



Clearing the Air

New South Wales Air Quality Statement 2017



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Good air quality in NSW during 2017

During 2017 air quality in NSW was generally good by national standards. The Air Quality Index (AQI) was in the 'very good', 'good' or 'fair' category for over 89% of the time in Sydney regions, 96% of the time in the Illawarra and South-west Slopes, 97% in the Lower Hunter and 98% to 100% of the time in all other regions.

Levels of nitrogen dioxide, sulfur dioxide and carbon monoxide remained well below their relevant standards.

Ozone and particle levels occasionally exceeded national standards in some areas.

In Sydney, PM_{2.5} levels met the daily national standard on all but 14 days, while PM₁₀ levels met the daily standard on all but nine days.

Annual average PM₁₀ levels were below the national standard at all sites across NSW except Stockton, where PM₁₀ levels are influenced by sea salt spray. In the Upper Hunter, Camberwell and Mount Thorley (sites close to mines) measured annual PM₁₀ levels above the benchmark. Annual average PM_{2.5} levels were above the national standard at some sites in Sydney, the Hunter Valley and the South-west Slopes, but remained below the standard in the Illawarra, Central Coast and remaining rural NSW stations.

Two significant pollution events – extensive hazard reduction burning in August and early September and widespread dust storms in late September following a very dry winter period – resulted in particle levels above the standards across much of the state, highlighting the impacts that exceptional events can have on air quality.

Sydney Central-East particle levels were affected by a very localised industry fire near the Chullora monitoring station from late February to early March.

During 2017 the highest daily PM₁₀ was recorded at Wagga Wagga on 31 March (171.6 µg/m³) most likely due to widespread agricultural burning. The highest daily PM_{2.5} (56.4 µg/m³) was recorded at Liverpool on 14 August during widespread hazard reduction burning in or near the Sydney region.

All regions recorded days with ozone levels above national standards (ten days in total). This is higher than 2016, when six days were above the standard. The most widespread event occurred from 10 to 11 February during an extreme heatwave.

NSW Climate in 2017

In 2017, NSW experienced record temperatures. Sydney saw very much above average temperatures, while the Hunter recorded its highest mean temperatures on record. Rainfall was average to below average across most of the state, with a very dry winter and start of spring.

The mean and maximum temperatures for NSW during 2017 were the warmest on record. Overall, NSW recorded the driest year since 2006, although high rainfall was recorded on the east coast in March. Notable events included heatwaves in January, February and December, along with record heat in September (BOM 2018).

The year began with dry conditions and the warmest summer on record for NSW, with persistent heat and several significant heatwaves in January and February (BOM 2017a,

BOM 2017b). Temperatures and rainfall during autumn were above average in NSW, with very wet conditions in the east of the state during March (BOM 2017c). NSW experienced a very dry winter, with rainfall totals only half the seasonal long-term average. With clear skies, daytime temperatures were above average while night-time temperatures were below average for much of the state (excluding the Sydney Greater Metropolitan Region) (BOM 2017d). Very dry, hot conditions were experienced in NSW at the start of spring with the driest September on record and the warmest September day on record on the 23rd during a major heat wave event (BOM 2017e, BOM 2017f). However, NSW rainfall totals were average overall for spring due to a wet October. A hot start to summer 2017–18 saw record December maximum temperatures, including at Penrith and Newcastle (BOM 2018).

Air Quality Index

By national standards, most parts of NSW experienced good air quality during 2017. The Air Quality Index (AQI) was in the ‘very good’, ‘good’ or ‘fair’ category for at least 89% of the time in Sydney regions, 96% in the Illawarra and South-west Slopes, 97% in the Lower Hunter and 98% to 100% of the time in all other regions, demonstrating that air quality consistently met relevant standards.

The AQI provides a comparison of air pollutants, standardising measurements of ozone, carbon monoxide, sulfur dioxide, nitrogen dioxide, airborne particles and visibility into one easy-to-understand index (Figure 1). An AQI of 100 or above indicates that one or more air pollutants have exceeded relevant standards. AQI values above 200 indicate that air quality is in the hazardous category, and people sensitive to air pollution are advised to avoid all outdoor physical activities. Find out more [about the AQI](#) on the OEH website.

AQI levels reached the hazardous category at one or more stations on 16 days: 14 in Sydney and one day each in the Lower Hunter and South-west Slopes (Figure 2). Six of the hazardous days in Sydney occurred exclusively at Chullora, due to a recycling plant fire near the monitoring station from late February to early March. The remaining days were associated with hazard reduction burns and other vegetation fires in August and September (RFS 2017a). In the Lower Hunter, the hazardous reading on 14 December was a result of poor visibility from a recycling plant fire in the region (Newcastle Herald 2017). PM₁₀ and PM_{2.5} particles were also elevated during this time. In the South-west slopes the hazardous day in March was most likely due to agricultural activities (OEH 2017).

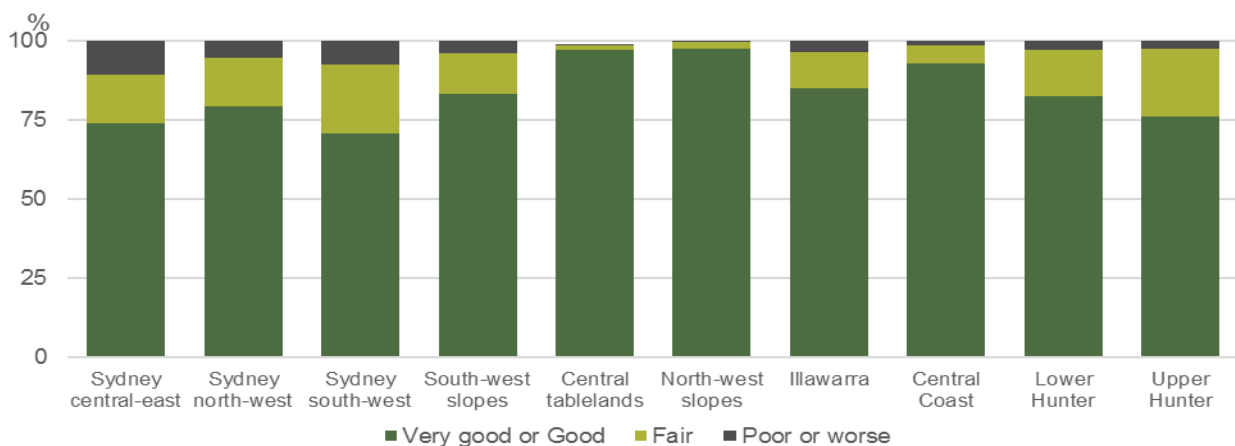


Figure 1 2017 Air Quality Index categories as a percentage of time in each region

Note: Lower Hunter AQI from Newcastle, Beresfield and Wallsend data; Upper Hunter AQI from Muswellbrook and Singleton data.

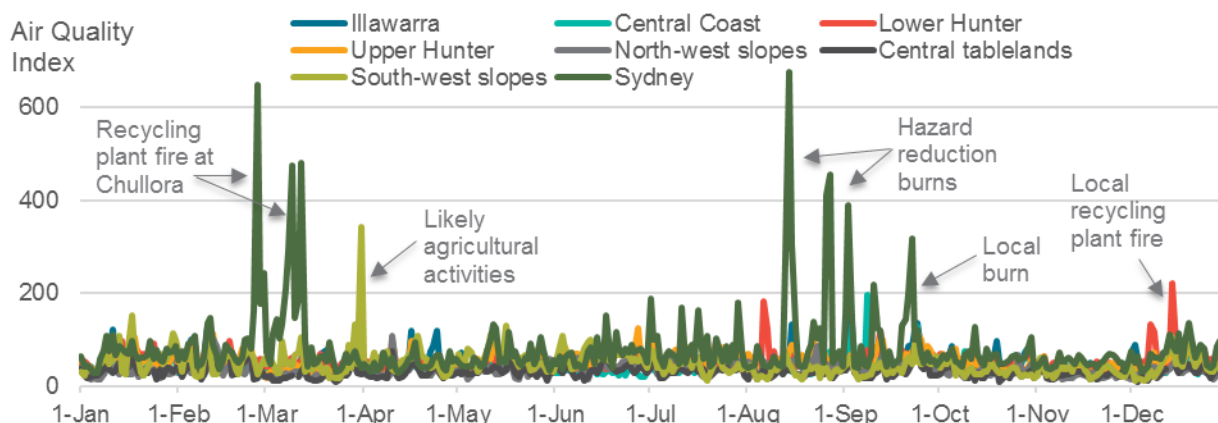


Figure 2 Regional Air Quality Index time series during 2017

Note: Sydney AQI based on Sydney Central-east, Sydney South-west and Sydney North-west; Lower Hunter AQI from Beresfield, Newcastle and Wallsend; Upper Hunter AQI from Muswellbrook and Singleton.

Ozone pollution

Ozone levels met national standards on all but ten days during 2017.

Ozone levels peak in the warmer months from October to March. The most extensive ozone event during 2017 occurred between 10 to 11 February when levels above the national standards were recorded in Sydney, Central Coast and Lower Hunter regions (Table 1). This event occurred during the most severe heatwave period recorded in south-east Australia during summer 2016–17 (BOM 2017a). Maximum temperatures reached 45.6°C in western Sydney (at Bringelly), 43.9°C in eastern Sydney (at Earlwood) and 44.9°C in the Lower Hunter (at Beresfield) on these days.

Table 1 Days above the 1-hour and 4-hour ozone standards – 2017

Date	Stations where 1-hour average ozone standard exceeded (10 pphm)	Stations where 4-hour average ozone standard exceeded (8 pphm)
09/01	-	Richmond (8.2), St Marys (8.6)
11/01	Albion Park South (11.7), Kembla Grange (12.2), Wollongong (10.7)	Albion Park South (8.9), Kembla Grange (9.8), Randwick (8.9), Wollongong (9.4)
17/01	-	Kembla Grange (8.1)
06/02	-	Richmond (8.5)
10/02	Albion Park South (10.9), Earlwood (10.9), Kembla Grange (11.3), Lindfield (10.6), Randwick (11.6), Rozelle (11.4), St Marys (11), Wollongong (10.2), Wyong (12.1)	Albion Park South (10.2), Chullora (8.3), Earlwood (8.4), Kembla Grange (9.4), Lindfield (8.9), Prospect (8.3), Randwick (10.2), Rozelle (10.9), St Marys (9.6), Wallsend (8.1), Wollongong (9.3), Wyong (10.5)
11/02	Chullora (11.4), Liverpool (13.5), Prospect (12.3), Randwick (11.4), Wallsend (10.6)	Chullora (11.1), Earlwood (8.7), Lindfield (8.3), Liverpool (11.7), Prospect (10.6), Randwick (9.7), St Marys (8.6), Wallsend (9.7), Wyong (8.4)
23/02	-	Bargo (8.1), St Marys (8.2)
13/12	-	Bargo (8.2), Bringelly (8.9), Camden (8.4)
16/12	-	Camden (8.3), Campbelltown West (9.1)
19/12	Camden (12.2), Liverpool (10.1)	Bargo (8.6), Camden (10.8), Chullora (8.7), Earlwood (8.1), Kembla Grange (8.1), Lindfield (8.3), Liverpool (9.1), Macquarie Park (8.7)

Note: Values in brackets are the actual maximum ozone levels at each station on the day. pphm = parts per hundred million in volume.

Particle pollution

Annual average PM₁₀ levels were below the national standards at all stations except Stockton, while some stations in Sydney, the Hunter valley and South-west Slopes saw annual average PM_{2.5} levels above the standard. Hazard reduction burns were carried out on some days with increased particle levels.

Daily PM₁₀ levels above the national standard of 50 micrograms per cubic metre ($\mu\text{g}/\text{m}^3$) were recorded for all but 10 sites throughout the network in 2017 (Table 2). This was mainly as a result of hazard reduction burning in winter and regional dust storm impacts in September during a period of elevated wind following an extremely dry winter period.

The maximum daily PM₁₀ level was 171.6 $\mu\text{g}/\text{m}^3$ recorded at Wagga Wagga North on 31 March, most likely as a result of agricultural burning (OEH 2017).

To account for natural events, the national goal excludes exceptional events (that is, those related to bushfires, hazard reduction burning and dust storms). By this measure, 22 stations met the PM₁₀ goal in 2017 (Table 2). At Wagga Wagga particle levels are impacted by broad-scale agricultural activities (including stubble burning) and wood smoke emissions during the cooler months. At Stockton, particle levels are higher due to sea salt spray, mainly during the warmer months when onshore winds are predominant.

Annual average PM₁₀ levels were below the 25 $\mu\text{g}/\text{m}^3$ standard at all stations except Stockton (see details on Hunter Valley air quality below). Annual average PM₁₀ levels are generally higher in the Hunter Valley than elsewhere in the state.

During 2017, daily PM_{2.5} levels above the standard were occasionally recorded at around half the stations in the network (Table 2). All but four stations met the PM_{2.5} daily goal in 2017, which excludes exceptional events (Table 2). The most days above the daily standard were recorded at Chullora in Sydney (eight days), followed by Wagga Wagga (five days) and Liverpool, Prospect, Richmond and St Marys in Sydney (three days).

The maximum daily PM_{2.5} was 56.4 $\mu\text{g}/\text{m}^3$ at Liverpool on 14 August during hazard reduction burning in or near the Sydney region (RFS 2017a). Compared with 2016, less stations recorded days above the PM_{2.5} standard in 2017, although the number of days over the PM_{2.5} standard increased. Four of these days occurred exclusively at Chullora in March due to a localised fire at a nearby recycling plant.

Annual average PM_{2.5} levels were above the national standard at two stations in Sydney – Chullora (9.5 $\mu\text{g}/\text{m}^3$), Liverpool (8.9 $\mu\text{g}/\text{m}^3$); two stations in Newcastle – Carrington (8.6 $\mu\text{g}/\text{m}^3$), Stockton (9.8 $\mu\text{g}/\text{m}^3$); two stations in the Upper Hunter – Muswellbrook (9.4 $\mu\text{g}/\text{m}^3$), Singleton (8.2 $\mu\text{g}/\text{m}^3$); and in the South-west Slopes at Wagga Wagga (8.1 $\mu\text{g}/\text{m}^3$). This is one more site compared to 2016, although the levels have increased at some sites (particularly in Sydney and the Upper Hunter).

Table 2 Summary of PM₁₀ and PM_{2.5} observations in NSW – 2017

Region	Station	PM ₁₀				PM _{2.5}					
		Annual average (µg/m ³)	Max daily average (µg/m ³)	Date	Days above standard [#]		Annual average (µg/m ³)	Max daily average (µg/m ³)	Date	Days above standard [#]	
					(a)	(b)				(a)	(b)
Sydney	Bargo	14.1	53.5	24/9	0	1	6.3	20.9	14/8	0	0
Sydney	Bringelly	19.8	83.8	11/7	3	3	7.5	52.5	14/8	0	2
Sydney	Camden	14.7	48.4	24/9	0	0	6.7	27.7	14/8	0	2
Sydney	Campbelltown	15.7	53.1	24/9	0	1	7.4	25.0	14/8	0	0
Sydney	Chullora	20.1	63.0	12/10	2	2	9.5	44.6	8/3	4	4
Sydney	Earlwood	18.0	59.8	14/8	0	1	7.3	50.9	14/8	0	2
Sydney	Lindfield	16.0	46.3	24/9	0	0	-	-	-	-	-
Sydney	Liverpool	20.8	74.0	14/8	0	2	8.9	56.4	14/8	1	2
Sydney	Macquarie Pk	na	49.6	24/9	0	0	na	24.1	14/8	0	0
Sydney	Oakdale	12.1	46.8	24/9	0	0	6.0	25.5	2/9	0	1
Sydney	Prospect	18.9	61.1	24/9	0	1	7.7	30.1	2/9	0	3
Sydney	Randwick	19.2	56.0	14/8	0	1	na	45.3	14/8	0	1
Sydney	Richmond	16.0	51.5	24/9	0	1	7.0	34.3	10/9	0	3
Sydney	Rozelle	18.1	54.1	6/2	1	0	7.2	36.3	14/8	0	2
Sydney	St Marys	16.2	49.8	24/9	0	0	7.0	38.2	15/8	0	3
Illawarra	Albion Park S	15.3	44.6	14/12	0	0	6.6	19.3	19/12	0	0
Illawarra	KemblaGrange	20.5	67.7	24/9	2	2	6.9	21.3	11/5	0	0
Illawarra	Wollongong	18.1	55.3	14/12	1	0	7.1	24.7	3/9	0	0
C. Coast	Wyong	16.1	63.4	24/9	0	1	5.8	27.2	12/9	0	1
Newcastle	Beresfield	19.6	49.4	24/9	0	0	7.6	18.7	12/5	0	0
Newcastle	Carrington	24.4	64.0	24/9	6	4	8.6	20.7	12/9	0	0
Newcastle	Mayfield	24.2	70.6	24/9	2	1	7.5	18.9	11/2	0	0
Newcastle	Newcastle	22.4	55.0	24/9	0	1	7.4	18.0	10/9	0	0
Newcastle	Stockton	36.4	96.7	19/10	56	4	9.8	32.0	12/9	0	1
Newcastle	Wallsend	17.4	47.9	24/9	0	0	7.3	20.4	2/7	0	0
U. Hunter	Aberdeen	17.6	59.4	12/2	0	2	-	-	-	-	-
U. Hunter	Camberwell*	27.4*	101.5*	13/9	33*	*	7.4*	24.7*	12/2	0*	0*
U. Hunter	Muswellbrook	21.7	56.5	12/2	0	2	9.4	31.1	27/6	1	1
U. Hunter	Singleton	20.8	57.0	24/9	2	3	8.2	29.6	12/5	0	1
Rural	Albury	15.8	48.8	6/3	0	0	7.3	18.7	8/4	0	0
Rural	Bathurst	14.1	49.9	23/9	0	0	6.1	17.5	16/6	0	0
Rural	Tamworth	15.3	54.1	10/4	0	2	7.8	21.6	23/8	0	0
Rural	Wagga Wagga	20.6	171.6	31/3	10	0	8.1	32.5	16/5	2	3

Note: Levels above the standards are shown in bold. C. Coast = Central Coast. U. Hunter = Upper Hunter
na Annual average not reported (<75% of data available - Macquarie Pk monitoring began 09/08/17 and
Randwick PM_{2.5} monitoring began 30/03/2017)

- Data not monitored

Days above standard are divided into (a) Non-exceptional and (b) Exceptional events. Exceptional events are those related to bushfires, hazard reduction burns and dust storms. These are not counted towards the NEPM goal of 'no days above the particle standards in a year'.

* Camberwell is a Small Upper Hunter Air Quality Monitoring Network community monitoring station which is not suitable for assessing performance against NEPM standards (see over, Focus: Hunter Valley).

Focus: Hunter Valley air quality

While levels of sulfur dioxide, nitrogen dioxide and carbon monoxide in the Hunter Valley remained below national standards, ozone and particle levels in the Hunter Valley did exceed national standards at some stations.

Annual average PM_{2.5} levels in Stockton and Muswellbrook are higher than at other locations in the Hunter Valley. The main sources of PM_{2.5} within the Hunter are combustion related (transport, industry, wood-fired heaters, bushfires) and natural (sea salt). PM₁₀ levels at the Upper Hunter monitoring stations that are closer to mines are generally higher than elsewhere in the region.

Large population centres

Monitoring at larger population centres in the Hunter Valley during 2017 showed the following:

- The ozone standards were exceeded at Wallsend on 10 and 11 February 2017, during a severe heatwave period (BOM 2017a). A number of sites in Sydney and the Central Coast also exceeded the ozone standards on these days (Table 1).
- Five of the nine Hunter stations (excluding Carrington, Mayfield, Singleton and Stockton (see below)) met the PM₁₀ daily goal of no days over the standard, excluding exceptional events (Table 2).
- Annual average PM₁₀ levels were below the 25 µg/m³ standard at all stations except Stockton (Table 2).
- The maximum daily average PM₁₀ in the Upper Hunter was 59.4 µg/m³ (Aberdeen on 12 February) and 96.7 µg/m³ in the Newcastle region (Stockton on 19 October).
- Daily average PM₁₀ levels were above national standards on 14 days at one or more large population centres (excluding Stockton – see Stockton air quality) (Table 3) compared to three days in 2016.
- Levels were above the daily average PM₁₀ standard at Stockton on 60 days in 2017 (the same as in 2016), mainly due to sea salt spray under predominant onshore flows in the warmer months.
- Levels above the PM_{2.5} daily standard were recorded at Stockton and Singleton (one day each) and Muswellbrook (two days). These stations also recorded PM_{2.5} levels above the annual standard (Table 2).
- All Hunter stations, except Muswellbrook, met the PM_{2.5} daily goal of no days above the standard, excluding exceptional events (Table 2). At Muswellbrook, PM_{2.5} levels over the standard on 27 June were most likely due to wood smoke.
- Across the Hunter there were three days during 2017 when daily PM_{2.5} levels exceeded the standard at one or more sites (Table 4), compared to four days during 2016. In the cooler months, use of wood-fired heaters influences PM_{2.5} levels at Upper Hunter sites. Hazard reduction burns in May impacted PM_{2.5} levels throughout the region.
- High daily PM₁₀ at Singleton on 18 January was most likely due to a large grass fire (RFS 2017a), on 10 April due to a dust storm, and on 24 September from a combination of dust from the NW desert, hazard reduction burns and local dust sources. On 12 and 13 September, elevated PM₁₀ levels were measured throughout the Hunter. The Newcastle region may have been impacted by smoke from fires, while in the Upper Hunter the elevated levels may have resulted from local dust sources, particularly on 13 September under fresh north-west winds. High daily PM_{2.5} at Singleton on 12 May was most likely due to hazard reduction burns (RFS 2017a).
- High daily PM₁₀ at Muswellbrook on 12 February was due to fires in the north-west of the valley (RFS 2017a). Elevated levels on 15 December (also at Aberdeen and Wybong)

were most likely due to a forest/scrub fire. High daily PM_{2.5} at Muswellbrook on 12 May was due to hazard reduction burns (RFS 2017a).

Small community and diagnostic sites in the Upper Hunter

Although comparing data from small community and diagnostic stations in the Upper Hunter Air Quality Monitoring Network (UHAQMN) with the National Environment Protection (Ambient Air Quality) Measure (Air NEPM) standards is not recommended, OEH recognises that there is a desire within the community to assess how pollution levels at these stations compare with the standards. Table 5 summarises daily PM₁₀ data from the smaller community, background and diagnostic stations within the UHAQMN.

During 2017, there were 39 days in the Upper Hunter when PM₁₀ levels above the standard were recorded at one or more stations (Table 6), an increase compared to 14 days in 2016. Eighty-two percent of these events (32 days) occurred exclusively at stations designated as small community and diagnostic sites. Camberwell, Mount Thorley and Singleton NW recorded the greatest number of days when levels were above the benchmark (Table 5).

Camberwell, a small community station close to a number of mines, had the most days over the PM₁₀ benchmark (33 days). The majority of these occurred during the dry, hot summer and spring periods.

The most widespread event occurred on 12 February, when two large population, four smaller community and one diagnostic station reported levels above the daily PM₁₀ benchmark. Elevated particle levels on this day occurred as a result of fires burning in the northwest part of the valley. The Rural Fire Service reported that northern NSW (from the Hunter region to the Queensland border) experienced catastrophic fire conditions during this February heatwave (RFS 2017b).

Table 3 Days above the PM₁₀ benchmark at Hunter Valley large population centres – 2017

Date	Stations exceeding the daily average PM ₁₀ national benchmark of 50 µg/m ³
11/01/2017	Carrington (51.5)
14/01/2017	Carrington (51.3)
18/01/2017	Singleton (52.0)
6/02/2017	Carrington (51.1)
12/02/2017	Aberdeen (59.4), Muswellbrook (56.5)
10/04/2017	Singleton (50.6)
12/09/2017	Carrington (54.4), Singleton (50.5)
13/09/2017	Carrington (53.2), Singleton (50.6)
23/09/2017	Carrington (52.6)
24/09/2017	Carrington (64.0), Mayfield (70.6), Newcastle (55.0), Singleton (57.0)
07/12/2017	Carrington (52.6)
14/12/2017	Carrington (53.6), Mayfield (58.3)
15/12/2017	Aberdeen (53.3), Muswellbrook (50.8)
20/12/2017	Carrington (58.1), Mayfield (59.2)

Note: This table excludes Stockton. Values in brackets are the actual daily averages at each station.

Table 4 Days above the PM_{2.5} benchmark at Hunter Valley stations – 2017

Date	Stations exceeding the daily average PM _{2.5} national benchmark of 25 µg/m ³
12/05/2017	Muswellbrook (29.0), Singleton (29.6)
27/06/2017	Muswellbrook (31.1)
12/09/2017	Stockton (32.0)

Note: Values in brackets are the actual daily averages at each station.

Table 5 PM₁₀ levels at Upper Hunter small community, background and diagnostic sites – 2017

Station type	Station	Annual average (µg/m ³)	Maximum daily average PM ₁₀ (µg/m ³)	Date of maximum	Days above benchmark
Small community	Bulga	17.2	47.4	23 Sep	0
Small community	Camberwell	27.4	101.5	13 Sep	33
Small community	Jerrys Plains	18.0	50.5	27 Sep	1
Small community	Maison Dieu	23.1	78.9	24 Sep	9
Small community	Warkworth	21.8	50.7	12 Feb	1
Small community	Wybong	16.6	64.3	15 Dec	3
Background	Merriwa	14.2	49.7	12 Feb	0
Background	Singleton South	19.4	55.8	24 Sep	2
Diagnostic	Mount Thorley	25.4	97.2	23 Sep	21
Diagnostic	Muswellbrook NW	18.5	51.0	12 Feb	1
Diagnostic	Singleton NW	22.7	67.9	11 Jan	12

Note: Levels above the daily average PM₁₀ benchmark of 50 µg/m³ are shown in bold

Table 6 Days above the PM₁₀ benchmark in the Upper Hunter – 2017

Date	Stations exceeding the daily average PM ₁₀ national benchmark of 50 µg/m ³
11/01/2017	Camberwell (82.1), Maison Dieu (62.4), Mount Thorley (56.7), Singleton NW (67.9)
14/01/2017	Camberwell (53.2)
18/01/2017	Camberwell (67.7), Singleton (52), Singleton NW (54.3)
24/01/2017	Camberwell (59.9)
30/01/2017	Camberwell (53.9)
31/01/2017	Camberwell (57.1)
06/02/2017	Camberwell (56.3), Mount Thorley (61.2)
11/02/2017	Camberwell (53.9), Mount Thorley (51.7)
12/02/2017	Aberdeen (59.4), Camberwell (77.7), Maison Dieu (57.7), Muswellbrook (56.5), Muswellbrook NW (51), Warkworth (50.7), Wybong (56.3)
10/04/2017	Camberwell (56.8), Mount Thorley (53.0), Singleton (50.6), Singleton NW (50.8)
07/07/2017	Mount Thorley (51.6)
26/07/2017	Camberwell (91.3)
28/07/2017	Camberwell (60.1)
29/07/2017	Mount Thorley (52.8)
30/07/2017	Camberwell (54.4), Mount Thorley (51.4)
31/07/2017	Camberwell (61.3)
07/08/2017	Camberwell (50.8)
11/08/2017	Camberwell (52.4)
15/08/2017	Camberwell (71.9), Mount Thorley (58.2), Singleton NW (52.7)
16/08/2017	Camberwell (87.8), Mount Thorley (54.8), Singleton NW (67.6)
03/09/2017	Camberwell (62.4), Maison Dieu (50.9), Mount Thorley (68.0)
04/09/2017	Camberwell (54.1)
05/09/2017	Camberwell (51.0)
11/09/2017	Camberwell (55.2), Mount Thorley (60.7), Singleton NW (53.4)
12/09/2017	Camberwell (53.5), Mount Thorley (70.6), Singleton (50.5), Singleton NW (58.7)
13/09/2017	Camberwell (101.5), Maison Dieu (67.3), Mount Thorley (87.3), Singleton (50.6), Singleton NW (65.5), Singleton South (52.5)
19/09/2017	Camberwell (52.4)
22/09/2017	Camberwell (51.5), Maison Dieu (51.3), Mount Thorley (80.2)
23/09/2017	Camberwell (62.8), Maison Dieu (66.4), Mount Thorley (97.2), Singleton NW (55.9)
24/09/2017	Camberwell (77.0), Maison Dieu (78.9), Mount Thorley (80.0), Singleton (57.0), Singleton NW (59.0), Singleton South (55.8)
25/09/2017	Camberwell (75.2), Maison Dieu (64.3), Mount Thorley (79.9), Singleton NW (65.6)
27/09/2017	Jerrys Plains (50.5), Wybong (53.0)
28/09/2017	Camberwell (61.5), Mount Thorley (59.6)
29/09/2017	Mount Thorley (56.8)
30/09/2017	Mount Thorley (57.4)
30/10/2017	Camberwell (53.0)
14/12/2017	Camberwell (56.5)
15/12/2017	Aberdeen (53.3), Muswellbrook (50.8), Wybong (64.3)
20/12/2017	Camberwell (59.5), Maison Dieu (66.1), Mount Thorley (61.0), Singleton NW (54.7)

Key: Large population centre site, small community site, diagnostic site, background.

Note: Values in brackets are the actual daily averages at each station

Stockton air quality

The Stockton station is located close to the coast. High PM₁₀ levels at the station are more often associated with exposure to sea salt spray under north-easterly winds as indicated in the pollution rose in Figure 3.

In 2017, the PM₁₀ particle levels were over the daily national standard at Stockton on 60 days and the PM₁₀ annual average was 36.4 µg/m³. The [Lower Hunter Particle Characterisation Study](#) found that the largest contribution to PM₁₀ at Stockton is due to sea salt spray.

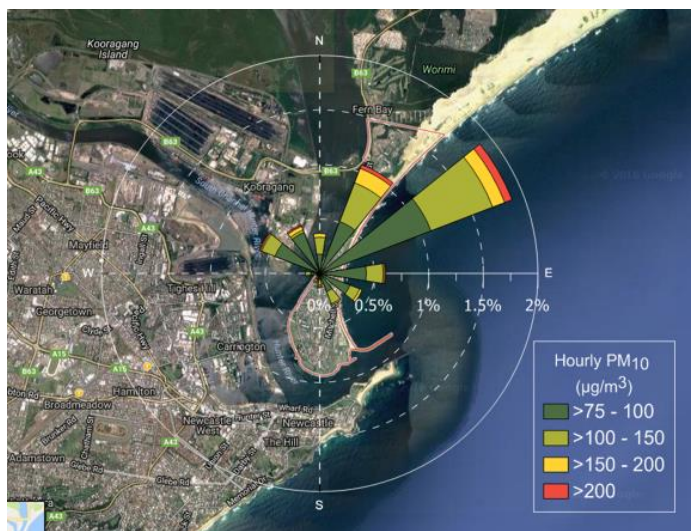


Figure 3 Stockton hourly PM₁₀ levels above 75 µg/m³ in relation to wind direction

More information

Data from the NSW air quality monitoring network is updated hourly and made available online on the [OEH current air quality](#) website. You can also subscribe to automated email and/or SMS air pollution alerts at the [OEH Subscribe to air quality](#) website.

Information about sources of emissions in NSW is available from the [NSW Air Emissions Inventory](#).

Information about the principles and programs used in NSW to manage particle pollution is available on the [EPA Managing particles and improving air quality in NSW](#) website.

Information about actions to reduce emissions in the Upper Hunter is available on the [EPA Upper Hunter air quality](#) website.

Information about sources and research into particle pollution is available at [Upper Hunter Fine Particle Characterisation Study](#), [Lower Hunter Particle Characterisation Study](#) and [Sydney Particle Study](#) websites.

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