney and Illawarra regions.

On 21 October, during the bushfire emergency, ozone levels above national standards were recorded at multiple stations across Sydney and the Illawarra. The maximum 1-hour average on this day was 0.117 ppm at Liverpool, which also recorded the highest 4-hour average of 0.110 ppm.

Another widespread multi-site ozone event occurred on 20 December during hot and calm summer conditions. The maximum 1-hour average on this day was 0.126 ppm at Kembla Grange, where the maximum 4-hour average of 0.103 ppm was also recorded. Two western Sydney sites (St Marys and Camden) were also affected on this day.

Ozone levels in the Lower Hunter and Central Coast regions remained below national standards during 2013.

Table 15. Days when O₃ 1-hour AAQ NEPM standard was exceeded

| Date | Stations where standard exceeded | Comments ¹ |
|------------|--|--------------------------------|
| 12/01/2013 | Camden | |
| 21/10/2013 | Bringelly, Liverpool, Chullora, Prospect, St Marys, Kembla Grange, Albion Park South | Bushfire emergency |
| 02/11/2013 | Wollongong, Albion Park South | Bushfire emergency |
| 20/12/2013 | Kembla Grange, Wollongong, Albion Park South | Hot and calm summer conditions |

¹ Events that can be clearly identified as influencing pollution levels

Table 16. Days when O₃ 4-hour AAQ NEPM standard was exceeded

| Date | Stations where standard exceeded | Comments ¹ |
|------------|--|--------------------------------|
| 11/01/2013 | Oakdale | |
| 12/01/2013 | Camden | |
| 21/10/2013 | Bringelly, Camden, Chullora, Liverpool, Prospect, St Marys, Albion Park South, Kembla Grange, Wollongong | Bushfire emergency |
| 02/11/2013 | Albion Park South | Bushfire emergency |
| 04/12/2013 | Camden, Campbelltown West | |
| 20/12/2013 | St Marys, Camden, Albion Park South, Kembla Grange, Wollongong | Hot and calm summer conditions |

¹ Events that can be clearly identified as influencing pollution levels

Sulfur dioxide

Table 17. Summary for SO₂: Daily maximum 1-hour average concentrations (2013)

| Region/ Performance monitoring station | Data availability rate (%) | Number of valid days | Maximum values (ppm) | | | |
|--|----------------------------------|----------------------------|----------------------|--------------------|----------------|------------------------|
| | | | Highest | Date of highest | 2nd highest | Date of 2nd highest |
| Sydney | | | | | | |
| Bringelly | 94.5 | 360 | 0.011 | 09/09/2013 13:00 | 0.011 | 14/07/2013 14:00 |
| Campbelltown West | 95.0 | 362 | 0.009 | 08/01/2013 01:00 | 0.007 | 19/12/2013 09:00 |
| Chullora | 92.9 | 355 | 0.012 | 07/01/2013 24:00 | 0.011 | 09/02/2013 08:00 |
| Prospect | 90.9 | 341 | 0.020 | 27/03/2013 22:00 | 0.020 | 20/12/2013 20:00 |
| Richmond | 94.2 | 358 | 0.010 | 08/01/2013 10:00 | 0.010 | 07/01/2013 23:00 |
| Central Coast | | | | | | |
| Wyang | 94.7 | 358 | 0.029 | 04/09/2013 13:00 | 0.027 | 29/08/2013 15:00 |
| Illawarra | | | | | | |
| Albion Park South | 89.6 | 341 | 0.039 | 22/12/2013 14:00 | 0.023 | 08/02/2013 15:00 |
| Wollongong | 92.4 | 352 | 0.040 | 11/07/2013 11:00 | 0.026 | 23/12/2013 15:00 |
| Lower Hunter | | | | | | |
| Newcastle | 95.1 | 360 | 0.052 | 09/12/2013 09:00 | 0.042 | 28/11/2013 07:00 |
| Wallsend | 92.2 | 351 | 0.050 | 31/12/2013 08:00 | 0.047 | 12/06/2013 12:00 |

AAQ NEPM standard: 0.200 ppm (1-hour average)

Table 18. Summary for SO₂: Maximum 24-hour average concentrations (2013)

| Region/ Performance monitoring station | Data availability rate (%) | Number of valid days | Maximum value (ppm) | | | |
|--|----------------------------------|----------------------------|---------------------|-----------------|-------------|------------------------|
| | | | Highest | Date of highest | 2nd highest | Date of 2nd highest |
| Sydney | | | | | | |
| Bringelly | 98.6 | 360 | 0.002 | 23/09/2013 | 0.002 | 20/12/2013 |
| Campbelltown West | 99.2 | 362 | 0.002 | 20/12/2013 | 0.002 | 09/02/2013 |
| Chullora | 97.3 | 355 | 0.003 | 09/02/2013 | 0.003 | 04/12/2013 |
| Prospect | 93.4 | 341 | 0.004 | 20/12/2013 | 0.004 | 27/03/2013 |
| Richmond | 98.1 | 358 | 0.002 | 26/02/2013 | 0.002 | 31/01/2013 |
| Central Coast | | | | | | |
| Wyong | 98.1 | 358 | 0.005 | 31/01/2013 | 0.005 | 07/11/2013 |
| Illawarra | | | | | | |
| Albion Park South | 93.4 | 341 | 0.009 | 22/12/2013 | 0.008 | 04/12/2013 |
| Wollongong | 96.4 | 352 | 0.008 | 23/12/2013 | 0.006 | 21/12/2013 |
| Lower Hunter | | | | | | |
| Newcastle | 98.6 | 360 | 0.007 | 28/11/2013 | 0.006 | 13/05/2013 |
| Wallsend | 96.2 | 351 | 0.005 | 31/12/2013 | 0.005 | 13/09/2013 |

AAQ NEPM standard: 0.080 ppm (24-hour average)

SO₂ levels were substantially below the 1-hour, 24-hour and annual NEPM standards (Tables 17 and 18). Lower Hunter sites Newcastle and Wallsend recorded the higher 1-hour values (up to 25% of the standard). The highest 24-hour average was recorded at Albion Park South (11% of the standard). Maximum annual averages were the same at a number of sites (i.e. no one particular site stood out).

Particles as PM₁₀

Table 19. Summary for PM₁₀: Maximum 24-hour average concentrations (2013)

| Region/ Performance monitoring station | Data availability rate (%) | Number of valid days | Maximum values (µg/m ³) | | | |
|--|----------------------------------|-------------------------|-------------------------------------|--------------------|-------------|------------------------|
| | | | Highest | Date of highest | 6th highest | Date of 6th highest |
| Sydney | | | | | | |
| Bringelly | 99.5 | 363 | 97.2 | 21/10/2013 | 40.6 | 12/01/2013 |
| Camden | 98.9 | 361 | 97.5 | 21/10/2013 | 35.6 | 27/03/2013 |
| Campbelltown West | 99.2 | 362 | 56.9 | 13/05/2013 | 32.8 | 27/03/2013 |
| Chullora | 99.5 | 363 | 69.4 | 21/10/2013 | 41.8 | 22/10/2013 |
| Liverpool | 97.5 | 356 | 98.5 | 21/10/2013 | 42.6 | 07/11/2013 |
| Oakdale | 100.0 | 365 | 99.0 | 20/10/2013 | 34.0 | 21/10/2013 |
| Prospect | 94.5 | 345 | 81.8 | 21/10/2013 | 46.5 | 29/10/2013 |
| Richmond | 97.8 | 357 | 104.6 | 21/10/2013 | 48.3 | 22/10/2013 |
| Rozelle | 96.7 | 353 | 58.5 | 08/11/2013 | 41.2 | 23/12/2013 |
| Central Coast | | | | | | |
| Wyong | 98.6 | 360 | 70.7 | 03/11/2013 | 38.3 | 29/12/2013 |
| Illawarra | | | | | | |
| Albion Park South | 96.7 | 353 | 69.0 | 19/10/2013 | 44.5 | 22/10/2013 |
| Kembla Grange | 99.7 | 364 | 102.2 | 19/10/2013 | 47.9 | 20/10/2013 |
| Wollongong | 98.9 | 361 | 93.8 | 19/10/2013 | 51.0 | 09/12/2013 |
| Lower Hunter | | | | | | |
| Beresfield | 95.9 | 350 | 55.3 | 17/10/2013 | 48.8 | 22/10/2013 |
| Newcastle | 98.9 | 361 | 69.0 | 17/10/2013 | 49.1 | 09/12/2013 |
| Regional | | | | | | |
| Albury | 98.6 | 360 | 59.2 | 04/04/2013 | 45.8 | 08/01/2013 |
| Bathurst | 99.7 | 364 | 145.0 | 18/10/2013 | 44.0 | 06/11/2013 |
| Tamworth | 98.4 | 359 | 47.5 | 07/11/2013 | 38.5 | 17/10/2013 |
| Wagga Wagga North | 98.9 | 361 | 110.7 | 08/01/2013 | 65.9 | 18/01/2013 |

Bold font indicates values that exceed the AAQ NEPM standard.

AAQ NEPM standard: 50.0 µg/m³ (24-hour average)

With respect to the NEPM 24-hour PM₁₀ standard, all sites except Tamworth exceeded the standard during 2013 (Table 19). However, only two sites did not comply with the NEPM goal of five allowable exceedence days (Wollongong and Wagga Wagga North). At Wollongong, the standard was exceeded on six days of the year, including three days during the New South Wales bushfire emergency (17 October to 11 November).

There were 15 exceedence days at Wagga Wagga North, one of which was during the bushfire emergency. The greater number of exceedence days at Wagga Wagga North during 2013 compared with 2012 (one exceedence day) was notable. As seen in Table 20, the 2013 exceedences largely occurred during the drier months (January to April and November to December). Records suggest that there were grass fires near the monitoring station on nine of the 15 exceedence days.

The 24-hour PM₁₀ standard was exceeded on 39 calendar days within the NEPM network of stations (Table 20). Twelve of these occurred during the widespread

bushfire emergency. The highest PM₁₀ level was recorded at Bathurst at the start of the bushfire emergency. Most stations, with the exception of Campbelltown West, recorded their highest levels during the bushfire emergency (Table 19). At Campbelltown West, the instrument was in alarm because of filter overloading on 21 October 2013, when most stations recorded their maximum 24-hour PM₁₀ averages. As an indicator of the impact of the bushfires, the 24-hour rolling average at Campbelltown West was 118 µg/m³ on 21 October at 10 am.

Table 20. Calendar days when PM₁₀ 24-hour AAQ NEPM standard was exceeded

| Date | Stations where standard exceeded | Comments ¹ |
|------------|---|-----------------------------|
| 08/01/2013 | Wagga Wagga North | Grass fires nearby |
| 09/01/2013 | Beresfield | |
| 18/01/2013 | Newcastle, Wagga Wagga North | Grass fires at Wagga Wagga |
| 19/01/2013 | Wagga Wagga North | Grass fires nearby |
| 31/01/2013 | Wagga Wagga North | |
| 24/02/2013 | Wollongong | |
| 27/02/2013 | Wollongong | |
| 22/03/2013 | Wagga Wagga North, Albury | |
| 27/03/2013 | Oakdale | Grass fire nearby |
| 04/04/2013 | Albury | |
| 11/04/2013 | Wagga Wagga North | Stubble burn |
| 14/04/2013 | Wagga Wagga North | Grass fire nearby |
| 29/04/2013 | Wagga Wagga North | Grass fire nearby |
| 03/05/2013 | Wagga Wagga North | |
| 10/05/2013 | Bathurst | |
| 11/05/2013 | Wagga Wagga North | Grass fire nearby |
| 13/05/2013 | Campbelltown West | |
| 25/08/2013 | Bringelly, Prospect | Hazard reduction burn |
| 04/09/2013 | Liverpool | Hazard reduction burn |
| 05/09/2013 | Richmond | Hazard reduction burn |
| 10/09/2013 | Chullora, Kembla Grange | Bushfires in western Sydney |
| 10/10/2013 | Beresfield | |
| 17/10/2013 | Beresfield, Newcastle | Bushfire emergency |
| 18/10/2013 | Bathurst, Beresfield | Bushfire emergency |
| 19/10/2013 | Albion Park South, Bathurst, Kembla Grange, Oakdale, Wagga Wagga North, Wollongong | Bushfire emergency |
| 20/10/2013 | Bringelly, Camden, Oakdale | Bushfire emergency |
| 21/10/2013 | Albion Park South, Bringelly, Camden, Chullora, Kembla Grange, Liverpool, Prospect, Richmond, Rozelle, Wollongong | Bushfire emergency |
| 22/10/2013 | Oakdale | Bushfire emergency |
| 23/10/2013 | Beresfield, Newcastle | Bushfire emergency |
| 25/10/2013 | Richmond | Bushfire emergency |
| 29/10/2013 | Richmond | Bushfire emergency |

Table 20 continued. Calendar days when PM₁₀ 24-hour AAQ NEPM standard was exceeded

| Date | Stations where standard exceeded | Comments ¹ |
|------------|--|-----------------------|
| 02/11/2013 | Rozelle, Wollongong | Bushfire emergency |
| 03/11/2013 | Chullora, Prospect, Richmond, Wyong | Bushfire emergency |
| 8/11/2013 | Chullora, Kembla Grange, Liverpool, Newcastle, Prospect, Rozelle | Bushfire emergency |
| 28/11/2013 | Wagga Wagga North | Grass fire nearby |
| 03/12/2013 | Wagga Wagga North | |
| 09/12/2013 | Wollongong | |
| 20/12/2013 | Wagga Wagga North | |
| 22/12/2013 | Wagga Wagga North | |

¹ Events that can be clearly identified as influencing pollution levels

Particles as PM_{2.5}

Table 21. Summary of PM_{2.5}: Maximum 24-hour average concentrations (2013)

| Region/ Performance monitoring station | Data availability rate (%) | Number of valid days | Maximum values (µg/m³) | | | |
|--|----------------------------------|----------------------------|------------------------|--------------------|-------------|------------------------|
| | | | Highest | Date of highest | 2nd highest | Date of 2nd highest |
| Sydney | | | | | | |
| Camden | 99.7 | 364 | 61.9 | 21/10/2013 | 34.1 | 20/10/2013 |
| Chullora | 98.6 | 360 | 49.1 | 21/10/2013 | 33.3 | 03/11/2013 |
| Earlwood | 91.2 | 333 | 37.3 | 21/10/2013 | 28.0 | 03/11/2013 |
| Liverpool | 93.2 | 340 | 73.8 | 21/10/2013 | 27.0 | 28/04/2013 |
| Richmond | 95.1 | 347 | 68.0 | 25/10/2013 | 67.2 | 21/10/2013 |
| Central Coast | | | | | | |
| Wyong | 94.2 | 344 | 43.7 | 03/11/2013 | 24.2 | 24/10/2013 |
| Illawarra | | | | | | |
| Wollongong | 94.8 | 346 | 88.4 | 19/10/2013 | 51.3 | 21/10/2013 |
| Lower Hunter | | | | | | |
| Beresfield | 94.2 | 344 | 38.4 | 18/10/2013 | 23.6 | 17/10/2013 |
| Wallsend | 96.2 | 351 | 37.0 | 18/10/2013 | 31.3 | 23/10/2013 |

Bold font indicates values in excess of the AAQ NEPM ARS.

AAQ NEPM advisory reporting standard (ARS): 25.0 µg/m³ (24-hour average)

Daily PM_{2.5} levels above the advisory reporting standard of 25 µg/m³ were recorded at all PM_{2.5} monitoring stations (Table 21). The maximum daily average PM_{2.5} was 88.4 µg/m³ at Wollongong on 19 October, during the bushfire emergency.

Table 21a presents FRM data for Chullora, the only station where these measurements are performed. Data from BAM and FRM, while generally comparable, demonstrate inter-method differences owing to the differences in sampling strategies.

Out of the 20 days on which levels were recorded above the ARS, seven were outside the bushfire emergency, and mostly at Richmond. In total, Richmond recorded 14 days above the PM_{2.5} ARS during 2013 (Table 22); this was a substantial increase compared with the 2012 exceedence frequency (two days). This appears to have been due to hazard reduction burning during the 2013 autumn season.

Table 21a. Summary of PM_{2.5}: Maximum 24-hour average concentrations (2013) – FRM method

| Region/ Performance monitoring station | Data availability rate ¹ (%) | Number of valid days | Maximum values (µg/m ³) | | | |
|--|---|-------------------------|-------------------------------------|-----------------|-------------|------------------------|
| | | | Highest | Date of highest | 2nd highest | Date of 2nd highest |
| Sydney | | | | | | |
| Chullora | 66.7 | 80 | 53.9 | 21/10/2013 | 27.5 | 8/11/2013 |

¹ Data availability rates are based on a 1-day-in-3 sampling regime.

Table 22. Days above the 24-hour PM_{2.5} AAQ NEPM advisory reporting standard (2013)

| Date | Stations where advisory reporting standard exceeded | Comments ¹ |
|------------|---|-----------------------|
| 28/04/2013 | Liverpool | |
| 29/04/2013 | Wallsend | |
| 11/05/2013 | Richmond | |
| 25/08/2013 | Richmond | Hazard reduction burn |
| 01/09/2013 | Richmond | Hazard reduction burn |
| 05/09/2013 | Richmond | Hazard reduction burn |
| 06/09/2013 | Richmond | Scrub burn |
| 17/10/2013 | Wallsend | Bushfire emergency |
| 18/10/2013 | Beresfield, Richmond, Wallsend | Bushfire emergency |
| 19/10/2013 | Wallsend, Wollongong | Bushfire emergency |
| 20/10/2013 | Camden | Bushfire emergency |
| 21/10/2013 | Camden, Chullora, Earlwood, Liverpool, Richmond, Wollongong | Bushfire emergency |
| 22/10/2013 | Camden, Richmond | Bushfire emergency |
| 23/10/2013 | Richmond, Wallsend | Bushfire emergency |
| 25/10/2013 | Richmond | Bushfire emergency |
| 27/10/2013 | Richmond | Bushfire emergency |
| 28/10/2013 | Richmond | Bushfire emergency |
| 02/11/2013 | Earlwood, Wollongong | Bushfire emergency |
| 03/11/2013 | Chullora, Earlwood, Richmond, Wyong | Bushfire emergency |
| 08/11/2013 | Chullora, Earlwood, Richmond, Wallsend, Wollongong | Bushfire emergency |

¹ Events that can be clearly identified as influencing pollution levels

Assessment of progress towards achieving the goal

The NSW Government outlined its commitments to improving air quality under Goal 22 in its forward plan for NSW, [NSW 2021](#). The AAQ NEPM goal is a driver for these strategies and a benchmark against which progress in managing air quality can be assessed.

OEH operates the NSW air quality monitoring network. The NSW Environment Protection Authority (EPA) develops and implements regulations, policies and programs to improve compliance with AAQ NEPM goals and protect public health.

Air Quality Management in the Sydney Greater Metropolitan Region and Regional NSW

The EPA delivers a number of actions that target the pollutants of most concern in NSW, namely particles in the Greater Metropolitan Region (GMR) and some regional centres and ground-level ozone (and its precursors) during summer. These efforts are designed to reduce air emissions from industry, motor vehicles and commercial and domestic sources. Industry emissions of oxides of nitrogen and sulfur dioxide are also a focus for action in some regional locations.

The following outlines the key mechanisms for managing particles and ozone and the activities implemented in 2013.

Managing particle emissions

In December 2013 the EPA released [Managing Particles and Improving Air Quality in NSW](#). This document provides information on the management of particulate pollution in NSW. It also gives details of a set of principles and actions to reduce particle emissions, targeting priority locations and sources to achieve the greatest public health benefit.

Air emissions inventory

The Air Emissions Inventory for the NSW GMR is a detailed snapshot of major sources of air pollution. It lists over 1000 substances released to the atmosphere from natural and human-made sources within GMR and is updated every 5 years. The latest inventory is for the 2008 calendar year. Detailed inventory data are available in a series of technical reports on the [2008 Calendar Year Air Emissions Inventory](#) webpage.

To improve community access to information and understanding of air pollution sources in local areas, in 2013 the EPA released the [Air Emissions in my Community Web Tool](#). The tool presents aggregated data and charts for different geographic areas down to local council and postcode level.

Industry emissions

In 2013, the EPA continued implementing its regulatory responsibilities, including licensing scheduled industry activities and conducting compliance and enforcement programs. The *Protection of the Environment Operations Act 1997* and the Protection

of the Environment Operations (Clean Air) Regulation 2010 set the framework for managing air pollution from major industries in NSW.

Coal mines and Hunter air quality

Coal mining and air quality in the Hunter region were a particular focus for EPA air quality management in 2013. This included the EPA continuing to implement the [Dust Stop program](#) to reduce dust from coal mining activities.

In 2013 the EPA released [The Upper Hunter Air Particles Action Plan](#), which outlines a range of measures in place or being developed to improve air quality in the Upper Hunter. It includes actions to engage communities, improve planning decisions, reduce particle emissions from coal mines and other sources and improve the evidence base for action through monitoring and research.

The results of the [Upper Hunter Fine Particle Characterisation Study](#) were also released in 2013. This study, conducted over a year, was undertaken to provide communities in Muswellbrook and Singleton with scientific information about the sources of fine particles (as PM_{2.5}) in their local environment.

Wood smoke reduction

As part of its ongoing work to reduce wood smoke, in 2013 the EPA started the [Wood smoke reduction program](#), a comprehensive 2-year program to help NSW local councils to raise awareness about the health impacts of wood smoke and the benefits of correct wood heater operation, as well as to help their communities shift away from polluting wood heaters to cleaner forms of heating. Sixteen councils and one Regional Organisation of Councils participated in the 2013 winter season program.

The EPA continued working with the Commonwealth and other jurisdictions towards developing national measures for wood heater management; it also participated in a review of the Australian Standards for wood heaters.

Vehicles, fuel and diesel equipment

Smoky vehicle program. In NSW it is an offence for a vehicle to emit excessive air impurities for a continuous period of more than 10 seconds, and a [smoky vehicle program](#) operates to target highly polluting vehicles. In 2013 the enforcement program was enhanced with a mobile app to enable members of the public to use their mobile devices to report smoky vehicles.

In 2013, the NSW Roads and Maritime Services started a [smoky vehicle enforcement program](#), supported by retrofit and repair, targeting heavy vehicles emitting excessive smoke in Sydney's M5 East Tunnel.

Clean machine program. The Clean Machine Program has reduced diesel exhaust emissions from non-road machines (such as cranes, excavators and bulldozers) used in ports, mines, quarries, waste facilities and construction by encouraging the procurement of 'cleaner' engines and the use of improved worksite practices. It also offers subsidies to retrofit heavily polluting equipment with particle filters.

At the end of 2013 more than 30 organisations, including private businesses and local councils, had participated in the program and 121 diesel machines had been retrofitted. These retrofits will reduce diesel particle emissions by an estimated 26 tonnes of over 10 years, providing substantial health benefits in the NSW GMR. Emission reductions are also expected from improved procurement and worksite practices.

Locomotives. In 2013 a scoping study was completed for the EPA on locomotive emissions and potential control measures. The study report, [Locomotive Emissions Project: Scoping Study of Potential Measures to Reduce Emissions from New and In-Service Locomotives in NSW and Australia](#), has been published on the EPA website, together with a summary of stakeholder feedback.

Vapour recovery at service stations. Stage 1 vapour recovery (VR1) captures VOC emissions expelled from underground petrol storage tanks at service stations as they are being filled by road tankers. Regulatory changes made in 2009 extended VR1 to all parts of the Sydney, Illawarra, Lower Hunter and Central Coast areas.

The VR1 requirements took effect in July 2010 for new and modified service stations and will apply to all but the smallest existing service stations from 1 January 2015. At the end of 2013, approximately a third of the service stations required to install or upgrade VR1 had done so.

Stage 2 vapour recovery (VR2) captures VOC emissions expelled from vehicle petrol tanks during refuelling at petrol bowers. VR2 requirements took effect from July 2010 for new and modified service stations. As required by regulation, the largest existing service stations in Sydney, Newcastle, Wollongong and the Central Coast had installed VR2 equipment by the end of 2013.

In Sydney, other service stations supplying over 3.5 million litres per year are required to install VR2 by 1 January 2017, with smaller service stations installing VR2 when they are upgraded. VR2 installation when upgrades occur is also required for all but the smallest existing service stations in Newcastle, Wollongong and Central Coast metropolitan areas. At the end of 2013, VR2 had been installed at around 7% of NSW service stations subject to VR2 requirements.

Once fully implemented, vapour recovery is expected to reduce VOC emissions in the GMR by about 5000 tonnes/year.

Summer low-volatility petrol. To manage ozone formation in the Sydney region, regulatory requirements limit petrol volatility to 62 kiloPascals (a measure of vapour pressure) over the summer period from 15 November to 15 March each year. Petrol refiners, importers and blenders must test and report to the EPA on batch volatility. The petrol volatility limits reduce VOC emissions in the Sydney region by about 4000 tonnes each summer.

Section D – Data analysis

The following section (Tables 23 to 148) provides a **basic statistical summary**, using percentiles, for each station and for each AAQ NEPM standard. Percentiles for daily maximum values are presented; only valid days were used to calculate these statistics. For stations with 2 years or more of data, **trend data**, in the form of annual maxima, are provided for each standard for each pollutant. Trend data are presented if any monitoring of a particular pollutant occurred at a station in a given year and the annual data availability rate for the pollutant was at least 15% at that station.

Carbon monoxide

Statistical summary for 2013

Table 23. Statistical summary for CO: Daily maximum rolling 8-hour average concentrations (2013)

| Region/Performance monitoring station | Data availability rate (%) | Maximum (ppm) | Percentile (ppm) | | | | | | |
|---------------------------------------|----------------------------|---------------|------------------|------|------|------|------|------|------|
| | | | 99th | 98th | 95th | 90th | 75th | 50th | 25th |
| Sydney | | | | | | | | | |
| Camden | 99.0 | 1.9 | 0.9 | 0.6 | 0.4 | 0.4 | 0.2 | 0.2 | 0.1 |
| Campbelltown West | 98.6 | 3.0 | 0.8 | 0.7 | 0.5 | 0.5 | 0.3 | 0.1 | 0.0 |
| Chullora | 97.3 | 2.5 | 1.7 | 1.2 | 1.1 | 0.9 | 0.6 | 0.4 | 0.3 |
| Liverpool | 98.7 | 2.1 | 1.9 | 1.8 | 1.4 | 1.1 | 0.7 | 0.5 | 0.3 |
| Prospect | 94.7 | 1.6 | 1.4 | 1.2 | 0.9 | 0.7 | 0.4 | 0.2 | 0.1 |
| Rozelle | 93.8 | 1.8 | 1.2 | 1.1 | 0.9 | 0.7 | 0.5 | 0.3 | 0.2 |
| Illawarra | | | | | | | | | |
| Wollongong | 97.3 | 2.7 | 0.8 | 0.8 | 0.7 | 0.5 | 0.4 | 0.3 | 0.2 |
| Central Coast | | | | | | | | | |
| Wyong | 98.6 | 0.8 | 0.4 | 0.3 | 0.3 | 0.3 | 0.2 | 0.1 | 0.1 |
| Lower Hunter | | | | | | | | | |
| Newcastle | 98.3 | 1.4 | 1.0 | 1.0 | 0.8 | 0.5 | 0.3 | 0.1 | 0.1 |

AAQ NEPM standard: 9.0 ppm (rolling 8-hour average)

Trend analysis

Table 24. Daily maximum rolling 8-hour average concentrations for CO (ppm)

| Region/Performance monitoring station | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 |
|---------------------------------------|------|------|------|------|------|------|------|------|------|------|
| Sydney | | | | | | | | | | |
| Blacktown ¹ /Prospect | 1.6* | | | 2.0 | 1.5 | 2.3 | 1.9 | 1.7 | 1.8 | 1.6 |
| Camden | | | | | | | | | 0.3 | 1.9 |
| Chullora | 3.4 | 2.8 | 2.3 | 1.8 | 1.6 | 2.6 | 2.3 | 1.5 | 2.0 | 2.5 |
| Liverpool | 3.0 | 2.8 | 2.1 | 2.0 | 2.4 | 2.2 | 2.1 | 2.4 | 1.9 | 2.1 |
| Macarthur/Campbelltown West* | | 1.0 | 1.8 | 1.8 | 0.9 | 0.8 | 0.9 | 1.1 | 0.7* | 3.0* |
| Rozelle | 2.2 | 2.1 | 2.0 | 1.8 | 1.5 | 2.3 | 1.8 | 1.4 | 2.2 | 1.8 |
| Illawarra | | | | | | | | | | |
| Wollongong | 2.1 | 2.5 | 1.5 | 1.5 | 1.3 | 1.3 | 1.5 | 1.2 | 1.2 | 2.7 |
| Central Coast | | | | | | | | | | |
| Wyong | | | | | | | | | 0.4 | 0.8 |
| Lower Hunter | | | | | | | | | | |
| Newcastle | 2.4 | 1.9 | 2.2 | 1.7 | 2.0 | 1.9 | 1.4 | 1.5 | 1.3 | 1.4 |

AAQ NEPM standard: 9.0 ppm (rolling 8-hour average)

Statistical summaries for multiple years, by station

Table 25. Statistical summary for CO: Daily maximum rolling 8-hour average concentrations. Station: Blacktown¹/Prospect

| Year | Data availability rate (%) | Number of exceedences (days) | Maximum (ppm) | Percentile (ppm) | | | | | | |
|----------------------|----------------------------|------------------------------|---------------|------------------|------|------|------|------|------|------|
| | | | | 99th | 98th | 95th | 90th | 75th | 50th | 25th |
| 2004 ¹ | 40.9 | 0 | 1.6 | 1.5 | 1.4 | 1.2 | 0.9 | 0.4 | 0.1 | 0.0 |
| 2005–06 ² | | | | | | | | | | |
| 2007 | 78.5 | 0 | 2.0 | 1.7 | 1.5 | 1.3 | 1.1 | 0.6 | 0.3 | 0.2 |
| 2008 | 91.7 | 0 | 1.5 | 1.3 | 1.2 | 1.0 | 0.9 | 0.6 | 0.3 | 0.1 |
| 2009 | 97.5 | 0 | 2.3 | 2.1 | 1.8 | 1.3 | 1.1 | 0.7 | 0.5 | 0.3 |
| 2010 | 95.8 | 0 | 1.9 | 1.7 | 1.4 | 1.2 | 1.0 | 0.7 | 0.5 | 0.4 |
| 2011 | 95.6 | 0 | 1.7 | 1.5 | 1.4 | 1.1 | 1.0 | 0.6 | 0.4 | 0.3 |
| 2012 | 96.8 | 0 | 1.8 | 1.7 | 1.4 | 1.0 | 0.8 | 0.6 | 0.4 | 0.3 |
| 2013 | 94.7 | 0 | 1.6 | 1.4 | 1.2 | 0.9 | 0.7 | 0.4 | 0.2 | 0.1 |

² Blacktown station closed pending relocation

AAQ NEPM standard: 9.0 ppm (rolling 8-hour average)

Table 26. Statistical summary for CO: Daily maximum rolling 8-hour average concentrations. Station: Camden

| Year | Data availability rate (%) | Number of exceedences (days) | Maximum (ppm) | Percentile (ppm) | | | | | | |
|------|----------------------------|------------------------------|---------------|------------------|------|------|------|------|------|------|
| | | | | 99th | 98th | 95th | 90th | 75th | 50th | 25th |
| 2012 | 21.0 | 0 | 0.3 | 0.3 | 0.3 | 0.3 | 0.2 | 0.2 | 0.2 | 0.1 |
| 2013 | 99.0 | 0 | 1.9 | 0.9 | 0.6 | 0.4 | 0.4 | 0.2 | 0.2 | 0.1 |

AAQ NEPM standard: 9.0 ppm (rolling 8-hour average)

Table 27. Statistical summary for CO: Daily maximum rolling 8-hour average concentrations. Station: Chullora

| Year | Data availability rate (%) | Number of exceedences (days) | Maximum (ppm) | Percentile (ppm) | | | | | | |
|------|----------------------------|------------------------------|---------------|------------------|------|------|------|------|------|------|
| | | | | 99th | 98th | 95th | 90th | 75th | 50th | 25th |
| 2004 | 84.8 | 0 | 3.4 | 2.2 | 1.9 | 1.7 | 1.3 | 0.8 | 0.5 | 0.3 |
| 2005 | 97.0 | 0 | 2.8 | 1.9 | 1.7 | 1.5 | 1.2 | 0.7 | 0.4 | 0.3 |
| 2006 | 94.7 | 0 | 2.3 | 1.6 | 1.4 | 1.2 | 1.0 | 0.7 | 0.4 | 0.3 |
| 2007 | 90.7 | 0 | 1.8 | 1.6 | 1.4 | 1.2 | 1.0 | 0.5 | 0.3 | 0.2 |
| 2008 | 92.9 | 0 | 1.6 | 1.3 | 1.2 | 1.0 | 0.8 | 0.5 | 0.3 | 0.2 |
| 2009 | 96.1 | 0 | 2.6 | 2.2 | 1.6 | 1.3 | 1.0 | 0.7 | 0.4 | 0.3 |
| 2010 | 98.0 | 0 | 2.3 | 1.8 | 1.5 | 1.2 | 0.9 | 0.7 | 0.5 | 0.4 |
| 2011 | 98.3 | 0 | 1.5 | 1.4 | 1.3 | 1.2 | 1.0 | 0.6 | 0.4 | 0.3 |
| 2012 | 97.7 | 0 | 2.0 | 1.6 | 1.2 | 1.1 | 0.9 | 0.6 | 0.5 | 0.4 |
| 2013 | 97.3 | 0 | 2.5 | 1.7 | 1.2 | 1.1 | 0.9 | 0.6 | 0.4 | 0.3 |

AAQ NEPM standard: 9.0 ppm (rolling 8-hour average)

Table 28. Statistical summary for CO: Daily maximum rolling 8-hour average concentrations. Station: Liverpool

| Year | Data availability rate (%) | Number of exceedences (days) | Maximum (ppm) | Percentile (ppm) | | | | | | |
|------|----------------------------|------------------------------|---------------|------------------|------|------|------|------|------|------|
| | | | | 99th | 98th | 95th | 90th | 75th | 50th | 25th |
| 2004 | 88.9 | 0 | 3.0 | 2.9 | 2.6 | 2.1 | 1.7 | 0.9 | 0.6 | 0.4 |
| 2005 | 91.9 | 0 | 2.8 | 2.4 | 2.3 | 1.9 | 1.6 | 0.9 | 0.5 | 0.3 |
| 2006 | 96.4 | 0 | 2.1 | 1.8 | 1.7 | 1.5 | 1.3 | 0.9 | 0.5 | 0.3 |
| 2007 | 94.7 | 0 | 2.1 | 1.9 | 1.7 | 1.3 | 1.1 | 0.7 | 0.4 | 0.2 |
| 2008 | 88.0 | 0 | 2.4 | 2.1 | 1.8 | 1.6 | 1.3 | 0.7 | 0.4 | 0.2 |
| 2009 | 92.4 | 0 | 2.2 | 1.9 | 1.7 | 1.5 | 1.2 | 0.8 | 0.5 | 0.3 |
| 2010 | 98.6 | 0 | 2.1 | 1.9 | 1.7 | 1.4 | 1.1 | 0.7 | 0.5 | 0.4 |
| 2011 | 97.9 | 0 | 2.4 | 2.1 | 1.8 | 1.5 | 1.2 | 0.7 | 0.5 | 0.4 |
| 2012 | 97.4 | 0 | 1.9 | 1.7 | 1.6 | 1.3 | 1.1 | 0.7 | 0.5 | 0.4 |
| 2013 | 98.7 | 0 | 2.1 | 1.9 | 1.8 | 1.4 | 1.1 | 0.7 | 0.5 | 0.3 |

AAQ NEPM standard: 9.0 ppm (rolling 8-hour average)

Table 29. Statistical summary for CO: Daily maximum rolling 8-hour average concentrations. Station: Macarthur/Campbelltown West¹

| Year | Data availability rate (%) | Number of exceedences (days) | Maximum (ppm) | Percentile (ppm) | | | | | | |
|-------------------|----------------------------|------------------------------|---------------|------------------|------|------|------|------|------|------|
| | | | | 99th | 98th | 95th | 90th | 75th | 50th | 25th |
| 2005 | 55.2 | 0 | 1.0 | 0.9 | 0.8 | 0.7 | 0.5 | 0.4 | 0.3 | 0.2 |
| 2006 | 98.2 | 0 | 1.8 | 1.6 | 1.5 | 0.6 | 0.4 | 0.3 | 0.2 | 0.2 |
| 2007 | 94.0 | 0 | 1.8 | 1.7 | 1.1 | 0.6 | 0.5 | 0.4 | 0.3 | 0.2 |
| 2008 | 97.3 | 0 | 0.9 | 0.6 | 0.6 | 0.5 | 0.4 | 0.3 | 0.2 | 0.1 |
| 2009 | 95.1 | 0 | 0.8 | 0.8 | 0.7 | 0.6 | 0.6 | 0.4 | 0.4 | 0.2 |
| 2010 | 96.1 | 0 | 0.9 | 0.8 | 0.8 | 0.6 | 0.5 | 0.4 | 0.4 | 0.3 |
| 2011 | 95.3 | 0 | 1.1 | 0.8 | 0.7 | 0.6 | 0.5 | 0.4 | 0.3 | 0.3 |
| 2012 ¹ | 55.0 | 0 | 0.7 | 0.6 | 0.6 | 0.5 | 0.5 | 0.4 | 0.3 | 0.3 |
| 2013 ¹ | 98.6 | 0 | 3.0 | 0.8 | 0.7 | 0.5 | 0.5 | 0.3 | 0.1 | 0.0 |

AAQ NEPM standard: 9.0 ppm (rolling 8-hour average)

Table 30. Statistical summary for CO: Daily maximum rolling 8-hour average concentrations. Station: Rozelle

| Year | Data availability rate (%) | Number of exceedences (days) | Maximum (ppm) | Percentile (ppm) | | | | | | |
|------|----------------------------|------------------------------|---------------|------------------|------|------|------|------|------|------|
| | | | | 99th | 98th | 95th | 90th | 75th | 50th | 25th |
| 2004 | 94.0 | 0 | 2.2 | 1.9 | 1.7 | 1.4 | 1.1 | 0.7 | 0.4 | 0.3 |
| 2005 | 97.3 | 0 | 2.1 | 1.8 | 1.6 | 1.3 | 1.0 | 0.6 | 0.4 | 0.2 |
| 2006 | 96.6 | 0 | 2.0 | 1.6 | 1.4 | 1.2 | 0.9 | 0.6 | 0.4 | 0.3 |
| 2007 | 96.1 | 0 | 1.8 | 1.7 | 1.3 | 0.9 | 0.8 | 0.5 | 0.3 | 0.2 |
| 2008 | 94.4 | 0 | 1.5 | 1.3 | 1.2 | 1.1 | 0.9 | 0.5 | 0.3 | 0.2 |
| 2009 | 95.6 | 0 | 2.3 | 1.5 | 1.4 | 1.2 | 1.0 | 0.7 | 0.5 | 0.4 |
| 2010 | 93.6 | 0 | 1.8 | 1.5 | 1.4 | 1.1 | 0.9 | 0.7 | 0.5 | 0.4 |
| 2011 | 96.6 | 0 | 1.4 | 1.2 | 1.1 | 0.9 | 0.8 | 0.5 | 0.4 | 0.3 |
| 2012 | 96.9 | 0 | 2.2 | 1.3 | 1.2 | 1.0 | 0.8 | 0.6 | 0.5 | 0.4 |
| 2013 | 93.8 | 0 | 1.8 | 1.2 | 1.1 | 0.9 | 0.7 | 0.5 | 0.3 | 0.2 |

AAQ NEPM standard: 9.0 ppm (rolling 8-hour average)

Table 31. Statistical summary for CO: Daily maximum rolling 8-hour average concentrations. Station: Wyong

| Year | Data availability rate (%) | Number of exceedences (days) | Maximum (ppm) | Percentile (ppm) | | | | | | |
|------|----------------------------|------------------------------|---------------|------------------|------|------|------|------|------|------|
| | | | | 99th | 98th | 95th | 90th | 75th | 50th | 25th |
| 2012 | 20.1 | 0 | 0.4 | 0.4 | 0.4 | 0.3 | 0.2 | 0.2 | 0.1 | 0.1 |
| 2013 | 98.7 | 0 | 0.8 | 0.4 | 0.3 | 0.3 | 0.3 | 0.2 | 0.1 | 0.1 |

AAQ NEPM standard: 9.0 ppm (rolling 8-hour average)

Table 32. Statistical summary for CO: Daily maximum rolling 8-hour average concentrations. Station: Wollongong

| Year | Data availability rate (%) | Number of exceedences (days) | Maximum (ppm) | Percentile (ppm) | | | | | | |
|------|----------------------------|------------------------------|---------------|------------------|------|------|------|------|------|------|
| | | | | 99th | 98th | 95th | 90th | 75th | 50th | 25th |
| 2004 | 97.3 | 0 | 2.1 | 1.6 | 1.5 | 1.2 | 1.0 | 0.7 | 0.5 | 0.3 |
| 2005 | 96.8 | 0 | 2.6 | 1.8 | 1.5 | 1.2 | 1.1 | 0.7 | 0.5 | 0.3 |
| 2006 | 98.6 | 0 | 1.5 | 1.3 | 1.2 | 1.0 | 0.9 | 0.6 | 0.4 | 0.3 |
| 2007 | 90.7 | 0 | 1.5 | 1.3 | 1.1 | 1.0 | 0.8 | 0.6 | 0.4 | 0.2 |
| 2008 | 94.0 | 0 | 1.3 | 0.9 | 0.9 | 0.8 | 0.7 | 0.5 | 0.3 | 0.2 |
| 2009 | 82.1 | 0 | 1.3 | 1.1 | 1.1 | 1.0 | 0.8 | 0.5 | 0.4 | 0.2 |
| 2010 | 98.4 | 0 | 1.5 | 1.2 | 1.1 | 0.9 | 0.8 | 0.6 | 0.5 | 0.4 |
| 2011 | 97.2 | 0 | 1.2 | 1.1 | 1.0 | 0.9 | 0.7 | 0.6 | 0.4 | 0.3 |
| 2012 | 96.5 | 0 | 1.2 | 1.1 | 1.0 | 0.8 | 0.7 | 0.5 | 0.4 | 0.3 |
| 2013 | 97.3 | 0 | 2.7 | 0.8 | 0.8 | 0.7 | 0.5 | 0.4 | 0.3 | 0.2 |

AAQ NEPM standard: 9.0 ppm (rolling 8-hour average)

Table 33. Statistical summary for CO: Daily maximum rolling 8-hour average concentrations. Station: Newcastle

| Year | Data availability rate (%) | Number of exceedences (days) | Maximum (ppm) | Percentile (ppm) | | | | | | |
|------|----------------------------|------------------------------|---------------|------------------|------|------|------|------|------|------|
| | | | | 99th | 98th | 95th | 90th | 75th | 50th | 25th |
| 2004 | 97.0 | 0 | 2.4 | 2.0 | 1.7 | 1.3 | 1.1 | 0.6 | 0.4 | 0.2 |
| 2005 | 95.8 | 0 | 1.9 | 1.7 | 1.6 | 1.3 | 0.9 | 0.4 | 0.3 | 0.2 |
| 2006 | 94.7 | 0 | 2.2 | 1.6 | 1.5 | 1.0 | 0.8 | 0.4 | 0.3 | 0.2 |
| 2007 | 43.4 | 0 | 1.7 | 1.6 | 1.5 | 1.1 | 0.8 | 0.5 | 0.2 | 0.1 |
| 2008 | 96.1 | 0 | 2.0 | 1.5 | 1.4 | 1.2 | 1.0 | 0.6 | 0.4 | 0.3 |
| 2009 | 84.3 | 0 | 1.9 | 1.6 | 1.4 | 1.1 | 0.9 | 0.6 | 0.4 | 0.3 |
| 2010 | 87.5 | 0 | 1.4 | 1.2 | 1.1 | 0.9 | 0.6 | 0.4 | 0.3 | 0.2 |
| 2011 | 98.8 | 0 | 1.5 | 1.2 | 1.0 | 0.7 | 0.5 | 0.3 | 0.1 | 0.1 |
| 2012 | 94.3 | 0 | 1.3 | 1.3 | 1.1 | 0.8 | 0.6 | 0.3 | 0.1 | 0.0 |
| 2013 | 98.3 | 0 | 1.4 | 1.0 | 1.0 | 0.8 | 0.5 | 0.3 | 0.1 | 0.1 |

AAQ NEPM standard: 9.0 ppm (rolling 8-hour average)

Nitrogen dioxide

Statistical summary

Table 34. Statistical summary for NO₂: Daily maximum 1-hour average concentrations (2013)

| Region/Performance monitoring station | Data availability rate (%) | Maximum (ppm) | Percentile (ppm) | | | | | | |
|---------------------------------------|----------------------------|---------------|------------------|-------|-------|-------|-------|-------|-------|
| | | | 99th | 98th | 95th | 90th | 75th | 50th | 25th |
| Sydney | | | | | | | | | |
| Bringelly | 92.9 | 0.037 | 0.025 | 0.022 | 0.019 | 0.016 | 0.013 | 0.010 | 0.007 |
| Camden | 94.1 | 0.036 | 0.024 | 0.020 | 0.018 | 0.015 | 0.013 | 0.010 | 0.007 |
| Campbelltown West | 94.9 | 0.054 | 0.043 | 0.042 | 0.038 | 0.035 | 0.029 | 0.023 | 0.017 |
| Chullora | 92.2 | 0.055 | 0.051 | 0.047 | 0.043 | 0.038 | 0.031 | 0.026 | 0.019 |
| Liverpool | 92.2 | 0.056 | 0.047 | 0.040 | 0.037 | 0.034 | 0.028 | 0.024 | 0.017 |
| Prospect | 88.8 | 0.049 | 0.044 | 0.041 | 0.037 | 0.033 | 0.029 | 0.022 | 0.014 |
| Richmond | 92.5 | 0.032 | 0.024 | 0.023 | 0.021 | 0.018 | 0.015 | 0.011 | 0.007 |
| Rozelle | 91.5 | 0.070 | 0.048 | 0.045 | 0.038 | 0.035 | 0.029 | 0.023 | 0.016 |
| Central Coast | | | | | | | | | |
| Wyong | 94.7 | 0.041 | 0.037 | 0.029 | 0.026 | 0.024 | 0.019 | 0.014 | 0.010 |
| Illawarra | | | | | | | | | |
| Albion Park South | 92.4 | 0.039 | 0.036 | 0.030 | 0.025 | 0.019 | 0.013 | 0.010 | 0.006 |
| Wollongong | 89.2 | 0.050 | 0.048 | 0.043 | 0.035 | 0.031 | 0.026 | 0.020 | 0.014 |
| Lower Hunter | | | | | | | | | |
| Newcastle | 95.0 | 0.042 | 0.039 | 0.036 | 0.033 | 0.029 | 0.025 | 0.019 | 0.011 |
| Wallsend | 91.8 | 0.043 | 0.033 | 0.030 | 0.027 | 0.024 | 0.021 | 0.016 | 0.012 |

AAQ NEPM standard: 0.120 ppm (1-hour average)

Trend analysis

Table 35. Maximum 1-hour average concentrations for NO₂ (ppm)

| Region/Performance monitoring station | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 |
|---------------------------------------|--------|-------|-------|-------|-------|-------|-------|-------|-------|--------|
| Sydney | | | | | | | | | | |
| Blacktown*/Prospect | 0.048* | | | 0.049 | 0.048 | 0.051 | 0.043 | 0.039 | 0.050 | 0.049 |
| Bringelly | 0.041 | 0.045 | 0.040 | 0.044 | 0.033 | 0.034 | 0.037 | 0.029 | 0.038 | 0.037 |
| Camden | | | | | | | | | | 0.036 |
| Chullora | 0.056 | 0.064 | 0.066 | 0.049 | 0.044 | 0.052 | 0.057 | 0.051 | 0.059 | 0.055 |
| Liverpool | 0.060 | 0.063 | 0.053 | 0.053 | 0.046 | 0.053 | 0.053 | 0.046 | 0.046 | 0.056 |
| Macarthur/Campbelltown West* | 0.052 | 0.081 | 0.066 | 0.047 | 0.044 | 0.048 | 0.042 | 0.045 | 0.038 | 0.054* |
| Richmond | 0.037 | 0.036 | 0.044 | 0.029 | 0.027 | 0.030 | 0.033 | 0.029 | 0.046 | 0.032 |
| Rozelle | 0.064 | 0.052 | 0.057 | 0.050 | 0.040 | 0.049 | 0.049 | 0.050 | 0.062 | 0.070 |
| Central Coast | | | | | | | | | | |
| Wyang | | | | | | | | | | 0.041 |
| Illawarra | | | | | | | | | | |
| Albion Park*/Albion Park South | 0.044* | 0.044 | 0.051 | 0.045 | 0.029 | 0.052 | 0.041 | 0.040 | 0.037 | 0.039 |
| Wollongong | 0.044 | 0.058 | 0.050 | 0.043 | 0.046 | 0.048 | 0.052 | 0.043 | 0.049 | 0.050 |
| Lower Hunter | | | | | | | | | | |
| Newcastle | 0.044 | 0.041 | 0.042 | 0.032 | 0.033 | 0.043 | 0.038 | 0.038 | 0.038 | 0.042 |
| Wallsend | 0.041 | 0.038 | 0.037 | 0.035 | 0.031 | 0.040 | 0.038 | 0.037 | 0.034 | 0.043 |

AAQ NEPM standard: 0.120 ppm (1-hour average)

Table 36. Annual average concentrations for NO₂ (ppm)

| Region/Performance monitoring station | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 |
|---------------------------------------|--------|--------|-------|-------|-------|-------|-------|-------|-------|--------|
| Sydney | | | | | | | | | | |
| Blacktown*/Prospect | 0.013* | | | 0.012 | 0.010 | 0.011 | 0.012 | 0.010 | 0.010 | 0.011 |
| Bringelly | 0.006 | 0.006 | 0.006 | 0.006 | 0.005 | 0.004 | 0.005 | 0.005 | 0.005 | 0.005 |
| Camden | | | | | | | | | | 0.004 |
| Chullora | 0.016 | 0.014 | 0.014 | 0.013 | 0.013 | 0.013 | 0.013 | 0.013 | 0.013 | 0.013 |
| Liverpool | 0.013 | 0.013 | 0.013 | 0.012 | 0.011 | 0.010 | 0.011 | 0.010 | 0.009 | 0.011 |
| Macarthur/Campbell town West* | 0.009 | 0.012 | 0.011 | 0.011 | 0.010 | 0.009 | 0.009 | 0.008 | 0.008 | 0.010* |
| Richmond | 0.007 | 0.006 | 0.006 | 0.006 | 0.005 | 0.005 | 0.005 | 0.005 | 0.005 | 0.005 |
| Rozelle | 0.014 | 0.013 | 0.013 | 0.012 | 0.011 | 0.011 | 0.011 | 0.011 | 0.012 | 0.011 |
| Central Coast | | | | | | | | | | |
| Wyang | | | | | | | | | | 0.041 |
| Illawarra | | | | | | | | | | |
| Albion Park*/Albion Park South | 0.004* | 0.013* | 0.005 | 0.004 | 0.004 | 0.003 | 0.003 | 0.002 | 0.004 | 0.004 |
| Wollongong | 0.009 | 0.009 | 0.009 | 0.009 | 0.009 | 0.010 | 0.009 | 0.008 | 0.009 | 0.008 |
| Lower Hunter | | | | | | | | | | |
| Newcastle | 0.009 | 0.009 | 0.008 | 0.007 | 0.007 | 0.008 | 0.008 | 0.007 | 0.008 | 0.008 |
| Wallsend | 0.008 | 0.008 | 0.009 | 0.008 | 0.007 | 0.008 | 0.009 | 0.008 | 0.008 | 0.008 |

AAQ NEPM standard: 0.030 ppm (Annual average)

Statistical summaries for multiple years, by station

Table 37. Statistical summary for NO₂: Annual daily maximum 1-hour average concentrations. Station: Blacktown¹/Prospect

| Year | Data availability rate (%) | Number of exceedences (days) | Maximum (ppm) | Percentile (ppm) | | | | | | |
|----------------------|----------------------------|------------------------------|---------------|------------------|-------|-------|-------|-------|-------|-------|
| | | | | 99th | 98th | 95th | 90th | 75th | 50th | 25th |
| 2004 ¹ | 39.3 | 0 | 0.048 | 0.045 | 0.043 | 0.038 | 0.035 | 0.030 | 0.024 | 0.019 |
| 2005–06 ² | | | | | | | | | | |
| 2007 | 64.7 | 0 | 0.049 | 0.044 | 0.042 | 0.037 | 0.034 | 0.029 | 0.025 | 0.020 |
| 2008 | 59.5 | 0 | 0.048 | 0.037 | 0.036 | 0.034 | 0.031 | 0.026 | 0.019 | 0.015 |
| 2009 | 84.6 | 0 | 0.051 | 0.040 | 0.039 | 0.035 | 0.032 | 0.027 | 0.022 | 0.017 |
| 2010 | 82.0 | 0 | 0.043 | 0.039 | 0.038 | 0.033 | 0.031 | 0.027 | 0.023 | 0.017 |
| 2011 | 94.6 | 0 | 0.039 | 0.038 | 0.035 | 0.032 | 0.029 | 0.025 | 0.020 | 0.015 |
| 2012 | 92.7 | 0 | 0.050 | 0.043 | 0.037 | 0.034 | 0.030 | 0.026 | 0.021 | 0.015 |
| 2013 | 88.8 | 0 | 0.049 | 0.044 | 0.041 | 0.037 | 0.033 | 0.029 | 0.022 | 0.014 |

² Blacktown station closed pending relocation
AAQ NEPM standard: 0.120 ppm (1-hour average)

Table 38. Statistical summary for NO₂: Annual daily maximum 1-hour average concentrations. Station: Bringelly

| Year | Data availability rate (%) | Number of exceedences (days) | Maximum (ppm) | Percentile (ppm) | | | | | | |
|------|----------------------------|------------------------------|---------------|------------------|-------|-------|-------|-------|-------|-------|
| | | | | 99th | 98th | 95th | 90th | 75th | 50th | 25th |
| 2004 | 90.8 | 0 | 0.041 | 0.033 | 0.029 | 0.025 | 0.022 | 0.017 | 0.013 | 0.010 |
| 2005 | 91.5 | 0 | 0.045 | 0.033 | 0.030 | 0.026 | 0.022 | 0.018 | 0.013 | 0.009 |
| 2006 | 92.0 | 0 | 0.040 | 0.036 | 0.032 | 0.026 | 0.022 | 0.018 | 0.014 | 0.010 |
| 2007 | 92.2 | 0 | 0.044 | 0.033 | 0.029 | 0.024 | 0.022 | 0.016 | 0.012 | 0.009 |
| 2008 | 86.3 | 0 | 0.033 | 0.027 | 0.024 | 0.020 | 0.018 | 0.014 | 0.011 | 0.007 |
| 2009 | 77.9 | 0 | 0.034 | 0.027 | 0.025 | 0.022 | 0.018 | 0.013 | 0.010 | 0.006 |
| 2010 | 87.4 | 0 | 0.037 | 0.029 | 0.027 | 0.022 | 0.019 | 0.015 | 0.011 | 0.009 |
| 2011 | 87.4 | 0 | 0.029 | 0.024 | 0.023 | 0.019 | 0.017 | 0.013 | 0.010 | 0.007 |
| 2012 | 89.7 | 0 | 0.038 | 0.027 | 0.025 | 0.022 | 0.018 | 0.015 | 0.011 | 0.007 |
| 2013 | 92.9 | 0 | 0.037 | 0.025 | 0.022 | 0.019 | 0.016 | 0.013 | 0.010 | 0.007 |

AAQ NEPM standard: 0.120 ppm (1-hour average)

Table 39. Statistical summary for NO₂: Annual daily maximum 1-hour average concentrations. Station: Camden

| Year | Data availability rate (%) | Number of exceedences (days) | Maximum (ppm) | Percentile (ppm) | | | | | | |
|------|----------------------------|------------------------------|---------------|------------------|-------|-------|-------|-------|-------|-------|
| | | | | 99th | 98th | 95th | 90th | 75th | 50th | 25th |
| 2012 | 20.0 | 0 | 0.022 | 0.022 | 0.022 | 0.020 | 0.017 | 0.012 | 0.009 | 0.007 |
| 2013 | 94.1 | 0 | 0.036 | 0.024 | 0.020 | 0.018 | 0.015 | 0.013 | 0.010 | 0.007 |

AAQ NEPM standard: 0.120 ppm (1-hour average)

Table 40. Statistical summary for NO₂: Annual daily maximum 1-hour average concentrations. Station: Chullora

| Year | Data availability rate (%) | Number of exceedences (days) | Maximum (ppm) | Percentile (ppm) | | | | | | |
|------|----------------------------|------------------------------|---------------|------------------|-------|-------|-------|-------|-------|-------|
| | | | | 99th | 98th | 95th | 90th | 75th | 50th | 25th |
| 2004 | 84.3 | 0 | 0.056 | 0.052 | 0.051 | 0.044 | 0.041 | 0.034 | 0.028 | 0.023 |
| 2005 | 92.5 | 0 | 0.064 | 0.048 | 0.044 | 0.040 | 0.037 | 0.030 | 0.026 | 0.020 |
| 2006 | 91.7 | 0 | 0.066 | 0.052 | 0.046 | 0.041 | 0.037 | 0.031 | 0.025 | 0.019 |
| 2007 | 90.3 | 0 | 0.049 | 0.047 | 0.045 | 0.038 | 0.035 | 0.029 | 0.024 | 0.017 |
| 2008 | 88.9 | 0 | 0.044 | 0.041 | 0.040 | 0.037 | 0.034 | 0.029 | 0.024 | 0.018 |
| 2009 | 90.5 | 0 | 0.052 | 0.044 | 0.041 | 0.036 | 0.033 | 0.028 | 0.023 | 0.018 |
| 2010 | 86.5 | 0 | 0.057 | 0.042 | 0.040 | 0.036 | 0.032 | 0.028 | 0.023 | 0.017 |
| 2011 | 93.2 | 0 | 0.051 | 0.046 | 0.043 | 0.037 | 0.034 | 0.029 | 0.024 | 0.018 |
| 2012 | 93.6 | 0 | 0.059 | 0.049 | 0.047 | 0.041 | 0.037 | 0.030 | 0.024 | 0.019 |
| 2013 | 92.2 | 0 | 0.055 | 0.051 | 0.047 | 0.043 | 0.038 | 0.031 | 0.026 | 0.019 |

AAQ NEPM standard: 0.120 ppm (1-hour average)

Table 41. Statistical summary for NO₂: Annual daily maximum 1-hour average concentrations. Station: Liverpool

| Year | Data availability rate (%) | Number of exceedences (days) | Maximum (ppm) | Percentile (ppm) | | | | | | |
|------|----------------------------|------------------------------|---------------|------------------|-------|-------|-------|-------|-------|-------|
| | | | | 99th | 98th | 95th | 90th | 75th | 50th | 25th |
| 2004 | 93.2 | 0 | 0.060 | 0.050 | 0.049 | 0.042 | 0.036 | 0.030 | 0.025 | 0.020 |
| 2005 | 92.0 | 0 | 0.063 | 0.051 | 0.045 | 0.039 | 0.034 | 0.029 | 0.024 | 0.020 |
| 2006 | 92.7 | 0 | 0.053 | 0.049 | 0.047 | 0.041 | 0.035 | 0.029 | 0.024 | 0.018 |
| 2007 | 90.5 | 0 | 0.053 | 0.046 | 0.039 | 0.035 | 0.032 | 0.028 | 0.023 | 0.017 |
| 2008 | 84.7 | 0 | 0.046 | 0.040 | 0.037 | 0.033 | 0.030 | 0.027 | 0.021 | 0.016 |
| 2009 | 85.3 | 0 | 0.053 | 0.044 | 0.042 | 0.034 | 0.030 | 0.025 | 0.020 | 0.015 |
| 2010 | 92.0 | 0 | 0.053 | 0.044 | 0.041 | 0.035 | 0.030 | 0.026 | 0.022 | 0.017 |
| 2011 | 92.0 | 0 | 0.046 | 0.039 | 0.038 | 0.032 | 0.030 | 0.025 | 0.020 | 0.015 |
| 2012 | 90.1 | 0 | 0.046 | 0.039 | 0.036 | 0.032 | 0.030 | 0.025 | 0.020 | 0.014 |
| 2013 | 92.2 | 0 | 0.056 | 0.047 | 0.040 | 0.037 | 0.034 | 0.028 | 0.024 | 0.017 |

AAQ NEPM standard: 0.120 ppm (1-hour average)

Table 42. Statistical summary for NO₂: Annual daily maximum 1-hour average concentrations. Station: Macarthur/Campbelltown West¹

| Year | Data availability rate (%) | Number of exceedences (days) | Maximum (ppm) | Percentile (ppm) | | | | | | |
|-------------------|----------------------------|------------------------------|---------------|------------------|-------|-------|-------|-------|-------|-------|
| | | | | 99th | 98th | 95th | 90th | 75th | 50th | 25th |
| 2004 | 16.2 | 0 | 0.052 | 0.052 | 0.051 | 0.039 | 0.032 | 0.024 | 0.020 | 0.016 |
| 2005 | 91.9 | 0 | 0.081 | 0.053 | 0.048 | 0.042 | 0.035 | 0.030 | 0.024 | 0.019 |
| 2006 | 93.9 | 0 | 0.066 | 0.049 | 0.048 | 0.043 | 0.036 | 0.030 | 0.024 | 0.018 |
| 2007 | 90.2 | 0 | 0.047 | 0.043 | 0.041 | 0.037 | 0.033 | 0.028 | 0.023 | 0.018 |
| 2008 | 89.0 | 0 | 0.044 | 0.041 | 0.039 | 0.035 | 0.032 | 0.026 | 0.021 | 0.016 |
| 2009 | 91.0 | 0 | 0.048 | 0.044 | 0.040 | 0.035 | 0.031 | 0.025 | 0.020 | 0.016 |
| 2010 | 90.4 | 0 | 0.042 | 0.039 | 0.036 | 0.032 | 0.029 | 0.025 | 0.020 | 0.015 |
| 2011 | 92.9 | 0 | 0.045 | 0.039 | 0.037 | 0.033 | 0.029 | 0.024 | 0.019 | 0.014 |
| 2012 | 52.2 | 0 | 0.038 | 0.034 | 0.033 | 0.031 | 0.027 | 0.023 | 0.018 | 0.013 |
| 2012 ¹ | 33.9 | 0 | 0.052 | 0.052 | 0.051 | 0.039 | 0.032 | 0.024 | 0.020 | 0.016 |
| 2013 ¹ | 94.9 | 0 | 0.054 | 0.043 | 0.042 | 0.038 | 0.035 | 0.029 | 0.023 | 0.017 |

AAQ NEPM standard: 0.120 ppm (1-hour average)

Table 43. Statistical summary for NO₂: Annual daily maximum 1-hour average concentrations. Station: Richmond

| Year | Data availability rate (%) | Number of exceedences (days) | Maximum (ppm) | Percentile (ppm) | | | | | | |
|------|----------------------------|------------------------------|---------------|------------------|-------|-------|-------|-------|-------|-------|
| | | | | 99th | 98th | 95th | 90th | 75th | 50th | 25th |
| 2004 | 88.4 | 0 | 0.037 | 0.035 | 0.033 | 0.030 | 0.026 | 0.021 | 0.015 | 0.011 |
| 2005 | 90.1 | 0 | 0.036 | 0.032 | 0.030 | 0.027 | 0.025 | 0.020 | 0.014 | 0.010 |
| 2006 | 91.4 | 0 | 0.044 | 0.036 | 0.033 | 0.027 | 0.024 | 0.020 | 0.015 | 0.011 |
| 2007 | 89.1 | 0 | 0.029 | 0.028 | 0.026 | 0.023 | 0.021 | 0.017 | 0.012 | 0.009 |
| 2008 | 86.9 | 0 | 0.027 | 0.024 | 0.023 | 0.021 | 0.019 | 0.015 | 0.011 | 0.008 |
| 2009 | 91.4 | 0 | 0.030 | 0.027 | 0.026 | 0.023 | 0.020 | 0.016 | 0.012 | 0.009 |
| 2010 | 87.9 | 0 | 0.033 | 0.025 | 0.024 | 0.021 | 0.020 | 0.015 | 0.012 | 0.008 |
| 2011 | 94.4 | 0 | 0.029 | 0.026 | 0.024 | 0.021 | 0.019 | 0.015 | 0.011 | 0.008 |
| 2012 | 93.1 | 0 | 0.046 | 0.042 | 0.028 | 0.021 | 0.019 | 0.015 | 0.011 | 0.007 |
| 2013 | 92.5 | 0 | 0.032 | 0.024 | 0.023 | 0.021 | 0.018 | 0.015 | 0.011 | 0.007 |

AAQ NEPM standard: 0.120 ppm (1-hour average)

Table 44. Statistical summary for NO₂: Annual daily maximum 1-hour average concentrations. Station: Rozelle

| Year | Data availability rate (%) | Number of exceedences (days) | Maximum (ppm) | Percentile (ppm) | | | | | | |
|------|----------------------------|------------------------------|---------------|------------------|-------|-------|-------|-------|-------|-------|
| | | | | 99th | 98th | 95th | 90th | 75th | 50th | 25th |
| 2004 | 89.2 | 0 | 0.064 | 0.054 | 0.047 | 0.043 | 0.037 | 0.031 | 0.025 | 0.019 |
| 2005 | 91.2 | 0 | 0.052 | 0.047 | 0.044 | 0.040 | 0.035 | 0.031 | 0.023 | 0.017 |
| 2006 | 92.9 | 0 | 0.057 | 0.050 | 0.044 | 0.038 | 0.035 | 0.030 | 0.025 | 0.017 |
| 2007 | 89.2 | 0 | 0.050 | 0.043 | 0.040 | 0.038 | 0.033 | 0.028 | 0.023 | 0.015 |
| 2008 | 79.1 | 0 | 0.040 | 0.037 | 0.036 | 0.033 | 0.031 | 0.027 | 0.022 | 0.015 |
| 2009 | 86.1 | 0 | 0.049 | 0.039 | 0.036 | 0.033 | 0.031 | 0.026 | 0.021 | 0.015 |
| 2010 | 79.6 | 0 | 0.049 | 0.039 | 0.037 | 0.034 | 0.031 | 0.028 | 0.022 | 0.015 |
| 2011 | 90.9 | 0 | 0.050 | 0.043 | 0.041 | 0.035 | 0.031 | 0.028 | 0.022 | 0.014 |
| 2012 | 92.1 | 0 | 0.062 | 0.049 | 0.046 | 0.038 | 0.034 | 0.028 | 0.022 | 0.017 |
| 2013 | 91.5 | 0 | 0.070 | 0.048 | 0.045 | 0.038 | 0.035 | 0.029 | 0.023 | 0.016 |

AAQ NEPM standard: 0.120 ppm (1-hour average)

Table 45. Statistical summary for NO₂: Annual daily maximum 1-hour average concentrations. Station: Wyong

| Year | Data availability rate (%) | Number of exceedences (days) | Maximum (ppm) | Percentile (ppm) | | | | | | |
|------|----------------------------|------------------------------|---------------|------------------|-------|-------|-------|-------|-------|-------|
| | | | | 99th | 98th | 95th | 90th | 75th | 50th | 25th |
| 2012 | 18.9 | 0 | 0.029 | 0.028 | 0.025 | 0.023 | 0.018 | 0.015 | 0.012 | 0.009 |
| 2013 | 94.7 | 0 | 0.041 | 0.037 | 0.029 | 0.026 | 0.024 | 0.019 | 0.014 | 0.010 |

AAQ NEPM standard: 0.120 ppm (1-hour average)

Table 46. Statistical summary for NO₂: Annual daily maximum 1-hour average concentrations. Station: Albion Park¹/Albion Park South

| Year | Data availability rate (%) | Number of exceedences (days) | Maximum (ppm) | Percentile (ppm) | | | | | | |
|-------------------|----------------------------|------------------------------|---------------|------------------|-------|-------|-------|-------|-------|-------|
| | | | | 99th | 98th | 95th | 90th | 75th | 50th | 25th |
| 2004 ¹ | 91.4 | 0 | 0.044 | 0.036 | 0.035 | 0.027 | 0.021 | 0.016 | 0.010 | 0.006 |
| 2005 ¹ | 4.8 | 0 | 0.035 | 0.035 | 0.035 | 0.034 | 0.031 | 0.011 | 0.005 | 0.004 |
| 2005 | 0.2 | 0 | 0.044 | 0.044 | 0.044 | 0.044 | 0.044 | 0.044 | 0.025 | 0.041 |
| 2006 | 78.9 | 0 | 0.051 | 0.042 | 0.034 | 0.027 | 0.022 | 0.016 | 0.011 | 0.007 |
| 2007 | 93.0 | 0 | 0.045 | 0.034 | 0.031 | 0.027 | 0.021 | 0.015 | 0.010 | 0.006 |
| 2008 | 55.9 | 0 | 0.029 | 0.026 | 0.025 | 0.021 | 0.018 | 0.014 | 0.009 | 0.004 |
| 2009 | 91.3 | 0 | 0.052 | 0.038 | 0.033 | 0.024 | 0.022 | 0.014 | 0.009 | 0.004 |
| 2010 | 87.5 | 0 | 0.041 | 0.030 | 0.027 | 0.023 | 0.019 | 0.013 | 0.008 | 0.004 |
| 2011 | 89.1 | 0 | 0.040 | 0.030 | 0.027 | 0.021 | 0.016 | 0.012 | 0.007 | 0.003 |
| 2012 | 86.1 | 0 | 0.037 | 0.034 | 0.028 | 0.023 | 0.020 | 0.014 | 0.008 | 0.004 |
| 2013 | 92.4 | 0 | 0.039 | 0.036 | 0.030 | 0.025 | 0.019 | 0.013 | 0.010 | 0.006 |

AAQ NEPM standard: 0.120 ppm (1-hour average)

Table 47. Statistical summary for NO₂: Annual daily maximum 1-hour average concentrations. Station: Wollongong

| Year | Data availability rate (%) | Number of exceedences (days) | Maximum (ppm) | Percentile (ppm) | | | | | | |
|------|----------------------------|------------------------------|---------------|------------------|-------|-------|-------|-------|-------|-------|
| | | | | 99th | 98th | 95th | 90th | 75th | 50th | 25th |
| 2004 | 92.2 | 0 | 0.044 | 0.041 | 0.038 | 0.034 | 0.030 | 0.026 | 0.020 | 0.015 |
| 2005 | 88.6 | 0 | 0.058 | 0.043 | 0.039 | 0.032 | 0.029 | 0.025 | 0.019 | 0.014 |
| 2006 | 87.8 | 0 | 0.050 | 0.045 | 0.041 | 0.035 | 0.031 | 0.025 | 0.020 | 0.015 |
| 2007 | 89.6 | 0 | 0.043 | 0.038 | 0.037 | 0.032 | 0.029 | 0.025 | 0.020 | 0.014 |
| 2008 | 83.1 | 0 | 0.046 | 0.037 | 0.036 | 0.033 | 0.030 | 0.026 | 0.020 | 0.014 |
| 2009 | 70.1 | 0 | 0.048 | 0.044 | 0.037 | 0.034 | 0.030 | 0.025 | 0.019 | 0.013 |
| 2010 | 87.1 | 0 | 0.052 | 0.042 | 0.037 | 0.033 | 0.028 | 0.024 | 0.020 | 0.015 |
| 2011 | 90.8 | 0 | 0.043 | 0.039 | 0.037 | 0.031 | 0.029 | 0.024 | 0.019 | 0.013 |
| 2012 | 90.5 | 0 | 0.049 | 0.040 | 0.039 | 0.034 | 0.030 | 0.025 | 0.018 | 0.013 |
| 2013 | 89.2 | 0 | 0.050 | 0.048 | 0.043 | 0.035 | 0.031 | 0.026 | 0.020 | 0.014 |

AAQ NEPM standard: 0.120 ppm (1-hour average)

Table 48. Statistical summary for NO₂: Annual daily maximum 1-hour average concentrations. Station: Newcastle

| Year | Data availability rate (%) | Number of exceedences (days) | Maximum (ppm) | Percentile (ppm) | | | | | | |
|------|----------------------------|------------------------------|---------------|------------------|-------|-------|-------|-------|-------|-------|
| | | | | 99th | 98th | 95th | 90th | 75th | 50th | 25th |
| 2004 | 91.0 | 0 | 0.044 | 0.038 | 0.035 | 0.032 | 0.029 | 0.025 | 0.020 | 0.012 |
| 2005 | 89.7 | 0 | 0.041 | 0.035 | 0.033 | 0.031 | 0.029 | 0.025 | 0.018 | 0.011 |
| 2006 | 89.2 | 0 | 0.042 | 0.035 | 0.033 | 0.031 | 0.028 | 0.024 | 0.018 | 0.010 |
| 2007 | 40.6 | 0 | 0.032 | 0.031 | 0.029 | 0.026 | 0.025 | 0.021 | 0.015 | 0.009 |
| 2008 | 82.8 | 0 | 0.033 | 0.030 | 0.029 | 0.027 | 0.026 | 0.021 | 0.016 | 0.010 |
| 2009 | 89.5 | 0 | 0.043 | 0.037 | 0.032 | 0.029 | 0.027 | 0.022 | 0.016 | 0.010 |
| 2010 | 85.9 | 0 | 0.038 | 0.032 | 0.031 | 0.029 | 0.028 | 0.023 | 0.017 | 0.011 |
| 2011 | 90.7 | 0 | 0.038 | 0.034 | 0.033 | 0.029 | 0.027 | 0.023 | 0.017 | 0.010 |
| 2012 | 92.6 | 0 | 0.038 | 0.035 | 0.033 | 0.031 | 0.029 | 0.025 | 0.018 | 0.011 |
| 2013 | 95.0 | 0 | 0.042 | 0.039 | 0.036 | 0.033 | 0.029 | 0.025 | 0.019 | 0.011 |

AAQ NEPM standard: 0.120 ppm (1-hour average)

Table 49. Statistical summary for NO₂: Annual daily maximum 1-hour average concentrations. Station: Wallsend

| Year | Data availability rate (%) | Number of exceedences (days) | Maximum (ppm) | Percentile (ppm) | | | | | | |
|------|----------------------------|------------------------------|---------------|------------------|-------|-------|-------|-------|-------|-------|
| | | | | 99th | 98th | 95th | 90th | 75th | 50th | 25th |
| 2004 | 92.2 | 0 | 0.041 | 0.035 | 0.033 | 0.029 | 0.027 | 0.023 | 0.017 | 0.012 |
| 2005 | 93.4 | 0 | 0.038 | 0.033 | 0.032 | 0.029 | 0.028 | 0.023 | 0.018 | 0.012 |
| 2006 | 92.1 | 0 | 0.037 | 0.035 | 0.034 | 0.030 | 0.027 | 0.023 | 0.018 | 0.013 |
| 2007 | 93.9 | 0 | 0.035 | 0.032 | 0.031 | 0.029 | 0.026 | 0.022 | 0.016 | 0.011 |
| 2008 | 87.1 | 0 | 0.031 | 0.029 | 0.028 | 0.026 | 0.023 | 0.020 | 0.015 | 0.010 |
| 2009 | 83.8 | 0 | 0.040 | 0.033 | 0.031 | 0.027 | 0.025 | 0.021 | 0.016 | 0.011 |
| 2010 | 86.1 | 0 | 0.038 | 0.033 | 0.032 | 0.028 | 0.026 | 0.022 | 0.017 | 0.012 |
| 2011 | 90.7 | 0 | 0.037 | 0.032 | 0.029 | 0.027 | 0.026 | 0.021 | 0.016 | 0.011 |
| 2012 | 94.1 | 0 | 0.034 | 0.030 | 0.029 | 0.027 | 0.025 | 0.021 | 0.016 | 0.012 |
| 2013 | 91.8 | 0 | 0.043 | 0.033 | 0.030 | 0.027 | 0.024 | 0.021 | 0.016 | 0.012 |

AAQ NEPM standard: 0.120 ppm (1-hour average)

Ozone

Statistical summary

Table 50. Statistical summary for O₃: Daily maximum 1-hour average concentrations (2013)

| Region/Performance monitoring station | Data availability rate (%) | Maximum (ppm) | Percentile (ppm) | | | | | | |
|---------------------------------------|----------------------------|---------------|------------------|-------|-------|-------|-------|-------|-------|
| | | | 99th | 98th | 95th | 90th | 75th | 50th | 25th |
| Sydney | | | | | | | | | |
| Bringelly | 94.8 | 0.108 | 0.085 | 0.081 | 0.062 | 0.053 | 0.040 | 0.031 | 0.026 |
| Camden | 93.1 | 0.110 | 0.098 | 0.079 | 0.069 | 0.056 | 0.042 | 0.031 | 0.027 |
| Campbelltown West | 93.9 | 0.094 | 0.085 | 0.076 | 0.061 | 0.049 | 0.037 | 0.029 | 0.025 |
| Chullora | 94.8 | 0.105 | 0.072 | 0.066 | 0.052 | 0.045 | 0.035 | 0.028 | 0.023 |
| Liverpool | 94.2 | 0.117 | 0.086 | 0.074 | 0.060 | 0.050 | 0.040 | 0.030 | 0.025 |
| Oakdale | 94.0 | 0.095 | 0.085 | 0.078 | 0.063 | 0.055 | 0.041 | 0.032 | 0.027 |
| Prospect | 91.5 | 0.111 | 0.084 | 0.070 | 0.062 | 0.053 | 0.042 | 0.031 | 0.026 |
| Richmond | 94.3 | 0.095 | 0.071 | 0.070 | 0.061 | 0.054 | 0.043 | 0.034 | 0.027 |
| Rozelle | 92.4 | 0.073 | 0.063 | 0.054 | 0.046 | 0.041 | 0.033 | 0.029 | 0.025 |
| St Marys | 93.7 | 0.110 | 0.076 | 0.073 | 0.063 | 0.054 | 0.043 | 0.032 | 0.027 |
| Central Coast | | | | | | | | | |
| Wyong | 92.2 | 0.079 | 0.070 | 0.061 | 0.053 | 0.044 | 0.037 | 0.030 | 0.026 |
| Illawarra | | | | | | | | | |
| Albion Park South | 93.2 | 0.120 | 0.094 | 0.064 | 0.053 | 0.044 | 0.035 | 0.031 | 0.027 |
| Kembla Grange | 93.8 | 0.126 | 0.081 | 0.063 | 0.048 | 0.043 | 0.034 | 0.030 | 0.025 |
| Wollongong | 92.7 | 0.112 | 0.085 | 0.066 | 0.052 | 0.043 | 0.034 | 0.029 | 0.024 |
| Lower Hunter | | | | | | | | | |
| Newcastle | 93.9 | 0.081 | 0.059 | 0.057 | 0.048 | 0.042 | 0.035 | 0.028 | 0.024 |
| Wallsend | 92.2 | 0.084 | 0.071 | 0.065 | 0.055 | 0.046 | 0.038 | 0.030 | 0.025 |

Bold font indicates values that exceed the AAQ NEPM standard.

AAQ NEPM standard: 0.100 ppm (1-hour average)

Table 51. Statistical summary for O₃: Daily maximum rolling 4-hour average concentrations (2013)

| Region/Performance monitoring station | Data availability rate (%) | Maximum (ppm) | Percentile (ppm) | | | | | | |
|---------------------------------------|----------------------------|---------------|------------------|-------|-------|-------|-------|-------|-------|
| | | | 99th | 98th | 95th | 90th | 75th | 50th | 25th |
| Sydney | | | | | | | | | |
| Bringelly | 98.9 | 0.102 | 0.074 | 0.068 | 0.054 | 0.047 | 0.037 | 0.030 | 0.025 |
| Camden | 97.0 | 0.090 | 0.085 | 0.072 | 0.062 | 0.050 | 0.038 | 0.030 | 0.026 |
| Campbelltown W | 97.8 | 0.082 | 0.074 | 0.067 | 0.054 | 0.044 | 0.034 | 0.028 | 0.023 |
| Chullora | 98.7 | 0.094 | 0.061 | 0.055 | 0.048 | 0.042 | 0.032 | 0.026 | 0.022 |
| Liverpool | 98.2 | 0.110 | 0.070 | 0.065 | 0.055 | 0.044 | 0.036 | 0.028 | 0.023 |
| Oakdale | 97.9 | 0.081 | 0.069 | 0.068 | 0.057 | 0.050 | 0.039 | 0.031 | 0.026 |
| Prospect | 95.2 | 0.104 | 0.072 | 0.064 | 0.056 | 0.048 | 0.038 | 0.030 | 0.024 |
| Richmond | 98.3 | 0.076 | 0.065 | 0.061 | 0.054 | 0.049 | 0.039 | 0.032 | 0.026 |
| Rozelle | 96.0 | 0.063 | 0.051 | 0.045 | 0.041 | 0.037 | 0.031 | 0.027 | 0.023 |
| St Marys | 97.6 | 0.101 | 0.068 | 0.063 | 0.057 | 0.048 | 0.040 | 0.030 | 0.025 |
| Central Coast | | | | | | | | | |
| Wyong | 96.1 | 0.072 | 0.063 | 0.057 | 0.046 | 0.040 | 0.034 | 0.028 | 0.024 |
| Illawarra | | | | | | | | | |
| Albion Park South | 97.1 | 0.100 | 0.074 | 0.056 | 0.047 | 0.041 | 0.034 | 0.029 | 0.026 |
| Kembla Grange | 97.8 | 0.103 | 0.070 | 0.057 | 0.044 | 0.039 | 0.032 | 0.029 | 0.024 |
| Wollongong | 96.5 | 0.091 | 0.076 | 0.058 | 0.048 | 0.041 | 0.032 | 0.027 | 0.023 |
| Lower Hunter | | | | | | | | | |
| Newcastle | 98.0 | 0.075 | 0.054 | 0.050 | 0.044 | 0.039 | 0.033 | 0.027 | 0.023 |
| Wallsend | 96.1 | 0.078 | 0.063 | 0.057 | 0.049 | 0.042 | 0.036 | 0.029 | 0.024 |

Bold font indicates values that exceed the AAQ NEPM standard. AAQ NEPM Standard: 0.080 ppm (rolling 4-hour average)

Trend analysis

Table 52. Maximum 1-hour average concentrations for O₃ (ppm)

| Region/Performance monitoring station | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 |
|---------------------------------------|---------------|--------------|--------------|--------------|--------------|--------------|-------|--------------|-------|--------------|
| Sydney | | | | | | | | | | |
| Blacktown*/Prospect | 0.123* | | | 0.089 | 0.107 | 0.126 | 0.104 | 0.126 | 0.080 | 0.111 |
| Bringelly | 0.122 | 0.112 | 0.119 | 0.111 | 0.093 | 0.120 | 0.104 | 0.125 | 0.088 | 0.108 |
| Camden | | | | | | | | | 0.095 | 0.110 |
| Chullora | 0.105 | 0.086 | 0.117 | 0.088 | 0.080 | 0.154 | 0.083 | 0.114 | 0.080 | 0.105 |
| Liverpool | 0.113 | 0.149 | 0.128 | 0.116 | 0.098 | 0.151 | 0.091 | 0.103 | 0.079 | 0.117 |
| Macarthur/Campbelltown West* | 0.099 | 0.142 | 0.128 | 0.121 | 0.085 | 0.116 | 0.119 | 0.131 | 0.079 | 0.094* |
| Oakdale | 0.124 | 0.130 | 0.109 | 0.142 | 0.093 | 0.128 | 0.099 | 0.126 | 0.089 | 0.095 |
| Richmond | 0.096 | 0.125 | 0.108 | 0.134 | 0.078 | 0.102 | 0.089 | 0.116 | 0.085 | 0.095 |
| Rozelle | 0.094 | 0.081 | 0.093 | 0.088 | 0.056 | 0.083 | 0.073 | 0.093 | 0.069 | 0.073 |
| St Marys | 0.142 | 0.113 | 0.124 | 0.123 | 0.096 | 0.132 | 0.095 | 0.136 | 0.085 | 0.110 |
| Central Coast | | | | | | | | | | |
| Wyong | | | | | | | | | 0.078 | 0.079 |
| Illawarra | | | | | | | | | | |
| Albion Park*/Albion Park South | 0.112* | 0.073 | 0.096 | 0.092 | 0.062 | 0.102 | 0.093 | 0.118 | 0.067 | 0.120 |
| Kembla Grange | 0.120 | 0.091 | 0.093 | 0.093 | 0.072 | 0.103 | 0.081 | 0.121 | 0.068 | 0.126 |
| Wollongong | 0.103 | 0.102 | 0.096 | 0.077 | 0.067 | 0.083 | 0.082 | 0.084 | 0.065 | 0.112 |
| Lower Hunter | | | | | | | | | | |
| Newcastle | 0.112 | 0.078 | 0.068 | 0.053 | 0.064 | 0.073 | 0.086 | 0.066 | 0.071 | 0.081 |
| Wallsend | 0.103 | 0.094 | 0.086 | 0.070 | 0.057 | 0.086 | 0.067 | 0.071 | 0.080 | 0.084 |

Bold font indicates values that exceed the AAQ NEPM standard.
AAQ NEPM standard: 0.100 ppm (1-hour average)

Table 53. Maximum rolling 4-hour average concentrations for O₃ (ppm)

| Region/ Performance monitoring station | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 |
|---|---------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|---------------|
| Sydney | | | | | | | | | | |
| Blacktown [*] /Prospect | 0.107* | | | 0.085 | 0.096 | 0.100 | 0.097 | 0.114 | 0.073 | 0.104 |
| Bringelly | 0.110 | 0.102 | 0.110 | 0.095 | 0.078 | 0.108 | 0.089 | 0.118 | 0.072 | 0.102 |
| Camden | | | | | | | | | 0.084 | 0.090 |
| Chullora | 0.086 | 0.080 | 0.104 | 0.074 | 0.074 | 0.112 | 0.072 | 0.096 | 0.068 | 0.094 |
| Liverpool | 0.092 | 0.121 | 0.124 | 0.094 | 0.089 | 0.103 | 0.081 | 0.095 | 0.071 | 0.110 |
| Macarthur/Campbelltown West [*] | 0.084 | 0.126 | 0.117 | 0.101 | 0.070 | 0.097 | 0.103 | 0.122 | 0.071 | 0.082* |
| Oakdale | 0.099 | 0.106 | 0.085 | 0.116 | 0.075 | 0.108 | 0.088 | 0.098 | 0.081 | 0.081 |
| Richmond | 0.088 | 0.100 | 0.095 | 0.121 | 0.067 | 0.090 | 0.082 | 0.088 | 0.070 | 0.076 |
| Rozelle | 0.087 | 0.065 | 0.082 | 0.075 | 0.048 | 0.073 | 0.067 | 0.080 | 0.054 | 0.063 |
| St Marys | 0.128 | 0.091 | 0.109 | 0.105 | 0.082 | 0.106 | 0.083 | 0.121 | 0.072 | 0.101 |
| Central Coast | | | | | | | | | | |
| Wyong | | | | | | | | | 0.066 | 0.072 |
| Illawarra | | | | | | | | | | |
| Albion Park [*] /Albion Park South | 0.092* | 0.063 | 0.077 | 0.080 | 0.055 | 0.083 | 0.073 | 0.099 | 0.064 | 0.100 |
| Kembla Grange | 0.100 | 0.084 | 0.081 | 0.082 | 0.066 | 0.090 | 0.078 | 0.105 | 0.061 | 0.103 |
| Wollongong | 0.090 | 0.099 | 0.086 | 0.073 | 0.063 | 0.074 | 0.073 | 0.078 | 0.061 | 0.091 |
| Lower Hunter | | | | | | | | | | |
| Newcastle | 0.073 | 0.070 | 0.064 | 0.047 | 0.058 | 0.06 | 0.076 | 0.063 | 0.057 | 0.075 |
| Wallsend | 0.078 | 0.074 | 0.066 | 0.068 | 0.054 | 0.07 | 0.063 | 0.059 | 0.070 | 0.078 |

Bold font indicates values that exceed the AAQ NEPM standard.

AAQ NEPM standard: 0.080 ppm (rolling 4-hour average)

Statistical summaries for multiple years, by station

Table 54. Statistical summary for O₃: Annual daily maximum 1-hour average concentrations. Station: Blacktown¹/Prospect

| Year | Data availability rate (%) | Number of exceedences (days) | Maximum (ppm) | Percentile (ppm) | | | | | | |
|-------------------|----------------------------|------------------------------|---------------|------------------|-------|-------|-------|-------|-------|-------|
| | | | | 99th | 98th | 95th | 90th | 75th | 50th | 25th |
| 2004 ¹ | 39.5 | 2 | 0.123 | 0.103 | 0.091 | 0.084 | 0.068 | 0.050 | 0.036 | 0.028 |
| 2005 | | | | | | | | | | |
| 2006 | | | | | | | | | | |
| 2007 | 73.3 | 0 | 0.089 | 0.069 | 0.066 | 0.061 | 0.052 | 0.039 | 0.030 | 0.024 |
| 2008 | 89.5 | 1 | 0.107 | 0.084 | 0.063 | 0.052 | 0.045 | 0.035 | 0.027 | 0.023 |
| 2009 | 93.3 | 3 | 0.126 | 0.099 | 0.086 | 0.070 | 0.061 | 0.041 | 0.032 | 0.026 |
| 2010 | 88.7 | 2 | 0.104 | 0.082 | 0.072 | 0.062 | 0.050 | 0.038 | 0.030 | 0.023 |
| 2011 | 95.2 | 1 | 0.126 | 0.086 | 0.068 | 0.057 | 0.046 | 0.034 | 0.028 | 0.023 |
| 2012 | 91.8 | 0 | 0.080 | 0.076 | 0.069 | 0.061 | 0.050 | 0.039 | 0.028 | 0.023 |
| 2013 | 91.5 | 1 | 0.111 | 0.084 | 0.070 | 0.062 | 0.053 | 0.042 | 0.031 | 0.026 |

Bold font indicates AAQ NEPM standard and goal exceedences.

AAQ NEPM standard: 0.100 ppm (1-hour average)

Table 55. Statistical summary for O₃: Annual daily maximum 1-hour average concentrations. Station: Bringelly

| Year | Data availability rate (%) | Number of exceedences (days) | Maximum (ppm) | Percentile (ppm) | | | | | | |
|------|----------------------------|------------------------------|---------------|------------------|-------|-------|-------|-------|-------|-------|
| | | | | 99th | 98th | 95th | 90th | 75th | 50th | 25th |
| 2004 | 91.1 | 6 | 0.122 | 0.105 | 0.095 | 0.074 | 0.060 | 0.044 | 0.033 | 0.029 |
| 2005 | 88.4 | 3 | 0.112 | 0.091 | 0.081 | 0.066 | 0.057 | 0.043 | 0.034 | 0.029 |
| 2006 | 92.1 | 6 | 0.119 | 0.107 | 0.095 | 0.071 | 0.057 | 0.044 | 0.033 | 0.027 |
| 2007 | 92.1 | 4 | 0.111 | 0.103 | 0.079 | 0.069 | 0.058 | 0.044 | 0.033 | 0.028 |
| 2008 | 89.8 | 0 | 0.093 | 0.083 | 0.071 | 0.055 | 0.051 | 0.039 | 0.030 | 0.026 |
| 2009 | 90.8 | 4 | 0.120 | 0.102 | 0.089 | 0.072 | 0.062 | 0.041 | 0.030 | 0.026 |
| 2010 | 89.2 | 2 | 0.104 | 0.081 | 0.075 | 0.061 | 0.052 | 0.040 | 0.031 | 0.026 |
| 2011 | 88.5 | 2 | 0.125 | 0.087 | 0.080 | 0.065 | 0.055 | 0.038 | 0.030 | 0.026 |
| 2012 | 93.0 | 0 | 0.088 | 0.075 | 0.072 | 0.060 | 0.049 | 0.040 | 0.030 | 0.026 |
| 2013 | 94.8 | 1 | 0.108 | 0.085 | 0.081 | 0.062 | 0.053 | 0.040 | 0.031 | 0.026 |

Bold font indicates AAQ NEPM standard and goal exceedences.
AAQ NEPM standard: 0.100 ppm (1-hour average)

Table 56. Statistical summary for O₃: Annual daily maximum 1-hour average concentrations. Station: Camden

| Year | Data availability rate (%) | Number of exceedences (days) | Maximum (ppm) | Percentile (ppm) | | | | | | |
|------|----------------------------|------------------------------|---------------|------------------|-------|-------|-------|-------|-------|-------|
| | | | | 99th | 98th | 95th | 90th | 75th | 50th | 25th |
| 2012 | 20.3 | 0 | 0.095 | 0.094 | 0.091 | 0.078 | 0.068 | 0.053 | 0.041 | 0.031 |
| 2013 | 93.1 | 1 | 0.110 | 0.098 | 0.079 | 0.069 | 0.056 | 0.042 | 0.031 | 0.027 |

Bold font indicates AAQ NEPM standard and goal exceedences.
AAQ NEPM standard: 0.100 ppm (1-hour average)

Table 57. Statistical summary for O₃: Annual daily maximum 1-hour average concentrations. Station: Chullora

| Year | Data availability rate (%) | Number of exceedences (days) | Maximum (ppm) | Percentile (ppm) | | | | | | |
|------|----------------------------|------------------------------|---------------|------------------|-------|-------|-------|-------|-------|-------|
| | | | | 99th | 98th | 95th | 90th | 75th | 50th | 25th |
| 2004 | 87.2 | 1 | 0.105 | 0.091 | 0.075 | 0.063 | 0.051 | 0.038 | 0.030 | 0.026 |
| 2005 | 92.0 | 0 | 0.086 | 0.078 | 0.067 | 0.058 | 0.048 | 0.037 | 0.030 | 0.025 |
| 2006 | 94.3 | 1 | 0.117 | 0.078 | 0.073 | 0.058 | 0.049 | 0.037 | 0.030 | 0.024 |
| 2007 | 93.0 | 0 | 0.088 | 0.069 | 0.064 | 0.054 | 0.044 | 0.036 | 0.029 | 0.024 |
| 2008 | 93.9 | 0 | 0.080 | 0.064 | 0.057 | 0.049 | 0.042 | 0.032 | 0.027 | 0.022 |
| 2009 | 92.7 | 2 | 0.154 | 0.089 | 0.077 | 0.061 | 0.050 | 0.035 | 0.027 | 0.023 |
| 2010 | 93.1 | 0 | 0.083 | 0.067 | 0.062 | 0.050 | 0.043 | 0.031 | 0.026 | 0.023 |
| 2011 | 94.2 | 1 | 0.114 | 0.073 | 0.061 | 0.052 | 0.043 | 0.032 | 0.025 | 0.021 |
| 2012 | 94.2 | 0 | 0.080 | 0.065 | 0.055 | 0.047 | 0.040 | 0.031 | 0.026 | 0.021 |
| 2013 | 94.8 | 1 | 0.105 | 0.072 | 0.066 | 0.052 | 0.045 | 0.035 | 0.028 | 0.023 |

Bold font indicates AAQ NEPM standard and goal exceedences.
AAQ NEPM standard: 0.100 ppm (1-hour average)

Table 58. Statistical summary for O₃: Annual daily maximum 1-hour average concentrations. Station: Liverpool

| Year | Data availability rate (%) | Number of exceedences (days) | Maximum (ppm) | Percentile (ppm) | | | | | | |
|------|----------------------------|------------------------------|---------------|------------------|-------|-------|-------|-------|-------|-------|
| | | | | 99th | 98th | 95th | 90th | 75th | 50th | 25th |
| 2004 | 84.0 | 3 | 0.113 | 0.100 | 0.086 | 0.069 | 0.054 | 0.040 | 0.030 | 0.025 |
| 2005 | 88.0 | 1 | 0.149 | 0.085 | 0.077 | 0.059 | 0.052 | 0.040 | 0.032 | 0.026 |
| 2006 | 91.4 | 4 | 0.128 | 0.105 | 0.090 | 0.069 | 0.054 | 0.040 | 0.030 | 0.025 |
| 2007 | 90.3 | 2 | 0.116 | 0.086 | 0.078 | 0.062 | 0.052 | 0.039 | 0.029 | 0.024 |
| 2008 | 87.1 | 0 | 0.098 | 0.074 | 0.065 | 0.057 | 0.046 | 0.035 | 0.028 | 0.023 |
| 2009 | 88.9 | 2 | 0.151 | 0.092 | 0.088 | 0.068 | 0.052 | 0.038 | 0.029 | 0.024 |
| 2010 | 94.2 | 0 | 0.091 | 0.078 | 0.069 | 0.057 | 0.047 | 0.035 | 0.028 | 0.023 |
| 2011 | 94.1 | 1 | 0.103 | 0.080 | 0.071 | 0.057 | 0.046 | 0.032 | 0.025 | 0.022 |
| 2012 | 92.4 | 0 | 0.079 | 0.068 | 0.065 | 0.054 | 0.047 | 0.035 | 0.028 | 0.022 |
| 2013 | 94.2 | 1 | 0.117 | 0.086 | 0.074 | 0.060 | 0.050 | 0.040 | 0.030 | 0.025 |

Bold font indicates AAQ NEPM standard and goal exceedences.

AAQ NEPM standard: 0.100 ppm (1-hour average)

Table 59. Statistical summary for O₃: Annual daily maximum 1-hour average concentrations. Station: Macarthur¹/Campbelltown West²

| Year | Data availability rate (%) | Number of exceedences (days) | Maximum (ppm) | Percentile (ppm) | | | | | | |
|-------------------|----------------------------|------------------------------|---------------|------------------|--------------|-------|-------|-------|-------|-------|
| | | | | 99th | 98th | 95th | 90th | 75th | 50th | 25th |
| 2004 | 16.2 | 0 | 0.099 | 0.099 | 0.091 | 0.076 | 0.062 | 0.055 | 0.039 | 0.028 |
| 2005 | 94.7 | 6 | 0.142 | 0.106 | 0.091 | 0.073 | 0.061 | 0.044 | 0.033 | 0.029 |
| 2006 | 94.3 | 8 | 0.128 | 0.116 | 0.103 | 0.074 | 0.059 | 0.044 | 0.032 | 0.027 |
| 2007 | 90.6 | 3 | 0.121 | 0.098 | 0.089 | 0.071 | 0.059 | 0.042 | 0.032 | 0.027 |
| 2008 | 93.6 | 0 | 0.085 | 0.081 | 0.072 | 0.059 | 0.052 | 0.037 | 0.031 | 0.027 |
| 2009 | 92.3 | 7 | 0.116 | 0.108 | 0.102 | 0.078 | 0.062 | 0.043 | 0.032 | 0.028 |
| 2010 | 93.9 | 1 | 0.119 | 0.090 | 0.083 | 0.065 | 0.054 | 0.040 | 0.032 | 0.028 |
| 2011 | 93.6 | 2 | 0.131 | 0.096 | 0.084 | 0.067 | 0.054 | 0.037 | 0.030 | 0.026 |
| 2012 ¹ | 52.6 | 0 | 0.079 | 0.074 | 0.068 | 0.057 | 0.047 | 0.034 | 0.028 | 0.025 |
| 2012 ² | 32.5 | 0 | 0.080 | 0.079 | 0.076 | 0.066 | 0.056 | 0.040 | 0.035 | 0.029 |
| 2013 ² | 93.9 | 0 | 0.094 | 0.085 | 0.076 | 0.061 | 0.049 | 0.037 | 0.029 | 0.025 |

Bold font indicates AAQ NEPM standard and goal exceedences.

AAQ NEPM standard: 0.100 ppm (1-hour average)

Table 60. Statistical summary for O₃: Annual daily maximum 1-hour average concentrations. Station: Oakdale

| Year | Data availability rate (%) | Number of exceedences (days) | Maximum (ppm) | Percentile (ppm) | | | | | | |
|------|----------------------------|------------------------------|---------------|------------------|--------------|-------|-------|-------|-------|-------|
| | | | | 99th | 98th | 95th | 90th | 75th | 50th | 25th |
| 2004 | 77.3 | 7 | 0.124 | 0.106 | 0.103 | 0.074 | 0.065 | 0.047 | 0.035 | 0.030 |
| 2005 | 91.9 | 4 | 0.130 | 0.105 | 0.085 | 0.071 | 0.058 | 0.043 | 0.034 | 0.030 |
| 2006 | 87.9 | 1 | 0.109 | 0.089 | 0.083 | 0.070 | 0.060 | 0.048 | 0.035 | 0.030 |
| 2007 | 87.6 | 4 | 0.142 | 0.104 | 0.092 | 0.071 | 0.060 | 0.044 | 0.034 | 0.030 |
| 2008 | 92.5 | 0 | 0.093 | 0.070 | 0.065 | 0.058 | 0.050 | 0.039 | 0.032 | 0.027 |
| 2009 | 85.9 | 6 | 0.128 | 0.106 | 0.093 | 0.078 | 0.058 | 0.042 | 0.032 | 0.029 |
| 2010 | 94.2 | 0 | 0.099 | 0.090 | 0.080 | 0.066 | 0.055 | 0.039 | 0.033 | 0.029 |
| 2011 | 95.0 | 3 | 0.126 | 0.084 | 0.075 | 0.063 | 0.051 | 0.039 | 0.031 | 0.027 |
| 2012 | 92.7 | 0 | 0.089 | 0.078 | 0.072 | 0.056 | 0.048 | 0.039 | 0.030 | 0.027 |
| 2013 | 94.0 | 0 | 0.095 | 0.085 | 0.078 | 0.063 | 0.055 | 0.041 | 0.032 | 0.027 |

Bold font indicates AAQ NEPM standard and goal exceedences.

AAQ NEPM standard: 0.100 ppm (1-hour average)

Table 61. Statistical summary for O₃: Annual daily maximum 1-hour average concentrations. Station: Richmond

| Year | Data availability rate (%) | Number of exceedences (days) | Maximum (ppm) | Percentile (ppm) | | | | | | |
|------|----------------------------|------------------------------|---------------|------------------|-------|-------|-------|-------|-------|-------|
| | | | | 99th | 98th | 95th | 90th | 75th | 50th | 25th |
| 2004 | 89.5 | 0 | 0.096 | 0.080 | 0.076 | 0.065 | 0.058 | 0.045 | 0.034 | 0.029 |
| 2005 | 91.8 | 2 | 0.125 | 0.091 | 0.083 | 0.065 | 0.058 | 0.045 | 0.035 | 0.029 |
| 2006 | 92.8 | 2 | 0.108 | 0.088 | 0.077 | 0.069 | 0.058 | 0.046 | 0.035 | 0.029 |
| 2007 | 91.1 | 1 | 0.134 | 0.086 | 0.075 | 0.068 | 0.058 | 0.045 | 0.034 | 0.029 |
| 2008 | 90.6 | 0 | 0.078 | 0.066 | 0.061 | 0.053 | 0.045 | 0.036 | 0.030 | 0.026 |
| 2009 | 90.1 | 1 | 0.102 | 0.086 | 0.078 | 0.066 | 0.058 | 0.043 | 0.034 | 0.029 |
| 2010 | 93.2 | 0 | 0.089 | 0.078 | 0.071 | 0.060 | 0.052 | 0.040 | 0.032 | 0.028 |
| 2011 | 94.3 | 1 | 0.116 | 0.077 | 0.067 | 0.058 | 0.048 | 0.037 | 0.031 | 0.026 |
| 2012 | 92.9 | 0 | 0.085 | 0.070 | 0.065 | 0.056 | 0.047 | 0.039 | 0.031 | 0.026 |
| 2013 | 94.3 | 0 | 0.095 | 0.071 | 0.070 | 0.061 | 0.054 | 0.043 | 0.034 | 0.027 |

Bold font indicates AAQ NEPM standard and goal exceedences.

AAQ NEPM standard: 0.100 ppm (1-hour average)

Table 62. Statistical summary for O₃: Annual daily maximum 1-hour average concentration. Station: Rozelle

| Year | Data availability rate (%) | Number of exceedences (days) | Maximum (ppm) | Percentile (ppm) | | | | | | |
|------|----------------------------|------------------------------|---------------|------------------|-------|-------|-------|-------|-------|-------|
| | | | | 99th | 98th | 95th | 90th | 75th | 50th | 25th |
| 2004 | 88.9 | 0 | 0.094 | 0.080 | 0.074 | 0.056 | 0.045 | 0.034 | 0.027 | 0.024 |
| 2005 | 88.9 | 0 | 0.081 | 0.069 | 0.060 | 0.051 | 0.044 | 0.034 | 0.029 | 0.024 |
| 2006 | 92.2 | 0 | 0.093 | 0.069 | 0.063 | 0.052 | 0.042 | 0.032 | 0.027 | 0.023 |
| 2007 | 92.0 | 0 | 0.088 | 0.058 | 0.050 | 0.046 | 0.041 | 0.033 | 0.027 | 0.023 |
| 2008 | 92.8 | 0 | 0.056 | 0.050 | 0.046 | 0.042 | 0.038 | 0.030 | 0.026 | 0.022 |
| 2009 | 92.6 | 0 | 0.083 | 0.068 | 0.060 | 0.050 | 0.042 | 0.032 | 0.028 | 0.023 |
| 2010 | 89.1 | 0 | 0.073 | 0.057 | 0.055 | 0.047 | 0.040 | 0.033 | 0.029 | 0.025 |
| 2011 | 93.3 | 0 | 0.093 | 0.066 | 0.053 | 0.044 | 0.038 | 0.031 | 0.026 | 0.023 |
| 2012 | 94.8 | 0 | 0.069 | 0.057 | 0.052 | 0.045 | 0.042 | 0.034 | 0.029 | 0.024 |
| 2013 | 92.4 | 0 | 0.073 | 0.063 | 0.054 | 0.046 | 0.041 | 0.033 | 0.029 | 0.025 |

AAQ NEPM standard: 0.100 ppm (1-hour average)

Table 63. Statistical summary for O₃: Annual daily maximum 1-hour average concentrations. Station: St Marys

| Year | Data availability rate (%) | Number of exceedences (days) | Maximum (ppm) | Percentile (ppm) | | | | | | |
|------|----------------------------|------------------------------|---------------|------------------|-------|-------|-------|-------|-------|-------|
| | | | | 99th | 98th | 95th | 90th | 75th | 50th | 25th |
| 2004 | 93.3 | 3 | 0.142 | 0.097 | 0.085 | 0.068 | 0.058 | 0.044 | 0.033 | 0.029 |
| 2005 | 92.1 | 2 | 0.113 | 0.090 | 0.078 | 0.066 | 0.058 | 0.042 | 0.034 | 0.029 |
| 2006 | 92.6 | 3 | 0.124 | 0.091 | 0.078 | 0.067 | 0.056 | 0.043 | 0.032 | 0.027 |
| 2007 | 92.2 | 3 | 0.123 | 0.093 | 0.077 | 0.065 | 0.057 | 0.044 | 0.033 | 0.028 |
| 2008 | 92.7 | 0 | 0.096 | 0.076 | 0.060 | 0.053 | 0.048 | 0.038 | 0.031 | 0.026 |
| 2009 | 93.0 | 5 | 0.132 | 0.102 | 0.082 | 0.073 | 0.062 | 0.041 | 0.032 | 0.028 |
| 2010 | 93.5 | 0 | 0.095 | 0.083 | 0.073 | 0.064 | 0.053 | 0.040 | 0.032 | 0.027 |
| 2011 | 94.8 | 3 | 0.136 | 0.094 | 0.074 | 0.060 | 0.051 | 0.037 | 0.030 | 0.026 |
| 2012 | 93.3 | 0 | 0.085 | 0.074 | 0.069 | 0.058 | 0.049 | 0.038 | 0.030 | 0.025 |
| 2013 | 93.7 | 1 | 0.110 | 0.076 | 0.073 | 0.063 | 0.054 | 0.043 | 0.032 | 0.027 |

Bold font indicates AAQ NEPM standard and goal exceedences.

AAQ NEPM standard: 0.100 ppm (1-hour average)

Table 64. Statistical summary for O₃: Annual daily maximum 1-hour average concentrations. Station: Wyong

| Year | Data availability rate (%) | Number of exceedences (days) | Maximum (ppm) | Percentile (ppm) | | | | | | |
|------|----------------------------|------------------------------|---------------|------------------|-------|-------|-------|-------|-------|-------|
| | | | | 99th | 98th | 95th | 90th | 75th | 50th | 25th |
| 2012 | 19.3 | 0 | 0.078 | 0.077 | 0.071 | 0.060 | 0.056 | 0.041 | 0.032 | 0.028 |
| 2013 | 92.2 | 0 | 0.079 | 0.070 | 0.061 | 0.053 | 0.044 | 0.037 | 0.030 | 0.026 |

AAQ NEPM standard: 0.100 ppm (1-hour average)

Table 65. Statistical summary for O₃: Annual daily maximum 1-hour average concentrations. Station: Albion Park¹/Albion Park South

| Year | Data availability rate (%) | Number of exceedences (days) | Maximum (ppm) | Percentile (ppm) | | | | | | |
|-------------------|----------------------------|------------------------------|---------------|------------------|-------|-------|-------|-------|-------|-------|
| | | | | 99th | 98th | 95th | 90th | 75th | 50th | 25th |
| 2004 ¹ | 93.5 | 1 | 0.112 | 0.083 | 0.068 | 0.051 | 0.044 | 0.035 | 0.030 | 0.027 |
| 2005 ¹ | 4.8 | 0 | 0.067 | 0.067 | 0.067 | 0.066 | 0.060 | 0.038 | 0.030 | 0.023 |
| 2006 | 86.2 | 0 | 0.096 | 0.083 | 0.075 | 0.054 | 0.046 | 0.036 | 0.031 | 0.027 |
| 2007 | 91.4 | 0 | 0.092 | 0.071 | 0.060 | 0.051 | 0.042 | 0.035 | 0.031 | 0.028 |
| 2008 | 90.5 | 0 | 0.062 | 0.058 | 0.056 | 0.047 | 0.040 | 0.034 | 0.030 | 0.025 |
| 2009 | 93.2 | 1 | 0.102 | 0.075 | 0.070 | 0.053 | 0.044 | 0.037 | 0.034 | 0.030 |
| 2010 | 90.3 | 0 | 0.093 | 0.061 | 0.059 | 0.049 | 0.041 | 0.031 | 0.028 | 0.026 |
| 2011 | 89.6 | 1 | 0.118 | 0.071 | 0.059 | 0.046 | 0.038 | 0.032 | 0.028 | 0.024 |
| 2012 | 93.8 | 0 | 0.067 | 0.058 | 0.051 | 0.044 | 0.041 | 0.032 | 0.029 | 0.025 |
| 2013 | 93.2 | 3 | 0.120 | 0.094 | 0.064 | 0.053 | 0.044 | 0.035 | 0.031 | 0.027 |

Bold font indicates AAQ NEPM standard and goal exceedences.
AAQ NEPM standard: 0.100 ppm (1-hour average)

Table 66. Statistical summary for O₃: Annual daily maximum 1-hour average concentrations. Station: Kembla Grange

| Year | Data availability rate (%) | Number of exceedences (days) | Maximum (ppm) | Percentile (ppm) | | | | | | |
|------|----------------------------|------------------------------|---------------|------------------|-------|-------|-------|-------|-------|-------|
| | | | | 99th | 98th | 95th | 90th | 75th | 50th | 25th |
| 2004 | 91.3 | 3 | 0.120 | 0.093 | 0.064 | 0.052 | 0.043 | 0.036 | 0.031 | 0.027 |
| 2005 | 92.6 | 0 | 0.091 | 0.074 | 0.066 | 0.054 | 0.044 | 0.036 | 0.032 | 0.027 |
| 2006 | 94.6 | 0 | 0.093 | 0.074 | 0.065 | 0.052 | 0.047 | 0.036 | 0.030 | 0.026 |
| 2007 | 94.1 | 0 | 0.093 | 0.076 | 0.063 | 0.049 | 0.043 | 0.034 | 0.031 | 0.027 |
| 2008 | 93.6 | 0 | 0.072 | 0.063 | 0.055 | 0.048 | 0.042 | 0.032 | 0.029 | 0.025 |
| 2009 | 87.5 | 1 | 0.103 | 0.083 | 0.070 | 0.052 | 0.044 | 0.035 | 0.031 | 0.027 |
| 2010 | 89.7 | 0 | 0.081 | 0.061 | 0.056 | 0.049 | 0.043 | 0.033 | 0.029 | 0.025 |
| 2011 | 94.4 | 1 | 0.121 | 0.073 | 0.063 | 0.052 | 0.042 | 0.034 | 0.030 | 0.026 |
| 2012 | 94.3 | 0 | 0.068 | 0.057 | 0.052 | 0.045 | 0.041 | 0.032 | 0.029 | 0.025 |
| 2013 | 93.8 | 2 | 0.126 | 0.081 | 0.063 | 0.048 | 0.043 | 0.034 | 0.030 | 0.025 |

Bold font indicates AAQ NEPM standard and goal exceedences.
AAQ NEPM standard: 0.100 ppm (1-hour average)

Table 67. Statistical summary for O₃: Annual daily maximum 1-hour average concentrations. Station: Wollongong

| Year | Data availability rate (%) | Number of exceedences (days) | Maximum (ppm) | Percentile (ppm) | | | | | | |
|------|----------------------------|------------------------------|---------------|------------------|-------|-------|-------|-------|-------|-------|
| | | | | 99th | 98th | 95th | 90th | 75th | 50th | 25th |
| 2004 | 92.5 | 1 | 0.103 | 0.084 | 0.071 | 0.056 | 0.043 | 0.034 | 0.029 | 0.026 |
| 2005 | 92.4 | 1 | 0.102 | 0.074 | 0.066 | 0.054 | 0.046 | 0.035 | 0.030 | 0.026 |
| 2006 | 94.6 | 0 | 0.096 | 0.073 | 0.064 | 0.054 | 0.047 | 0.036 | 0.030 | 0.026 |
| 2007 | 90.2 | 0 | 0.077 | 0.068 | 0.062 | 0.051 | 0.042 | 0.035 | 0.029 | 0.025 |
| 2008 | 94.0 | 0 | 0.067 | 0.062 | 0.056 | 0.048 | 0.043 | 0.033 | 0.029 | 0.025 |
| 2009 | 90.7 | 0 | 0.083 | 0.074 | 0.056 | 0.046 | 0.041 | 0.034 | 0.030 | 0.026 |
| 2010 | 91.8 | 0 | 0.082 | 0.067 | 0.062 | 0.052 | 0.043 | 0.034 | 0.029 | 0.025 |
| 2011 | 93.1 | 0 | 0.084 | 0.069 | 0.055 | 0.048 | 0.040 | 0.034 | 0.028 | 0.024 |
| 2012 | 94.9 | 0 | 0.065 | 0.062 | 0.054 | 0.047 | 0.039 | 0.031 | 0.027 | 0.024 |
| 2013 | 92.7 | 2 | 0.112 | 0.085 | 0.066 | 0.052 | 0.043 | 0.034 | 0.029 | 0.024 |

Bold font indicates AAQ NEPM standard and goal exceedences.

AAQ NEPM standard: 0.100 ppm (1-hour average)

Table 68. Statistical summary for O₃: Annual daily maximum 1-hour average concentrations. Station: Newcastle

| Year | Data availability rate (%) | Number of exceedences (days) | Maximum (ppm) | Percentile (ppm) | | | | | | |
|------|----------------------------|------------------------------|---------------|------------------|-------|-------|-------|-------|-------|-------|
| | | | | 99th | 98th | 95th | 90th | 75th | 50th | 25th |
| 2004 | 92.3 | 1 | 0.112 | 0.070 | 0.067 | 0.052 | 0.044 | 0.036 | 0.030 | 0.025 |
| 2005 | 92.4 | 0 | 0.078 | 0.061 | 0.058 | 0.049 | 0.042 | 0.035 | 0.030 | 0.026 |
| 2006 | 93.7 | 0 | 0.068 | 0.063 | 0.060 | 0.047 | 0.042 | 0.035 | 0.029 | 0.024 |
| 2007 | 43.9 | 0 | 0.053 | 0.052 | 0.051 | 0.047 | 0.040 | 0.033 | 0.027 | 0.022 |
| 2008 | 89.9 | 0 | 0.064 | 0.054 | 0.049 | 0.044 | 0.039 | 0.034 | 0.028 | 0.024 |
| 2009 | 86.3 | 0 | 0.073 | 0.068 | 0.062 | 0.050 | 0.043 | 0.037 | 0.032 | 0.027 |
| 2010 | 89.1 | 0 | 0.086 | 0.069 | 0.060 | 0.049 | 0.041 | 0.036 | 0.031 | 0.027 |
| 2011 | 90.7 | 0 | 0.066 | 0.057 | 0.053 | 0.047 | 0.041 | 0.035 | 0.029 | 0.024 |
| 2012 | 94.3 | 0 | 0.071 | 0.057 | 0.052 | 0.046 | 0.041 | 0.033 | 0.028 | 0.024 |
| 2013 | 93.9 | 0 | 0.081 | 0.059 | 0.057 | 0.048 | 0.042 | 0.035 | 0.028 | 0.024 |

Bold font indicates AAQ NEPM standard and goal exceedences.

AAQ NEPM standard: 0.100 ppm (1-hour average)

Table 69. Statistical summary for O₃: Annual daily maximum 1-hour average concentrations. Station: Wallsend

| Year | Data availability rate (%) | Number of exceedences (days) | Maximum (ppm) | Percentile (ppm) | | | | | | |
|------|----------------------------|------------------------------|---------------|------------------|-------|-------|-------|-------|-------|-------|
| | | | | 99th | 98th | 95th | 90th | 75th | 50th | 25th |
| 2004 | 88.2 | 1 | 0.103 | 0.075 | 0.065 | 0.054 | 0.048 | 0.037 | 0.031 | 0.026 |
| 2005 | 91.3 | 0 | 0.094 | 0.070 | 0.065 | 0.053 | 0.046 | 0.037 | 0.031 | 0.026 |
| 2006 | 93.2 | 0 | 0.086 | 0.070 | 0.062 | 0.051 | 0.045 | 0.036 | 0.029 | 0.024 |
| 2007 | 92.3 | 0 | 0.070 | 0.063 | 0.055 | 0.049 | 0.045 | 0.036 | 0.029 | 0.025 |
| 2008 | 91.9 | 0 | 0.057 | 0.054 | 0.052 | 0.044 | 0.040 | 0.033 | 0.028 | 0.023 |
| 2009 | 85.7 | 0 | 0.086 | 0.068 | 0.063 | 0.054 | 0.044 | 0.036 | 0.030 | 0.024 |
| 2010 | 88.3 | 0 | 0.067 | 0.065 | 0.056 | 0.047 | 0.040 | 0.034 | 0.029 | 0.024 |
| 2011 | 94.0 | 0 | 0.071 | 0.056 | 0.055 | 0.049 | 0.040 | 0.033 | 0.027 | 0.022 |
| 2012 | 94.7 | 0 | 0.080 | 0.064 | 0.055 | 0.050 | 0.043 | 0.034 | 0.028 | 0.023 |
| 2013 | 92.2 | 0 | 0.084 | 0.071 | 0.065 | 0.055 | 0.046 | 0.038 | 0.030 | 0.025 |

Bold font indicates AAQ NEPM standard and goal exceedences.
AAQ NEPM standard: 0.100 ppm (1-hour average)

Table 70. Statistical summary for O₃: Daily maximum rolling 4-hour average concentrations. Station: Blacktown¹/Prospect

| Year | Data availability rate (%) | Number of exceedences (days) | Maximum (ppm) | Percentile (ppm) | | | | | | |
|----------------------|----------------------------|------------------------------|---------------|------------------|-------|-------|-------|-------|-------|-------|
| | | | | 99th | 98th | 95th | 90th | 75th | 50th | 25th |
| 2004 ¹ | 41.3 | 4 | 0.107 | 0.089 | 0.081 | 0.070 | 0.062 | 0.044 | 0.033 | 0.026 |
| 2005–06 ² | | | | | | | | | | |
| 2007 | 75.1 | 1 | 0.085 | 0.063 | 0.060 | 0.055 | 0.048 | 0.036 | 0.028 | 0.023 |
| 2008 | 93.1 | 1 | 0.096 | 0.069 | 0.058 | 0.047 | 0.042 | 0.033 | 0.026 | 0.022 |
| 2009 | 95.7 | 6 | 0.100 | 0.087 | 0.074 | 0.063 | 0.053 | 0.039 | 0.030 | 0.024 |
| 2010 | 85.9 | 2 | 0.097 | 0.072 | 0.068 | 0.056 | 0.046 | 0.035 | 0.028 | 0.022 |
| 2011 | 99.3 | 3 | 0.114 | 0.077 | 0.061 | 0.051 | 0.043 | 0.032 | 0.026 | 0.022 |
| 2012 | 95.6 | 0 | 0.073 | 0.064 | 0.061 | 0.053 | 0.045 | 0.036 | 0.027 | 0.022 |
| 2013 | 95.2 | 1 | 0.104 | 0.072 | 0.064 | 0.056 | 0.048 | 0.038 | 0.030 | 0.024 |

² Blacktown station closed pending relocation

Bold font indicates AAQ NEPM standard and goal exceedences.
AAQ NEPM standard: 0.080 ppm (1-hour average)

Table 71. Statistical summary for O₃: Daily maximum rolling 4-hour average concentrations. Station: Bringelly

| Year | Data availability rate (%) | Number of exceedences (days) | Maximum (ppm) | Percentile (ppm) | | | | | | |
|------|----------------------------|------------------------------|---------------|------------------|-------|-------|-------|-------|-------|-------|
| | | | | 99th | 98th | 95th | 90th | 75th | 50th | 25th |
| 2004 | 95.1 | 6 | 0.110 | 0.088 | 0.080 | 0.064 | 0.053 | 0.041 | 0.032 | 0.028 |
| 2005 | 92.4 | 3 | 0.102 | 0.079 | 0.072 | 0.060 | 0.050 | 0.040 | 0.032 | 0.027 |
| 2006 | 96.1 | 5 | 0.110 | 0.084 | 0.077 | 0.062 | 0.051 | 0.041 | 0.031 | 0.026 |
| 2007 | 94.8 | 4 | 0.095 | 0.083 | 0.071 | 0.058 | 0.052 | 0.040 | 0.031 | 0.027 |
| 2008 | 93.6 | 0 | 0.078 | 0.071 | 0.061 | 0.050 | 0.046 | 0.036 | 0.029 | 0.025 |
| 2009 | 92.5 | 5 | 0.108 | 0.085 | 0.078 | 0.063 | 0.054 | 0.039 | 0.029 | 0.025 |
| 2010 | 85.2 | 3 | 0.089 | 0.072 | 0.066 | 0.055 | 0.047 | 0.037 | 0.030 | 0.025 |
| 2011 | 88.5 | 2 | 0.118 | 0.076 | 0.070 | 0.056 | 0.048 | 0.035 | 0.029 | 0.025 |
| 2012 | 97.0 | 0 | 0.072 | 0.066 | 0.062 | 0.054 | 0.046 | 0.037 | 0.029 | 0.025 |
| 2013 | 98.9 | 1 | 0.102 | 0.074 | 0.068 | 0.054 | 0.047 | 0.037 | 0.030 | 0.025 |

Bold font indicates AAQ NEPM standard and goal exceedences.

AAQ NEPM standard: 0.080 ppm (4-hour average)

Table 72. Statistical summary for O₃: Daily maximum rolling 4-hour average concentrations. Station: Camden

| Year | Data availability rate (%) | Number of exceedences (days) | Maximum (ppm) | Percentile (ppm) | | | | | | |
|------|----------------------------|------------------------------|---------------|------------------|-------|-------|-------|-------|-------|-------|
| | | | | 99th | 98th | 95th | 90th | 75th | 50th | 25th |
| 2012 | 21.1 | 1 | 0.084 | 0.083 | 0.074 | 0.069 | 0.059 | 0.048 | 0.038 | 0.029 |
| 2013 | 97.0 | 4 | 0.090 | 0.085 | 0.072 | 0.062 | 0.050 | 0.038 | 0.030 | 0.026 |

Bold font indicates AAQ NEPM standard and goal exceedences.

AAQ NEPM standard: 0.080 ppm (4-hour average)

Table 73. Statistical summary for O₃: Daily maximum rolling 4-hour average concentrations. Station: Chullora

| Year | Data availability rate (%) | Number of exceedences (days) | Maximum (ppm) | Percentile (ppm) | | | | | | |
|------|----------------------------|------------------------------|---------------|------------------|-------|-------|-------|-------|-------|-------|
| | | | | 99th | 98th | 95th | 90th | 75th | 50th | 25th |
| 2004 | 91.2 | 4 | 0.086 | 0.081 | 0.067 | 0.054 | 0.045 | 0.035 | 0.029 | 0.024 |
| 2005 | 96.2 | 0 | 0.080 | 0.066 | 0.061 | 0.052 | 0.042 | 0.034 | 0.028 | 0.023 |
| 2006 | 98.8 | 2 | 0.104 | 0.071 | 0.064 | 0.054 | 0.044 | 0.034 | 0.028 | 0.022 |
| 2007 | 97.1 | 0 | 0.074 | 0.065 | 0.057 | 0.051 | 0.041 | 0.033 | 0.027 | 0.022 |
| 2008 | 98.3 | 0 | 0.074 | 0.058 | 0.050 | 0.045 | 0.039 | 0.030 | 0.025 | 0.020 |
| 2009 | 96.8 | 2 | 0.112 | 0.075 | 0.070 | 0.056 | 0.045 | 0.033 | 0.026 | 0.021 |
| 2010 | 96.4 | 0 | 0.072 | 0.062 | 0.058 | 0.045 | 0.039 | 0.029 | 0.024 | 0.021 |
| 2011 | 97.1 | 1 | 0.096 | 0.067 | 0.056 | 0.047 | 0.038 | 0.030 | 0.023 | 0.020 |
| 2012 | 98.1 | 0 | 0.068 | 0.058 | 0.049 | 0.041 | 0.037 | 0.028 | 0.024 | 0.020 |
| 2013 | 98.7 | 1 | 0.094 | 0.061 | 0.055 | 0.048 | 0.042 | 0.032 | 0.026 | 0.022 |

Bold font indicates AAQ NEPM standard and goal exceedences.

AAQ NEPM standard: 0.080 ppm (4-hour average)

Table 74. Statistical summary for O₃: Daily maximum rolling 4-hour average concentrations. Station: Liverpool

| Year | Data availability rate (%) | Number of exceedences (days) | Maximum (ppm) | Percentile (ppm) | | | | | | |
|------|----------------------------|------------------------------|---------------|------------------|-------|-------|-------|-------|-------|-------|
| | | | | 99th | 98th | 95th | 90th | 75th | 50th | 25th |
| 2004 | 87.6 | 4 | 0.092 | 0.082 | 0.071 | 0.062 | 0.048 | 0.036 | 0.029 | 0.023 |
| 2005 | 92.0 | 2 | 0.121 | 0.074 | 0.068 | 0.053 | 0.046 | 0.036 | 0.030 | 0.024 |
| 2006 | 95.2 | 4 | 0.124 | 0.088 | 0.074 | 0.064 | 0.049 | 0.037 | 0.028 | 0.023 |
| 2007 | 92.3 | 2 | 0.094 | 0.074 | 0.067 | 0.057 | 0.046 | 0.035 | 0.028 | 0.022 |
| 2008 | 90.5 | 1 | 0.089 | 0.064 | 0.057 | 0.050 | 0.042 | 0.032 | 0.026 | 0.021 |
| 2009 | 92.5 | 4 | 0.103 | 0.085 | 0.077 | 0.057 | 0.046 | 0.035 | 0.028 | 0.022 |
| 2010 | 98.3 | 1 | 0.081 | 0.069 | 0.061 | 0.052 | 0.042 | 0.033 | 0.026 | 0.021 |
| 2011 | 97.3 | 1 | 0.095 | 0.068 | 0.060 | 0.051 | 0.042 | 0.030 | 0.024 | 0.020 |
| 2012 | 96.1 | 0 | 0.071 | 0.062 | 0.055 | 0.048 | 0.043 | 0.033 | 0.026 | 0.021 |
| 2013 | 98.2 | 1 | 0.110 | 0.070 | 0.065 | 0.055 | 0.044 | 0.036 | 0.028 | 0.023 |

Bold font indicates AAQ NEPM standard and goal exceedences.
AAQ NEPM standard: 0.080 ppm (4-hour average)

Table 75. Statistical summary for O₃: Daily maximum rolling 4-hour average concentrations. Station: Macarthur/Campbelltown West¹

| Year | Data availability rate (%) | Number of exceedences (days) | Maximum (ppm) | Percentile (ppm) | | | | | | |
|-------------------|----------------------------|------------------------------|---------------|------------------|--------------|-------|-------|-------|-------|-------|
| | | | | 99th | 98th | 95th | 90th | 75th | 50th | 25th |
| 2004 | 16.9 | 1 | 0.084 | 0.084 | 0.080 | 0.061 | 0.055 | 0.047 | 0.037 | 0.027 |
| 2005 | 98.9 | 7 | 0.126 | 0.096 | 0.080 | 0.061 | 0.055 | 0.040 | 0.032 | 0.028 |
| 2006 | 98.5 | 8 | 0.117 | 0.094 | 0.085 | 0.066 | 0.054 | 0.040 | 0.030 | 0.025 |
| 2007 | 94.1 | 7 | 0.101 | 0.084 | 0.079 | 0.063 | 0.054 | 0.039 | 0.030 | 0.025 |
| 2008 | 97.9 | 0 | 0.070 | 0.065 | 0.063 | 0.054 | 0.047 | 0.035 | 0.030 | 0.025 |
| 2009 | 96.6 | 9 | 0.097 | 0.090 | 0.083 | 0.068 | 0.056 | 0.040 | 0.031 | 0.027 |
| 2010 | 98.0 | 1 | 0.103 | 0.075 | 0.073 | 0.057 | 0.049 | 0.038 | 0.031 | 0.027 |
| 2011 | 96.4 | 2 | 0.122 | 0.079 | 0.072 | 0.062 | 0.048 | 0.035 | 0.029 | 0.025 |
| 2012 | 54.7 | 0 | 0.073 | 0.062 | 0.059 | 0.052 | 0.043 | 0.031 | 0.027 | 0.023 |
| 2012 ¹ | 33.8 | 0 | 0.071 | 0.069 | 0.065 | 0.061 | 0.051 | 0.038 | 0.033 | 0.028 |
| 2013 ¹ | 97.8 | 1 | 0.082 | 0.074 | 0.067 | 0.054 | 0.044 | 0.034 | 0.028 | 0.023 |

Bold font indicates AAQ NEPM standard and goal exceedences.
AAQ NEPM standard: 0.080 ppm (4-hour average)

Table 76. Statistical summary for O₃: Daily maximum rolling 4-hour average concentrations. Station: Oakdale

| Year | Data availability rate (%) | Number of exceedences (days) | Maximum (ppm) | Percentile (ppm) | | | | | | |
|------|----------------------------|------------------------------|---------------|------------------|--------------|-------|-------|-------|-------|-------|
| | | | | 99th | 98th | 95th | 90th | 75th | 50th | 25th |
| 2004 | 80.6 | 6 | 0.099 | 0.090 | 0.084 | 0.066 | 0.057 | 0.043 | 0.033 | 0.030 |
| 2005 | 95.9 | 4 | 0.106 | 0.088 | 0.074 | 0.062 | 0.052 | 0.040 | 0.032 | 0.029 |
| 2006 | 91.6 | 1 | 0.085 | 0.078 | 0.072 | 0.061 | 0.053 | 0.043 | 0.033 | 0.029 |
| 2007 | 91.0 | 5 | 0.116 | 0.086 | 0.077 | 0.063 | 0.053 | 0.042 | 0.033 | 0.029 |
| 2008 | 96.8 | 0 | 0.075 | 0.061 | 0.056 | 0.052 | 0.045 | 0.037 | 0.031 | 0.026 |
| 2009 | 89.9 | 6 | 0.108 | 0.090 | 0.080 | 0.064 | 0.053 | 0.040 | 0.032 | 0.029 |
| 2010 | 98.4 | 2 | 0.088 | 0.075 | 0.070 | 0.058 | 0.049 | 0.038 | 0.032 | 0.028 |
| 2011 | 99.2 | 3 | 0.098 | 0.074 | 0.066 | 0.057 | 0.047 | 0.036 | 0.030 | 0.026 |
| 2012 | 96.7 | 1 | 0.081 | 0.071 | 0.060 | 0.050 | 0.045 | 0.036 | 0.029 | 0.026 |
| 2013 | 97.9 | 1 | 0.081 | 0.069 | 0.068 | 0.057 | 0.050 | 0.039 | 0.031 | 0.026 |

Bold font indicates AAQ NEPM standard and goal exceedences.
AAQ NEPM standard: 0.080 ppm (4-hour average)

Table 77. Statistical summary for O₃: Daily maximum rolling 4-hour average concentrations. Station: Richmond

| Year | Data availability rate (%) | Number of exceedences (days) | Maximum (ppm) | Percentile (ppm) | | | | | | |
|------|----------------------------|------------------------------|---------------|------------------|-------|-------|-------|-------|-------|-------|
| | | | | 99th | 98th | 95th | 90th | 75th | 50th | 25th |
| 2004 | 93.8 | 1 | 0.088 | 0.074 | 0.068 | 0.057 | 0.052 | 0.042 | 0.032 | 0.028 |
| 2005 | 96.3 | 3 | 0.100 | 0.080 | 0.069 | 0.060 | 0.052 | 0.042 | 0.033 | 0.028 |
| 2006 | 97.3 | 2 | 0.095 | 0.078 | 0.072 | 0.061 | 0.052 | 0.042 | 0.034 | 0.027 |
| 2007 | 94.1 | 3 | 0.121 | 0.079 | 0.068 | 0.059 | 0.053 | 0.042 | 0.032 | 0.027 |
| 2008 | 94.5 | 0 | 0.067 | 0.060 | 0.055 | 0.048 | 0.041 | 0.034 | 0.029 | 0.024 |
| 2009 | 94.2 | 3 | 0.090 | 0.079 | 0.069 | 0.058 | 0.051 | 0.040 | 0.032 | 0.027 |
| 2010 | 97.3 | 1 | 0.082 | 0.067 | 0.061 | 0.054 | 0.047 | 0.037 | 0.031 | 0.026 |
| 2011 | 98.5 | 1 | 0.088 | 0.065 | 0.059 | 0.050 | 0.045 | 0.034 | 0.029 | 0.025 |
| 2012 | 96.6 | 0 | 0.070 | 0.061 | 0.056 | 0.050 | 0.044 | 0.036 | 0.030 | 0.025 |
| 2013 | 98.3 | 0 | 0.076 | 0.065 | 0.061 | 0.054 | 0.049 | 0.039 | 0.032 | 0.026 |

Bold font indicates AAQ NEPM standard and goal exceedences.
AAQ NEPM standard: 0.080 ppm (4-hour average)

Table 78. Statistical summary for O₃: Daily maximum rolling 4-hour average concentrations. Station: Rozelle

| Year | Data availability rate (%) | Number of exceedences (days) | Maximum (ppm) | Percentile (ppm) | | | | | | |
|------|----------------------------|------------------------------|---------------|------------------|-------|-------|-------|-------|-------|-------|
| | | | | 99th | 98th | 95th | 90th | 75th | 50th | 25th |
| 2004 | 92.9 | 1 | 0.087 | 0.071 | 0.066 | 0.051 | 0.041 | 0.032 | 0.026 | 0.022 |
| 2005 | 92.9 | 0 | 0.065 | 0.060 | 0.055 | 0.045 | 0.039 | 0.032 | 0.027 | 0.022 |
| 2006 | 96.6 | 1 | 0.082 | 0.063 | 0.056 | 0.047 | 0.037 | 0.031 | 0.025 | 0.021 |
| 2007 | 93.7 | 0 | 0.075 | 0.054 | 0.046 | 0.042 | 0.037 | 0.031 | 0.026 | 0.021 |
| 2008 | 97.0 | 0 | 0.048 | 0.046 | 0.043 | 0.038 | 0.034 | 0.028 | 0.025 | 0.020 |
| 2009 | 94.8 | 0 | 0.073 | 0.059 | 0.054 | 0.044 | 0.037 | 0.031 | 0.026 | 0.022 |
| 2010 | 86.8 | 0 | 0.067 | 0.056 | 0.051 | 0.043 | 0.036 | 0.031 | 0.027 | 0.023 |
| 2011 | 97.1 | 0 | 0.080 | 0.058 | 0.049 | 0.041 | 0.035 | 0.029 | 0.024 | 0.021 |
| 2012 | 98.6 | 0 | 0.054 | 0.049 | 0.047 | 0.042 | 0.037 | 0.032 | 0.028 | 0.023 |
| 2013 | 96.0 | 0 | 0.063 | 0.051 | 0.045 | 0.041 | 0.037 | 0.031 | 0.027 | 0.023 |

Bold font indicates AAQ NEPM standard and goal exceedences.
AAQ NEPM standard: 0.080 ppm (4-hour average)

Table 79. Statistical summary for O₃: Daily maximum rolling 4-hour average concentrations. Station: St Marys

| Year | Data availability rate (%) | Number of exceedences (days) | Maximum (ppm) | Percentile (ppm) | | | | | | |
|------|----------------------------|------------------------------|---------------|------------------|-------|-------|-------|-------|-------|-------|
| | | | | 99th | 98th | 95th | 90th | 75th | 50th | 25th |
| 2004 | 97.5 | 3 | 0.128 | 0.081 | 0.070 | 0.060 | 0.052 | 0.040 | 0.032 | 0.027 |
| 2005 | 96.2 | 3 | 0.091 | 0.078 | 0.068 | 0.059 | 0.050 | 0.040 | 0.032 | 0.027 |
| 2006 | 96.6 | 4 | 0.109 | 0.084 | 0.067 | 0.059 | 0.052 | 0.041 | 0.030 | 0.026 |
| 2007 | 93.1 | 4 | 0.105 | 0.088 | 0.069 | 0.058 | 0.051 | 0.040 | 0.031 | 0.026 |
| 2008 | 97.0 | 1 | 0.082 | 0.069 | 0.056 | 0.048 | 0.044 | 0.036 | 0.029 | 0.025 |
| 2009 | 97.2 | 5 | 0.106 | 0.087 | 0.073 | 0.063 | 0.055 | 0.039 | 0.031 | 0.026 |
| 2010 | 97.8 | 1 | 0.083 | 0.072 | 0.066 | 0.057 | 0.049 | 0.038 | 0.031 | 0.026 |
| 2011 | 98.8 | 3 | 0.121 | 0.080 | 0.063 | 0.054 | 0.047 | 0.034 | 0.028 | 0.024 |
| 2012 | 97.2 | 0 | 0.072 | 0.065 | 0.061 | 0.053 | 0.045 | 0.035 | 0.029 | 0.024 |
| 2013 | 97.6 | 2 | 0.101 | 0.068 | 0.063 | 0.057 | 0.048 | 0.040 | 0.030 | 0.025 |

Bold font indicates AAQ NEPM standard and goal exceedences.
AAQ NEPM standard: 0.080 ppm (4-hour average)

Table 80. Statistical summary for O₃: Daily maximum rolling 4-hour average concentrations. Station: Wyong

| Year | Data availability rate (%) | Number of exceedences (days) | Maximum (ppm) | Percentile (ppm) | | | | | | |
|------|----------------------------|------------------------------|---------------|------------------|-------|-------|-------|-------|-------|-------|
| | | | | 99th | 98th | 95th | 90th | 75th | 50th | 25th |
| 2012 | 20.1 | 0 | 0.066 | 0.066 | 0.065 | 0.057 | 0.050 | 0.039 | 0.031 | 0.027 |
| 2013 | 96.1 | 0 | 0.072 | 0.063 | 0.057 | 0.046 | 0.040 | 0.034 | 0.028 | 0.024 |

AAQ NEPM standard: 0.080 ppm (4-hour average)

Table 81. Statistical summary for O₃: Daily maximum rolling 4-hour average concentrations. Station: Albion Park¹/Albion Park South

| Year | Data availability rate (%) | Number of exceedences (days) | Maximum (ppm) | Percentile (ppm) | | | | | | |
|-------------------|----------------------------|------------------------------|---------------|------------------|-------|-------|-------|-------|-------|-------|
| | | | | 99th | 98th | 95th | 90th | 75th | 50th | 25th |
| 2004 ¹ | 97.5 | 1 | 0.092 | 0.077 | 0.057 | 0.047 | 0.040 | 0.033 | 0.029 | 0.026 |
| 2005 ¹ | 5.0 | 0 | 0.063 | 0.063 | 0.063 | 0.061 | 0.054 | 0.039 | 0.029 | 0.022 |
| 2005 | 0.2 | 0 | 0.063 | 0.063 | 0.063 | 0.063 | 0.063 | 0.063 | 0.048 | 0.061 |
| 2006 | 90.0 | 0 | 0.077 | 0.073 | 0.065 | 0.048 | 0.041 | 0.035 | 0.030 | 0.026 |
| 2007 | 94.6 | 0 | 0.080 | 0.061 | 0.057 | 0.046 | 0.039 | 0.033 | 0.030 | 0.026 |
| 2008 | 94.1 | 0 | 0.055 | 0.053 | 0.048 | 0.044 | 0.038 | 0.032 | 0.029 | 0.024 |
| 2009 | 95.4 | 1 | 0.083 | 0.066 | 0.060 | 0.048 | 0.041 | 0.036 | 0.033 | 0.028 |
| 2010 | 86.2 | 0 | 0.073 | 0.056 | 0.048 | 0.044 | 0.037 | 0.029 | 0.027 | 0.024 |
| 2011 | 85.7 | 3 | 0.099 | 0.061 | 0.052 | 0.042 | 0.034 | 0.031 | 0.027 | 0.023 |
| 2012 | 97.8 | 0 | 0.064 | 0.051 | 0.047 | 0.041 | 0.037 | 0.031 | 0.028 | 0.024 |
| 2013 | 97.1 | 3 | 0.100 | 0.074 | 0.056 | 0.047 | 0.041 | 0.034 | 0.029 | 0.026 |

Bold font indicates AAQ NEPM standard and goal exceedences.
AAQ NEPM standard: 0.080 ppm (4-hour average)

Table 82. Statistical summary for O₃: Daily maximum rolling 4-hour average concentrations. Station: Kembla Grange

| Year | Data availability rate (%) | Number of exceedences (days) | Maximum (ppm) | Percentile (ppm) | | | | | | |
|------|----------------------------|------------------------------|---------------|------------------|-------|-------|-------|-------|-------|-------|
| | | | | 99th | 98th | 95th | 90th | 75th | 50th | 25th |
| 2004 | 95.4 | 3 | 0.100 | 0.078 | 0.055 | 0.047 | 0.040 | 0.034 | 0.029 | 0.025 |
| 2005 | 96.7 | 1 | 0.084 | 0.063 | 0.059 | 0.048 | 0.041 | 0.034 | 0.030 | 0.026 |
| 2006 | 98.9 | 1 | 0.081 | 0.063 | 0.057 | 0.046 | 0.042 | 0.034 | 0.029 | 0.025 |
| 2007 | 97.8 | 1 | 0.082 | 0.065 | 0.059 | 0.046 | 0.040 | 0.033 | 0.029 | 0.025 |
| 2008 | 97.5 | 0 | 0.066 | 0.054 | 0.050 | 0.043 | 0.039 | 0.031 | 0.028 | 0.023 |
| 2009 | 90.1 | 2 | 0.090 | 0.075 | 0.065 | 0.046 | 0.040 | 0.033 | 0.029 | 0.026 |
| 2010 | 86.7 | 0 | 0.078 | 0.055 | 0.052 | 0.044 | 0.038 | 0.031 | 0.028 | 0.024 |
| 2011 | 98.4 | 2 | 0.105 | 0.066 | 0.057 | 0.048 | 0.038 | 0.033 | 0.029 | 0.025 |
| 2012 | 98.4 | 0 | 0.061 | 0.051 | 0.047 | 0.041 | 0.037 | 0.031 | 0.027 | 0.024 |
| 2013 | 97.8 | 2 | 0.103 | 0.070 | 0.057 | 0.044 | 0.039 | 0.032 | 0.029 | 0.024 |

Bold font indicates AAQ NEPM standard and goal exceedences.
AAQ NEPM standard: 0.080 ppm (4-hour average)

Table 83. Statistical summary for O₃: Daily maximum rolling 4-hour average concentrations. Station: Wollongong

| Year | Data availability rate (%) | Number of exceedences (days) | Maximum (ppm) | Percentile (ppm) | | | | | | |
|------|----------------------------|------------------------------|---------------|------------------|-------|-------|-------|-------|-------|-------|
| | | | | 99th | 98th | 95th | 90th | 75th | 50th | 25th |
| 2004 | 96.3 | 2 | 0.090 | 0.068 | 0.061 | 0.050 | 0.040 | 0.032 | 0.028 | 0.024 |
| 2005 | 96.2 | 1 | 0.099 | 0.064 | 0.061 | 0.049 | 0.041 | 0.033 | 0.029 | 0.024 |
| 2006 | 98.6 | 1 | 0.086 | 0.066 | 0.055 | 0.048 | 0.042 | 0.033 | 0.028 | 0.024 |
| 2007 | 93.2 | 0 | 0.073 | 0.064 | 0.054 | 0.046 | 0.039 | 0.033 | 0.028 | 0.023 |
| 2008 | 97.9 | 0 | 0.063 | 0.056 | 0.051 | 0.043 | 0.040 | 0.031 | 0.027 | 0.023 |
| 2009 | 92.9 | 0 | 0.074 | 0.064 | 0.050 | 0.043 | 0.037 | 0.033 | 0.029 | 0.025 |
| 2010 | 94.9 | 0 | 0.073 | 0.061 | 0.055 | 0.046 | 0.039 | 0.032 | 0.027 | 0.024 |
| 2011 | 96.9 | 0 | 0.078 | 0.066 | 0.052 | 0.043 | 0.036 | 0.032 | 0.027 | 0.023 |
| 2012 | 98.9 | 0 | 0.061 | 0.055 | 0.050 | 0.042 | 0.038 | 0.030 | 0.026 | 0.023 |
| 2013 | 96.5 | 2 | 0.091 | 0.076 | 0.058 | 0.048 | 0.041 | 0.032 | 0.027 | 0.023 |

Bold font indicates AAQ NEPM standard and goal exceedences.
AAQ NEPM standard: 0.080 ppm (4-hour average)

Table 84. Statistical summary for O₃: Daily maximum rolling 4-hour average concentrations. Station: Newcastle

| Year | Data availability rate (%) | Number of exceedences (days) | Maximum (ppm) | Percentile (ppm) | | | | | | |
|------|----------------------------|------------------------------|---------------|------------------|-------|-------|-------|-------|-------|-------|
| | | | | 99th | 98th | 95th | 90th | 75th | 50th | 25th |
| 2004 | 96.4 | 0 | 0.073 | 0.062 | 0.059 | 0.048 | 0.041 | 0.034 | 0.028 | 0.024 |
| 2005 | 96.5 | 0 | 0.070 | 0.055 | 0.050 | 0.044 | 0.039 | 0.033 | 0.028 | 0.024 |
| 2006 | 97.9 | 0 | 0.064 | 0.057 | 0.053 | 0.043 | 0.038 | 0.033 | 0.028 | 0.022 |
| 2007 | 45.6 | 0 | 0.047 | 0.046 | 0.046 | 0.041 | 0.036 | 0.031 | 0.025 | 0.021 |
| 2008 | 93.8 | 0 | 0.058 | 0.049 | 0.046 | 0.040 | 0.037 | 0.032 | 0.027 | 0.022 |
| 2009 | 88.2 | 0 | 0.067 | 0.062 | 0.056 | 0.047 | 0.042 | 0.035 | 0.031 | 0.025 |
| 2010 | 85.1 | 0 | 0.076 | 0.062 | 0.054 | 0.045 | 0.040 | 0.034 | 0.029 | 0.025 |
| 2011 | 86.8 | 0 | 0.063 | 0.051 | 0.048 | 0.044 | 0.038 | 0.033 | 0.027 | 0.023 |
| 2012 | 97.8 | 0 | 0.057 | 0.049 | 0.048 | 0.043 | 0.039 | 0.032 | 0.027 | 0.022 |
| 2013 | 98.0 | 0 | 0.075 | 0.054 | 0.050 | 0.044 | 0.039 | 0.033 | 0.027 | 0.023 |

AAQ NEPM standard: 0.080 ppm (4-hour average)

Table 85. Statistical summary for O₃: Daily maximum rolling 4-hour average concentrations. Station: Wallsend

| Year | Data availability rate (%) | Number of exceedences (days) | Maximum (ppm) | Percentile (ppm) | | | | | | |
|------|----------------------------|------------------------------|---------------|------------------|-------|-------|-------|-------|-------|-------|
| | | | | 99th | 98th | 95th | 90th | 75th | 50th | 25th |
| 2004 | 92.0 | 0 | 0.078 | 0.065 | 0.057 | 0.05 | 0.044 | 0.035 | 0.029 | 0.024 |
| 2005 | 95.4 | 0 | 0.074 | 0.063 | 0.058 | 0.048 | 0.041 | 0.034 | 0.029 | 0.024 |
| 2006 | 97.3 | 0 | 0.066 | 0.064 | 0.057 | 0.046 | 0.040 | 0.033 | 0.027 | 0.023 |
| 2007 | 95.1 | 0 | 0.068 | 0.057 | 0.050 | 0.045 | 0.041 | 0.034 | 0.028 | 0.023 |
| 2008 | 95.7 | 0 | 0.054 | 0.048 | 0.045 | 0.040 | 0.036 | 0.031 | 0.027 | 0.022 |
| 2009 | 89.2 | 0 | 0.076 | 0.063 | 0.058 | 0.046 | 0.040 | 0.034 | 0.028 | 0.023 |
| 2010 | 88.2 | 0 | 0.063 | 0.056 | 0.052 | 0.042 | 0.037 | 0.032 | 0.027 | 0.023 |
| 2011 | 95.8 | 0 | 0.059 | 0.053 | 0.050 | 0.045 | 0.037 | 0.031 | 0.025 | 0.021 |
| 2012 | 98.7 | 0 | 0.070 | 0.056 | 0.051 | 0.046 | 0.041 | 0.033 | 0.027 | 0.022 |
| 2013 | 96.1 | 0 | 0.078 | 0.063 | 0.057 | 0.049 | 0.042 | 0.036 | 0.029 | 0.024 |

AAQ NEPM standard: 0.080 ppm (4-hour average)

Sulfur dioxide

Statistical summary

Table 86. Statistical summary for SO₂: Daily maximum 1-hour average concentrations (2013)

| Region/Performance monitoring station | Data availability rate (%) | Maximum (ppm) | Percentile (ppm) | | | | | | |
|---------------------------------------|----------------------------|---------------|------------------|-------|-------|-------|-------|-------|-------|
| | | | 99th | 98th | 95th | 90th | 75th | 50th | 25th |
| Sydney | | | | | | | | | |
| Bringelly | 94.5 | 0.011 | 0.009 | 0.007 | 0.004 | 0.003 | 0.002 | 0.001 | 0.001 |
| Chullora | 92.9 | 0.012 | 0.010 | 0.008 | 0.006 | 0.005 | 0.003 | 0.002 | 0.001 |
| Campbelltown West | 95.0 | 0.009 | 0.007 | 0.006 | 0.004 | 0.003 | 0.002 | 0.001 | 0.001 |
| Prospect | 90.9 | 0.020 | 0.014 | 0.010 | 0.006 | 0.005 | 0.003 | 0.002 | 0.001 |
| Richmond | 94.2 | 0.010 | 0.008 | 0.007 | 0.005 | 0.004 | 0.002 | 0.001 | 0.000 |
| Illawarra | | | | | | | | | |
| Albion Park South | 89.6 | 0.039 | 0.022 | 0.017 | 0.012 | 0.009 | 0.004 | 0.001 | 0.000 |
| Wollongong | 92.4 | 0.040 | 0.018 | 0.016 | 0.010 | 0.008 | 0.005 | 0.002 | 0.001 |
| Central Coast | | | | | | | | | |
| Wyong | 94.7 | 0.029 | 0.024 | 0.020 | 0.015 | 0.009 | 0.004 | 0.002 | 0.001 |
| Lower Hunter | | | | | | | | | |
| Newcastle | 95.1 | 0.052 | 0.030 | 0.024 | 0.017 | 0.015 | 0.009 | 0.004 | 0.002 |
| Wallsend | 92.2 | 0.050 | 0.028 | 0.021 | 0.016 | 0.012 | 0.007 | 0.004 | 0.002 |

AAQ NEPM standard: 0.200 ppm (1-hour average)

Table 87. Statistical summary for SO₂: Daily 24-hour average concentrations (2013)

| Region/Performance monitoring station | Data availability rate (%) | Maximum (ppm) | Percentile (ppm) | | | | | | |
|---------------------------------------|----------------------------|---------------|------------------|-------|-------|-------|-------|-------|-------|
| | | | 99th | 98th | 95th | 90th | 75th | 50th | 25th |
| Sydney | | | | | | | | | |
| Bringelly | 98.6 | 0.002 | 0.002 | 0.002 | 0.001 | 0.001 | 0.001 | 0.000 | 0.000 |
| Chullora | 97.3 | 0.003 | 0.003 | 0.002 | 0.002 | 0.001 | 0.001 | 0.001 | 0.000 |
| Campbelltown West | 99.2 | 0.002 | 0.002 | 0.002 | 0.002 | 0.001 | 0.001 | 0.000 | 0.000 |
| Prospect | 93.4 | 0.004 | 0.003 | 0.002 | 0.002 | 0.002 | 0.001 | 0.001 | 0.000 |
| Richmond | 98.1 | 0.002 | 0.002 | 0.002 | 0.001 | 0.001 | 0.001 | 0.000 | 0.000 |
| Illawarra | | | | | | | | | |
| Albion Park South | 93.4 | 0.009 | 0.007 | 0.005 | 0.003 | 0.002 | 0.001 | 0.000 | 0.000 |
| Wollongong | 96.4 | 0.008 | 0.004 | 0.003 | 0.002 | 0.002 | 0.001 | 0.000 | 0.000 |
| Central Coast | | | | | | | | | |
| Wyong | 98.1 | 0.005 | 0.004 | 0.003 | 0.002 | 0.002 | 0.001 | 0.000 | 0.000 |
| Lower Hunter | | | | | | | | | |
| Newcastle | 98.6 | 0.007 | 0.006 | 0.005 | 0.004 | 0.003 | 0.002 | 0.001 | 0.000 |
| Wallsend | 96.2 | 0.005 | 0.004 | 0.004 | 0.003 | 0.002 | 0.002 | 0.001 | 0.000 |

Trend analysis

Table 88. Maximum 1-hour average concentrations for SO₂ (ppm)

| Region/Performance monitoring station | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 |
|---------------------------------------|--------|-------|-------|-------|-------|-------|-------|-------|--------|--------|
| Sydney | | | | | | | | | | |
| Blacktown*/Prospect | 0.016* | | | 0.022 | 0.014 | 0.017 | 0.018 | 0.014 | 0.012 | 0.020 |
| Bringelly | 0.015 | 0.009 | 0.009 | 0.017 | 0.019 | 0.012 | 0.008 | 0.011 | 0.015 | 0.011 |
| Chullora | | 0.015 | 0.015 | 0.020 | 0.021 | 0.029 | 0.021 | 0.026 | 0.025 | 0.012 |
| Macarthur/Campbelltown West | | 0.015 | 0.010 | 0.015 | 0.015 | 0.010 | 0.010 | 0.014 | 0.006* | 0.009* |
| Richmond | 0.021 | 0.015 | 0.018 | 0.024 | 0.015 | 0.013 | 0.009 | 0.010 | 0.013 | 0.010 |
| Central Coast | | | | | | | | | | |
| Wyong | | | | | | | | | 0.030 | 0.029 |
| Illawarra | | | | | | | | | | |
| Albion Park*/Albion Park South | 0.034* | 0.032 | 0.038 | 0.038 | 0.028 | 0.031 | 0.032 | 0.035 | 0.027 | 0.039 |
| Wollongong | 0.053 | 0.038 | 0.035 | 0.032 | 0.021 | 0.020 | 0.027 | 0.018 | 0.017 | 0.040 |
| Lower Hunter | | | | | | | | | | |
| Newcastle | | 0.037 | 0.034 | 0.043 | 0.033 | 0.039 | 0.027 | 0.033 | 0.034 | 0.052 |
| Wallsend | 0.067 | 0.048 | 0.058 | 0.039 | 0.044 | 0.044 | 0.031 | 0.044 | 0.035 | 0.050 |

Table 89. Maximum 24-hour average concentrations for SO₂ (ppm)

| Region/Performance monitoring station | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 |
|---------------------------------------|--------|-------|-------|-------|-------|-------|-------|-------|--------|--------|
| Sydney | | | | | | | | | | |
| Blacktown*/Prospect | 0.004* | | | 0.005 | 0.004 | 0.003 | 0.004 | 0.003 | 0.003 | 0.004 |
| Bringelly | 0.002 | 0.002 | 0.002 | 0.003 | 0.003 | 0.003 | 0.002 | 0.002 | 0.002 | 0.002 |
| Chullora | | 0.005 | 0.004 | 0.004 | 0.005 | 0.005 | 0.004 | 0.005 | 0.004 | 0.003 |
| Macarthur/Campbelltown West* | | 0.003 | 0.003 | 0.004 | 0.004 | 0.004 | 0.003 | 0.002 | 0.002* | 0.002* |
| Richmond | 0.004 | 0.002 | 0.003 | 0.004 | 0.003 | 0.004 | 0.002 | 0.003 | 0.002 | 0.002 |
| Central Coast | | | | | | | | | | |
| Wyong | | | | | | | | | 0.004 | 0.005 |
| Illawarra | | | | | | | | | | |
| Albion Park*/Albion Park South | 0.009* | 0.011 | 0.010 | 0.014 | 0.008 | 0.012 | 0.011 | 0.010 | 0.010 | 0.009 |
| Wollongong | 0.015 | 0.006 | 0.007 | 0.008 | 0.007 | 0.004 | 0.008 | 0.009 | 0.005 | 0.008 |
| Lower Hunter | | | | | | | | | | |
| Newcastle | | 0.008 | 0.009 | 0.012 | 0.008 | 0.010 | 0.005 | 0.009 | 0.007 | 0.007 |
| Wallsend | 0.014 | 0.007 | 0.009 | 0.007 | 0.007 | 0.007 | 0.007 | 0.007 | 0.005 | 0.005 |

Table 90. Annual average concentrations for SO₂ (ppm)

| Region/ Performance monitoring station | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 |
|--|--------|-------|-------|-------|-------|-------|-------|-------|--------|--------|
| Sydney | | | | | | | | | | |
| Blacktown*/Prospect | 0.001* | | | 0.001 | 0.000 | 0.000 | 0.001 | 0.001 | 0.001 | 0.001 |
| Bringelly | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| Chullora | | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 |
| Macarthur/Campbelltown West* | | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.000 | 0.000 | 0.001* | 0.001* |
| Richmond | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| Central Coast | | | | | | | | | | |
| Wyong | | | | | | | | | 0.001 | 0.001 |
| Illawarra | | | | | | | | | | |
| Albion Park*/Albion Park South | 0.001* | 0.007 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.000 | 0.001 |
| Wollongong | 0.001 | 0.001 | 0.001 | 0.001 | 0.000 | 0.000 | 0.001 | 0.001 | 0.001 | 0.001 |
| Lower Hunter | | | | | | | | | | |
| Newcastle | | 0.002 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.002 | 0.002 | 0.001 |
| Wallsend | 0.002 | 0.001 | 0.001 | 0.001 | 0.002 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 |

Statistical summaries for multiple years, by station

Table 91. Statistical summary for SO₂: Annual daily maximum 1-hour average concentrations. Station: Blacktown¹/Prospect

| Year | Data availability rate (%) | Number of exceedences (days) | Maximum (ppm) | Percentile (ppm) | | | | | | |
|----------------------|----------------------------|------------------------------|---------------|------------------|-------|-------|-------|-------|-------|-------|
| | | | | 99th | 98th | 95th | 90th | 75th | 50th | 25th |
| 2004 ¹ | 39.1 | 0 | 0.013 | 0.012 | 0.010 | 0.007 | 0.006 | 0.004 | 0.002 | 0.200 |
| 2005–06 ² | | | | | | | | | | |
| 2007 | 67.0 | 0 | 0.022 | 0.016 | 0.013 | 0.007 | 0.006 | 0.003 | 0.002 | 0.001 |
| 2008 | 85.1 | 0 | 0.014 | 0.011 | 0.010 | 0.008 | 0.005 | 0.003 | 0.002 | 0.001 |
| 2009 | 91.3 | 0 | 0.017 | 0.010 | 0.010 | 0.008 | 0.006 | 0.004 | 0.002 | 0.001 |
| 2010 | 88.9 | 0 | 0.018 | 0.013 | 0.011 | 0.008 | 0.006 | 0.004 | 0.002 | 0.001 |
| 2011 | 93.8 | 0 | 0.014 | 0.011 | 0.008 | 0.006 | 0.005 | 0.003 | 0.002 | 0.001 |
| 2012 | 91.3 | 0 | 0.012 | 0.008 | 0.007 | 0.006 | 0.004 | 0.003 | 0.002 | 0.001 |
| 2013 | 90.9 | 0 | 0.020 | 0.014 | 0.010 | 0.006 | 0.005 | 0.003 | 0.002 | 0.001 |

² Blacktown station closed pending relocation
AAQ NEPM standard: 0.200 ppm (1-hour average)

Table 92. Statistical summary for SO₂: Annual daily maximum 1-hour average concentrations. Station: Bringelly

| Year | Data availability rate (%) | Number of exceedences (days) | Maximum (ppm) | Percentile (ppm) | | | | | | |
|------|----------------------------|------------------------------|---------------|------------------|-------|-------|-------|-------|-------|-------|
| | | | | 99th | 98th | 95th | 90th | 75th | 50th | 25th |
| 2004 | 90.8 | 0 | 0.015 | 0.008 | 0.007 | 0.005 | 0.004 | 0.002 | 0.001 | 0.000 |
| 2005 | 91.3 | 0 | 0.009 | 0.008 | 0.006 | 0.004 | 0.004 | 0.002 | 0.001 | 0.000 |
| 2006 | 91.4 | 0 | 0.009 | 0.006 | 0.005 | 0.004 | 0.003 | 0.002 | 0.001 | 0.001 |
| 2007 | 84.2 | 0 | 0.017 | 0.009 | 0.007 | 0.005 | 0.004 | 0.002 | 0.001 | 0.000 |
| 2008 | 89.2 | 0 | 0.019 | 0.008 | 0.006 | 0.005 | 0.003 | 0.002 | 0.001 | 0.000 |
| 2009 | 84.6 | 0 | 0.012 | 0.008 | 0.005 | 0.004 | 0.003 | 0.001 | 0.000 | 0.000 |
| 2010 | 79.9 | 0 | 0.008 | 0.005 | 0.005 | 0.004 | 0.003 | 0.002 | 0.001 | 0.000 |
| 2011 | 88.9 | 0 | 0.011 | 0.005 | 0.005 | 0.003 | 0.003 | 0.002 | 0.001 | 0.000 |
| 2012 | 94.6 | 0 | 0.015 | 0.005 | 0.005 | 0.003 | 0.003 | 0.002 | 0.001 | 0.000 |
| 2013 | 94.5 | 0 | 0.011 | 0.009 | 0.007 | 0.004 | 0.003 | 0.002 | 0.001 | 0.001 |

AAQ NEPM standard: 0.200 ppm (1-hour average)

Table 93. Statistical summary for SO₂: Annual daily maximum 1-hour average concentrations. Station: Chullora

| Year | Data availability rate (%) | Number of exceedences (days) | Maximum (ppm) | Percentile (ppm) | | | | | | |
|------|----------------------------|------------------------------|---------------|------------------|-------|-------|-------|-------|-------|-------|
| | | | | 99th | 98th | 95th | 90th | 75th | 50th | 25th |
| 2005 | 68.8 | 0 | 0.015 | 0.013 | 0.011 | 0.009 | 0.007 | 0.004 | 0.002 | 0.001 |
| 2006 | 93.9 | 0 | 0.015 | 0.013 | 0.011 | 0.009 | 0.007 | 0.004 | 0.003 | 0.002 |
| 2007 | 86.7 | 0 | 0.020 | 0.016 | 0.012 | 0.009 | 0.007 | 0.003 | 0.002 | 0.001 |
| 2008 | 77.5 | 0 | 0.021 | 0.018 | 0.012 | 0.007 | 0.006 | 0.004 | 0.002 | 0.001 |
| 2009 | 89.8 | 0 | 0.029 | 0.015 | 0.012 | 0.010 | 0.008 | 0.004 | 0.002 | 0.001 |
| 2010 | 92.1 | 0 | 0.021 | 0.015 | 0.014 | 0.010 | 0.007 | 0.004 | 0.002 | 0.001 |
| 2011 | 92.7 | 0 | 0.026 | 0.016 | 0.011 | 0.009 | 0.006 | 0.004 | 0.002 | 0.001 |
| 2012 | 93.6 | 0 | 0.025 | 0.011 | 0.008 | 0.007 | 0.005 | 0.003 | 0.002 | 0.001 |
| 2013 | 92.9 | 0 | 0.012 | 0.010 | 0.008 | 0.006 | 0.005 | 0.003 | 0.002 | 0.001 |

AAQ NEPM standard: 0.200 ppm (1-hour average)

Table 94. Statistical summary for SO₂: Annual daily maximum 1-hour average concentrations. Station: Macarthur/Campbelltown West¹

| Year | Data availability rate (%) | Number of exceedences (days) | Maximum (ppm) | Percentile (ppm) | | | | | | |
|---------------------|----------------------------|------------------------------|---------------|------------------|-------|-------|-------|-------|-------|-------|
| | | | | 99th | 98th | 95th | 90th | 75th | 50th | 25th |
| 2005 | 53.1 | 0 | 0.015 | 0.012 | 0.008 | 0.006 | 0.004 | 0.003 | 0.002 | 0.001 |
| 2006 | 93.2 | 0 | 0.010 | 0.008 | 0.006 | 0.005 | 0.004 | 0.002 | 0.001 | 0.001 |
| 2007 | 90.9 | 0 | 0.015 | 0.011 | 0.010 | 0.006 | 0.005 | 0.003 | 0.002 | 0.001 |
| 2008 | 92.1 | 0 | 0.015 | 0.013 | 0.009 | 0.006 | 0.004 | 0.003 | 0.001 | 0.001 |
| 2009 | 91.6 | 0 | 0.010 | 0.009 | 0.007 | 0.006 | 0.004 | 0.003 | 0.002 | 0.001 |
| 2010 | 92.9 | 0 | 0.010 | 0.006 | 0.006 | 0.005 | 0.004 | 0.002 | 0.001 | 0.001 |
| 2011 | 91.9 | 0 | 0.014 | 0.009 | 0.006 | 0.005 | 0.003 | 0.002 | 0.001 | 0.000 |
| 2012 | 52.6 | 0 | 0.006 | 0.005 | 0.005 | 0.004 | 0.003 | 0.002 | 0.001 | 0.000 |
| 2012 ⁽¹⁾ | 33.9 | 0 | 0.008 | 0.006 | 0.005 | 0.005 | 0.004 | 0.002 | 0.001 | 0.001 |
| 2013 ⁽¹⁾ | 95.0 | 0 | 0.009 | 0.007 | 0.006 | 0.004 | 0.003 | 0.002 | 0.001 | 0.001 |

AAQ NEPM standard: 0.200 ppm (1-hour average)

Table 95. Statistical summary for SO₂: Annual daily maximum 1-hour average concentrations. Station: Richmond

| Year | Data availability rate (%) | Number of exceedences (days) | Maximum (ppm) | Percentile (ppm) | | | | | | |
|------|----------------------------|------------------------------|---------------|------------------|-------|-------|-------|-------|-------|-------|
| | | | | 99th | 98th | 95th | 90th | 75th | 50th | 25th |
| 2004 | 89.7 | 0 | 0.021 | 0.012 | 0.009 | 0.007 | 0.005 | 0.002 | 0.001 | 0.001 |
| 2005 | 92.8 | 0 | 0.015 | 0.009 | 0.007 | 0.006 | 0.004 | 0.002 | 0.001 | 0.001 |
| 2006 | 92.0 | 0 | 0.018 | 0.011 | 0.009 | 0.006 | 0.004 | 0.002 | 0.001 | 0.001 |
| 2007 | 91.0 | 0 | 0.024 | 0.008 | 0.007 | 0.005 | 0.004 | 0.002 | 0.001 | 0.000 |
| 2008 | 72.0 | 0 | 0.015 | 0.010 | 0.007 | 0.005 | 0.003 | 0.002 | 0.001 | 0.000 |
| 2009 | 89.5 | 0 | 0.013 | 0.010 | 0.009 | 0.006 | 0.004 | 0.002 | 0.001 | 0.000 |
| 2010 | 93.3 | 0 | 0.009 | 0.007 | 0.006 | 0.005 | 0.003 | 0.002 | 0.001 | 0.000 |
| 2011 | 94.5 | 0 | 0.010 | 0.008 | 0.005 | 0.004 | 0.003 | 0.002 | 0.001 | 0.000 |
| 2012 | 83.4 | 0 | 0.013 | 0.008 | 0.007 | 0.005 | 0.004 | 0.002 | 0.001 | 0.000 |
| 2013 | 94.2 | 0 | 0.010 | 0.008 | 0.007 | 0.005 | 0.004 | 0.002 | 0.001 | 0.000 |

AAQ NEPM standard: 0.200 ppm (1-hour average)

Table 96. Statistical summary for SO₂: Annual daily maximum 1-hour average concentrations. Station: Wyong

| Year | Data availability rate (%) | Number of exceedences (days) | Maximum (ppm) | Percentile (ppm) | | | | | | |
|------|----------------------------|------------------------------|---------------|------------------|-------|-------|-------|-------|-------|-------|
| | | | | 99th | 98th | 95th | 90th | 75th | 50th | 25th |
| 2012 | 19.3 | 0 | 0.030 | 0.030 | 0.027 | 0.018 | 0.013 | 0.005 | 0.002 | 0.001 |
| 2013 | 94.7 | 0 | 0.029 | 0.024 | 0.020 | 0.015 | 0.009 | 0.004 | 0.002 | 0.001 |

AAQ NEPM standard: 0.200 ppm (1-hour average)

Table 97. Statistical summary for SO₂: Annual daily maximum 1-hour average concentrations. Station: Albion Park¹/ Albion Park South

| Year | Data availability rate (%) | Number of exceedences (days) | Maximum (ppm) | Percentile (ppm) | | | | | | |
|-------------------|----------------------------|------------------------------|---------------|------------------|-------|-------|-------|-------|-------|-------|
| | | | | 99th | 98th | 95th | 90th | 75th | 50th | 25th |
| 2004 ¹ | 92.9 | 0 | 0.034 | 0.029 | 0.027 | 0.017 | 0.013 | 0.005 | 0.001 | 0.000 |
| 2005 | 0.2 | 0 | 0.032 | 0.032 | 0.032 | 0.032 | 0.032 | 0.032 | 0.016 | 0.030 |
| 2006 | 86.7 | 0 | 0.038 | 0.028 | 0.024 | 0.019 | 0.011 | 0.004 | 0.001 | 0.000 |
| 2007 | 83.1 | 0 | 0.038 | 0.033 | 0.031 | 0.019 | 0.013 | 0.006 | 0.001 | 0.000 |
| 2008 | 93.0 | 0 | 0.028 | 0.026 | 0.022 | 0.015 | 0.011 | 0.005 | 0.001 | 0.000 |
| 2009 | 85.4 | 0 | 0.031 | 0.027 | 0.023 | 0.018 | 0.013 | 0.005 | 0.001 | 0.000 |
| 2010 | 89.6 | 0 | 0.032 | 0.027 | 0.023 | 0.019 | 0.013 | 0.005 | 0.001 | 0.000 |
| 2011 | 87.4 | 0 | 0.035 | 0.024 | 0.022 | 0.017 | 0.009 | 0.004 | 0.000 | 0.000 |
| 2012 | 92.5 | 0 | 0.027 | 0.017 | 0.015 | 0.010 | 0.008 | 0.003 | 0.001 | 0.000 |
| 2013 | 89.6 | 0 | 0.039 | 0.022 | 0.017 | 0.012 | 0.009 | 0.004 | 0.001 | 0.000 |

AAQ NEPM standard: 0.200 ppm (1-hour average)

Table 98. Statistical summary for SO₂: Annual daily maximum 1-hour average concentrations. Station: Wollongong

| Year | Data availability rate (%) | Number of exceedences (days) | Maximum (ppm) | Percentile (ppm) | | | | | | |
|------|----------------------------|------------------------------|---------------|------------------|-------|-------|-------|-------|-------|-------|
| | | | | 99th | 98th | 95th | 90th | 75th | 50th | 25th |
| 2004 | 92.8 | 0 | 0.053 | 0.024 | 0.018 | 0.014 | 0.011 | 0.006 | 0.003 | 0.001 |
| 2005 | 93.0 | 0 | 0.038 | 0.023 | 0.021 | 0.015 | 0.011 | 0.006 | 0.003 | 0.001 |
| 2006 | 94.5 | 0 | 0.035 | 0.020 | 0.018 | 0.015 | 0.012 | 0.007 | 0.004 | 0.001 |
| 2007 | 78.9 | 0 | 0.032 | 0.022 | 0.020 | 0.016 | 0.011 | 0.007 | 0.003 | 0.001 |
| 2008 | 78.2 | 0 | 0.021 | 0.019 | 0.015 | 0.012 | 0.009 | 0.006 | 0.002 | 0.000 |
| 2009 | 75.3 | 0 | 0.020 | 0.016 | 0.014 | 0.010 | 0.007 | 0.004 | 0.002 | 0.000 |
| 2010 | 88.4 | 0 | 0.027 | 0.018 | 0.015 | 0.013 | 0.011 | 0.006 | 0.003 | 0.001 |
| 2011 | 92.9 | 0 | 0.018 | 0.018 | 0.017 | 0.012 | 0.009 | 0.005 | 0.003 | 0.001 |
| 2012 | 94.9 | 0 | 0.017 | 0.016 | 0.014 | 0.010 | 0.008 | 0.004 | 0.002 | 0.001 |
| 2013 | 92.4 | 0 | 0.040 | 0.018 | 0.016 | 0.010 | 0.008 | 0.005 | 0.002 | 0.001 |

AAQ NEPM standard: 0.200 ppm (1-hour average)

Table 99. Statistical summary for SO₂: Annual daily maximum 1-hour average concentrations. Station: Newcastle

| Year | Data availability rate (%) | Number of Exceedences (days) | Maximum (ppm) | Percentile (ppm) | | | | | | |
|------|----------------------------|------------------------------|---------------|------------------|-------|-------|-------|-------|-------|-------|
| | | | | 99th | 98th | 95th | 90th | 75th | 50th | 25th |
| 2005 | 72.6 | 0 | 0.037 | 0.035 | 0.029 | 0.020 | 0.015 | 0.008 | 0.005 | 0.002 |
| 2006 | 93.3 | 0 | 0.034 | 0.028 | 0.021 | 0.017 | 0.013 | 0.007 | 0.004 | 0.001 |
| 2007 | 44.5 | 0 | 0.043 | 0.032 | 0.025 | 0.021 | 0.014 | 0.008 | 0.005 | 0.003 |
| 2008 | 86.9 | 0 | 0.033 | 0.027 | 0.024 | 0.019 | 0.015 | 0.010 | 0.004 | 0.002 |
| 2009 | 69.7 | 0 | 0.039 | 0.033 | 0.027 | 0.021 | 0.015 | 0.008 | 0.005 | 0.002 |
| 2010 | 84.6 | 0 | 0.027 | 0.022 | 0.020 | 0.015 | 0.012 | 0.008 | 0.004 | 0.002 |
| 2011 | 90.7 | 0 | 0.033 | 0.027 | 0.023 | 0.017 | 0.014 | 0.008 | 0.005 | 0.001 |
| 2012 | 93.1 | 0 | 0.034 | 0.025 | 0.022 | 0.019 | 0.014 | 0.008 | 0.004 | 0.002 |
| 2013 | 95.1 | 0 | 0.052 | 0.030 | 0.024 | 0.017 | 0.015 | 0.009 | 0.004 | 0.002 |

AAQ NEPM standard: 0.200 ppm (1-hour average)

Table 100. Statistical summary for SO₂: Annual daily maximum 1-hour average concentrations. Station: Wallsend

| Year | Data availability rate (%) | Number of exceedences (days) | Maximum (ppm) | Percentile (ppm) | | | | | | |
|------|----------------------------|------------------------------|---------------|------------------|-------|-------|-------|-------|-------|-------|
| | | | | 99th | 98th | 95th | 90th | 75th | 50th | 25th |
| 2004 | 90.1 | 0 | 0.067 | 0.042 | 0.033 | 0.022 | 0.016 | 0.010 | 0.005 | 0.002 |
| 2005 | 93.4 | 0 | 0.048 | 0.033 | 0.027 | 0.021 | 0.017 | 0.009 | 0.005 | 0.002 |
| 2006 | 94.5 | 0 | 0.058 | 0.027 | 0.025 | 0.021 | 0.016 | 0.011 | 0.005 | 0.002 |
| 2007 | 83.9 | 0 | 0.039 | 0.032 | 0.027 | 0.022 | 0.018 | 0.010 | 0.005 | 0.002 |
| 2008 | 91.3 | 0 | 0.044 | 0.032 | 0.026 | 0.021 | 0.018 | 0.011 | 0.006 | 0.002 |
| 2009 | 67.2 | 0 | 0.044 | 0.028 | 0.025 | 0.019 | 0.014 | 0.009 | 0.005 | 0.001 |
| 2010 | 70.3 | 0 | 0.031 | 0.022 | 0.020 | 0.017 | 0.014 | 0.009 | 0.004 | 0.001 |
| 2011 | 93.7 | 0 | 0.044 | 0.031 | 0.024 | 0.018 | 0.014 | 0.008 | 0.004 | 0.001 |
| 2012 | 95.1 | 0 | 0.035 | 0.021 | 0.020 | 0.016 | 0.013 | 0.008 | 0.004 | 0.002 |
| 2013 | 92.2 | 0 | 0.050 | 0.028 | 0.021 | 0.016 | 0.012 | 0.007 | 0.004 | 0.002 |

AAQ NEPM standard:- 0.200 ppm (1-hour average)

Table 101. Statistical summary for SO₂: 24-hour average concentrations. Station: Blacktown¹/Prospect

| Year | Data availability rate (%) | Number of exceedences (days) | Maximum (ppm) | Percentile (ppm) | | | | | | |
|----------------------|----------------------------|------------------------------|---------------|------------------|-------|-------|-------|-------|-------|-------|
| | | | | 99th | 98th | 95th | 90th | 75th | 50th | 25th |
| 2004 ¹ | 40.7 | 0 | 0.004 | 0.004 | 0.003 | 0.003 | 0.002 | 0.002 | 0.001 | 0.001 |
| 2005–06 ² | | | | | | | | | | |
| 2007 | 67.1 | 0 | 0.005 | 0.003 | 0.003 | 0.002 | 0.002 | 0.001 | 0.001 | 0.000 |
| 2008 | 89.9 | 0 | 0.004 | 0.003 | 0.003 | 0.002 | 0.001 | 0.001 | 0.000 | 0.000 |
| 2009 | 96.4 | 0 | 0.003 | 0.003 | 0.002 | 0.002 | 0.002 | 0.001 | 0.000 | 0.000 |
| 2010 | 96.4 | 0 | 0.004 | 0.003 | 0.003 | 0.002 | 0.002 | 0.001 | 0.001 | 0.000 |
| 2011 | 97.8 | 0 | 0.003 | 0.003 | 0.002 | 0.002 | 0.001 | 0.001 | 0.001 | 0.000 |
| 2012 | 94.5 | 0 | 0.003 | 0.002 | 0.002 | 0.002 | 0.002 | 0.001 | 0.001 | 0.000 |
| 2013 | 93.4 | 0 | 0.004 | 0.003 | 0.002 | 0.002 | 0.002 | 0.001 | 0.001 | 0.000 |

² Blacktown station closed pending relocation
AAQ NEPM standard: 0.080 ppm (24-hour average)

Table 102. Statistical summary for SO₂: 24-hour average concentrations. Station: Bringelly

| Year | Data availability rate (%) | Number of exceedences (days) | Maximum (ppm) | Percentile (ppm) | | | | | | |
|------|----------------------------|------------------------------|---------------|------------------|-------|-------|-------|-------|-------|--------|
| | | | | 99th | 98th | 95th | 90th | 75th | 50th | 25th |
| 2004 | 94.8 | 0 | 0.002 | 0.002 | 0.001 | 0.001 | 0.001 | 0.000 | 0.000 | 0.000 |
| 2005 | 95.3 | 0 | 0.002 | 0.002 | 0.001 | 0.001 | 0.001 | 0.000 | 0.000 | 0.000 |
| 2006 | 95.3 | 0 | 0.002 | 0.002 | 0.001 | 0.001 | 0.001 | 0.000 | 0.000 | 0.000 |
| 2007 | 86.8 | 0 | 0.003 | 0.002 | 0.002 | 0.002 | 0.001 | 0.001 | 0.000 | 0.000 |
| 2008 | 92.3 | 0 | 0.003 | 0.002 | 0.002 | 0.002 | 0.001 | 0.001 | 0.000 | -0.001 |
| 2009 | 87.1 | 0 | 0.003 | 0.002 | 0.001 | 0.001 | 0.001 | 0.000 | 0.000 | -0.001 |
| 2010 | 85.8 | 0 | 0.002 | 0.002 | 0.001 | 0.001 | 0.001 | 0.000 | 0.000 | 0.000 |
| 2011 | 94.8 | 0 | 0.002 | 0.001 | 0.001 | 0.001 | 0.001 | 0.000 | 0.000 | 0.000 |
| 2012 | 98.4 | 0 | 0.002 | 0.002 | 0.001 | 0.001 | 0.001 | 0.001 | 0.000 | 0.000 |
| 2013 | 98.6 | 0 | 0.002 | 0.002 | 0.002 | 0.001 | 0.001 | 0.001 | 0.000 | 0.000 |

AAQ NEPM standard: 0.080 ppm (24-hour average)

Table 103. Statistical summary for SO₂: 24-hour average concentrations. Station: Chullora

| Year | Data availability rate (%) | Number of Exceedences (days) | Maximum (ppm) | Percentile (ppm) | | | | | | |
|------|----------------------------|------------------------------|---------------|------------------|-------|-------|-------|-------|-------|-------|
| | | | | 99th | 98th | 95th | 90th | 75th | 50th | 25th |
| 2005 | 71.8 | 0 | 0.005 | 0.004 | 0.003 | 0.003 | 0.002 | 0.001 | 0.001 | 0.000 |
| 2006 | 98.4 | 0 | 0.004 | 0.004 | 0.003 | 0.003 | 0.002 | 0.002 | 0.001 | 0.001 |
| 2007 | 89.3 | 0 | 0.004 | 0.004 | 0.003 | 0.003 | 0.002 | 0.001 | 0.001 | 0.000 |
| 2008 | 80.9 | 0 | 0.005 | 0.004 | 0.003 | 0.002 | 0.002 | 0.001 | 0.001 | 0.000 |
| 2009 | 94.5 | 0 | 0.005 | 0.004 | 0.003 | 0.003 | 0.002 | 0.001 | 0.001 | 0.000 |
| 2010 | 96.2 | 0 | 0.004 | 0.004 | 0.003 | 0.003 | 0.002 | 0.001 | 0.001 | 0.000 |
| 2011 | 96.7 | 0 | 0.005 | 0.003 | 0.003 | 0.002 | 0.002 | 0.001 | 0.001 | 0.000 |
| 2012 | 97.0 | 0 | 0.004 | 0.003 | 0.002 | 0.002 | 0.001 | 0.001 | 0.000 | 0.000 |
| 2013 | 97.3 | 0 | 0.003 | 0.003 | 0.002 | 0.002 | 0.001 | 0.001 | 0.001 | 0.000 |

AAQ NEPM standard: 0.080 ppm (24-hour average)

Table 104. Statistical summary for SO₂: 24-hour average concentrations. Station: Macarthur/Campbelltown West¹

| Year | Data availability rate (%) | Number of Exceedences (days) | Maximum (ppm) | Percentile (ppm) | | | | | | |
|-------------------|----------------------------|------------------------------|---------------|------------------|-------|-------|-------|-------|-------|-------|
| | | | | 99th | 98th | 95th | 90th | 75th | 50th | 25th |
| 2005 | 55.3 | 0 | 0.003 | 0.003 | 0.002 | 0.002 | 0.001 | 0.001 | 0.000 | 0.000 |
| 2006 | 97.3 | 0 | 0.003 | 0.003 | 0.002 | 0.002 | 0.001 | 0.001 | 0.000 | 0.000 |
| 2007 | 94.8 | 0 | 0.004 | 0.003 | 0.003 | 0.002 | 0.002 | 0.001 | 0.001 | 0.000 |
| 2008 | 97.0 | 0 | 0.004 | 0.003 | 0.003 | 0.002 | 0.002 | 0.001 | 0.000 | 0.000 |
| 2009 | 95.9 | 0 | 0.004 | 0.003 | 0.003 | 0.002 | 0.002 | 0.001 | 0.001 | 0.000 |
| 2010 | 97.0 | 0 | 0.003 | 0.002 | 0.002 | 0.001 | 0.001 | 0.001 | 0.000 | 0.000 |
| 2011 | 96.2 | 0 | 0.002 | 0.002 | 0.002 | 0.001 | 0.001 | 0.001 | 0.000 | 0.000 |
| 2012 ¹ | 54.6 | 0 | 0.002 | 0.002 | 0.002 | 0.001 | 0.001 | 0.001 | 0.000 | 0.000 |
| 2012 ¹ | 35.0 | 0 | 0.002 | 0.002 | 0.002 | 0.002 | 0.001 | 0.001 | 0.000 | 0.000 |
| 2013 ¹ | 99.2 | 0 | 0.002 | 0.002 | 0.002 | 0.002 | 0.001 | 0.001 | 0.000 | 0.000 |

AAQ NEPM standard: 0.080 ppm (24-hour average)

Table 105. Statistical summary for SO₂: 24-hour average concentrations. Station: Richmond

| Year | Data availability rate (%) | Number of exceedences (days) | Maximum (ppm) | Percentile (ppm) | | | | | | |
|------|----------------------------|------------------------------|---------------|------------------|-------|-------|-------|-------|-------|-------|
| | | | | 99th | 98th | 95th | 90th | 75th | 50th | 25th |
| 2004 | 92.9 | 0 | 0.004 | 0.002 | 0.002 | 0.002 | 0.001 | 0.001 | 0.000 | 0.000 |
| 2005 | 96.7 | 0 | 0.002 | 0.002 | 0.002 | 0.001 | 0.001 | 0.001 | 0.000 | 0.000 |
| 2006 | 95.9 | 0 | 0.003 | 0.002 | 0.002 | 0.002 | 0.001 | 0.001 | 0.000 | 0.000 |
| 2007 | 94.5 | 0 | 0.004 | 0.002 | 0.002 | 0.001 | 0.001 | 0.000 | 0.000 | 0.000 |
| 2008 | 74.9 | 0 | 0.003 | 0.002 | 0.001 | 0.001 | 0.001 | 0.000 | 0.000 | 0.000 |
| 2009 | 93.7 | 0 | 0.004 | 0.003 | 0.002 | 0.001 | 0.001 | 0.000 | 0.000 | 0.000 |
| 2010 | 97.5 | 0 | 0.002 | 0.002 | 0.001 | 0.001 | 0.001 | 0.000 | 0.000 | 0.000 |
| 2011 | 98.4 | 0 | 0.003 | 0.001 | 0.001 | 0.001 | 0.001 | 0.000 | 0.000 | 0.000 |
| 2012 | 86.3 | 0 | 0.002 | 0.002 | 0.001 | 0.001 | 0.001 | 0.000 | 0.000 | 0.000 |
| 2013 | 98.1 | 0 | 0.002 | 0.002 | 0.002 | 0.001 | 0.001 | 0.001 | 0.000 | 0.000 |

AAQ NEPM standard: 0.080 ppm (24-hour average)

Table 106. Statistical summary for SO₂: 24-hour average concentrations. Station: Wyong

| Year | Data availability rate (%) | Number of exceedences (days) | Maximum (ppm) | Percentile (ppm) | | | | | | |
|------|----------------------------|------------------------------|---------------|------------------|-------|-------|-------|-------|-------|-------|
| | | | | 99th | 98th | 95th | 90th | 75th | 50th | 25th |
| 2012 | 19.9 | 0 | 0.004 | 0.004 | 0.004 | 0.003 | 0.003 | 0.002 | 0.001 | 0.000 |
| 2013 | 98.1 | 0 | 0.005 | 0.004 | 0.003 | 0.002 | 0.002 | 0.001 | 0.000 | 0.000 |

Table 107. Statistical summary for SO₂: 24-hour average concentrations. Station: Albion Park¹/Albion Park South

| Year | Data availability rate (%) | Number of exceedences (days) | Maximum (ppm) | Percentile (ppm) | | | | | | |
|-------------------|----------------------------|------------------------------|---------------|------------------|-------|-------|-------|-------|-------|-------|
| | | | | 99th | 98th | 95th | 90th | 75th | 50th | 25th |
| 2004 ¹ | 97.0 | 0 | 0.009 | 0.007 | 0.006 | 0.004 | 0.003 | 0.001 | 0.000 | 0.000 |
| 2005 ¹ | 4.9 | 0 | 0.011 | 0.011 | 0.011 | 0.010 | 0.007 | 0.002 | 0.000 | 0.000 |
| 2006 | 89.3 | 0 | 0.010 | 0.008 | 0.007 | 0.004 | 0.003 | 0.001 | 0.000 | 0.000 |
| 2007 | 83.8 | 0 | 0.014 | 0.011 | 0.008 | 0.004 | 0.003 | 0.001 | 0.000 | 0.000 |
| 2008 | 97.0 | 0 | 0.008 | 0.006 | 0.005 | 0.004 | 0.003 | 0.002 | 0.000 | 0.000 |
| 2009 | 88.5 | 0 | 0.012 | 0.009 | 0.008 | 0.006 | 0.004 | 0.002 | 0.000 | 0.000 |
| 2010 | 97.8 | 0 | 0.011 | 0.010 | 0.008 | 0.006 | 0.003 | 0.001 | 0.000 | 0.000 |
| 2011 | 94.8 | 0 | 0.010 | 0.007 | 0.006 | 0.004 | 0.002 | 0.001 | 0.000 | 0.000 |
| 2012 | 96.4 | 0 | 0.010 | 0.004 | 0.004 | 0.003 | 0.002 | 0.001 | 0.000 | 0.000 |
| 2013 | 93.4 | 0 | 0.009 | 0.007 | 0.005 | 0.003 | 0.002 | 0.001 | 0.000 | 0.000 |

AAQ NEPM standard: 0.080 ppm (24-hour average)

Table 108. Statistical summary for SO₂: 24-hour average concentrations. Station: Wollongong

| Year | Data availability rate (%) | Number of exceedences (days) | Maximum (ppm) | Percentile (ppm) | | | | | | |
|------|----------------------------|------------------------------|---------------|------------------|-------|-------|-------|-------|-------|--------|
| | | | | 99th | 98th | 95th | 90th | 75th | 50th | 25th |
| 2004 | 97.0 | 0 | 0.015 | 0.007 | 0.005 | 0.003 | 0.002 | 0.001 | 0.001 | 0.000 |
| 2005 | 97.5 | 0 | 0.006 | 0.006 | 0.003 | 0.003 | 0.002 | 0.001 | 0.001 | 0.000 |
| 2006 | 98.9 | 0 | 0.007 | 0.005 | 0.004 | 0.003 | 0.002 | 0.001 | 0.001 | 0.000 |
| 2007 | 79.2 | 0 | 0.008 | 0.006 | 0.005 | 0.003 | 0.002 | 0.002 | 0.001 | 0.000 |
| 2008 | 79.8 | 0 | 0.007 | 0.004 | 0.003 | 0.003 | 0.002 | 0.001 | 0.000 | -0.001 |
| 2009 | 73.4 | 0 | 0.004 | 0.003 | 0.003 | 0.002 | 0.002 | 0.001 | 0.000 | -0.001 |
| 2010 | 92.9 | 0 | 0.008 | 0.005 | 0.004 | 0.002 | 0.002 | 0.001 | 0.000 | 0.000 |
| 2011 | 96.7 | 0 | 0.009 | 0.004 | 0.003 | 0.003 | 0.002 | 0.001 | 0.000 | 0.000 |
| 2012 | 99.2 | 0 | 0.005 | 0.004 | 0.003 | 0.002 | 0.001 | 0.001 | 0.000 | 0.000 |
| 2013 | 96.4 | 0 | 0.008 | 0.004 | 0.003 | 0.002 | 0.002 | 0.001 | 0.000 | 0.000 |

AAQ NEPM standard: 0.080 ppm (24-hour average)

Table 109. Statistical summary for SO₂: 24-hour average concentrations. Station: Newcastle

| Year | Data availability rate (%) | Number of exceedences (days) | Maximum (ppm) | Percentile (ppm) | | | | | | |
|------|----------------------------|------------------------------|---------------|------------------|-------|-------|-------|-------|-------|-------|
| | | | | 99th | 98th | 95th | 90th | 75th | 50th | 25th |
| 2005 | 75.3 | 0 | 0.008 | 0.006 | 0.005 | 0.004 | 0.003 | 0.002 | 0.001 | 0.000 |
| 2006 | 97.3 | 0 | 0.009 | 0.005 | 0.005 | 0.004 | 0.003 | 0.002 | 0.001 | 0.000 |
| 2007 | 45.8 | 0 | 0.012 | 0.012 | 0.007 | 0.005 | 0.003 | 0.002 | 0.001 | 0.000 |
| 2008 | 90.2 | 0 | 0.008 | 0.006 | 0.006 | 0.004 | 0.003 | 0.002 | 0.001 | 0.000 |
| 2009 | 73.4 | 0 | 0.010 | 0.008 | 0.006 | 0.004 | 0.004 | 0.002 | 0.001 | 0.000 |
| 2010 | 91.8 | 0 | 0.005 | 0.005 | 0.004 | 0.004 | 0.003 | 0.002 | 0.001 | 0.000 |
| 2011 | 98.9 | 0 | 0.009 | 0.006 | 0.005 | 0.005 | 0.004 | 0.002 | 0.001 | 0.000 |
| 2012 | 97.5 | 0 | 0.007 | 0.006 | 0.005 | 0.004 | 0.003 | 0.002 | 0.001 | 0.001 |
| 2013 | 98.6 | 0 | 0.007 | 0.006 | 0.005 | 0.004 | 0.003 | 0.002 | 0.001 | 0.000 |

AAQ NEPM standard: 0.080 ppm (24-hour average)

Table 110. Statistical summary for SO₂ - 24-hour average concentrations. Station: Wallsend

| Year | Data availability rate (%) | Number of exceedences (days) | Maximum (ppm) | Percentile (ppm) | | | | | | |
|------|----------------------------|------------------------------|---------------|------------------|-------|-------|-------|-------|-------|-------|
| | | | | 99th | 98th | 95th | 90th | 75th | 50th | 25th |
| 2004 | 92.9 | 0 | 0.014 | 0.008 | 0.006 | 0.004 | 0.003 | 0.002 | 0.001 | 0.001 |
| 2005 | 97.5 | 0 | 0.007 | 0.006 | 0.005 | 0.004 | 0.003 | 0.002 | 0.001 | 0.000 |
| 2006 | 98.9 | 0 | 0.009 | 0.007 | 0.005 | 0.004 | 0.003 | 0.002 | 0.001 | 0.000 |
| 2007 | 83.6 | 0 | 0.007 | 0.006 | 0.006 | 0.005 | 0.004 | 0.002 | 0.001 | 0.000 |
| 2008 | 95.4 | 0 | 0.007 | 0.006 | 0.006 | 0.005 | 0.004 | 0.002 | 0.001 | 0.001 |
| 2009 | 68.2 | 0 | 0.007 | 0.006 | 0.006 | 0.004 | 0.003 | 0.002 | 0.001 | 0.000 |
| 2010 | 74.2 | 0 | 0.007 | 0.005 | 0.004 | 0.003 | 0.003 | 0.002 | 0.001 | 0.000 |
| 2011 | 99.5 | 0 | 0.007 | 0.005 | 0.005 | 0.003 | 0.002 | 0.001 | 0.001 | 0.000 |
| 2012 | 99.7 | 0 | 0.005 | 0.004 | 0.004 | 0.003 | 0.002 | 0.002 | 0.001 | 0.000 |
| 2013 | 96.2 | 0 | 0.005 | 0.004 | 0.004 | 0.003 | 0.002 | 0.002 | 0.001 | 0.000 |

AAQ NEPM standard: 0.080 ppm (24-hour average)

Particles as PM₁₀

Statistical summary

Table 111. Statistical summary for PM₁₀: 24-hour average concentrations (2013)

| Region/Performance monitoring station | Data availability rate (%) | Maximum (µg/m³) | Percentile (µg/m³) | | | | | | |
|---------------------------------------|----------------------------|-----------------|--------------------|------|------|------|------|------|------|
| | | | 99th | 98th | 95th | 90th | 75th | 50th | 25th |
| Sydney | | | | | | | | | |
| Bringelly | 99.5 | 97.2 | 46.1 | 35.9 | 30.4 | 26.9 | 20.9 | 15.1 | 11.5 |
| Camden | 98.9 | 97.5 | 40.9 | 34.3 | 30.6 | 25.9 | 18.8 | 13.5 | 9.7 |
| Campbelltown West | 99.2 | 56.9 | 36.9 | 32.0 | 29.4 | 25.7 | 18.9 | 14.1 | 10.5 |
| Chullora | 99.5 | 69.4 | 50.8 | 39.0 | 32.3 | 28.0 | 21.6 | 17.1 | 13.0 |
| Liverpool | 97.5 | 98.5 | 45.3 | 40.3 | 36.8 | 31.9 | 26.3 | 19.5 | 14.2 |
| Oakdale | 100.0 | 99.0 | 70.3 | 31.6 | 27.7 | 22.5 | 16.8 | 11.3 | 7.9 |
| Prospect | 94.5 | 81.8 | 51.2 | 43.4 | 33.8 | 30.0 | 23.3 | 17.6 | 13.3 |
| Richmond | 97.8 | 104.6 | 69.9 | 45.9 | 35.7 | 27.8 | 20.4 | 14.6 | 11.1 |
| Rozelle | 96.7 | 58.5 | 42.9 | 39.5 | 33.6 | 29.3 | 21.9 | 16.6 | 12.5 |
| Central Coast | | | | | | | | | |
| Wyong | 98.6 | 70.7 | 40.8 | 36.9 | 32.4 | 28.6 | 20.3 | 14.3 | 10.4 |
| Illawarra | | | | | | | | | |
| Albion Park South | 96.7 | 69.0 | 45.4 | 40.8 | 32.7 | 25.1 | 17.6 | 12.6 | 8.7 |
| Kembla Grange | 99.7 | 102.2 | 56.0 | 46.7 | 37.4 | 31.2 | 23.0 | 15.9 | 11.9 |
| Wollongong | 98.9 | 93.8 | 54.1 | 49.3 | 37.2 | 29.7 | 20.9 | 15.3 | 10.5 |
| Lower Hunter | | | | | | | | | |
| Beresfield | 95.9 | 55.3 | 52.4 | 44.3 | 38.0 | 34.5 | 26.5 | 19.1 | 14.8 |
| Newcastle | 98.9 | 69.0 | 50.5 | 48.3 | 41.9 | 37.4 | 27.8 | 20.5 | 15.2 |
| Regional | | | | | | | | | |
| Albury | 98.6 | 59.2 | 47.8 | 42.5 | 30.7 | 26.4 | 18.8 | 13.6 | 10.4 |
| Bathurst | 99.7 | 145.0 | 46.9 | 43.7 | 32.4 | 25.3 | 17.3 | 12.7 | 9.4 |
| Tamworth | 98.4 | 47.5 | 43.8 | 35.9 | 30.7 | 27.0 | 20.4 | 15.2 | 11.3 |
| Wagga Wagga North | 98.9 | 110.7 | 67.9 | 57.8 | 47.2 | 40.5 | 27.9 | 18.9 | 12.8 |

Bold font indicates values that exceed the AAQ NEPM standard.AAQ NEPM standard: 50.0 µg/m³ (24-hour average)

Trend analysis

Table 112. Maximum 24-hour average concentrations for PM₁₀ (µg/m³)

| Region/Performance monitoring station | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 |
|---------------------------------------|--------------|--------------|--------------|--------------|--------------|---------------|-------------|--------------|--------------|---------------|
| Sydney | | | | | | | | | | |
| Blacktown*/Prospect | 44.1* | | | 46.3 | 41.8 | 1680.3 | 40.1 | 41.5 | 38.7 | 81.8 |
| Bringelly | 62.5 | 54.5 | 72.2 | 51.0 | 62.7 | 1683.9 | 41.1 | 86.0 | 40.1 | 97.2 |
| Camden | | | | | | | | | 35.6 | 97.5 |
| Chullora | 55.8 | 50.7 | 66.1 | 66.5 | 44.3 | 1474.7 | 42.1 | 65.2 | 52.4 | 69.4 |
| Liverpool | 62.1 | 55.5 | 75.2 | 53.1 | 53.8 | 1579.8 | 41.1 | 68.8 | 42.5 | 98.5 |
| Macarthur/Campbelltown West* | 60.6 | 53.2 | 92.3 | 53.1 | 65.5 | 1146.3 | 58.7 | 38.1 | 39.3* | 56.9* |
| Oakdale | 41.3 | 42.3 | 56.5 | 49.2 | 68.2 | 1528.3 | 33.3 | 54.7 | 38.9 | 99.0 |
| Richmond | 46.6 | 47.4 | 63.1 | 43.0 | 39.0 | 1637.3 | 37.0 | 46.2 | 99.2 | 104.6 |
| Rozelle | 54.1 | 46.8 | 50.3 | 54.4 | 43.1 | 1562.8 | 37.6 | 39.4 | 40.7 | 58.5 |
| Central Coast | | | | | | | | | | |
| Wyong | | | | | | | | | 37.4 | 70.7 |
| Illawarra | | | | | | | | | | |
| Albion Park South | | | 61.4 | 53.8 | 96.1 | 1359.6 | 41.8 | 51.0 | 43.9 | 69.0 |
| Kembla Grange | 58.8 | 60.5 | 86.0 | 59.2 | 100.8 | 1174.0 | 47.5 | 55.5 | 57.2 | 102.2 |
| Wollongong | 49.0 | 56.5 | 63.3 | 58.5 | 78.3 | 1145.4 | 49.6 | 48.5 | 47.5 | 93.8 |
| Lower Hunter | | | | | | | | | | |
| Beresfield | 53.1 | 53.1 | 51.9 | 64.0 | 59.9 | 1999.0 | 50.0 | 42.8 | 50.8 | 55.3 |
| Newcastle | 46.7 | 48.3 | 51.2 | 58.1 | 54.4 | 2426.8 | 57.1 | 49.2 | 48.7 | 69.0 |
| Regional | | | | | | | | | | |
| Albury | 56.0 | 56.9 | 213.0 | 212.8 | 124.8 | 249.7 | 60.8 | 28.0 | 54.4 | 59.2 |
| Bathurst | 68.5 | 44.9 | 59.6 | 162.8 | 63.0 | 2114.4 | 43.3 | 24.3 | 55.5 | 145.0 |
| Tamworth | 56.2 | 88.7 | 47.8 | 48.8 | 100.4 | 1791.4 | 29.1 | 50.9 | 55.1 | 47.5 |
| Wagga Wagga/ Wagga Wagga North* | 109.0 | 161.9 | 188.3 | 110.3 | 294.9 | 297.4 | 64.9 | 56.3* | 67.2* | 110.7* |

Bold font indicates values that exceed the AAQ NEPM standard.
AAQ NEPM standard: 50.0 µg/m³ (24-hour average)

Statistical summaries for multiple years, by station

Table 113. Statistical summary for PM₁₀: 24-hour average concentrations. Station: Blacktown¹/Prospect

| Year | Data availability rate (%) | Number of exceedences (days) | Maximum (µg/m ³) | Percentile (µg/m ³) | | | | | | |
|----------------------|----------------------------|------------------------------|------------------------------|---------------------------------|-------------|------|------|------|------|------|
| | | | | 99th | 98th | 95th | 90th | 75th | 50th | 25th |
| 2004 ¹ | 35.8 | 0 | 44.1 | 43.4 | 41.9 | 39.2 | 33.7 | 27.4 | 22.6 | 18.1 |
| 2005–06 ² | | | | | | | | | | |
| 2007 | 82.7 | 0 | 46.3 | 43.3 | 41.6 | 33.4 | 28.1 | 21.9 | 16.8 | 12.4 |
| 2008 | 88.5 | 0 | 41.8 | 39.6 | 35.0 | 32.6 | 27.5 | 21.0 | 16.4 | 12.8 |
| 2009 | 96.4 | 11 | 1680.3 | 135.3 | 60.7 | 38.9 | 32.3 | 24.1 | 18.2 | 13.5 |
| 2010 | 97.5 | 0 | 40.1 | 31.7 | 30.1 | 26.7 | 22.8 | 18.7 | 14.9 | 11.2 |
| 2011 | 93.2 | 0 | 41.5 | 36.2 | 31.7 | 27.4 | 24.3 | 19.3 | 15.1 | 10.9 |
| 2012 | 94.3 | 0 | 38.7 | 34.8 | 33.8 | 29.3 | 26.5 | 20.5 | 16.3 | 13.0 |
| 2013 | 94.5 | 4 | 81.8 | 51.2 | 43.4 | 33.8 | 30.0 | 23.3 | 17.6 | 13.3 |

² Blacktown station closed pending relocation

Bold font indicates values that exceed the AAQ NEPM standard.

AAQ NEPM standard: 50.0 µg/m³ (24-hour average)

Table 114. Statistical summary for PM₁₀: 24-hour average concentrations. Station: Bringelly

| Year | Data availability rate (%) | Number of exceedences (days) | Maximum (µg/m ³) | Percentile (µg/m ³) | | | | | | |
|------|----------------------------|------------------------------|------------------------------|---------------------------------|------|------|------|------|------|------|
| | | | | 99th | 98th | 95th | 90th | 75th | 50th | 25th |
| 2004 | 93.4 | 2 | 62.5 | 46.0 | 41.6 | 35.1 | 30.7 | 24.8 | 18.9 | 13.2 |
| 2005 | 92.1 | 2 | 54.5 | 46.5 | 43.5 | 35.7 | 30.8 | 23.8 | 18.4 | 13.7 |
| 2006 | 88.8 | 3 | 72.2 | 52.3 | 42.6 | 33.4 | 29.3 | 25.0 | 19.0 | 14.5 |
| 2007 | 99.5 | 1 | 51.0 | 48.5 | 42.4 | 33.5 | 30.3 | 23.7 | 16.6 | 12.0 |
| 2008 | 97.0 | 1 | 62.7 | 35.2 | 33.0 | 28.6 | 24.6 | 19.3 | 14.4 | 10.6 |
| 2009 | 94.8 | 6 | 1683.9 | 114.8 | 47.4 | 37.1 | 31.9 | 22.8 | 17.0 | 12.4 |
| 2010 | 97.3 | 0 | 41.1 | 37.5 | 33.9 | 29.1 | 23.7 | 18.5 | 14.4 | 10.7 |
| 2011 | 98.9 | 2 | 86.0 | 41.5 | 36.5 | 30.7 | 25.0 | 18.9 | 14.3 | 10.6 |
| 2012 | 99.9 | 0 | 40.1 | 34.6 | 30.2 | 27.1 | 24.7 | 19.0 | 14.9 | 11.2 |
| 2013 | 99.5 | 3 | 97.2 | 46.1 | 35.9 | 30.4 | 26.9 | 20.9 | 15.1 | 11.5 |

Bold font indicates values that exceed the AAQ NEPM standard. AAQ NEPM standard: 50.0 µg/m³ (24-hour average)

Table 115. Statistical summary for PM₁₀: 24-hour average concentrations. Station: Camden

| Year | Data availability rate (%) | Number of exceedences (days) | Maximum (µg/m ³) | Percentile (µg/m ³) | | | | | | |
|------|----------------------------|------------------------------|------------------------------|---------------------------------|------|------|------|------|------|------|
| | | | | 99th | 98th | 95th | 90th | 75th | 50th | 25th |
| 2012 | 19.1 | 0 | 35.6 | 35.5 | 34.5 | 31.1 | 28.6 | 23.6 | 20.0 | 14.8 |
| 2013 | 98.9 | 2 | 97.5 | 40.9 | 34.3 | 30.6 | 25.9 | 18.8 | 13.5 | 9.7 |

Bold font indicates values that exceed the AAQ NEPM standard.

AAQ NEPM standard: 50.0 µg/m³ (24-hour average)

Table 116. Statistical summary for PM₁₀: 24-hour average concentrations. Station: Chullora

| Year | Data availability rate (%) | Number of exceedences (days) | Maximum (µg/m ³) | Percentile (µg/m ³) | | | | | | |
|------|----------------------------|------------------------------|------------------------------|---------------------------------|-------------|------|------|------|------|------|
| | | | | 99th | 98th | 95th | 90th | 75th | 50th | 25th |
| 2004 | 90.7 | 3 | 55.8 | 49.8 | 46.2 | 39.0 | 34.2 | 27.2 | 21.2 | 16.1 |
| 2005 | 88.8 | 1 | 50.7 | 46.1 | 43.8 | 38.3 | 33.6 | 27.4 | 20.4 | 16.3 |
| 2006 | 97.0 | 3 | 66.1 | 49.2 | 38.6 | 34.4 | 31.1 | 26.4 | 21.3 | 16.5 |
| 2007 | 97.5 | 2 | 66.5 | 39.4 | 37.7 | 34.2 | 29.2 | 23.1 | 18.8 | 13.4 |
| 2008 | 97.0 | 0 | 44.3 | 38.8 | 36.5 | 33.0 | 30.2 | 23.7 | 18.6 | 13.9 |
| 2009 | 98.4 | 9 | 1474.7 | 121.0 | 58.7 | 38.1 | 32.7 | 25.0 | 19.9 | 14.8 |
| 2010 | 98.9 | 0 | 42.1 | 39.1 | 35.6 | 30.6 | 26.6 | 21.4 | 16.9 | 12.9 |
| 2011 | 99.2 | 7 | 65.2 | 55.8 | 49.0 | 38.1 | 30.7 | 23.1 | 18.1 | 13.6 |
| 2012 | 98.6 | 1 | 52.4 | 36.6 | 35.1 | 31.7 | 27.6 | 21.8 | 16.9 | 13.4 |
| 2013 | 99.5 | 4 | 69.4 | 50.8 | 39.0 | 32.3 | 28.0 | 21.6 | 17.1 | 13.0 |

Bold font indicates values that exceed the AAQ NEPM standard.

AAQ NEPM standard: 50.0 µg/m³ (24-hour average)

Table 117. Statistical summary for PM₁₀: 24-hour average concentrations. Station: Liverpool

| Year | Data availability rate (%) | Number of exceedences (days) | Maximum (µg/m ³) | Percentile (µg/m ³) | | | | | | |
|------|----------------------------|------------------------------|------------------------------|---------------------------------|-------------|------|------|------|------|------|
| | | | | 99th | 98th | 95th | 90th | 75th | 50th | 25th |
| 2004 | 91.5 | 1 | 62.1 | 46.6 | 44.7 | 36.8 | 32.9 | 26.3 | 20.6 | 14.8 |
| 2005 | 96.4 | 2 | 55.5 | 48.1 | 43.7 | 38.1 | 32.5 | 26.5 | 20.2 | 15.1 |
| 2006 | 95.9 | 3 | 75.2 | 50.5 | 40.8 | 35.0 | 31.6 | 26.3 | 20.5 | 16.0 |
| 2007 | 95.3 | 1 | 53.1 | 41.3 | 39.1 | 35.9 | 30.3 | 23.7 | 17.6 | 12.8 |
| 2008 | 92.9 | 1 | 53.8 | 36.2 | 33.6 | 30.1 | 26.6 | 21.7 | 16.9 | 12.2 |
| 2009 | 93.7 | 8 | 1579.8 | 114.8 | 59.5 | 38.8 | 31.7 | 25.1 | 18.4 | 14.3 |
| 2010 | 97.3 | 0 | 41.1 | 35.3 | 33.0 | 29.9 | 26.2 | 20.4 | 16.2 | 12.0 |
| 2011 | 69.0 | 1 | 68.8 | 46.1 | 37.5 | 33.1 | 27.7 | 21.7 | 16.9 | 13.0 |
| 2012 | 97.0 | 0 | 42.5 | 39.3 | 37.7 | 35.1 | 30.8 | 24.4 | 18.8 | 13.7 |
| 2013 | 97.5 | 3 | 98.5 | 45.3 | 40.3 | 36.8 | 31.9 | 26.3 | 19.5 | 14.2 |

Bold font indicates values that exceed the AAQ NEPM standard.

AAQ NEPM standard: 50.0 µg/m³ (24-hour average)

Table 118. Statistical summary for PM₁₀: 24-hour average concentrations. Station: Macarthur/Campbelltown West¹

| Year | Data availability rate (%) | Number of exceedences (days) | Maximum (µg/m ³) | Percentile (µg/m ³) | | | | | | |
|---------------------|----------------------------|------------------------------|------------------------------|---------------------------------|-------------|------|------|------|------|------|
| | | | | 99th | 98th | 95th | 90th | 75th | 50th | 25th |
| 2004 | 14.5 | 1 | 60.6 | 60.6 | 53.8 | 42.8 | 38.0 | 30.9 | 21.8 | 15.6 |
| 2005 | 83.6 | 1 | 53.2 | 46.6 | 41.9 | 35.7 | 31.3 | 24.4 | 18.1 | 13.7 |
| 2006 | 100.0 | 4 | 92.3 | 53.5 | 34.5 | 31.0 | 26.2 | 22.4 | 15.6 | 11.5 |
| 2007 | 96.4 | 1 | 53.1 | 38.0 | 36.7 | 29.8 | 25.8 | 20.1 | 14.7 | 10.4 |
| 2008 | 99.5 | 1 | 65.5 | 33.2 | 30.7 | 27.6 | 23.3 | 17.5 | 13.7 | 9.9 |
| 2009 | 96.7 | 7 | 1146.3 | 111.4 | 56.2 | 35.5 | 29.6 | 21.2 | 15.5 | 10.5 |
| 2010 | 99.5 | 1 | 58.7 | 35.7 | 30.9 | 26.8 | 21.5 | 16.7 | 12.5 | 9.5 |
| 2011 | 98.4 | 0 | 38.1 | 31.9 | 28.5 | 23.0 | 20.6 | 16.0 | 12.1 | 8.9 |
| 2012 | 54.6 | 0 | 33.9 | 28.3 | 26.3 | 21.8 | 18.8 | 15.6 | 12.2 | 8.8 |
| 2012 ⁽¹⁾ | 35.2 | 0 | 39.3 | 37.1 | 34.4 | 30.2 | 27.9 | 24.0 | 18.1 | 13.9 |
| 2013 ⁽¹⁾ | 99.2 | 1 | 56.9 | 36.9 | 32.0 | 29.4 | 25.7 | 18.9 | 14.1 | 10.5 |

Bold font indicates values that exceed the AAQ NEPM standard.

AAQ NEPM standard: 50.0 µg/m³ (24-hour average)

Table 119. Statistical summary for PM₁₀: 24-hour average concentrations. Station: Oakdale

| Year | Data availability rate (%) | Number of exceedences (days) | Maximum (µg/m ³) | Percentile (µg/m ³) | | | | | | |
|------|----------------------------|------------------------------|------------------------------|---------------------------------|------|------|------|------|------|------|
| | | | | 99th | 98th | 95th | 90th | 75th | 50th | 25th |
| 2004 | 56.8 | 0 | 41.3 | 36.3 | 28.7 | 23.8 | 19.2 | 15.7 | 10.1 | 6.4 |
| 2005 | 92.9 | 0 | 42.3 | 38.8 | 32.5 | 27.7 | 22.2 | 16.6 | 12.4 | 8.4 |
| 2006 | 96.4 | 1 | 56.5 | 35.8 | 33.9 | 28.6 | 23.6 | 17.8 | 12.6 | 8.5 |
| 2007 | 97.3 | 0 | 49.2 | 36.4 | 32.2 | 25.4 | 22.4 | 16.4 | 11.2 | 7.2 |
| 2008 | 96.7 | 1 | 68.2 | 33.9 | 31.0 | 27.0 | 21.3 | 15.5 | 10.7 | 7.2 |
| 2009 | 91.2 | 6 | 1528.3 | 130.2 | 48.4 | 30.6 | 25.5 | 19.5 | 12.7 | 7.5 |
| 2010 | 99.5 | 0 | 33.3 | 29.3 | 27.9 | 23.3 | 18.1 | 13.4 | 9.2 | 6.6 |
| 2011 | 99.5 | 1 | 54.7 | 28.1 | 24.9 | 21.3 | 17.3 | 13.1 | 9.6 | 6.9 |
| 2012 | 98.9 | 0 | 38.9 | 33.4 | 28.2 | 24.0 | 19.8 | 14.9 | 10.2 | 6.9 |
| 2013 | 100.0 | 4 | 99.0 | 70.3 | 31.6 | 27.7 | 22.5 | 16.8 | 11.3 | 7.9 |

Bold font indicates values that exceed the AAQ NEPM standard.

AAQ NEPM standard: 50.0 µg/m³ (24-hour average)

Table 120. Statistical summary for PM₁₀: 24-hour average concentrations. Station: Richmond

| Year | Data availability rate (%) | Number of exceedences (days) | Maximum (µg/m ³) | Percentile (µg/m ³) | | | | | | |
|------|----------------------------|------------------------------|------------------------------|---------------------------------|------|------|------|------|------|------|
| | | | | 99th | 98th | 95th | 90th | 75th | 50th | 25th |
| 2004 | 96.2 | 0 | 46.6 | 41.1 | 38.4 | 33.7 | 29.8 | 22.5 | 17.4 | 12.1 |
| 2005 | 97.0 | 0 | 47.4 | 43.8 | 37.3 | 30.3 | 25.8 | 20.1 | 15.3 | 11.5 |
| 2006 | 97.0 | 2 | 63.1 | 44.9 | 38.0 | 30.8 | 27.1 | 21.5 | 16.0 | 12.2 |
| 2007 | 98.4 | 0 | 43.0 | 34.4 | 33.4 | 28.6 | 24.3 | 18.6 | 13.6 | 10.0 |
| 2008 | 98.4 | 0 | 39.0 | 30.9 | 28.3 | 24.9 | 20.2 | 16.0 | 11.9 | 9.1 |
| 2009 | 95.9 | 6 | 1637.3 | 121.7 | 46.1 | 32.9 | 28.0 | 19.4 | 13.4 | 9.6 |
| 2010 | 96.2 | 0 | 37.0 | 30.2 | 26.9 | 24.6 | 20.6 | 15.9 | 12.0 | 9.2 |
| 2011 | 98.9 | 0 | 46.2 | 32.3 | 29.7 | 25.3 | 21.3 | 15.9 | 11.8 | 8.9 |
| 2012 | 95.9 | 3 | 99.2 | 43.7 | 33.8 | 28.6 | 24.8 | 17.6 | 12.9 | 10.2 |
| 2013 | 97.8 | 5 | 104.6 | 69.9 | 45.9 | 35.7 | 27.8 | 20.4 | 14.6 | 11.1 |

Bold font indicates values that exceed the AAQ NEPM standard.

AAQ NEPM standard: 50.0 µg/m³ (24-hour average)

Table 121. Statistical summary for PM₁₀: 24-hour average concentrations. Station: Rozelle

| Year | Data availability rate (%) | Number of exceedences (days) | Maximum (µg/m ³) | Percentile (µg/m ³) | | | | | | |
|------|----------------------------|------------------------------|------------------------------|---------------------------------|-------------|------|------|------|------|------|
| | | | | 99th | 98th | 95th | 90th | 75th | 50th | 25th |
| 2004 | 92.3 | 1 | 54.1 | 43.8 | 38.8 | 34.0 | 30.1 | 24.6 | 19.3 | 14.0 |
| 2005 | 95.1 | 0 | 46.8 | 42.6 | 39.3 | 35.2 | 31.4 | 24.3 | 18.8 | 14.9 |
| 2006 | 94.0 | 1 | 50.3 | 45.0 | 38.8 | 33.6 | 29.3 | 24.7 | 19.4 | 15.4 |
| 2007 | 97.5 | 1 | 54.4 | 38.2 | 36.1 | 30.7 | 27.1 | 21.7 | 17.2 | 13.2 |
| 2008 | 96.4 | 0 | 43.1 | 34.0 | 32.6 | 28.7 | 26.0 | 20.6 | 16.7 | 12.9 |
| 2009 | 95.3 | 8 | 1562.8 | 128.5 | 55.8 | 36.1 | 31.0 | 24.3 | 17.8 | 13.1 |
| 2010 | 98.9 | 0 | 37.6 | 31.1 | 29.3 | 26.8 | 24.3 | 19.6 | 15.6 | 12.1 |
| 2011 | 98.4 | 0 | 39.4 | 34.7 | 32.3 | 27.2 | 24.5 | 20.5 | 15.7 | 12.0 |
| 2012 | 99.5 | 0 | 40.7 | 35.4 | 32.1 | 29.4 | 25.6 | 20.3 | 15.7 | 12.3 |
| 2013 | 96.7 | 3 | 58.5 | 42.9 | 39.5 | 33.6 | 29.3 | 21.9 | 16.6 | 12.5 |

Bold font indicates values that exceed the AAQ NEPM standard.

AAQ NEPM standard: 50.0 µg/m³ (24-hour average)

Table 122. Statistical summary for PM₁₀: 24-hour average concentrations. Station: Wyong

| Year | Data availability rate (%) | Number of exceedences (days) | Maximum (µg/m ³) | Percentile (µg/m ³) | | | | | | |
|------|----------------------------|------------------------------|------------------------------|---------------------------------|------|------|------|------|------|------|
| | | | | 99th | 98th | 95th | 90th | 75th | 50th | 25th |
| 2012 | 19.9 | 0 | 37.4 | 37.2 | 35.4 | 31.3 | 30.4 | 26.9 | 21.7 | 17.1 |
| 2013 | 98.6 | 1 | 70.7 | 40.8 | 36.9 | 32.4 | 28.6 | 20.3 | 14.3 | 10.4 |

Bold font indicates values that exceed the AAQ NEPM standard.

AAQ NEPM standard: 50.0 µg/m³ (24-hour average)

Table 123. Statistical summary for PM₁₀: 24-hour average concentrations. Station: Albion Park South

| Year | Data availability rate (%) | Number of exceedences (days) | Maximum (µg/m ³) | Percentile (µg/m ³) | | | | | | |
|------|----------------------------|------------------------------|------------------------------|---------------------------------|-------------|------|------|------|------|------|
| | | | | 99th | 98th | 95th | 90th | 75th | 50th | 25th |
| 2006 | 85.8 | 2 | 61.4 | 42.3 | 38.6 | 35.9 | 29.4 | 21.7 | 15.3 | 10.5 |
| 2007 | 88.5 | 1 | 53.8 | 42.6 | 37.8 | 33.4 | 28.4 | 20.8 | 13.6 | 8.7 |
| 2008 | 97.0 | 1 | 96.1 | 40.0 | 35.3 | 29.7 | 25.2 | 18.2 | 13.0 | 9.4 |
| 2009 | 99.5 | 9 | 1359.6 | 73.0 | 50.7 | 38.0 | 31.6 | 22.8 | 15.4 | 10.1 |
| 2010 | 96.7 | 0 | 41.8 | 37.2 | 35.6 | 29.0 | 24.7 | 18.4 | 11.6 | 8.6 |
| 2011 | 98.9 | 1 | 51.0 | 34.9 | 31.6 | 27.2 | 23.5 | 17.0 | 11.9 | 8.6 |
| 2012 | 98.4 | 0 | 43.9 | 36.0 | 32.7 | 26.9 | 22.9 | 16.7 | 11.9 | 8.6 |
| 2013 | 96.7 | 2 | 69.0 | 45.4 | 40.8 | 32.7 | 25.1 | 17.6 | 12.6 | 8.7 |

Bold font indicates values that exceed the AAQ NEPM standard.

AAQ NEPM standard: 50.0 µg/m³ (24-hour average)

Table 124. Statistical summary for PM₁₀: 24-hour average concentrations. Station: Kembla Grange

| Year | Data availability rate (%) | Number of Exceedences (days) | Maximum (µg/m ³) | Percentile (µg/m ³) | | | | | | |
|------|----------------------------|------------------------------|------------------------------|---------------------------------|-------------|------|------|------|------|------|
| | | | | 99th | 98th | 95th | 90th | 75th | 50th | 25th |
| 2004 | 57.4 | 1 | 58.8 | 46.8 | 43.3 | 37.0 | 30.3 | 21.8 | 14.9 | 10.5 |
| 2005 | 97.8 | 4 | 60.5 | 50.8 | 46.8 | 39.1 | 33.6 | 23.4 | 17.1 | 12.2 |
| 2006 | 99.2 | 9 | 86.0 | 69.6 | 54.5 | 40.4 | 34.5 | 26.0 | 18.7 | 13.0 |
| 2007 | 99.5 | 5 | 59.2 | 50.5 | 46.6 | 39.0 | 33.2 | 24.3 | 17.7 | 12.1 |
| 2008 | 98.6 | 4 | 100.8 | 52.8 | 42.0 | 33.3 | 30.3 | 23.4 | 16.7 | 11.1 |
| 2009 | 99.2 | 14 | 1174.0 | 134.4 | 67.0 | 42.5 | 34.0 | 25.5 | 18.0 | 11.5 |
| 2010 | 98.6 | 0 | 47.5 | 42.7 | 39.5 | 33.4 | 28.4 | 22.7 | 16.2 | 11.7 |
| 2011 | 98.9 | 1 | 55.5 | 45.9 | 39.7 | 33.6 | 29.1 | 21.1 | 15.0 | 9.9 |
| 2012 | 98.4 | 3 | 57.2 | 45.5 | 42.6 | 37.1 | 29.7 | 23.7 | 16.5 | 11.9 |
| 2013 | 99.7 | 4 | 102.2 | 56.0 | 46.7 | 37.4 | 31.2 | 23.0 | 15.9 | 11.9 |

Bold font indicates values that exceed the AAQ NEPM standard.

AAQ NEPM standard: 50.0 µg/m³ (24-hour average)

Table 125. Statistical summary for PM₁₀: 24-hour average concentrations. Station: Wollongong

| Year | Data availability rate (%) | Number of exceedences (days) | Maximum (µg/m ³) | Percentile (µg/m ³) | | | | | | |
|------|----------------------------|------------------------------|------------------------------|---------------------------------|------|------|------|------|------|------|
| | | | | 99th | 98th | 95th | 90th | 75th | 50th | 25th |
| 2004 | 97.0 | 0 | 49.0 | 46.2 | 42.3 | 36.7 | 30.6 | 23.4 | 17.4 | 12.2 |
| 2005 | 97.3 | 1 | 56.5 | 45.6 | 41.9 | 34.5 | 29.8 | 23.6 | 16.7 | 12.6 |
| 2006 | 96.4 | 4 | 63.3 | 52.6 | 46.7 | 37.5 | 32.3 | 25.1 | 18.5 | 13.0 |
| 2007 | 95.3 | 3 | 58.5 | 49.3 | 42.7 | 37.8 | 31.8 | 24.7 | 18.3 | 13.1 |
| 2008 | 94.5 | 1 | 78.3 | 41.0 | 36.8 | 31.2 | 28.7 | 21.5 | 16.3 | 12.1 |
| 2009 | 95.9 | 6 | 1145.4 | 107.0 | 49.5 | 40.3 | 34.7 | 24.5 | 18.8 | 12.6 |
| 2010 | 95.1 | 0 | 49.6 | 44.2 | 40.2 | 31.9 | 28.3 | 22.4 | 15.8 | 12.1 |
| 2011 | 96.7 | 0 | 48.5 | 42.4 | 37.7 | 32.6 | 26.3 | 21.0 | 15.8 | 11.4 |
| 2012 | 98.6 | 0 | 47.5 | 38.2 | 36.1 | 33.4 | 28.8 | 22.8 | 16.5 | 12.2 |
| 2013 | 98.9 | 6 | 93.8 | 54.1 | 49.3 | 37.2 | 29.7 | 20.9 | 15.3 | 10.5 |

Bold font indicates values that exceed the AAQ NEPM standard.
AAQ NEPM standard: 50.0 µg/m³ (24-hour average)

Table 126. Statistical summary for PM₁₀: 24-hour average concentrations. Station: Beresfield

| Year | Data availability rate (%) | Number of exceedences (days) | Maximum (µg/m ³) | Percentile (µg/m ³) | | | | | | |
|------|----------------------------|------------------------------|------------------------------|---------------------------------|-------------|------|------|------|------|------|
| | | | | 99th | 98th | 95th | 90th | 75th | 50th | 25th |
| 2004 | 87.2 | 1 | 53.1 | 47.2 | 43.8 | 39.2 | 33.1 | 24.9 | 19.3 | 14.0 |
| 2005 | 95.9 | 1 | 53.1 | 44.3 | 41.1 | 37.0 | 31.7 | 25.2 | 18.6 | 14.6 |
| 2006 | 96.4 | 2 | 51.9 | 44.5 | 43.2 | 36.8 | 34.2 | 26.7 | 18.7 | 14.6 |
| 2007 | 90.1 | 5 | 64.0 | 55.1 | 49.3 | 41.8 | 32.1 | 25.2 | 18.4 | 13.1 |
| 2008 | 95.4 | 5 | 59.9 | 52.5 | 38.3 | 32.3 | 27.3 | 21.5 | 16.9 | 13.4 |
| 2009 | 98.6 | 15 | 1999.0 | 174.3 | 70.6 | 47.7 | 35.3 | 26.2 | 18.4 | 14.2 |
| 2010 | 97.0 | 0 | 50.0 | 37.7 | 32.1 | 28.3 | 24.7 | 20.0 | 15.4 | 12.3 |
| 2011 | 95.1 | 0 | 42.8 | 39.9 | 35.8 | 29.3 | 25.5 | 21.3 | 16.1 | 12.5 |
| 2012 | 99.2 | 1 | 50.8 | 47.4 | 44.1 | 39.2 | 32.4 | 25.8 | 19.6 | 15.2 |
| 2013 | 95.9 | 5 | 55.3 | 52.4 | 44.3 | 38.0 | 34.5 | 26.5 | 19.1 | 14.8 |

Bold font indicates values that exceed the AAQ NEPM standard.
AAQ NEPM standard: 50.0 µg/m³ (24-hour average)

Table 127. Statistical summary for PM₁₀: 24-hour average concentrations. Station: Newcastle

| Year | Data availability rate (%) | Number of exceedences (days) | Maximum (µg/m ³) | Percentile (µg/m ³) | | | | | | |
|------|----------------------------|------------------------------|------------------------------|---------------------------------|-------------|------|------|------|------|------|
| | | | | 99th | 98th | 95th | 90th | 75th | 50th | 25th |
| 2004 | 19.4 | 0 | 46.7 | 46.6 | 46.6 | 39.4 | 34.1 | 27.3 | 21.7 | 17.0 |
| 2005 | 81.6 | 0 | 48.3 | 41.7 | 39.3 | 35.7 | 31.8 | 26.4 | 20.9 | 16.5 |
| 2006 | 97.3 | 1 | 51.2 | 43.2 | 38.1 | 34.2 | 30.8 | 25.6 | 20.5 | 15.8 |
| 2007 | 47.1 | 3 | 58.1 | 56.8 | 49.9 | 39.5 | 33.6 | 26.8 | 21.5 | 17.2 |
| 2008 | 93.2 | 2 | 54.4 | 44.2 | 39.6 | 34.4 | 31.4 | 24.8 | 19.1 | 15.1 |
| 2009 | 93.2 | 13 | 2426.8 | 119.5 | 71.2 | 44.9 | 37.0 | 28.1 | 22.3 | 16.5 |
| 2010 | 96.2 | 1 | 57.1 | 38.7 | 34.7 | 30.3 | 27.3 | 23.1 | 17.9 | 13.7 |
| 2011 | 99.5 | 0 | 49.2 | 42.6 | 38.7 | 32.4 | 29.6 | 24.0 | 18.2 | 13.6 |
| 2012 | 98.9 | 0 | 48.7 | 43.3 | 41.8 | 36.2 | 32.5 | 26.0 | 18.8 | 14.4 |
| 2013 | 98.9 | 4 | 69.0 | 50.5 | 48.3 | 41.9 | 37.4 | 27.8 | 20.5 | 15.2 |

Bold font indicates values that exceed the AAQ NEPM standard.
AAQ NEPM standard: 50.0 µg/m³ (24-hour average)

Table 128. Statistical summary for PM₁₀: 24-hour average concentrations. Station: Albury

| Year | Data availability rate (%) | Number of exceedences (days) | Maximum (µg/m ³) | Percentile (µg/m ³) | | | | | | |
|------|----------------------------|------------------------------|------------------------------|---------------------------------|--------------|------|------|------|------|------|
| | | | | 99th | 98th | 95th | 90th | 75th | 50th | 25th |
| 2004 | 77.3 | 2 | 56.0 | 45.0 | 41.0 | 36.7 | 32.2 | 18.6 | 13.2 | 9.9 |
| 2005 | 90.1 | 3 | 56.9 | 50.4 | 41.0 | 36.2 | 30.7 | 20.4 | 14.3 | 10.9 |
| 2006 | 87.9 | 14 | 213.0 | 114.8 | 75.8 | 48.1 | 35.4 | 24.0 | 17.8 | 13.3 |
| 2007 | 91.2 | 11 | 212.8 | 117.3 | 91.5 | 44.9 | 31.4 | 22.3 | 15.2 | 11.0 |
| 2008 | 96.4 | 8 | 124.8 | 67.8 | 53.5 | 40.2 | 29.7 | 20.7 | 14.3 | 9.9 |
| 2009 | 96.7 | 15 | 249.7 | 144.0 | 102.0 | 39.0 | 28.5 | 19.3 | 14.0 | 10.1 |
| 2010 | 99.5 | 2 | 60.8 | 45.1 | 31.6 | 24.1 | 19.4 | 14.6 | 11.2 | 8.6 |
| 2011 | 90.7 | 0 | 28.0 | 25.2 | 23.7 | 19.9 | 17.9 | 14.5 | 11.9 | 9.2 |
| 2012 | 92.1 | 1 | 54.4 | 38.7 | 32.3 | 25.8 | 21.3 | 16.7 | 12.8 | 10.2 |
| 2013 | 98.6 | 2 | 59.2 | 47.8 | 42.5 | 30.7 | 26.4 | 18.8 | 13.6 | 10.4 |

Bold font indicates values that exceed the AAQ NEPM standard.
AAQ NEPM standard: 50.0 µg/m³ (24-hour average)

Table 129. Statistical summary for PM₁₀: 24-hour average concentrations. Station: Bathurst

| Year | Data availability rate (%) | Number of exceedences (days) | Maximum (µg/m ³) | Percentile (µg/m ³) | | | | | | |
|------|----------------------------|------------------------------|------------------------------|---------------------------------|-------------|------|------|------|------|------|
| | | | | 99th | 98th | 95th | 90th | 75th | 50th | 25th |
| 2004 | 88.5 | 4 | 68.5 | 54.9 | 47.0 | 39.0 | 33.0 | 24.4 | 15.3 | 9.8 |
| 2005 | 93.2 | 0 | 44.9 | 40.8 | 36.3 | 30.4 | 25.4 | 18.6 | 12.9 | 8.9 |
| 2006 | 98.6 | 3 | 59.6 | 46.0 | 44.3 | 35.2 | 28.6 | 22.3 | 15.4 | 11.5 |
| 2007 | 95.1 | 2 | 162.8 | 48.6 | 38.9 | 32.0 | 26.6 | 19.2 | 13.5 | 9.2 |
| 2008 | 94.8 | 1 | 63.0 | 40.8 | 35.9 | 28.8 | 24.1 | 16.9 | 12.3 | 8.8 |
| 2009 | 97.8 | 12 | 2114.4 | 122.4 | 69.8 | 36.9 | 26.8 | 20.3 | 13.8 | 9.0 |
| 2010 | 98.6 | 0 | 43.3 | 32.6 | 26.7 | 21.2 | 18.5 | 12.5 | 7.9 | 5.0 |
| 2011 | 97.3 | 0 | 24.3 | 23.2 | 21.1 | 18.6 | 17.5 | 13.8 | 10.3 | 7.8 |
| 2012 | 99.5 | 2 | 55.5 | 31.0 | 28.1 | 24.2 | 21.3 | 16.4 | 12.2 | 9.2 |
| 2013 | 99.7 | 3 | 145.0 | 46.9 | 43.7 | 32.4 | 25.3 | 17.3 | 12.7 | 9.4 |

Bold font indicates values that exceed the AAQ NEPM standard.
AAQ NEPM standard:— 50.0 µg/m³ (24-hour average)

Table 130. Statistical summary for PM₁₀: 24-hour average concentrations. Station: Tamworth

| Year | Data availability rate (%) | Number of exceedences (days) | Maximum (µg/m ³) | Percentile (µg/m ³) | | | | | | |
|------|----------------------------|------------------------------|------------------------------|---------------------------------|--------------|------|------|------|------|------|
| | | | | 99th | 98th | 95th | 90th | 75th | 50th | 25th |
| 2004 | 79.2 | 2 | 56.2 | 47.0 | 40.4 | 34.8 | 31.0 | 24.8 | 19.4 | 15.4 |
| 2005 | 68.2 | 2 | 88.7 | 42.9 | 33.7 | 29.8 | 27.4 | 20.6 | 14.8 | 10.6 |
| 2006 | 79.2 | 0 | 47.8 | 39.0 | 36.7 | 29.3 | 26.7 | 21.3 | 15.0 | 11.0 |
| 2007 | 73.7 | 0 | 48.8 | 42.3 | 34.5 | 30.3 | 26.2 | 19.4 | 14.7 | 10.1 |
| 2008 | 85.8 | 3 | 100.4 | 52.0 | 40.7 | 30.5 | 23.8 | 18.7 | 14.0 | 10.5 |
| 2009 | 96.7 | 17 | 1791.4 | 235.9 | 120.7 | 47.0 | 33.8 | 22.8 | 15.7 | 11.4 |
| 2010 | 98.4 | 0 | 29.1 | 26.5 | 24.6 | 21.8 | 18.4 | 14.7 | 11.2 | 8.3 |
| 2011 | 96.7 | 1 | 50.9 | 34.0 | 27.4 | 22.4 | 19.2 | 15.8 | 12.3 | 9.1 |
| 2012 | 98.9 | 1 | 55.1 | 47.0 | 38.0 | 27.8 | 24.3 | 19.5 | 14.3 | 10.7 |
| 2013 | 98.4 | 0 | 47.5 | 43.8 | 35.9 | 30.7 | 27.0 | 20.4 | 15.2 | 11.3 |

Bold font indicates values that exceed the AAQ NEPM standard.
AAQ NEPM standard: 50.0 µg/m³ (24-hour average)

Table 131. Statistical summary for PM₁₀: 24-hour average concentrations. Station: Wagga Wagga / Wagga Wagga North¹

| Year | Data availability rate (%) | Number of exceedences (days) | Maximum (µg/m ³) | Percentile (µg/m ³) | | | | | | |
|-------------------|----------------------------|------------------------------|------------------------------|---------------------------------|--------------|-------------|-------------|------|------|------|
| | | | | 99th | 98th | 95th | 90th | 75th | 50th | 25th |
| 2004 | 91.0 | 28 | 109.0 | 70.5 | 68.5 | 61.3 | 47.0 | 33.2 | 21.5 | 13.8 |
| 2005 | 90.7 | 27 | 161.9 | 80.9 | 72.4 | 59.5 | 46.4 | 30.4 | 19.8 | 14.1 |
| 2006 | 95.6 | 37 | 188.3 | 110.0 | 86.8 | 61.1 | 50.7 | 36.2 | 24.9 | 16.9 |
| 2007 | 97.5 | 34 | 110.3 | 82.0 | 75.2 | 61.0 | 47.5 | 33.0 | 21.7 | 14.8 |
| 2008 | 93.7 | 23 | 294.9 | 70.6 | 62.6 | 53.2 | 45.1 | 28.4 | 21.0 | 14.5 |
| 2009 | 82.5 | 21 | 297.4 | 214.4 | 112.3 | 55.9 | 46.2 | 30.6 | 19.8 | 12.4 |
| 2010 | 97.0 | 6 | 64.9 | 52.1 | 48.5 | 38.7 | 29.0 | 21.5 | 15.4 | 10.0 |
| 2011 ¹ | 96.3 | 0 | 39.2 | 33.9 | 31.5 | 27.5 | 24.1 | 19.1 | 14.4 | 10.5 |
| 2012 ¹ | 98.4 | 1 | 67.2 | 46.5 | 43.1 | 37.4 | 32.6 | 23.1 | 16.6 | 12.4 |
| 2013 ¹ | 98.9 | 15 | 110.7 | 67.9 | 57.8 | 47.2 | 40.5 | 27.9 | 18.9 | 12.8 |

Bold font indicates values that exceed the AAQ NEPM standard.

AAQ NEPM standard: 50.0 µg/m³ (24-hour average)

Particles as PM_{2.5}

Continuous TEOM PM_{2.5} data from 2010

The current USEPA-approved method for PM_{2.5} compliance monitoring method is a non-continuous (batch), 1-day-in-3 technique that requires pre- and post-laboratory weighing. As this involves a significant delay in acquiring data, jurisdictions use continuous techniques to enable near real-time reporting of air quality via the web, as expected by the community (e.g. by using TEOM, or BAM monitors). The Federal government's [PM_{2.5} AAQ NEPM variation](#) requires the reporting of all PM_{2.5} data, including the compliance method and the continuous monitoring technique to be used.

In reports prior to 2010, continuous TEOM PM_{2.5} data were recorded with the internal USEPA PM₁₀ equivalency factors (of A = 3 and B = 1.03 where y = A + Bx) applied to assessments of continuous TEOM PM_{2.5} data. Removing the PM₁₀ equivalency factor has brought the NSW reporting in harmony with that of other Australian jurisdictions. This approach also better approximates data derived from the reference method specified in the PM_{2.5} AAQ NEPM variation.

Continuous PM_{2.5} monitoring techniques from 2012

During 2012, a staged rollout was undertaken to replace continuous TEOM PM_{2.5} monitors with a USEPA-equivalent method, namely the use of BAMs. The BAM method differs from TEOM in terms of sample treatment, using lower temperatures intermittently to reduce moisture levels in the sample stream. This is intended to promote greater retention of volatile components adsorbed to the fine particulate matter.

Statistical summary: BAM method

Table 132. Statistical summary for PM_{2.5}: daily 24-hour average concentrations (2013) – continuous BAM method

| Region/Performance monitoring station | Data availability rate (%) | Maximum (µg/m ³) | Percentile (µg/m ³) | | | | | | |
|---------------------------------------|----------------------------|------------------------------|---------------------------------|------|------|------|------|------|------|
| | | | 99th | 98th | 95th | 90th | 75th | 50th | 25th |
| Sydney | | | | | | | | | |
| Camden | 99.7 | 61.9 | 24.8 | 16.7 | 13.2 | 10.9 | 8.0 | 5.5 | 3.8 |
| Chullora | 98.6 | 49.1 | 22.4 | 19.9 | 15.9 | 13.6 | 10.6 | 7.2 | 5.3 |
| Earlwood | 91.2 | 37.3 | 27.4 | 20.8 | 16.6 | 13.5 | 9.8 | 6.6 | 4.7 |
| Liverpool | 93.2 | 73.8 | 24.4 | 22.1 | 18.7 | 16.0 | 11.7 | 8.1 | 5.8 |
| Richmond | 95.1 | 68.0 | 40.8 | 31.4 | 24.3 | 14.8 | 9.9 | 6.0 | 4.2 |
| Central Coast | | | | | | | | | |
| Wyang | 94.2 | 43.7 | 20.7 | 16.7 | 12.6 | 11.0 | 8.1 | 5.8 | 4.1 |
| Illawarra | | | | | | | | | |
| Wollongong | 94.8 | 88.4 | 28.8 | 21.5 | 15.5 | 12.8 | 9.2 | 6.4 | 4.6 |
| Lower Hunter | | | | | | | | | |
| Beresfield | 94.2 | 38.4 | 22.8 | 20.4 | 15.9 | 13.3 | 10.3 | 7.2 | 5.1 |
| Wallsend | 96.2 | 37.0 | 29.1 | 22.5 | 16.6 | 13.1 | 9.6 | 6.2 | 4.5 |

Bold font indicates values in excess of the ARS.

AAQ NEPM advisory reporting standard (ARS): 25.0 µg/m³ (24-hour average)

Trend data: TEOM and BAM methods

Annual averages and annual maximum 24-hour averages for all stations are given below.

Table 133. Maximum 24-hour average concentrations for PM_{2.5} (µg/m³): continuous TEOM and BAM* methods

| Region/Performance monitoring station | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013* |
|---------------------------------------|-------------|-------------|-------------|------|-------------|--------------|-------------|-------------|--------------|-------------|
| Sydney | | | | | | | | | | |
| Camden | | | | | | | | | 19.5 | 61.9 |
| Chullora | 23.5 | 25.4 | 32.8 | 20.5 | 19.5 | 183.2 | 24.2 | 23.9 | 23.7 | 49.1 |
| Earlwood | 20.1 | 26.8 | 29.1 | 19.8 | 18.2 | 186.7 | 22.5 | 23.6 | 20.7 | 37.3 |
| Liverpool | 38.9 | 30.7 | 48.1 | 23.0 | 32.2 | 268.1 | 21.8 | 38.0 | 24.9 | 73.8 |
| Richmond | 23.3 | 22.7 | 31.6 | 21.1 | 17.7 | 148.9 | 20.8 | 42.9 | 116.7 | 68.0 |
| Central Coast | | | | | | | | | | |
| Wyang | | | | | | | | | 14.7 | 43.7 |
| Illawarra | | | | | | | | | | |
| Wollongong | 22.6 | 22.1 | 26.6 | 22.5 | 14.6 | 241.0 | 23.5 | 17.7 | 15.6 | 88.4 |
| Lower Hunter | | | | | | | | | | |
| Beresfield | 27.8 | 19.5 | 24.9 | 23.0 | 16.9 | 230.8 | 25.9 | 18.8 | 22.4 | 38.4 |
| Wallsend | 23.5 | 18.0 | 25.6 | 18.2 | 22.8 | 415.6 | 18.8 | 16.2 | 16.2 | 37.0 |

Bold font indicates values in excess of the ARS.

AAQ NEPM advisory reporting standard (ARS): 25.0 µg/m³ (24-hour average)

All PM_{2.5} TEOM data use USEPA factors of A = 0 and B = 1.00

24-hour PM_{2.5} averages: TEOM and BAM methods

PM_{2.5} TEOM 24-hour daily averages provided in NEPM reports from 2009 onwards will differ from those reported previously, as the USEPA PM₁₀ equivalence factors have been removed from all TEOM PM_{2.5} data values; in reports before 2009 these factors were included.

Table 134. Annual average concentrations for PM_{2.5} (µg/m³) – continuous TEOM and BAM* methods

| Region/Performance monitoring station | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012* | 2013* |
|---------------------------------------|------------|------------|------------|------|------|------------|------|------|------------|------------|
| Sydney | | | | | | | | | | |
| Camden | | | | | | | | | 7.8 | 6.5 |
| Chullora | 8.6 | 7.6 | 7.2 | 6.4 | 5.9 | 7.1 | 5.7 | 5.9 | 6.1 | 8.4 |
| Earlwood | 7.5 | 7.1 | 6.9 | 5.9 | 5.5 | 6.8 | 5.7 | 5.4 | 5.6 | 7.9 |
| Liverpool | 9.2 | 8.4 | 8.9 | 7.2 | 6.5 | 8.3 | 6.3 | 5.9 | 8.5 | 9.4 |
| Richmond | 6.5 | 5.8 | 5.9 | 5.8 | 7.3 | 5.7 | 4.2 | 4.7 | 5.3 | 8.3 |
| Central Coast | | | | | | | | | | |
| Wyong | | | | | | | | | 7.3 | 6.7 |
| Illawarra | | | | | | | | | | |
| Wollongong | 6.7 | 6.3 | 6.4 | 6.0 | 5.3 | 7.1 | 5.1 | 4.6 | 4.6 | 7.7 |
| Lower Hunter | | | | | | | | | | |
| Beresfield | 7.7 | 6.8 | 6.8 | 6.3 | 6.0 | 8.5 | 6.0 | 5.5 | 7.9 | 8.2 |
| Wallsend | 6.7 | 6.5 | 6.4 | 5.8 | 5.9 | 8.1 | 4.6 | 4.8 | 5.1 | 7.7 |

Bold font indicates values in excess of the ARS.

AAQ NEPM advisory reporting standard (ARS): 8 µg/m³ (annual average)

All PM_{2.5} TEOM data use USEPA factors of A = 0 and B = 1.00.

Statistical summaries for multiple years, by station: TEOM and BAM methods

Table 135. Statistical summary for PM_{2.5}: 24-hour average concentrations – continuous BAM method. Station: Camden

| Year | Data availability rate (%) | Days above ARS | Maximum (µg/m ³) | Percentile (µg/m ³) | | | | | | |
|------|----------------------------|----------------|------------------------------|---------------------------------|------|------|------|------|------|------|
| | | | | 99th | 98th | 95th | 90th | 75th | 50th | 25th |
| 2012 | 20.8 | 0 | 19.5 | 19.4 | 18.1 | 13.2 | 11.6 | 9.5 | 7.8 | 5.3 |
| 2013 | 99.7 | 3 | 61.9 | 24.8 | 16.7 | 13.2 | 10.9 | 8 | 5.5 | 3.8 |

Bold font indicates values in excess of the ARS.

AAQ NEPM advisory reporting standard (ARS): 25.0 µg/m³ (24-hour average)

**Table 136. Statistical summary for PM_{2.5}: 24-hour average concentrations – continuous TEOM and BAM¹ methods.
Station: Chullora**

| Year | Data availability rate (%) | Days above ARS | Maximum (µg/m ³) | Percentile (µg/m ³) | | | | | | |
|------|----------------------------|----------------|------------------------------|---------------------------------|------|------|------|------|------|------|
| | | | | 99th | 98th | 95th | 90th | 75th | 50th | 25th |
| 2004 | 89.6 | 0 | 23.5 | 20.6 | 18.9 | 16.1 | 14.0 | 10.9 | 7.9 | 5.8 |
| 2005 | 93.2 | 2 | 25.4 | 20.6 | 17.9 | 15.1 | 13.0 | 9.2 | 6.7 | 5.0 |
| 2006 | 94.2 | 2 | 32.8 | 17.2 | 14.7 | 13.2 | 11.5 | 8.8 | 6.4 | 4.7 |
| 2007 | 92.3 | 0 | 20.5 | 17.3 | 16.6 | 13.1 | 11.8 | 8.2 | 5.7 | 3.7 |
| 2008 | 96.7 | 0 | 19.5 | 16.8 | 14.5 | 12.1 | 9.9 | 7.6 | 5.4 | 3.7 |
| 2009 | 98.6 | 3 | 183.2 | 19.4 | 17.3 | 14.1 | 11.3 | 8.5 | 5.9 | 3.9 |
| 2010 | 93.7 | 0 | 24.2 | 19.2 | 15.4 | 11.9 | 10.0 | 7.3 | 5.0 | 3.4 |
| 2011 | 98.9 | 0 | 23.9 | 18.6 | 16.2 | 12.3 | 10.8 | 7.6 | 5.2 | 3.4 |
| 2012 | 97.5 | 0 | 23.7 | 18.1 | 14.8 | 12.2 | 10.0 | 7.5 | 5.4 | 3.7 |
| 2013 | 98.6 | 3 | 49.1 | 22.4 | 19.9 | 15.9 | 13.6 | 10.6 | 7.2 | 5.3 |

¹TEOM was replaced by BAM on 14/12/2012.

Bold font indicates values in excess of the ARS.

AAQ NEPM advisory reporting standard (ARS): 25.0 µg/m³ (24-hour average)

All PM_{2.5} TEOM data use USEPA factors of A = 0 and B = 1.00.

**Table 137. Statistical summary for PM_{2.5}: 24-hour average concentrations – continuous TEOM and BAM¹ methods.
Station: Earlwood**

| Year | Data availability rate (%) | Days above ARS | Maximum (µg/m ³) | Percentile (µg/m ³) | | | | | | |
|------|----------------------------|----------------|------------------------------|---------------------------------|------|------|------|------|------|------|
| | | | | 99th | 98th | 95th | 90th | 75th | 50th | 25th |
| 2004 | 96.2 | 0 | 20.1 | 19.5 | 17.9 | 15.1 | 13.2 | 10.1 | 6.8 | 4.5 |
| 2005 | 98.9 | 2 | 26.8 | 20.1 | 18.8 | 14.0 | 12.4 | 9.1 | 6.3 | 4.3 |
| 2006 | 98.6 | 2 | 29.1 | 17.8 | 15.1 | 13.2 | 11.6 | 8.4 | 6.4 | 4.4 |
| 2007 | 96.7 | 0 | 19.8 | 16.8 | 15.6 | 12.3 | 10.5 | 7.8 | 5.2 | 3.3 |
| 2008 | 98.4 | 0 | 18.2 | 15.9 | 14.7 | 11.3 | 9.7 | 7.2 | 4.9 | 3.3 |
| 2009 | 75.6 | 1 | 186.7 | 22.5 | 18.9 | 13.9 | 11.3 | 8.2 | 5.3 | 3.4 |
| 2010 | 95.6 | 0 | 22.5 | 16.7 | 14.2 | 11.4 | 9.9 | 7.3 | 5.0 | 3.4 |
| 2011 | 96.2 | 0 | 23.6 | 18.4 | 15.8 | 12.7 | 10.5 | 6.9 | 4.5 | 2.8 |
| 2012 | 98.9 | 0 | 20.7 | 17.4 | 14.5 | 11.8 | 10.3 | 7.3 | 4.6 | 3.2 |
| 2013 | 91.2 | 4 | 37.3 | 27.4 | 20.8 | 16.6 | 13.5 | 9.8 | 6.6 | 4.7 |

¹TEOM was replaced by BAM on 19/12/2012.

Bold font indicates values in excess of the ARS.

AAQ NEPM advisory reporting standard (ARS): 25.0 µg/m³ (24-hour average)

**Table 138. Statistical summary for PM_{2.5}: 24-hour average concentrations – continuous TEOM and BAM¹ methods.
Station: Liverpool**

| Year | Data availability rate (%) | Days above ARS | Maximum (µg/m ³) | Percentile (µg/m ³) | | | | | | |
|------|----------------------------|----------------|------------------------------|---------------------------------|------|------|------|------|------|------|
| | | | | 99th | 98th | 95th | 90th | 75th | 50th | 25th |
| 2004 | 85.2 | 4 | 38.9 | 27.3 | 22.4 | 17.2 | 15.7 | 11.8 | 8.5 | 5.2 |
| 2005 | 90.1 | 2 | 30.7 | 24.2 | 22.1 | 17.3 | 15.4 | 11.0 | 7.5 | 5.1 |
| 2006 | 98.6 | 3 | 48.1 | 22.2 | 18.5 | 15.9 | 14.2 | 11.0 | 8.2 | 5.9 |
| 2007 | 94.8 | 0 | 23.0 | 19.4 | 18.3 | 15.2 | 12.1 | 9.3 | 6.6 | 4.3 |
| 2008 | 92.3 | 1 | 32.2 | 16.6 | 14.8 | 12.2 | 10.6 | 8.4 | 5.8 | 4.0 |
| 2009 | 94.5 | 3 | 268.1 | 25.2 | 19.9 | 14.9 | 12.9 | 9.7 | 6.7 | 4.5 |
| 2010 | 95.9 | 0 | 21.8 | 17.7 | 15.6 | 13.2 | 11.0 | 8.1 | 5.6 | 3.9 |
| 2011 | 99.2 | 2 | 38.0 | 20.7 | 16.2 | 14.0 | 10.9 | 7.4 | 4.9 | 3.1 |
| 2012 | 85.8 | 0 | 24.9 | 21.5 | 19.5 | 15.2 | 13.9 | 10.8 | 7.6 | 5.7 |
| 2013 | 93.2 | 2 | 73.8 | 24.4 | 22.1 | 18.7 | 16.0 | 11.7 | 8.1 | 5.8 |

¹TEOM was replaced by BAM on 2/3/2012.

Bold font indicates values in excess of the ARS.

AAQ NEPM advisory reporting standard (ARS): 25.0 µg/m³ (24-hour average)

All PM_{2.5} TEOM data use USEPA factors of A = 0 and B = 1.00.

**Table 139. Statistical summary for PM_{2.5}: 24-hour average concentrations – continuous TEOM and BAM¹ methods.
Station: Richmond**

| Year | Data availability rate (%) | Days above ARS | Maximum (µg/m ³) | Percentile (µg/m ³) | | | | | | |
|------|----------------------------|----------------|------------------------------|---------------------------------|-------------|------|------|------|------|------|
| | | | | 99th | 98th | 95th | 90th | 75th | 50th | 25th |
| 2004 | 96.2 | 0 | 23.3 | 19.8 | 17.5 | 14.2 | 11.5 | 8.6 | 5.8 | 3.4 |
| 2005 | 83.8 | 0 | 22.7 | 16.5 | 14.9 | 12.6 | 10.8 | 7.3 | 4.8 | 3.3 |
| 2006 | 84.9 | 1 | 31.6 | 18.5 | 13.3 | 10.9 | 9.3 | 7.3 | 5.3 | 3.8 |
| 2007 | 42.2 | 0 | 21.1 | 16.3 | 14.3 | 11.7 | 9.3 | 7.3 | 5.2 | 3.8 |
| 2008 | 98.9 | 0 | 17.7 | 15.6 | 13.8 | 12.3 | 10.5 | 8.6 | 6.8 | 5.6 |
| 2009 | 89.3 | 2 | 148.9 | 22.1 | 15.6 | 11.5 | 9.9 | 6.7 | 4.4 | 2.8 |
| 2010 | 97.3 | 0 | 20.8 | 14.3 | 12.3 | 9.4 | 7.9 | 5.7 | 3.5 | 2.1 |
| 2011 | 97.8 | 2 | 42.9 | 22.7 | 15.7 | 10.6 | 8.6 | 6.2 | 3.7 | 2.2 |
| 2012 | 94.3 | 2 | 116.7 | 18.0 | 14.8 | 11.0 | 9.4 | 6.7 | 4.1 | 2.6 |
| 2013 | 95.1 | 14 | 68.0 | 40.8 | 31.4 | 24.3 | 14.8 | 9.9 | 6.0 | 4.2 |

¹TEOM was replaced by BAM on 7/9/2012.

Table 140. Statistical summary for PM_{2.5}: 24-hour average concentrations – continuous BAM method. Station: Wyong

| Year | Data availability rate (%) | Days above ARS | Maximum (µg/m ³) | Percentile (µg/m ³) | | | | | | |
|------|----------------------------|----------------|------------------------------|---------------------------------|------|------|------|------|------|------|
| | | | | 99th | 98th | 95th | 90th | 75th | 50th | 25th |
| 2012 | 19.7 | 0 | 14.7 | 14.7 | 14.6 | 12.5 | 11.4 | 9 | 6.9 | 4.8 |
| 2013 | 94.2 | 1 | 43.7 | 20.7 | 16.7 | 12.6 | 11 | 8.1 | 5.8 | 4.1 |

Bold font indicates values in excess of the ARS.

AAQ NEPM advisory reporting standard (ARS): 25.0 µg/m³ (24-hour average)

**Table 141. Statistical summary for PM_{2.5}: 24-hour average concentrations – continuous TEOM and BAM¹ methods.
Station: Wollongong**

| Year | Data availability rate (%) | Days above ARS | Maximum (µg/m ³) | Percentile (µg/m ³) | | | | | | |
|------|----------------------------|----------------|------------------------------|---------------------------------|------|------|------|------|------|------|
| | | | | 99th | 98th | 95th | 90th | 75th | 50th | 25th |
| 2004 | 97.0 | 0 | 22.6 | 19.1 | 17.6 | 14.4 | 12.4 | 9.0 | 5.9 | 3.6 |
| 2005 | 97.8 | 0 | 22.1 | 18.0 | 16.6 | 13.0 | 11.9 | 8.2 | 5.6 | 3.8 |
| 2006 | 99.9 | 2 | 26.6 | 17.4 | 14.4 | 12.6 | 11.1 | 8.4 | 5.8 | 3.6 |
| 2007 | 98.4 | 0 | 22.5 | 18.5 | 16.3 | 13.7 | 11.1 | 7.7 | 5.2 | 3.2 |
| 2008 | 94.0 | 0 | 14.6 | 14.2 | 13.0 | 10.7 | 9.3 | 7.1 | 4.8 | 3.0 |
| 2009 | 96.2 | 3 | 241.0 | 23.0 | 19.3 | 14.9 | 12.1 | 8.2 | 5.6 | 3.4 |
| 2010 | 92.1 | 0 | 23.5 | 15.0 | 13.8 | 11.2 | 9.3 | 6.4 | 4.2 | 3.0 |
| 2011 | 96.4 | 0 | 17.7 | 16.0 | 14.1 | 11.2 | 8.8 | 6.4 | 3.8 | 2.4 |
| 2012 | 98.1 | 0 | 15.6 | 13.7 | 13.1 | 10.6 | 8.3 | 5.9 | 4.0 | 2.4 |
| 2013 | 94.8 | 4 | 88.4 | 28.8 | 21.5 | 15.5 | 12.8 | 9.2 | 6.4 | 4.6 |

¹TEOM was replaced by BAM on 5/12/2012.

Bold font indicates values in excess of the ARS.

AAQ NEPM advisory reporting standard (ARS): 25.0 µg/m³ (24-hour average)

All PM_{2.5} TEOM data use USEPA factors of A = 0 and B = 1.00.

**Table 142. Statistical summary for PM_{2.5}: 24-hour average concentrations – continuous TEOM and BAM¹ methods.
Station: Beresfield**

| Year | Data availability rate (%) | Days above ARS | Maximum (µg/m ³) | Percentile (µg/m ³) | | | | | | |
|------|----------------------------|----------------|------------------------------|---------------------------------|------|------|------|------|------|------|
| | | | | 99th | 98th | 95th | 90th | 75th | 50th | 25th |
| 2004 | 90.2 | 1 | 27.8 | 20.3 | 19.6 | 16.5 | 13.3 | 9.8 | 7.1 | 4.6 |
| 2005 | 93.7 | 0 | 19.5 | 17.7 | 16.4 | 14.8 | 12.2 | 8.8 | 5.9 | 4.1 |
| 2006 | 98.9 | 0 | 24.9 | 17.8 | 15.5 | 13.3 | 11.4 | 8.6 | 5.9 | 4.3 |
| 2007 | 86.0 | 0 | 23.0 | 17.2 | 15.9 | 13.6 | 11.5 | 8.4 | 5.5 | 3.5 |
| 2008 | 91.5 | 0 | 16.9 | 15.1 | 14.1 | 11.8 | 9.9 | 7.7 | 5.7 | 3.7 |
| 2009 | 93.7 | 5 | 230.8 | 34.6 | 21.5 | 16.3 | 13.6 | 9.7 | 6.7 | 4.8 |
| 2010 | 97.3 | 1 | 25.9 | 15.2 | 13.6 | 11.6 | 9.9 | 7.4 | 5.4 | 3.9 |
| 2011 | 99.2 | 0 | 18.8 | 15.0 | 13.5 | 11.0 | 9.7 | 7.0 | 4.9 | 3.2 |
| 2012 | 93.4 | 0 | 22.4 | 21.0 | 18.1 | 14.4 | 12.7 | 9.9 | 7.1 | 5.3 |
| 2013 | 94.2 | 1 | 38.4 | 22.8 | 20.4 | 15.9 | 13.3 | 10.3 | 7.2 | 5.1 |

¹TEOM was replaced by BAM on 29/11/2012.

Bold font indicates values in excess of the ARS.

AAQ NEPM advisory reporting standard (ARS): 25.0 µg/m³ (24-hour average)

All PM_{2.5} TEOM data use USEPA factors of A = 0 and B = 1.00.

**Table 143. Statistical summary for PM_{2.5}: 24-hour average concentrations – continuous TEOM and BAM¹ methods.
Station: Wallsend**

| Year | Data availability rate (%) | Days above ARS | Maximum (µg/m ³) | Percentile (µg/m ³) | | | | | | |
|------|----------------------------|----------------|------------------------------|---------------------------------|------|------|------|------|------|------|
| | | | | 99th | 98th | 95th | 90th | 75th | 50th | 25th |
| 2004 | 87.2 | 0 | 23.5 | 17.4 | 15.2 | 12.8 | 10.9 | 8.5 | 5.9 | 4.2 |
| 2005 | 95.9 | 0 | 18.0 | 16.5 | 15.4 | 13.3 | 11.3 | 8.4 | 5.8 | 4.1 |
| 2006 | 99.2 | 1 | 25.6 | 16.6 | 14.5 | 12.2 | 10.5 | 8.1 | 5.9 | 4.1 |
| 2007 | 92.3 | 0 | 18.2 | 15.3 | 14.9 | 12.3 | 10.1 | 7.5 | 5.1 | 3.3 |
| 2008 | 87.2 | 0 | 22.8 | 18.3 | 14.8 | 12.1 | 10.2 | 7.5 | 5.3 | 3.4 |
| 2009 | 88.8 | 5 | 415.6 | 39.7 | 21.0 | 14.5 | 12.5 | 8.4 | 5.6 | 3.9 |
| 2010 | 92.6 | 0 | 18.8 | 11.9 | 10.7 | 9.2 | 7.4 | 5.7 | 4.2 | 3.1 |
| 2011 | 99.9 | 0 | 16.2 | 13.9 | 12.3 | 10.9 | 8.8 | 6.2 | 4.2 | 2.7 |
| 2012 | 99.5 | 0 | 16.2 | 14.2 | 13.1 | 11.3 | 9.1 | 6.4 | 4.3 | 3.1 |
| 2013 | 96.2 | 6 | 37.0 | 29.1 | 22.5 | 16.6 | 13.1 | 9.6 | 6.2 | 4.5 |

¹TEOM was replaced by BAM on 21/2/2012.

Bold font indicates values in excess of the ARS.

AAQ NEPM advisory reporting standard (ARS): 25.0 µg/m³ (24-hour average)

All PM_{2.5} TEOM data use USEPA factors of A = 0 and B = 1.00.

2.5

Statistical summary: FRM method

Table 144. Statistical summary for PM_{2.5}: Daily 24-hour average concentrations (2013) – FRM method

| Region/ Performance monitoring station | Data availability rate (%) | Maximum (µg/m ³) | Percentile (µg/m ³) | | | | | | |
|--|----------------------------------|---------------------------------|---------------------------------|------|------|------|------|------|------|
| | | | 99th | 98th | 95th | 90th | 75th | 50th | 25th |
| Sydney | | | | | | | | | |
| Chullora | 65.8 | 53.9 | 27.4 | 24.4 | 13.3 | 12.3 | 8.5 | 5.4 | 4.1 |

Bold font indicates values in excess of the ARS.

AAQ NEPM advisory reporting standard (ARS): 25.0 µg/m³ (24-hour average)

Data availability rates are based on a 1-day-in-3 sampling regime.

Trend data: FRM method

Annual averages and annual maximum 24-hour averages for all stations are given below. Please note that monitoring as part of this study did not begin until February 2005, and monitoring ceased at Richmond in September 2007 because of technical issues. Please note that the data availability rates are based on a 1-day-in-3 sampling regime.

Table 145. Maximum 24-hour average concentrations for PM_{2.5} (µg/m³) – FRM method

| Region/ Performance monitoring station | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 |
|--|-------------|-------------|------|------|-------------|-------------|------|------|-------------|
| Sydney | | | | | | | | | |
| Chullora | 27.8 | 30.0 | 19.2 | 22.1 | 27.5 | 28.2 | 16.7 | 14.6 | 53.9 |
| Richmond ¹ | 28.8 | 45.8 | 18.3 | | | | | | |

¹Monitoring at Richmond ceased in 2007.

Bold font indicates values in excess of the ARS

AAQ NEPM advisory reporting standard (ARS): 25.0 µg/m³ (24-hour average)

Data availability rates are based on a 1-day-in-3 sampling regime.

Table 146. Annual average concentrations for PM_{2.5} (µg/m³) – FRM method

| Region/ Performance monitoring station | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 |
|--|------|------|------|------|------|------|------|------|------|
| Sydney | | | | | | | | | |
| Chullora | 7.3 | 6.8 | 6.7 | 6.1 | 6.7 | 6.5 | 6.2 | NA | 7.2 |
| Richmond ¹ | 6.4 | 6.5 | 6.6 | | | | | | |

¹Monitoring at Richmond ceased in 2007.

NA: As a result of technical problems and problems with parts availability, an annual average was not able to be calculated.

AAQ NEPM advisory reporting standard (ARS): 25.0 µg/m³ (24-hour average)

Data availability rates are based on a 1-day-in-3 sampling regime.

Statistical summaries for multiple years, by station: FRM method

Table 147. Statistical summary for PM_{2.5}: 24-hour average concentrations – FRM method. Station: Chullora

| Year | Data availability rate (%) | Days above ARS | Maximum (µg/m ³) | Percentile (µg/m ³) | | | | | | |
|------|----------------------------------|----------------------|---------------------------------|---------------------------------|------|------|------|------|------|------|
| | | | | 99th | 98th | 95th | 90th | 75th | 50th | 25th |
| 2005 | 72.1 | 1 | 27.8 | 19.1 | 17.6 | 13.0 | 11.7 | 9.2 | 6.7 | 4.6 |
| 2006 | 84.4 | 1 | 30.0 | 20.3 | 16.6 | 13.3 | 11.2 | 8.3 | 5.8 | 4.1 |
| 2007 | 80.3 | 0 | 19.2 | 15.5 | 14.6 | 13.8 | 11.4 | 8.2 | 5.8 | 4.0 |
| 2008 | 88.5 | 0 | 22.1 | 19.2 | 14.3 | 11.5 | 10.5 | 7.2 | 5.4 | 4.0 |
| 2009 | 87.6 | 2 | 27.5 | 26.7 | 19.1 | 13.1 | 11.3 | 9.1 | 5.4 | 3.8 |
| 2010 | 83.8 | 1 | 28.2 | 21.9 | 16.6 | 12.8 | 11.0 | 7.5 | 5.8 | 4.2 |
| 2011 | 77.9 | 0 | 16.7 | 16.3 | 15.5 | 13.9 | 12.5 | 7.5 | 5.4 | 3.8 |
| 2012 | 38.0 | 0 | 14.6 | 12.7 | 10.8 | 9.9 | 9.4 | 8.3 | 6.3 | 4.6 |
| 2013 | 65.8 | 2 | 53.9 | 27.4 | 24.4 | 13.3 | 12.3 | 8.5 | 5.4 | 4.1 |

Bold font indicates values in excess of the ARS.

AAQ NEPM advisory reporting standard (ARS): 25.0 µg/m³ (24-hour average)

Data availability rates are based on a 1-day-in-3 sampling regime.

Table 148. Statistical summary for PM_{2.5}: 24-hour average concentrations – FRM. Station: Richmond¹

| Year | Data availability rate (%) | Days above ARS | Maximum (µg/m ³) | Percentile (µg/m ³) | | | | | | |
|------|----------------------------------|-------------------|---------------------------------|---------------------------------|------|------|------|------|------|------|
| | | | | 99th | 98th | 95th | 90th | 75th | 50th | 25th |
| 2005 | 69.7 | 2 | 28.8 | 27.7 | 21.3 | 13.3 | 11.5 | 7.5 | 5.0 | 3.3 |
| 2006 | 68.9 | 1 | 45.8 | 19.3 | 13.0 | 11.3 | 10.6 | 8.0 | 5.8 | 3.6 |
| 2007 | 49.2 | 0 | 18.3 | 16.8 | 15.7 | 15.4 | 11.8 | 8.8 | 5.6 | 3.6 |

¹Monitoring at Richmond ceased in 2007.

Bold font indicates values in excess of the ARS.

AAQ NEPM advisory reporting standard (ARS): 25.0 µg/m³ (24-hour average)

Data availability rates are based on a 1-day-in-3 sampling regime.