REVIEW OF NAMOI AMBIENT AIR QUALITY DATA JULY 2015 TO DECEMBER 2016

NSW Environment Protection Authority

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REVIEW OF NAMOI

AMBIENT AIR QUALITY DATA

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EXECUTIVE SUMMARY

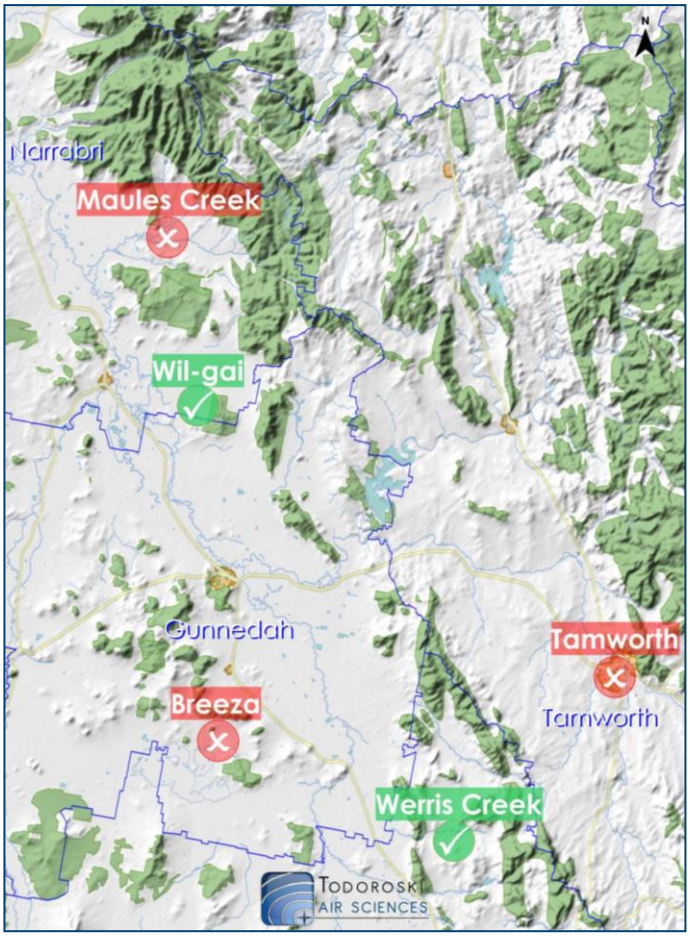
This report has been prepared by Todoroski Air Sciences for the NSW Environment Protection Authority (NSW EPA). It presents ambient air quality monitoring data recorded in the Namoi region for the July 2015 to December period 2016.

The results indicate that the air quality was generally good in the Namoi region during this period.

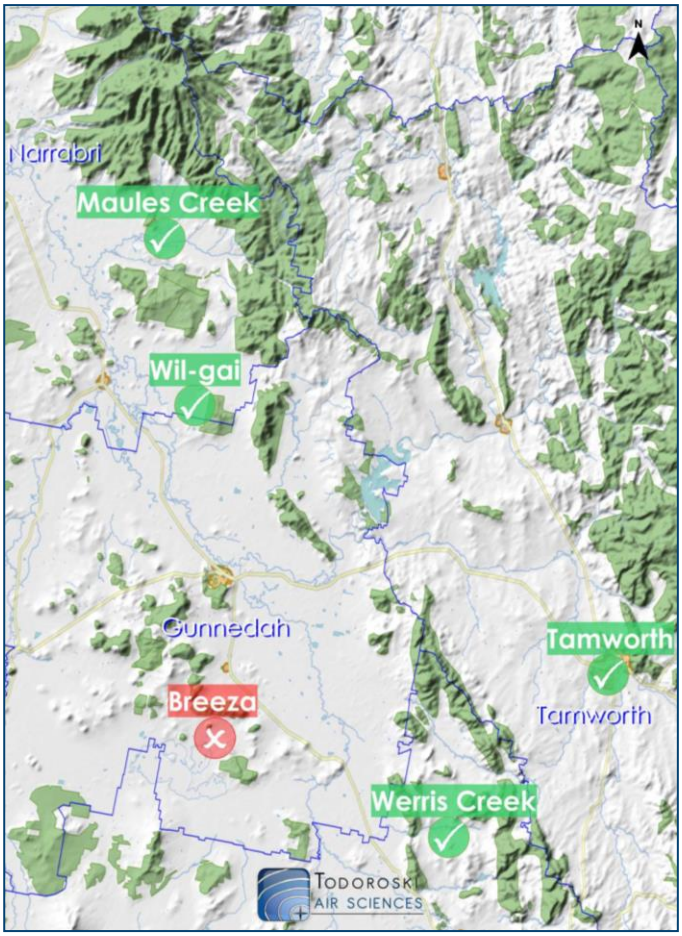
The data summary (shown below) indicates that the Tamworth and Maules Creek monitoring sites recorded one day with 24-hour average PM_{10} levels above the criterion of 50µg/m^3 on 31 January 2016. The Breeza monitoring site recorded one day with 24-hour average PM_{10} and $PM_{2.5}$ levels above the criteria of 50µg/m^3 and 25µg/m^3 on 25 May 2016 respectively, which coincides with a fire event near the monitoring station. All other data were below the applicable criteria. Further details are provided in the report. The 24-hour average data are provided in the Appendices.

Namoi Air Quality Pictorial Summary – July 2015 to December 2016

24-hour average



Annual average (2016)



Namoi Air Quality Tabular Summary – July 2015 to December 2016

Site	PM_{10}	$PM_{2.5}$	PM_{10}	$PM_{2.5}$
	Maximum 24-hour average		Annual average (2016)	
	Air Quality Impact Criteria (µg/m^3)			
	50	25	25	8
Breeza	✗	✗	✓	✗
Maules Creek	✗	✓	✓	✓
Werris Creek	✓	✓	✓	✓
Wil-gai	✓	✓	✓	✓
Tamworth	✗	✓	✓	✓

✓ - All data below applicable criteria

✗ - At least one elevated level above applicable criteria

1 INTRODUCTION

This report has been prepared by Todoroski Air Sciences on behalf of the NSW EPA. It provides a summary and analysis of the available ambient air quality and meteorological data collected in the Namoi region between July 2015 and December 2016.

2 PROJECT SCOPE

The following outlines the scope of work for this project.

- Provide three reports for the Namoi region which cover the periods July 2015 to December 2016, summer (December 2016 to February 2017) and autumn (March 2017 to May 2017). The reports will examine compliance with 24-hour hour average and annual average criteria, summarise all of the reported data and include seasonal trends and analysis to identify likely source categories for elevated pollution events.
- The report will be published on the NSW EPA's website and will assess the available data from monitoring stations operated by the NSW Office of Environment and Heritage (OEH) at Tamworth, and by industry at Breeza, Maules Creek, Werris Creek and Wil-gai.
- The aim is to provide a simplified report that is accessible and contains results that would be clearly understood by the general public.

3 THE PURPOSE OF AMBIENT MONITORING

It is important to note that the data presented in this report are from both NSW EPA and industry monitoring sites. The NSW EPA and the industry monitoring sites collect data for different purposes and this needs to be understood when comparing the data with the criteria.

NSW EPA monitoring sites are specifically designed to measure the likely levels of pollutants that the general population in the area would experience (i.e. an underlying population exposure level), whereas industry monitoring sites are specifically designed to measure maximum levels in a particular location which may be affected by a particular industry.

Data from NSW EPA monitoring sites can generally be compared with national air quality standards. Where the levels measured at NSW EPA monitoring sites are above the national standards on a prolonged and consistent basis, this indicates that some investigation of the potential cause of the issue may be warranted to determine whether any action on a regional level would reduce or better manage the pollutant levels. In the case of PM_{10} and $PM_{2.5}$, it is noted that all data must be published, however days with exceptional events (e.g. bushfires and dust storms) may be excluded for the purpose of assessing compliance with the national standards.

Data from industry monitoring sites can be compared with NSW EPA impact assessment criteria, and Project Approval criteria. Where the levels measured at industry monitoring sites are above the applicable impact assessment or Project Approval criteria on a prolonged and consistent basis, this indicates that further investigation is warranted to determine the potential cause and what action is required by industry to reduce or better manage the pollutant.

Whether there is any harmful effect on an individual due to an air pollutant will depend on many additional factors, and not just on the measured level of a pollutant. These factors include the total

exposure to the pollutant, individual circumstances (age, health, body mass, levels of pollutants at work), levels of other pollutants in the area, and many other factors. Where pollutant levels are below the criteria generally, harm would not be expected to occur, but it does not follow that harm automatically occurs when pollutant levels are above the criteria.

The criteria serve to highlight potential issues with the levels of pollutants that may warrant more detailed examination. The criteria may also serve to prioritise action in various areas, for example areas with the highest pollutant levels and highest populations or highest exposure would be expected to receive priority action.

3.1 More about air quality

More information about air quality can be found via the following links:

- The NSW EPA website provides ambient air quality monitoring data on a weekly basis for four industry operated monitoring locations in the Namoi region, at Breeza, Maules Creek, Werris Creek and Wil-gai.
    - http://www.epa.nsw.gov.au/air/namoi/namoiairmon.htm
- The Air Quality Index (AQI) was developed by the NSW EPA as an easily understood means of rating the pollutant level relative to its pollutant criteria.
    - http://www.environment.nsw.gov.au/AQMS/aboutaqi.htm
- The NSW OEH website air quality page provides hourly updates of the AQI and data readings from the NSW EPA monitoring sites. Subscribers can sign up for alerts for elevated levels for the North-west slopes, based on the Tamworth monitoring site.
    - http://www.environment.nsw.gov.au/aqms/subscribe.htm
- Aqicn.org provides near real-time AQI values for monitoring locations around the world. It should be noted that the AQI presented on this website is calculated differently to the NSW EPA AQI and is less stringent than those used in Australia, thus a direct comparison may not be valid.
    - http://aqicn.org/map/world/
- The NSW Health website provides information on how air pollution affects health and steps for reducing your air pollution and limiting your exposure.
    - http://www.health.nsw.gov.au/environment/air/Pages/default.aspx

4 AIR QUALITY MONITORING SITES

Figure 4-1 and **Table 4-1** summarise the locations and recorded parameters of the monitoring sites in the Namoi region in 2015/ 2016.

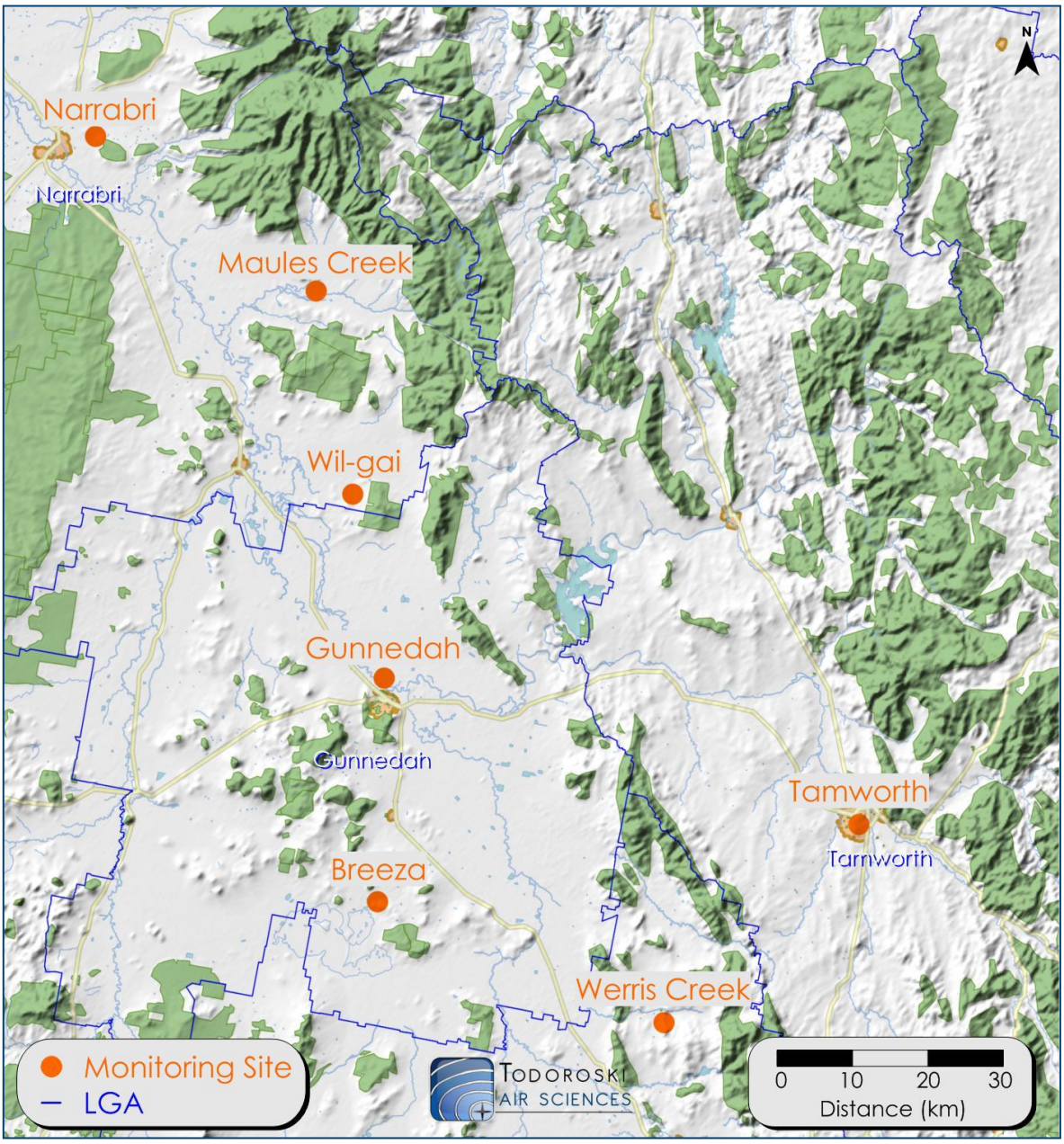


Figure 4-1: Monitoring site locations

Table 4-1: Monitoring sites

Monitoring Station	Type	Recorded Parameters	Recording Periods
Tamworth	NSW OEH site	PM_{10} (TEOM), $PM_{2.5}$ (BAM), WS, WD	Hourly/Daily
Breeza	Industry site	PM_{10} (TEOM), $PM_{2.5}$ (TEOM), WS[1], WD[1]	Hourly/Daily
Maules Creek	Industry site	PM_{10} (TEOM), $PM_{2.5}$ (TEOM), WS[1], WD[1]	Hourly/Daily
Werris Creek	Industry site	PM_{10} (TEOM), $PM_{2.5}$ (TEOM), WS, WD	Hourly/Daily
Wil-gai	Industry site	PM_{10} (TEOM), $PM_{2.5}$ (TEOM), WS, WD	Hourly/Daily
Gunnedah	BOM weather station	WS, WD	Hourly
Narrabri	BOM weather station	WS, WD	Hourly

PM_{10} - Particulate matter < 10µm
$PM_{2.5}$ - Particulate matter < 2.5µm
BOM - Bureau of Meteorology
TEOM - Tapered Element Oscillating Microbalance
BAM - Beta Attenuation Monitor
[1] Sensor not at 10m above ground level
WS - Wind speed
WD - Wind direction

5 AIR QUALITY CRITERIA

The sections below identify the key pollutants currently being monitored at the Namoi air quality monitoring sites and the applicable air quality criteria.

5.1 Particulate matter

Particulate matter consists of particles of varying size and composition. The total mass of all particles suspended in air is defined as the Total Suspended Particulate matter (TSP). The upper size range for TSP is nominally taken to be 30 micrometres (µm) as in practice particles larger than 30 to 50µm will settle out of the atmosphere too quickly to be regarded as air pollutants.

The TSP is defined further into two sub-components. They are PM_{10} particles, particulate matter with aerodynamic diameters of 10µm or less, and $PM_{2.5}$, particulate matter with aerodynamic diameters of 2.5µm or less.

Table 5-1 summarises the air quality goals that are relevant to particulate pollutants as outlined in the NSW EPA document *Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales* (**NSW EPA, 2017**).

Table 5-1: NSW EPA air quality impact assessment criteria

Pollutant	Averaging Period	Criterion
Total suspended particulates (TSP)	Annual	90µg/m^3
Particulate Matter < 10µm (PM_{10})	Annual	25µg/m^3
	24-hour	50µg/m^3
Particulate Matter < 2.5µm ($PM_{2.5}$)	Annual	8µg/m^3
	24-hour	25µg/m^3

Source: **NSW EPA, 2017**

5.2 Summary of applicable criteria for this review

The particulate pollutants monitored in the Namoi region have air quality criteria which are averaged over short and long time periods.

As this report looks at over an annual period of ambient air quality data, the annual average criteria are applicable, along with those averaged over the shorter time periods (24-hours).

Table 5-2 summarises the applicable air quality criteria for this review.

Table 5-2: Air quality criteria used in this review

Pollutant	Averaging Period	Type	Concentration
Particulate Matter < 10µm (PM_{10})	24-hour	Criterion / NEPM Standard[1]	50µg/m^3
	Annual	Criterion/ NEPM Standard[1]	30µg/m^3
Particulate Matter < 2.5µm ($PM_{2.5}$)	24-hour	Criterion/ NEPM Standard[1]	25µg/m^3
	Annual	Criterion/ NEPM Standard[1]	8µg/m^3

[1] Source: **NEPC, 2016**

6 METEOROLOGICAL MONITORING DATA

Representative wind speed and direction data have been obtained from the relevant monitoring stations listed in **Table 4-1.** The data are presented as a series windroses.

For an example of how to read a windrose, refer to **Figure A-1** in **Appendix A**.

Figure 6-1 presents the 2016 annual windroses for Tamworth, Werris Creek, Wil-gai, Gunnedah and Narrabri. Seasonal windroses for the meteorological stations are presented in **Figure 6-2** and **Figure 6-3**.

The annual windroses show that the meteorological stations recorded winds which varied over distance and depending on the local influence of environmental features such as terrain, vegetation and buildings.

On an annual basis, winds were most frequent from the southeast quadrant at Narrabri, Gunnedah and Tamworth. The winds recorded at the Wil-gai weather station were more variable. The Werris Creek weather station also recorded a high proportion of winds from the north to northwest.

During summer, the meteorological stations generally recorded winds which originated from south-easterly quadrant. The recorded wind directions in spring were more variable. The meteorological stations generally recorded winds from the south-easterly quadrant during autumn and winter. The winds at the Wil-gai weather station were generally variable. The Werris Creek weather station recorded a high proportion of winds from the north to northwest in winter.

The recorded wind speeds were generally higher at the Narrabri and Gunnedah (airport) weather stations than at the other sites. This is likely due to the clear open spaces and flat terrain which are characteristic of both sites. The Tamworth weather station generally recorded much lower wind speeds which is likely due to the siting of the station amongst buildings and vegetation within the township of Tamworth.

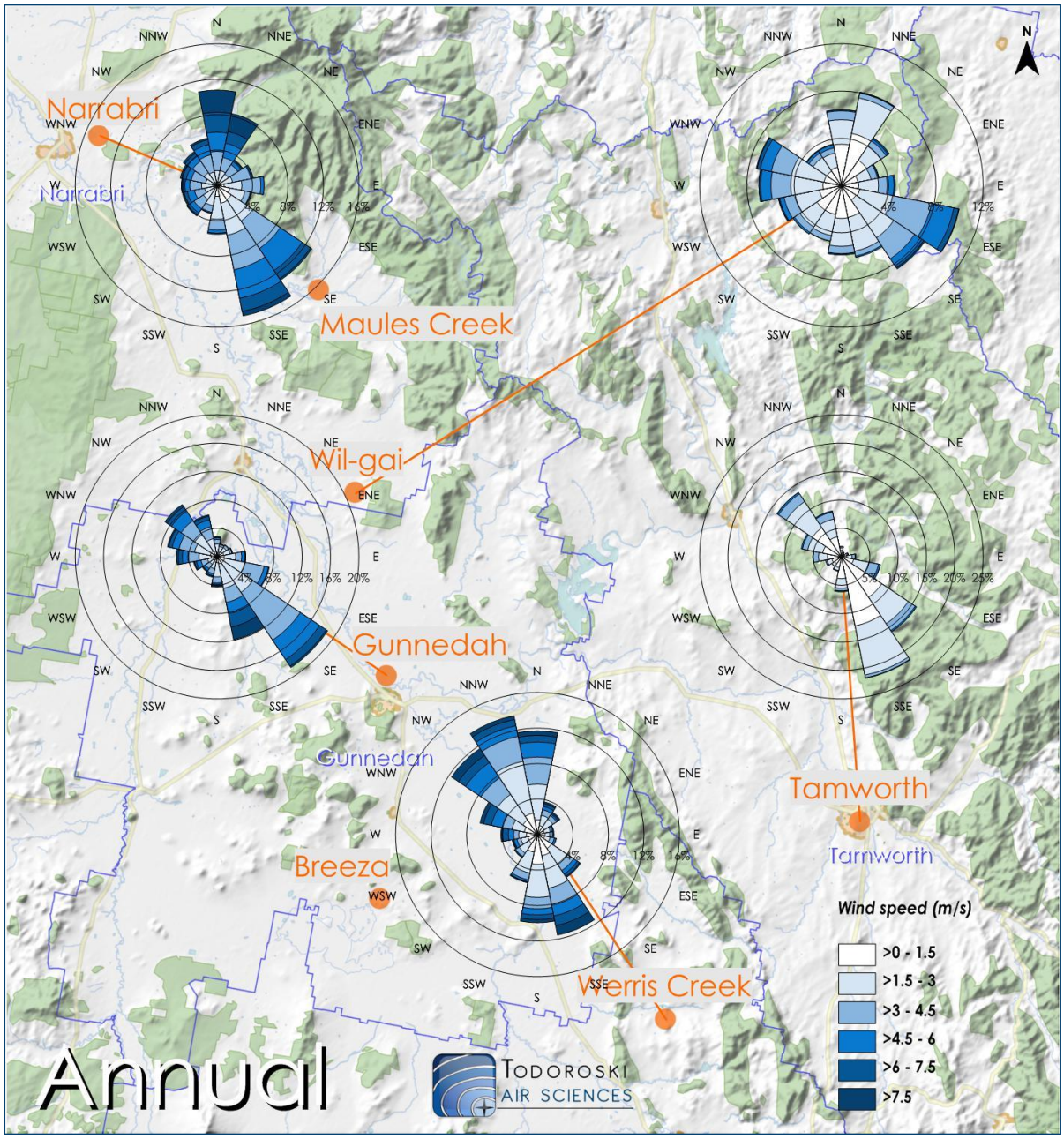


Figure 6-1: Annual 2016 windroses - Tamworth, Werris Creek, Wil-gai, Gunnedah and Narrabri

The annual windroses show that the meteorological stations recorded winds which varied over distance and depending on the local influence of environmental features such as terrain, vegetation and buildings. The recorded wind speeds were generally higher at the Narrabri and Gunnedah (airport) weather stations than at the other sites.

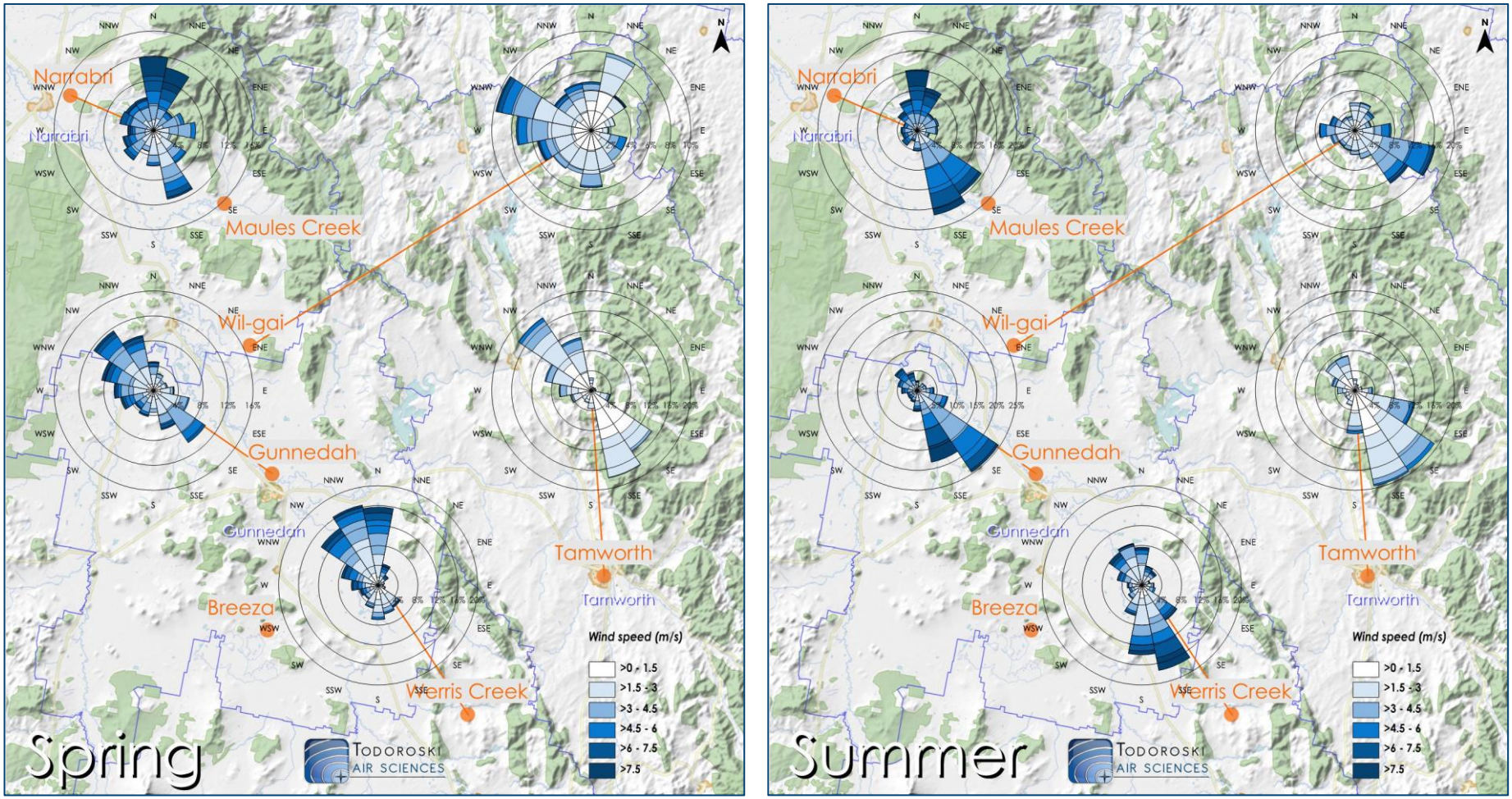


Figure 6-2: Tamworth, Werris Creek, Wil-gai, Gunnedah and Narrabri windroses – Spring 2016 (left) and Summer 2016 (right)

During summer, the meteorological stations generally recorded winds which originated from south-easterly quadrant. The recorded wind directions in spring were more variable.

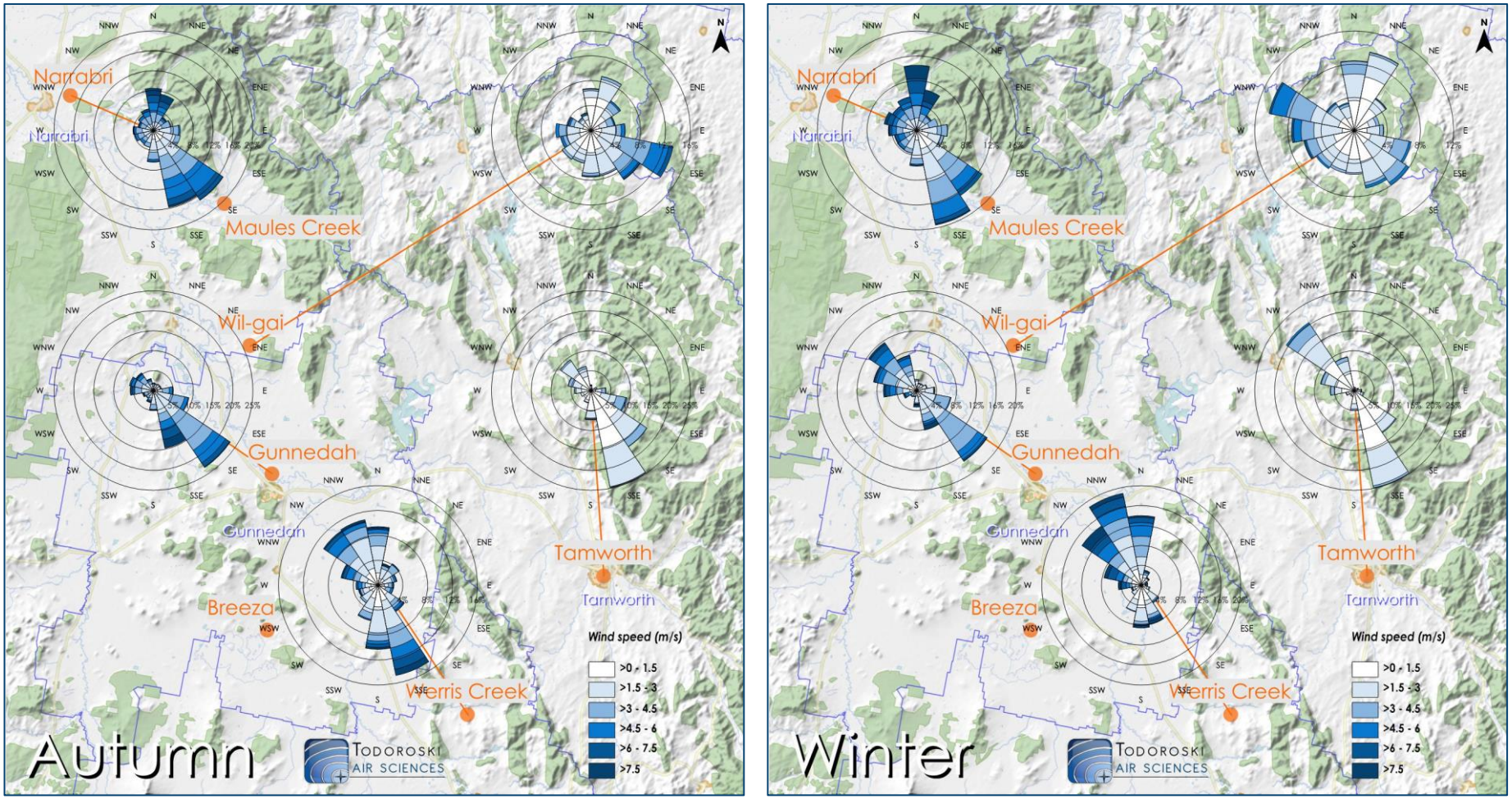


Figure 6-3: Tamworth, Werris Creek, Wil-gai, Gunnedah and Narrabri – Autumn 2016 (left) and Winter 2016 (right)

The meteorological stations generally recorded winds from the south-easterly quadrant during autumn and winter. The winds at the Wil-gai weather station were generally variable. The Werris Creek weather station recorded a high proportion of winds from the north to northwest in winter.

7 AMBIENT AIR QUALITY MONITORING DATA

7.1 Preamble

The monitoring data in this report are presented in raw form as provided to Todoroski Air Sciences by the NSW EPA.

The 24-hour average data presented in this report have been averaged using 1-hour average readings. Only data labelled as valid have been included in the averages. Days which contain less than 75% valid data (less than 18 hours of 1-hour average data) have not been included in this report.

The annual average data presented in this report have been averaged using 24-hour average readings. Annual averages with less than 75% data in a calendar quarter have been indicated.

All of the monitoring data provided to Todoroski Air Sciences are presented in this report. The data are shown in the results and Appendices as relevant. 1-hour, 24-hour and rolling annual average data are presented in a graphical format in **Appendix B** and 24-hour average data are presented in a tabulated format in **Appendix C**.

Hourly averaged pollutant monitoring data were combined with wind speed and direction data to provide an understanding of the conditions in which high pollutant levels most frequently occur. The data are presented as pollution roses in **Appendix B**. For an example pollution rose, refer to **Figure A-2** in **Appendix A**.

7.2 Analysis of Monitoring Data

Table 7-1 presents a summary of the pollutant levels measured from July 2015 to December 2016. The results indicate that the Breeza, Maules Creek and Tamworth monitors recorded 24-hour average PM_{10} levels above the criterion of 50µg/m^3 and the Breeza monitor recorded a 24-hour average $PM_{2.5}$ level above the criteria of 25µg/m^3 and an annual average $PM_{2.5}$ level above the criteria of 8µg/m^3. All other pollutant levels were below the applicable criteria.

Figure 7-1 presents a summary of the PM_{10} and $PM_{2.5}$ AQI levels recorded in the Namoi region during July 2015 to December 2016. The data indicate that the air quality was generally very good in the Namoi region during this period.

Table 7-1: Maximum and annual average pollutant levels – July 2015 to December 2016

Site	PM_{10}	$PM_{2.5}$	PM_{10}	$PM_{2.5}$
	Maximum 24-hour average		Annual average (2016)	
	Air Quality Impact Criteria (µg/m^3)			
	50	**25**	**25**	**8**
Breeza	44.6[1] (**206.5**)	22.1[1] (**181.2**)	12.0[1] (12.5)	7.9[1] (**8.4**)
Maules Creek	**62.8**	15.7	9.0	2.9
Werris Creek	41.2	18.7	10.1	5.3
Wil-gai	49.5	21.0	11.0	3.8
Tamworth	**51.7**	17.6	15.3	7.6[2]

[1] Excludes extraordinary event (smoke from fire) on 25 May 2016

[2] Less than 75% of data available in 2016 calendar year and first quarter of 2016

7.3 PM_{10}

Figure 7-2 presents all of the 24-hour average PM_{10} monitoring results recorded in the Namoi region between July 2015 and December 2016.

Relative to the Air Quality Index, as shown by the coloured bands in the figure, PM_{10} levels were generally very good or good. The monitors recorded fair levels between 0.2% of the time (Werris Creek) and 1.4% of the time (Wil-gai). The Tamworth and Maules Creek monitors recorded poor levels on one day and the Breeza monitor recorded one day with hazardous levels.

The Breeza, Maules Creek and Tamworth monitors each recorded one day with elevated PM_{10} levels above the 24-hour average criterion of 50µg/m^3. All other 24-hour average data were below the criterion between July 2015 and December 2016.

All annual average data recorded at the Namoi monitoring sites were below the criterion of 25µg/m^3 in 2016.

Figure B-1 to **Figure B-5** in **Appendix B** present the 1-hour average, 24-hour average and rolling annual average PM_{10} data in graphical form for each individual site. The rolling annual averages are based on the previous 12-month periods of data. There is no criterion that applies to 1-hour average PM_{10} levels and these 1-hour results are not intended to be compared with the PM_{10} criterion. It is a normal occurrence, and it is expected that in the normal environment 1-hour average PM_{10} levels will fluctuate more significantly than 24-hour average PM_{10} levels.

We note the monitoring sites on occasion recorded periods in which PM_{10} levels were less than zero. In some situations the concentration of the pollutant being measured may be very close to zero, in which

case the measured value may be less than the measurement limit of detection (**NEPC, 2001**), and in these circumstances the output may be negative.

The monitors may also record short term positive or negative values due to instrument faults, the presence of moisture within the instrument or volatile matter (which can register as a solid mass at first, but then evaporates, registering negative mass at a later time).

Figure B-6 to **Figure B-8** present pollution roses of the PM_{10} monitoring data collected by the Namoi monitoring sites during July 2015 to December 2016.

7.4 $PM_{2.5}$

Figure 7-3 presents all of the 24-hour average $PM_{2.5}$ monitoring data recorded in the Namoi region between July 2015 and December 2016.

Relative to the Air Quality Index, as shown by the coloured bands in the figure, the data indicate that $PM_{2.5}$ levels were generally very good to good between July 2015 and December 2016. The Werris Creek and Tamworth monitors recorded fair levels on three days and the Wil-gai monitor recorded four days with fair levels. The Breeza monitor recorded fair levels approximately 6% of the time (30 days) and recorded one day with hazardous levels.

On 25 May 2016 the Breeza monitor recorded a hazardous level which was above the 24-hour average $PM_{2.5}$ criterion of 25µg/m^3. All other 24-hour average data recorded at the Namoi monitoring sites were below the criterion between July 2015 and December 2016.

In 2016 the Breeza monitor recorded an annual average $PM_{2.5}$ level of 8.4µg/m^3 which was greater than the criterion of 8µg/m^3. All other annual average $PM_{2.5}$ levels were below the annual average $PM_{2.5}$ criterion in 2016.

Figure B-9 to **Figure B-13** in **Appendix B** present the 1-hour average, 24-hour average and rolling annual average $PM_{2.5}$ data in graphical form for each individual site. The rolling annual averages are based on the previous 12-month periods of data. There is no criterion that applies to 1-hour average $PM_{2.5}$ levels and these 1-hour results are not intended to be compared with the $PM_{2.5}$ criteria. It is a normal occurrence, and it is expected that in the normal environment 1-hour average $PM_{2.5}$ levels will fluctuate more significantly than 24-hour average $PM_{2.5}$ levels.

We note the monitoring sites on occasion recorded periods in which $PM_{2.5}$ levels were less than zero. In some situations the concentration of the pollutant being measured may be very close to zero, in which case the measured value may be less than the measurement limit of detection (**NEPC, 2001**), and in these circumstances the output may be negative.

The monitors may also record short term positive or negative values due to instrument faults, the presence of moisture within the instrument or volatile matter (which can register as a solid mass at first, but then evaporates, registering negative mass at a later time).

Figure B-14 to **Figure B-16** present pollution roses of the $PM_{2.5}$ monitoring data collected by the Namoi monitoring sites during July 2015 to December 2016.

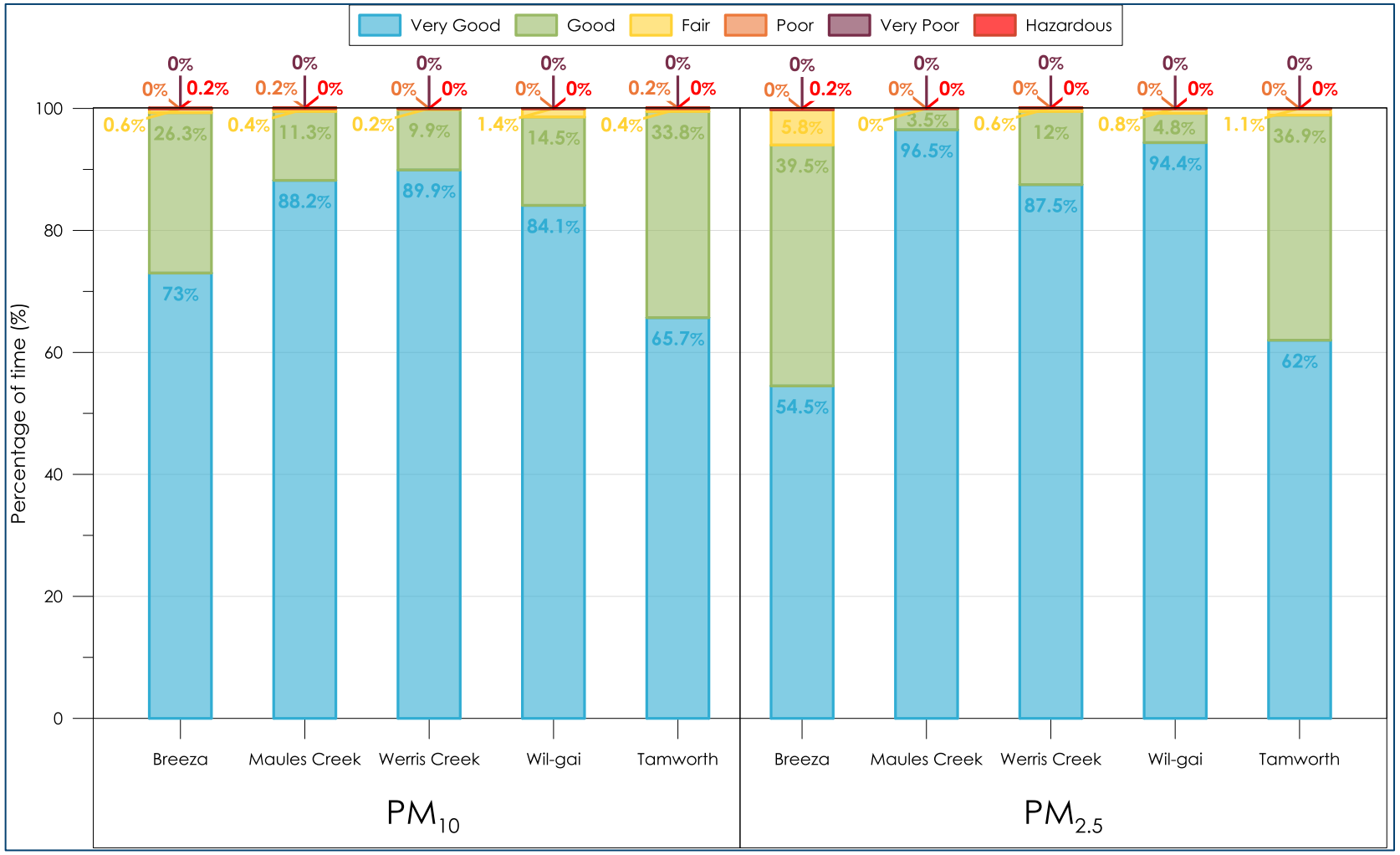


Figure 7-1: Summary of AQI levels recorded in the Namoi region during July 2015 to December 2016

The data indicate that PM_{10} levels in the Namoi region were very good between 65.7% (Tamworth) and 89.9% (Werris Creek) of the time, and $PM_{2.5}$ levels were very good between 54.5% (Breeza) and 96.5% (Maules Creek) of the time.

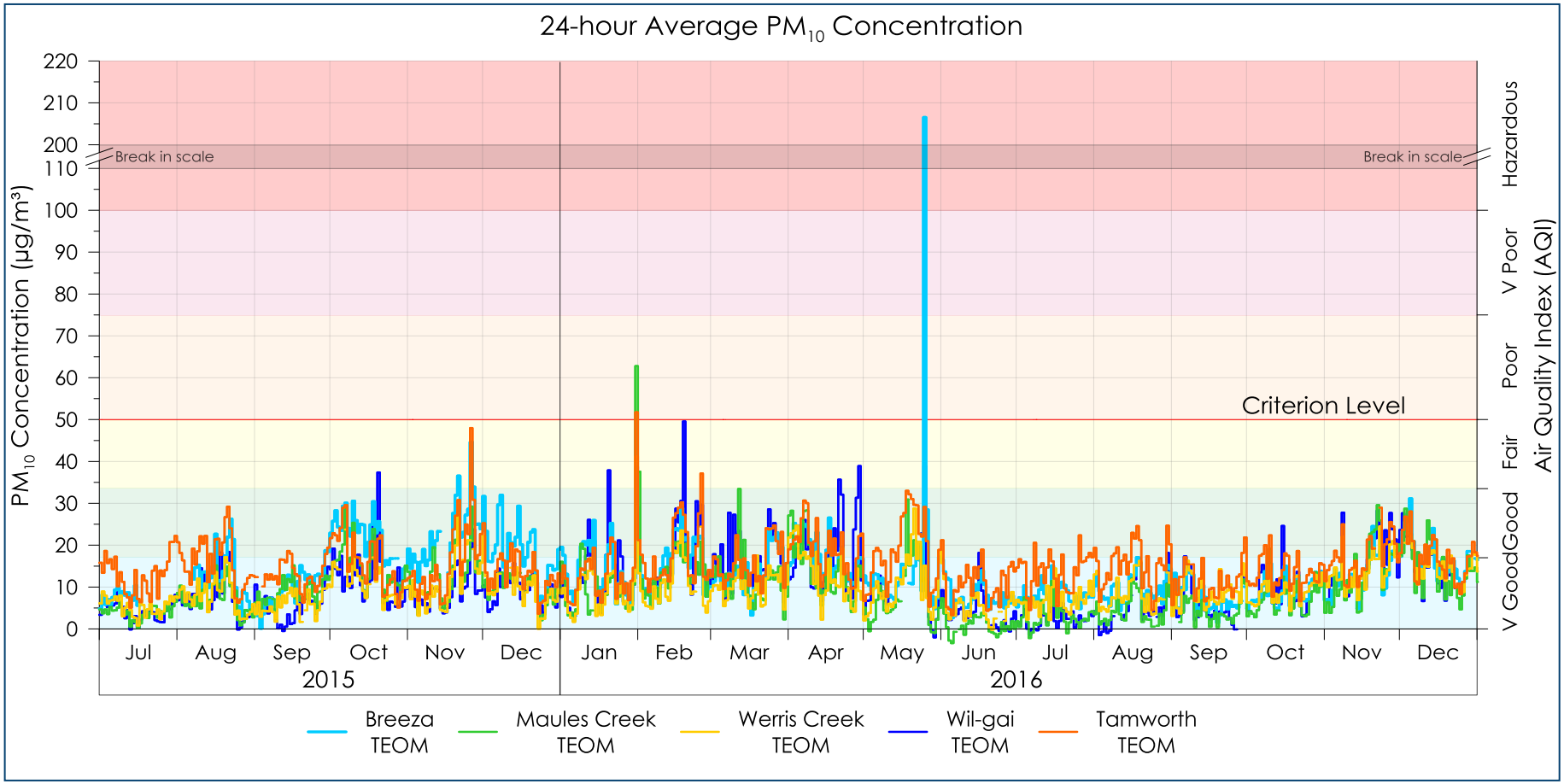


Figure 7-2: Namoi 24-hour average PM_{10} levels – July 2015 to December 2016

The recorded PM_{10} levels were generally very good or good between July 2015 and December 2016. The monitors recorded fair levels between 0.2% of the time (Werris Creek) and 1.4% of the time (Wil-gai). The Tamworth and Maules Creek monitors recorded poor levels on one day which were most likely caused by a regional dust storm and localised sources near Maules Creek. The Breeza monitor recorded one day with hazardous levels which were most likely caused by nearby fire activity. The Breeza, Maules Creek and Tamworth monitors each recorded one day with elevated PM_{10} levels above the 24-hour average criterion of 50µg/m^3. All other 24-hour average data were below the criterion between July 2015 and December 2016.

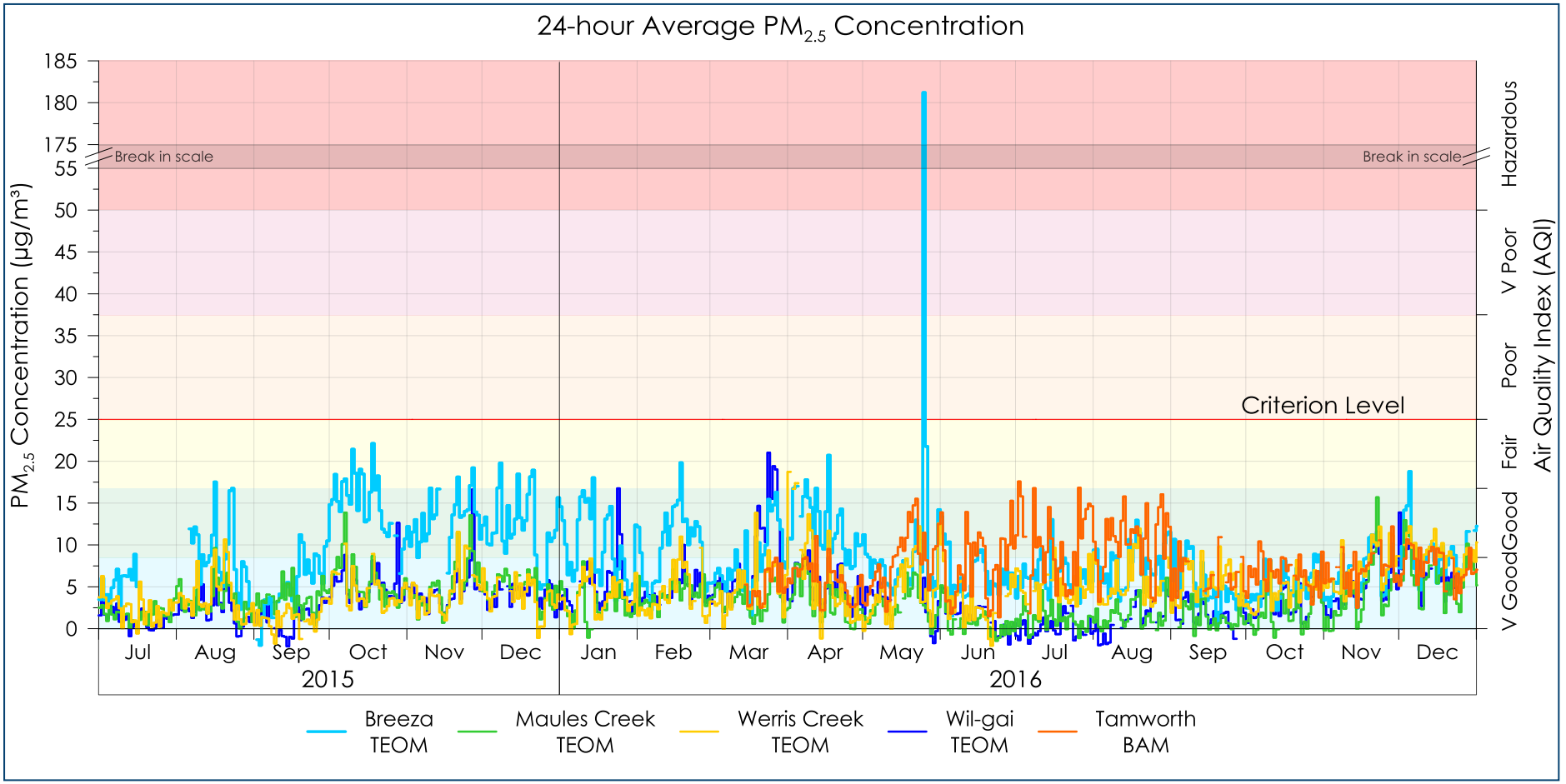


Figure 7-3: Namoi 24-hour average $PM_{2.5}$ levels – July 2015 to December 2016

The recorded $PM_{2.5}$ levels were generally very good to good between July 2015 and December 2016. The Werris Creek and Tamworth monitors recorded fair levels on three days and the Wil-gai monitor recorded four days with fair levels. The Breeza monitor recorded fair levels approximately 6% of the time (30 days) and recorded one day with hazardous levels which were most likely caused by nearby fire activity. On 25 May 2016 the Breeza monitor recorded a hazardous level which was above the 24-hour average $PM_{2.5}$ criterion of 25µg/m^3. All other data recorded at the Namoi monitoring sites were below the criterion of 25µg/m^3.

8 ANALYSIS OF ELEVATED POLLUTANT LEVELS

There were four elevated levels above the applicable criteria between July 2015 and December 2016, these included:

- 24-hour average PM_{10} level of 62.8µg/m^3 recorded at Maules Creek on 31 January 2016;
- 24-hour average PM_{10} level of 51.7µg/m^3 recorded at Tamworth on 31 January 2016;
- 24-hour average PM_{10} level of 206.5µg/m^3 recorded at Breeza on 25 May 2016; and,
- 24-hour average $PM_{2.5}$ level of 181.2µg/m^3 recorded at Breeza on 25 May 2016.

8.1 Maules Creek and Tamworth TEOM monitors - 31 January 2016

Figure 8-1 and **Figure 8-2** present plots of the 1-hour average PM_{10}, wind speed and wind direction data recorded at Tamworth and Maules Creek on 31 January 2016 respectively. The data presented in **Figure 8-1** shows that the Tamworth monitor recorded elevated PM_{10} levels during a period of moderate wind speed from the northwest from approximately 6am to 1pm. All of the monitoring sites except for Breeza recorded a similar trend with more elevated PM_{10} levels at this time, which suggests a regional dust event is likely to have contributed significantly to the elevated levels.

Figure 8-1 and **Figure 8-2** show that unlike the other monitors, the Maules Creek monitor recorded a significant spike affecting PM_{10} levels at 7pm and 8pm. The spike occurs during a period of sustained westerly winds with speeds of approximately 4m/s. Levels of $PM_{2.5}$ did not significantly increase. Given that no other monitors recorded similar levels at this time it is likely the elevated levels recorded in the evening at Maules Creek were caused by a localised source of coarse (PM_{10}) particulates to the west of the monitor. Mining activity appears to occur south of the monitor, and is unlikely to be the cause of the elevated level.

8.2 Breeza – 25 May 2016

Figure 8-3 presents a plot of the 1-hour average PM_{10} and $PM_{2.5}$ data recorded at Breeza on 25 May 2016. The 1-hour average wind speed and wind direction data recorded at Gunnedah have also been included.

The data presented in **Figure 8-3** show that the Breeza monitor recorded elevated PM_{10} and $PM_{2.5}$ levels from 1:00am to 10:00am and from 7:00pm to midnight 25 May 2016, during low wind speeds primarily from the east.

Figure 8-4 presents satellite imagery of the Namoi region on 24 May 2016. The image shows that there was a fire adjacent to the monitor in the afternoon preceding the elevated levels on 25 May 2016. Given the low and variable wind conditions and the highly elevated $PM_{2.5}$ levels at Breeza, it is most likely that the elevated PM_{10} and $PM_{2.5}$ levels recorded at the monitor originated from the fire activity.

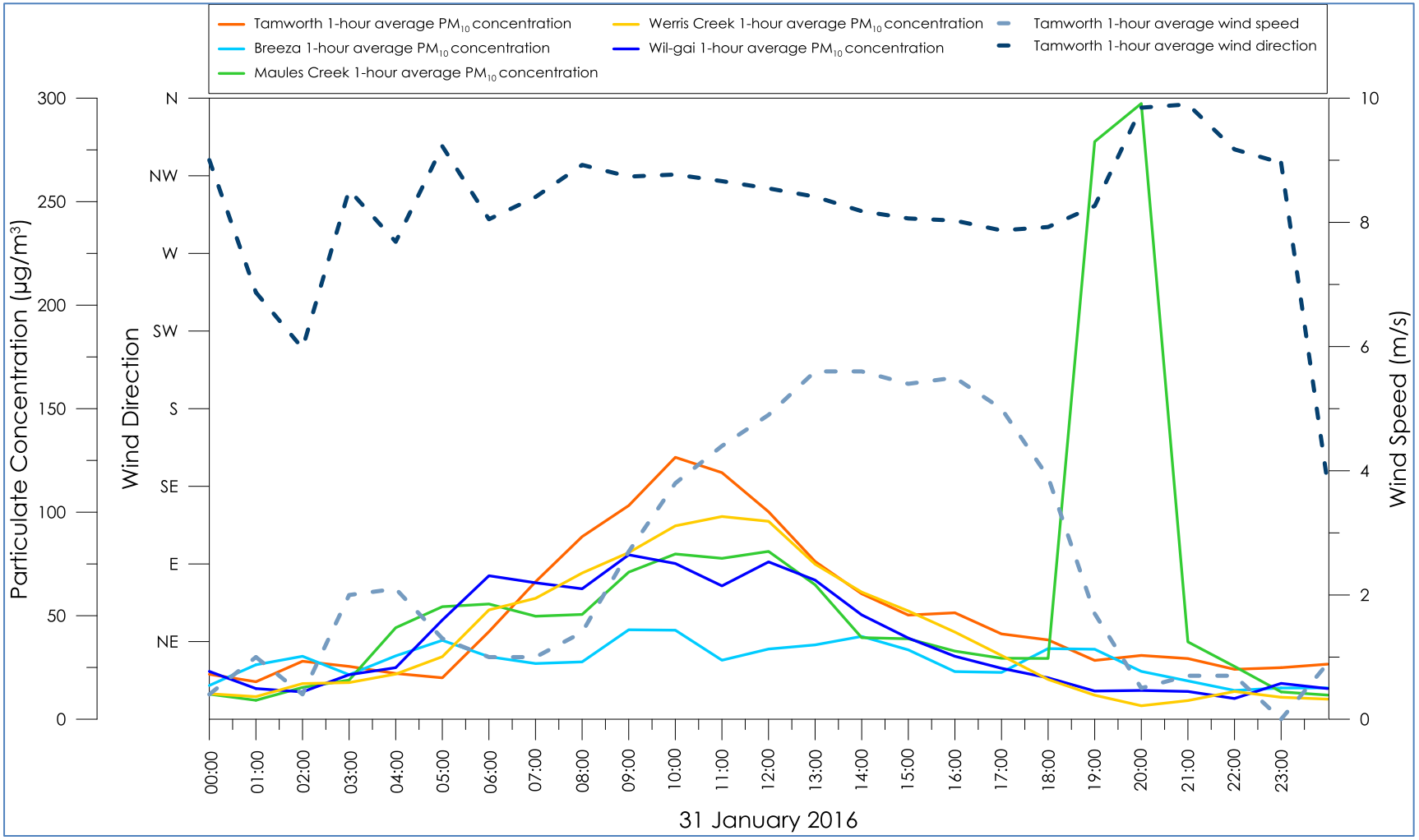


Figure 8-1: Analysis of elevated PM_{10} levels on 31 January 2016 – Tamworth

The Tamworth monitor recorded elevated PM_{10} levels from approximately 6am to 3pm on the 31 January 2016 during periods of wind speeds from the north-west.

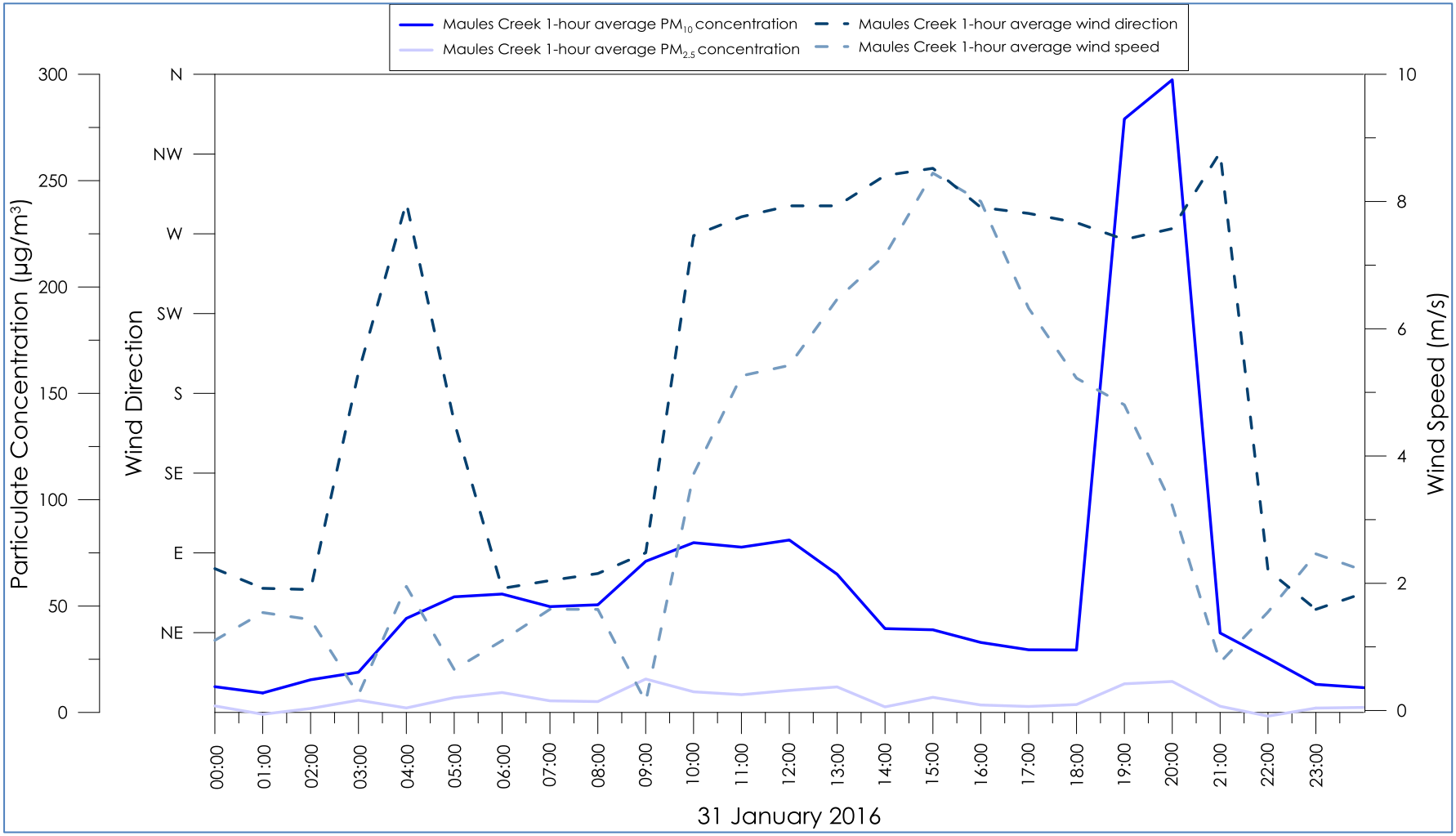


Figure 8-2: Analysis of elevated PM_{10} levels on 31 January 2016 – Maules

The Maules monitor recorded elevated PM_{10} levels from approximately 9pm to 10pm on 31 January 2016 which were likely caused by a localised source of coarse (PM_{10}) particulates to the west of the monitor. The $PM_{2.5}$ levels did not rise proportionally with PM_{10}.

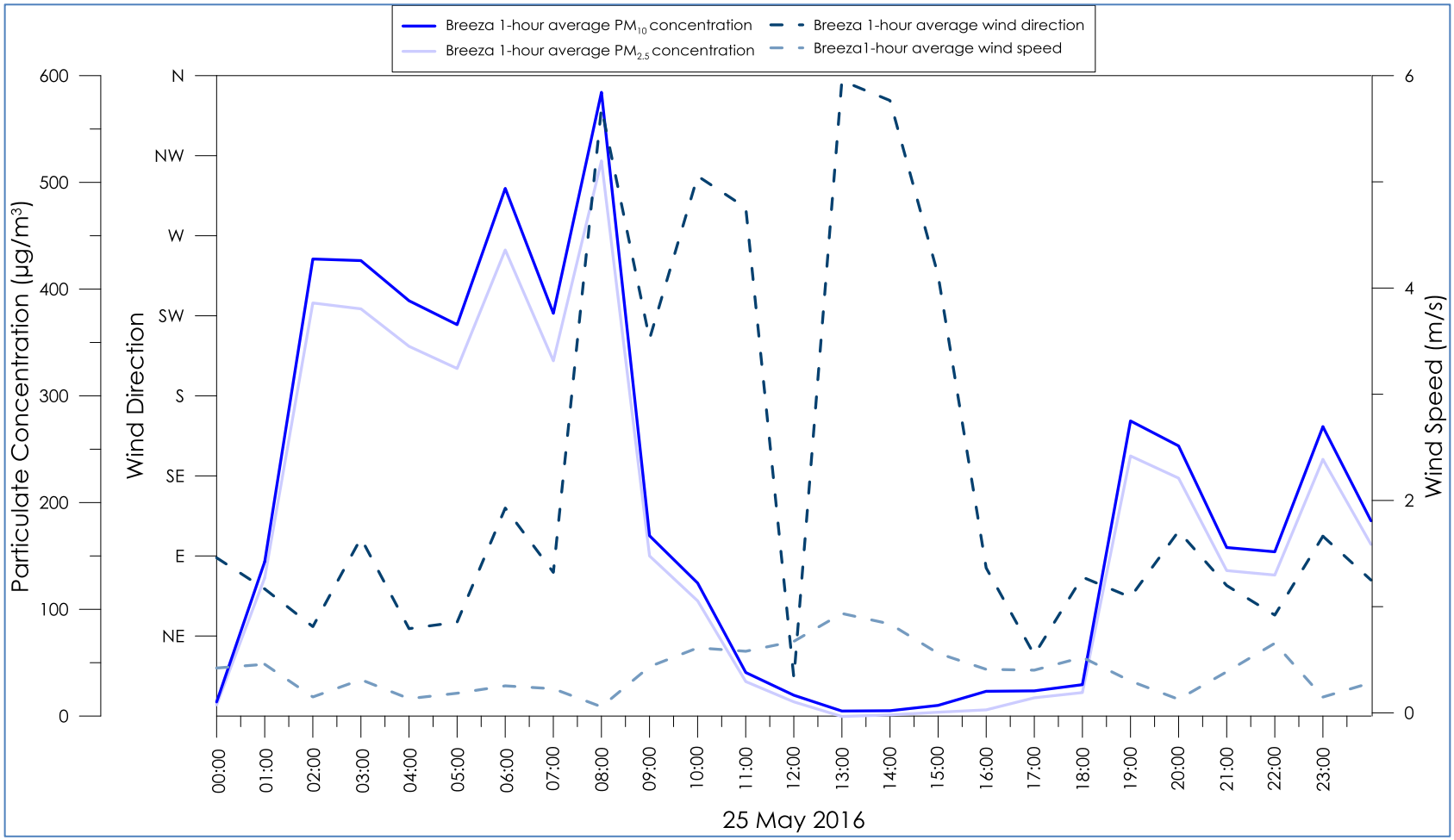


Figure 8-3: Analysis of elevated $PM_{2.5}$ levels on 25 May 2016 – Breeza

The Breeza monitor recorded elevated PM_{10} and $PM_{2.5}$ levels from 1:00am to 10:00am and from 7:00pm to midnight 25 May 2016, during low wind speeds primarily from the east. The elevated PM_{10} and $PM_{2.5}$ levels recorded at the monitor most likely originated from nearby fire activity.

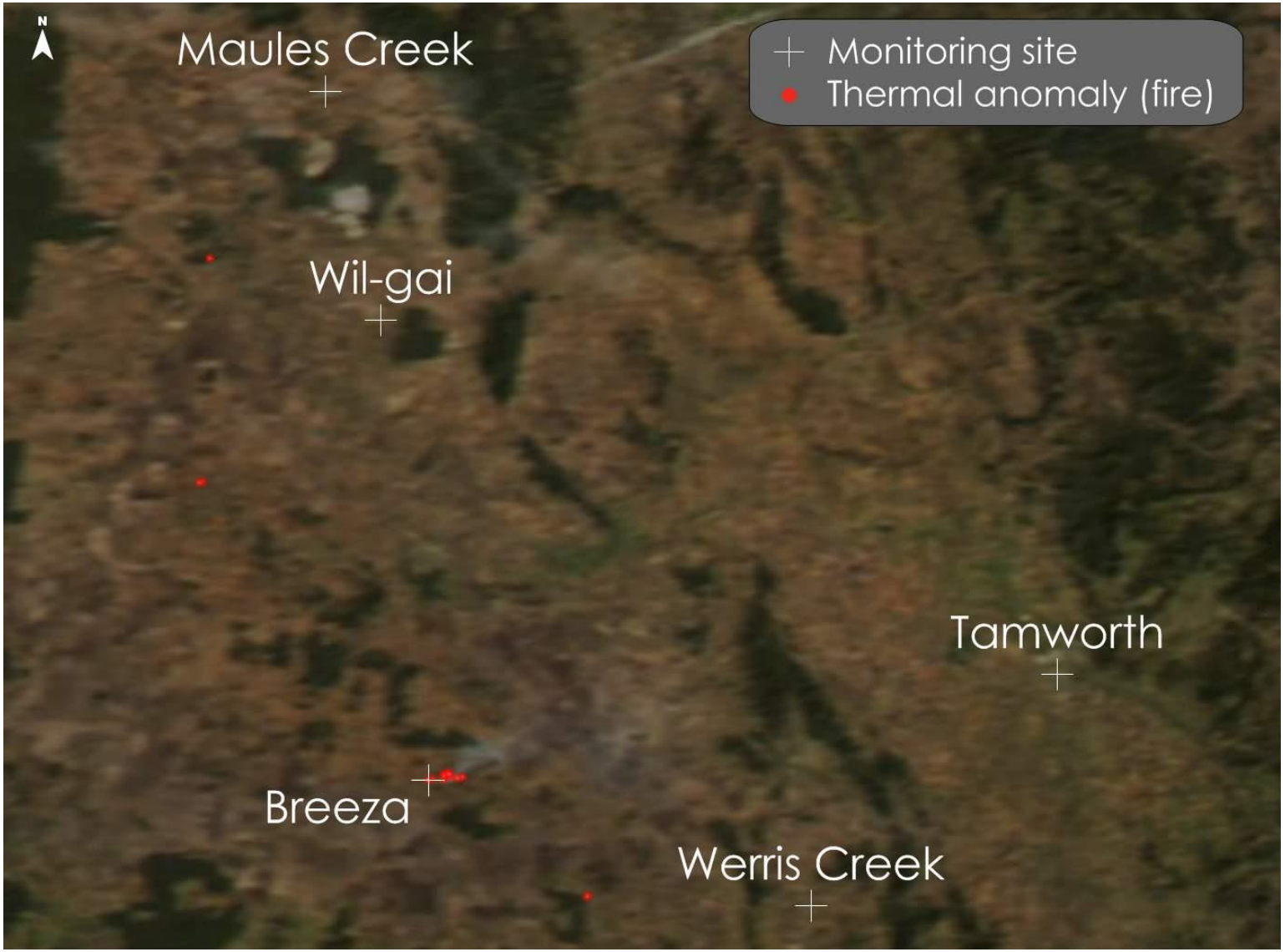


Figure 8-4: Satellite imagery of smoke from fire on 24 May 2016 (NASA, 2017)

9 LONGER TERM TRENDS

This section provides a brief analysis of the seasonal trends in the Namoi air quality monitoring data from July 2015 to December 2016. It is important to note that there are no criteria which apply to seasonal averages. These data have been presented to provide an illustration of the seasonal trends over the monitoring period.

Figure 9-1 presents seasonal averages of the PM_{10} and $PM_{2.5}$ monitoring data recorded in the Namoi region in 2015 and 2016. The figure also shows the ratio of $PM_{2.5}$ to PM_{10} as a percentage, based on the seasonal average concentrations. It should be noted that only two month of data were available to calculate the winter averages at the beginning of the monitoring period in July 2015.

The data in **Figure 9-1** show that PM_{10} levels in the Namoi region were generally highest during the warmer seasons and lowest during winter. This is likely due to the natural seasonal variation of dust levels in which warmer weather typically raises the potential for drier ground and elevates the occurrence of windblown dust, bushfires and pollen levels.

$PM_{2.5}$ levels recorded in the Namoi region varied depending on the location of the monitor.

The Breeza monitor recorded $PM_{2.5}$ levels which were significantly higher than the other monitoring sites between winter 2015 and autumn 2016. The high levels in this location are unusual given that the monitor is situated in a relatively remote location and that there are no known, significant sources of $PM_{2.5}$ located near the monitor. It is possible that pollen and/or volatile material from plant matter from the surrounding farmland contributed to the high levels recorded at this monitor, however no clear cause can be found for the elevated levels.

The levels recorded at the Tamworth monitor were also generally higher than the other sites, particularly in winter, as might be expected from a location within a large rural town.

The $PM_{2.5}$/ PM_{10} ratios show that the Tamworth and Werris Creek monitors recorded their highest $PM_{2.5}/PM_{10}$ ratios of approximately 70% during winter 2016. This is likely to be due to smoke from domestic wood heaters during the cooler times as these monitors are located within towns. The rural monitoring sites at Wil-gai and Maules Creek do not show any clear trend of increasing $PM_{2.5}$/ PM_{10} ratios during the cool times.

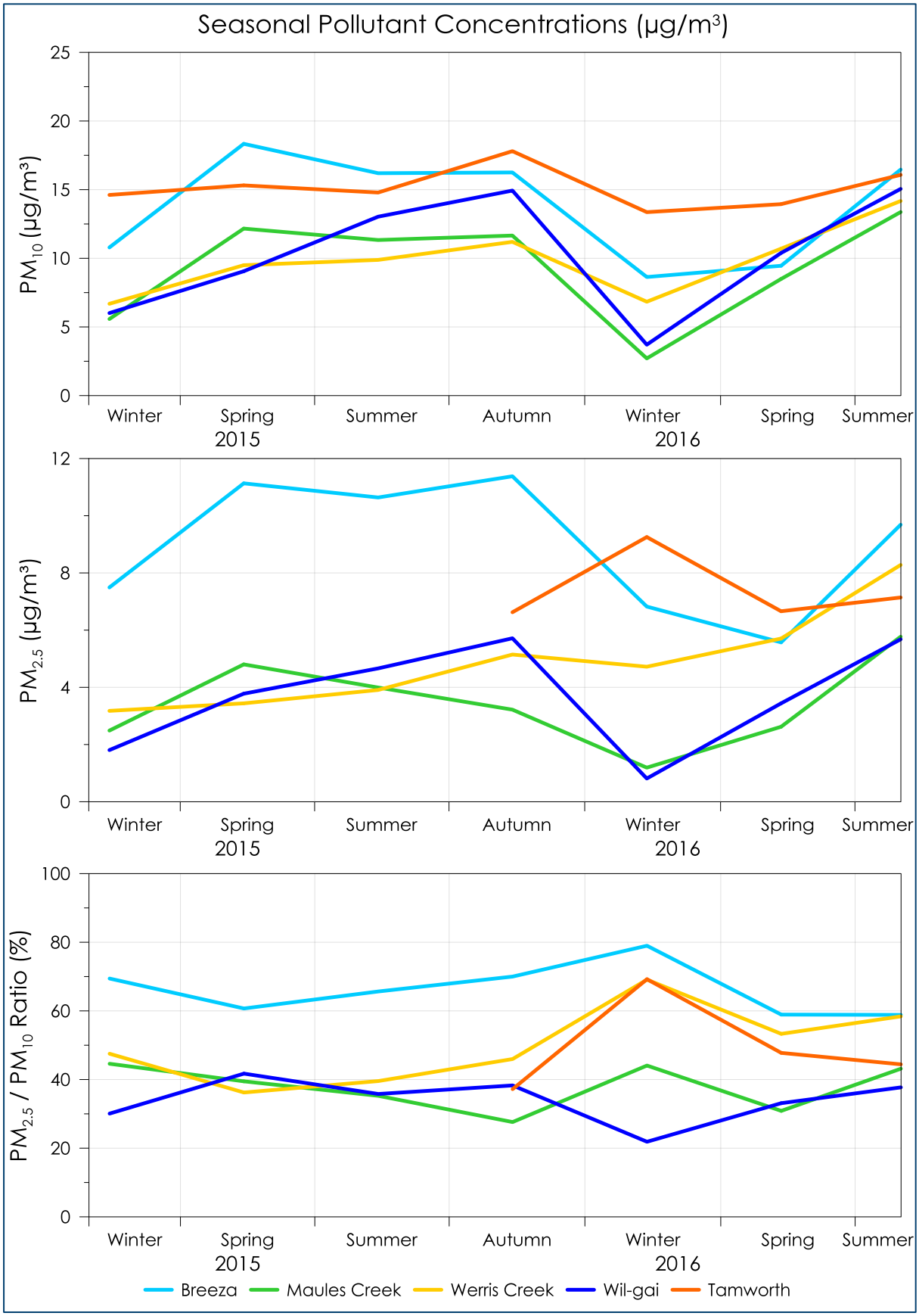


Figure 9-1: Seasonal Pollutant Concentrations (July 2015 to December 2016)

10 CONCLUSIONS

The results indicate that the monitoring stations generally recorded good air quality in July 2015 to December 2016.

The Tamworth and Maules Creek monitors recorded 24-hour average PM_{10} levels above the criterion of 50µg/m^3 on 31 January 2016. A regional dust event is likely to have contributed to the elevated levels at both monitors and a localised source of coarse particulates also likely contributed to the levels recorded at Maules Creek.

The Breeza monitor recorded 24-hour average PM_{10} and $PM_{2.5}$ levels above the applicable criteria on 25 May 2016. The elevated levels were recorded from 1:00am to 10:00am and from 7:00pm to midnight, during low wind speed conditions with the nearby fire activity being the likely cause.

All recorded annual average levels were below the applicable annual average criteria in July 2015 to December 2016 (average calculated excluding the fire event at Breeza on the 25 May 2016).

Relative to the Air Quality Index:

- The measured PM_{10} levels were very good 67% to 90% of the time. Levels were very good or good 98.6% to 99.8% of the time. The Breeza, Maules Creek, Werris Creek, Wil-gai and Tamworth monitors recorded fair levels on three days (0.6%), two days (0.4%), one day (0.2%), seven days (1.4%) and two days (0.4%) respectively. On 31 January 2016 the Maules Creek and Tamworth monitors recorded poor levels. The Breeza monitor also recorded one day with hazardous levels on 25 May 2016; and,
- The measured levels of $PM_{2.5}$ were generally very good 54.5% to 96.5% of the time. Levels were very good or good 94% to 100% of the time. The Breeza, Werris Creek, Wil-gai and Tamworth monitors recorded fair levels thirty days (5.8%), three days (0.6%), four days (0.8%) and three days (1.1%) respectively. The Breeza monitor also recorded one day with hazardous levels on 25 May 2016.

On this basis it can be concluded that the air quality in the Namoi region was generally good in the July 2015 to December 2016 period.

11 REFERENCES

NASA (2017)

NASA Worldview website. <https://worldview.earthdata.nasa.gov/>, accessed 23 June 2017.

NEPC (2001)

"National Environment Protection (Ambient Air Quality) Measure Technical Paper No. 5 Data Collection and Handling", National Environment Protection Council, May 2001.

NEPC (2016)

"National Environment Protection (Ambient Air Quality) Measure", National Environment Protection Council, March 2016.

NSW EPA (2017)

"Approved Methods for the Modelling and Assessment of Air Pollutants in NSW", State of NSW and Environment Protection Authority, January 2017.

Appendix A

How to read a windrose

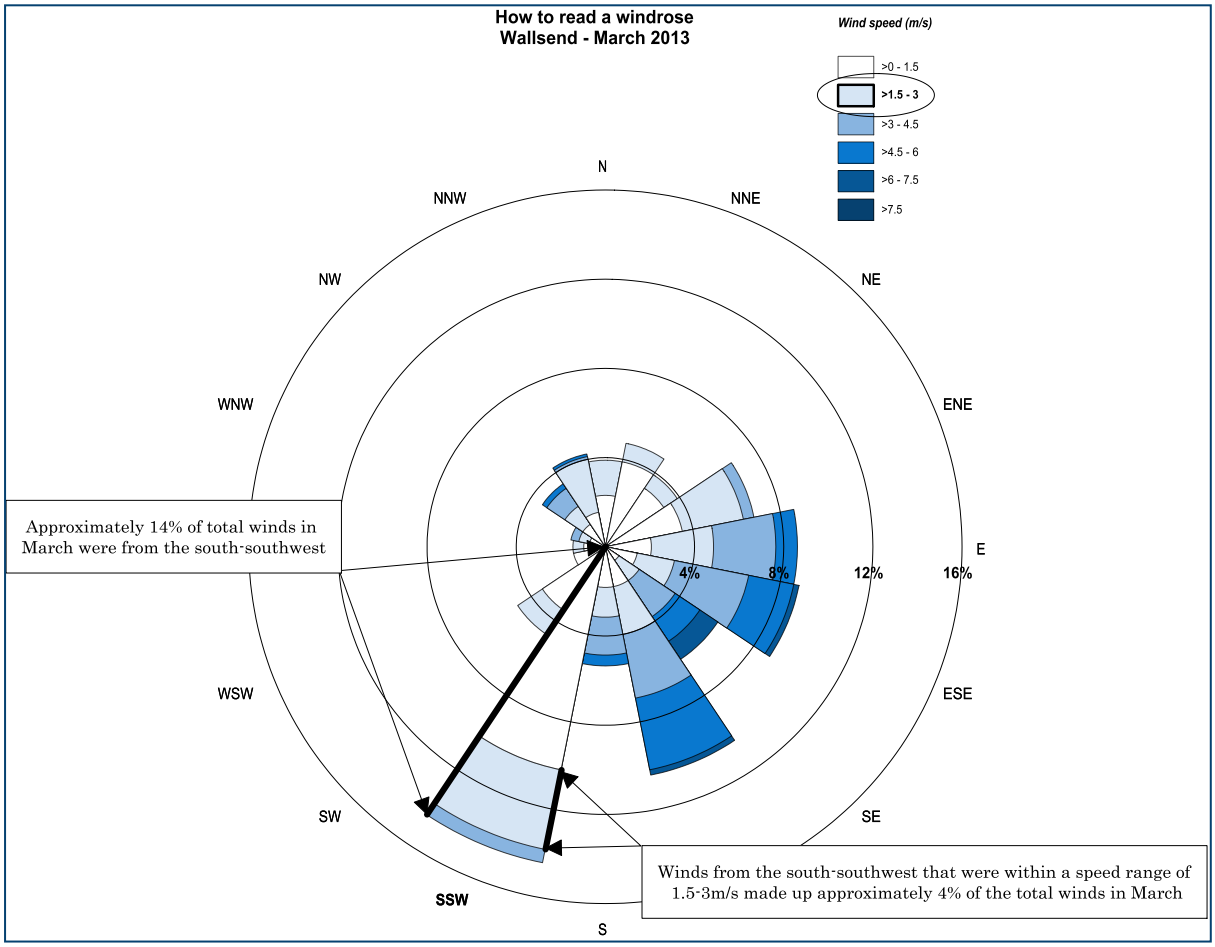


Figure A-1: How to read a windrose

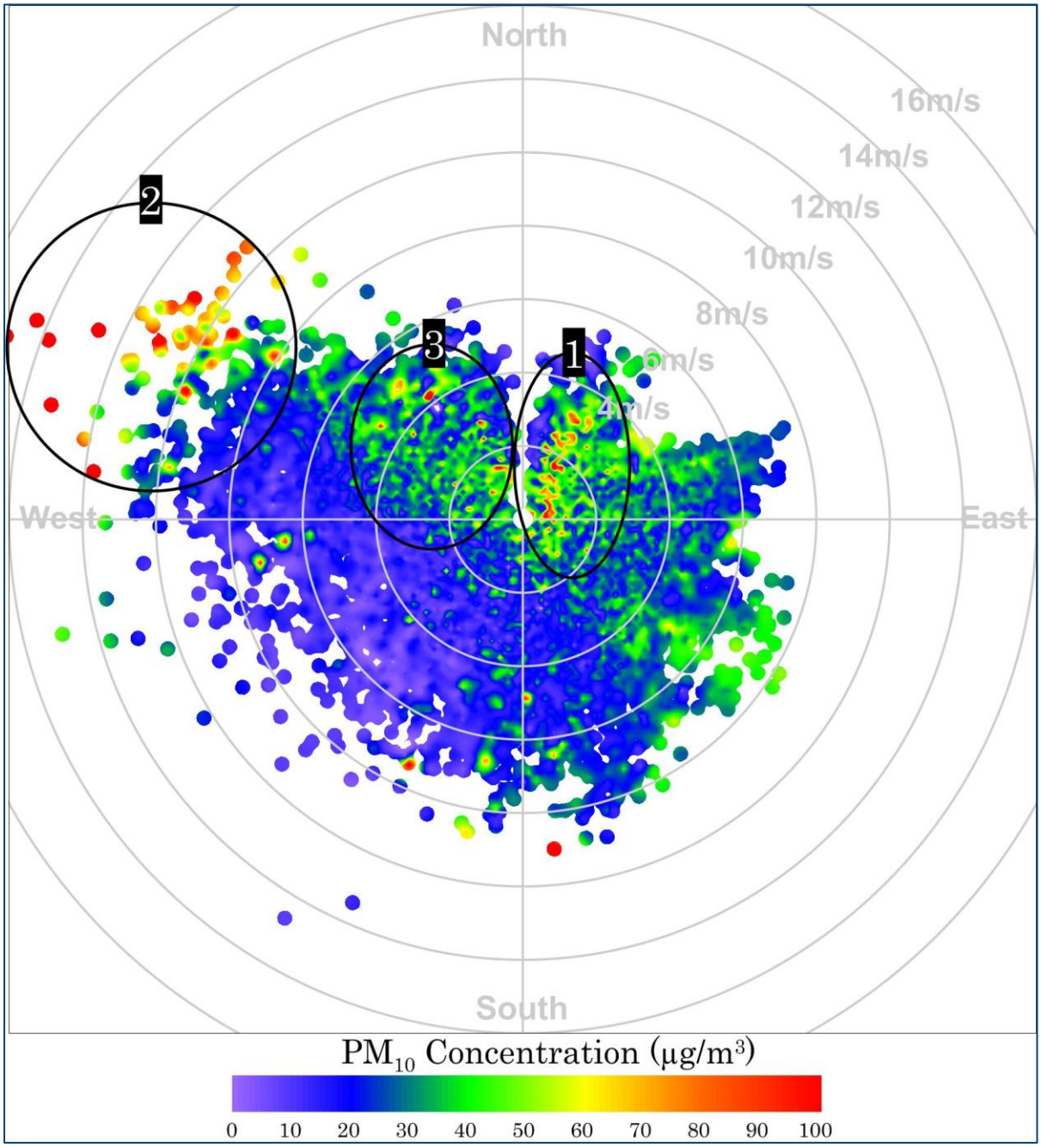


Figure A-2: Example Pollution Rose

- **1** - High PM_{10} levels tended to originate from the north-eastern directions under wind speeds below 4m/s.
- **2** - High PM_{10} levels were also recorded from the northwest and west-northwest direction under high wind speeds (>8m/s).
- **3** - Some high levels were also recorded from the northwest under moderate wind speeds.

Appendix B

Monitoring Data (Graphical)

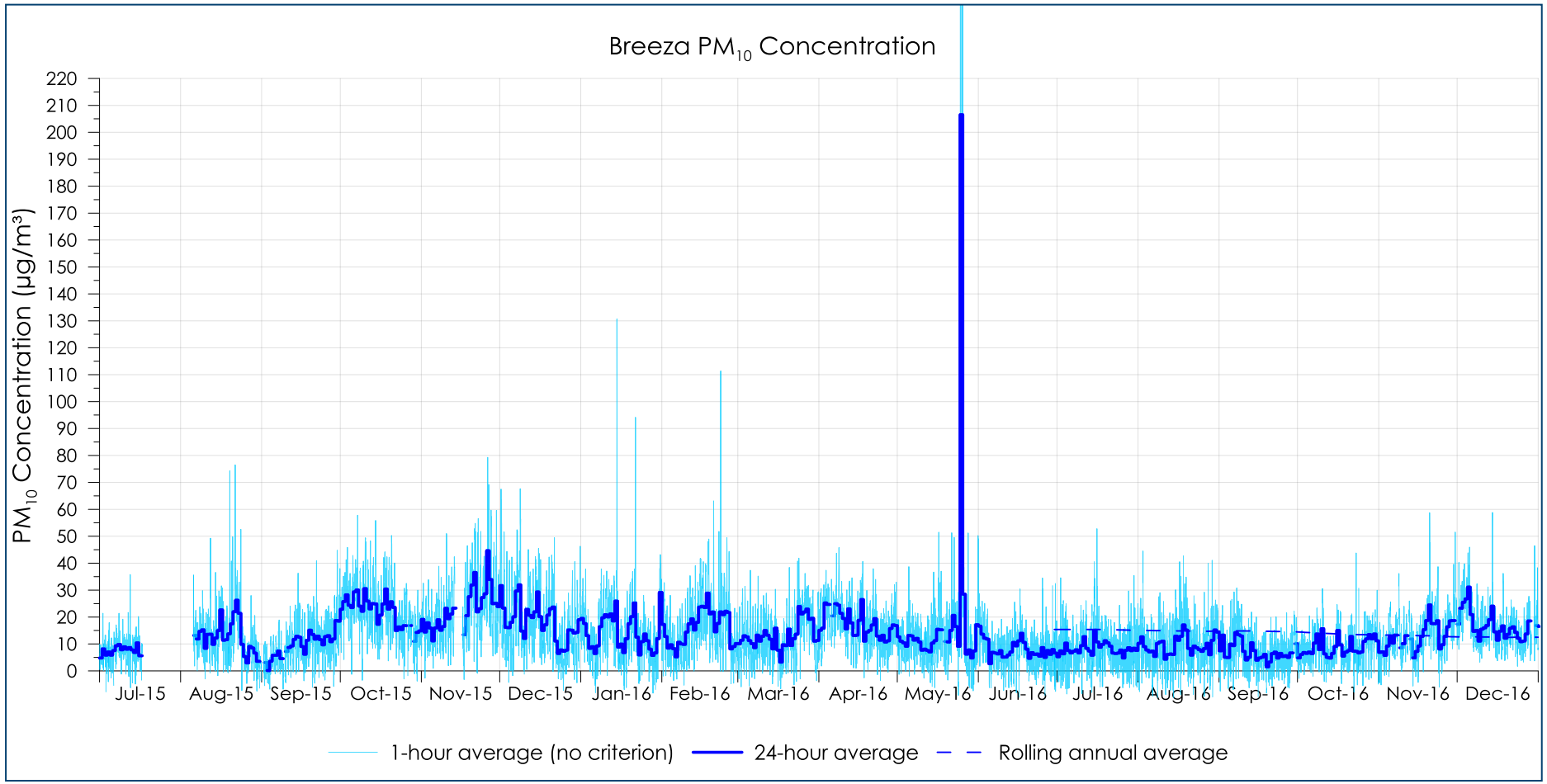


Figure B-1: Breeza PM_{10} (1-hour, 24-hour and rolling annual average) concentration – July 2015 to December 2016

Rolling annual average levels are based on the previous 12-month periods of data, for example, 1 July 2015 to 30 June 2016.

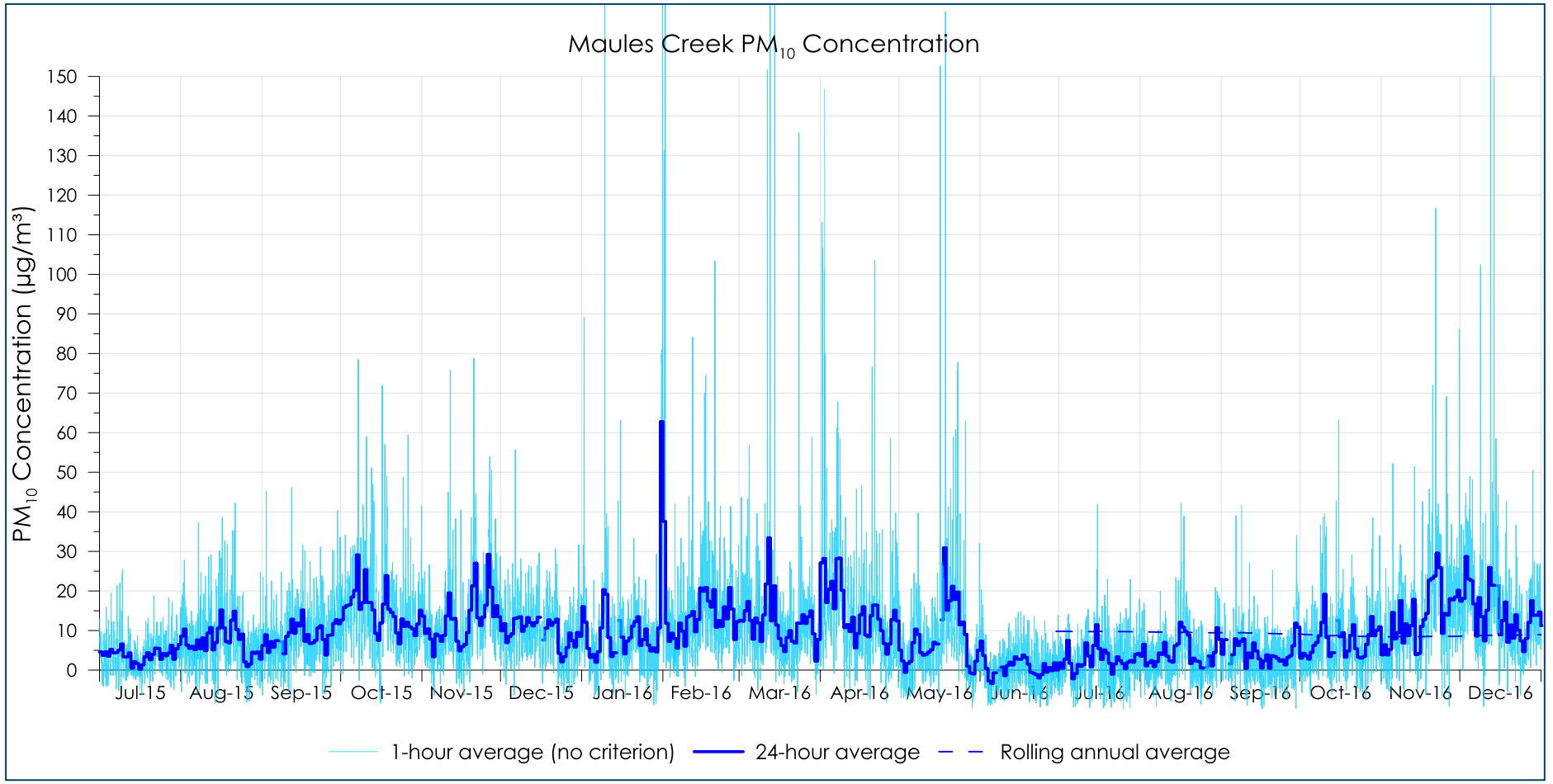


Figure B-2: Maules Creek PM_{10} (1-hour, 24-hour and rolling annual average) concentration – July 2015 to December 2016

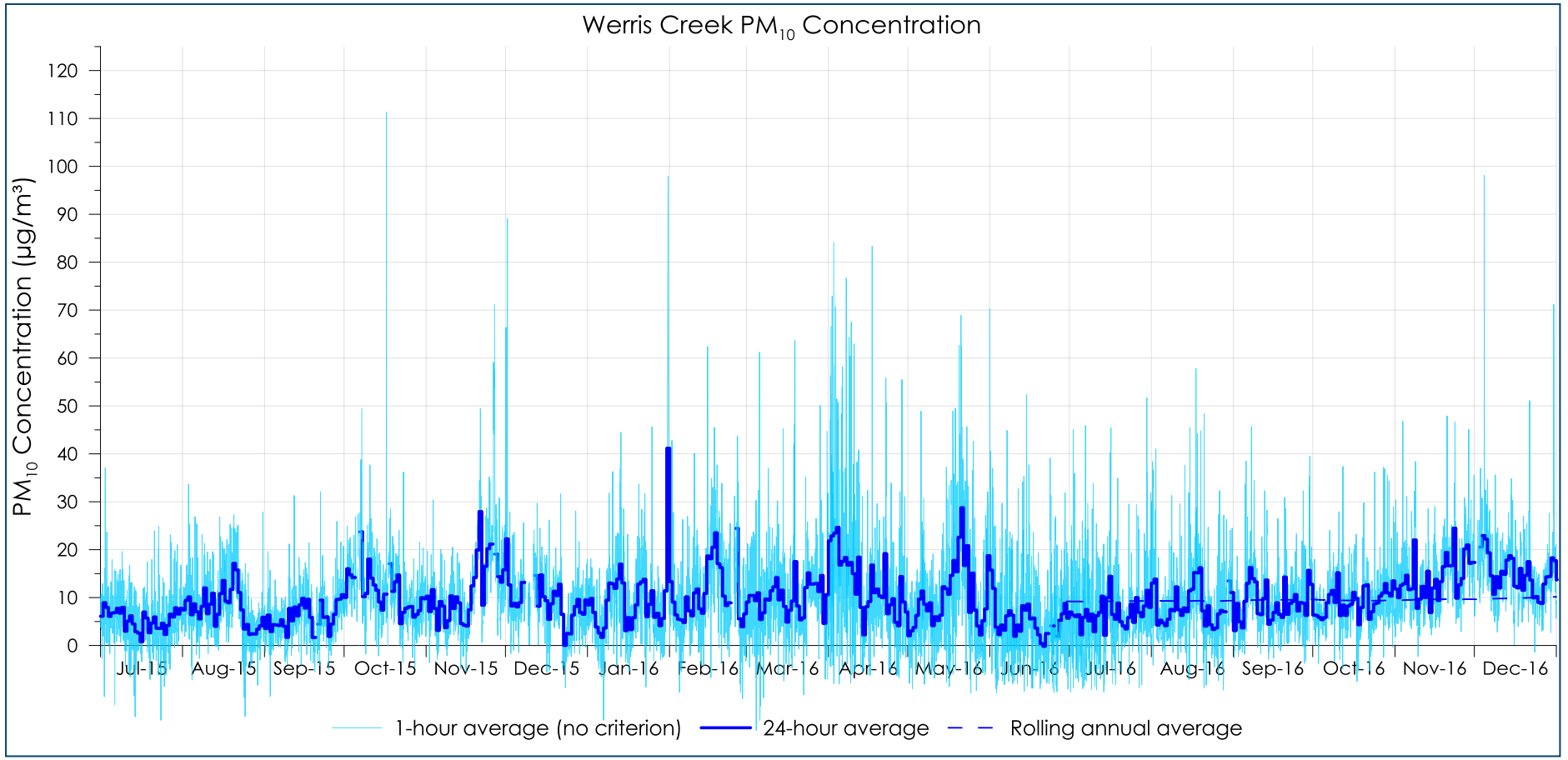


Figure B-3: Werris Creek PM_{10} (1-hour, 24-hour and rolling annual average) concentration – July 2015 to December 2016

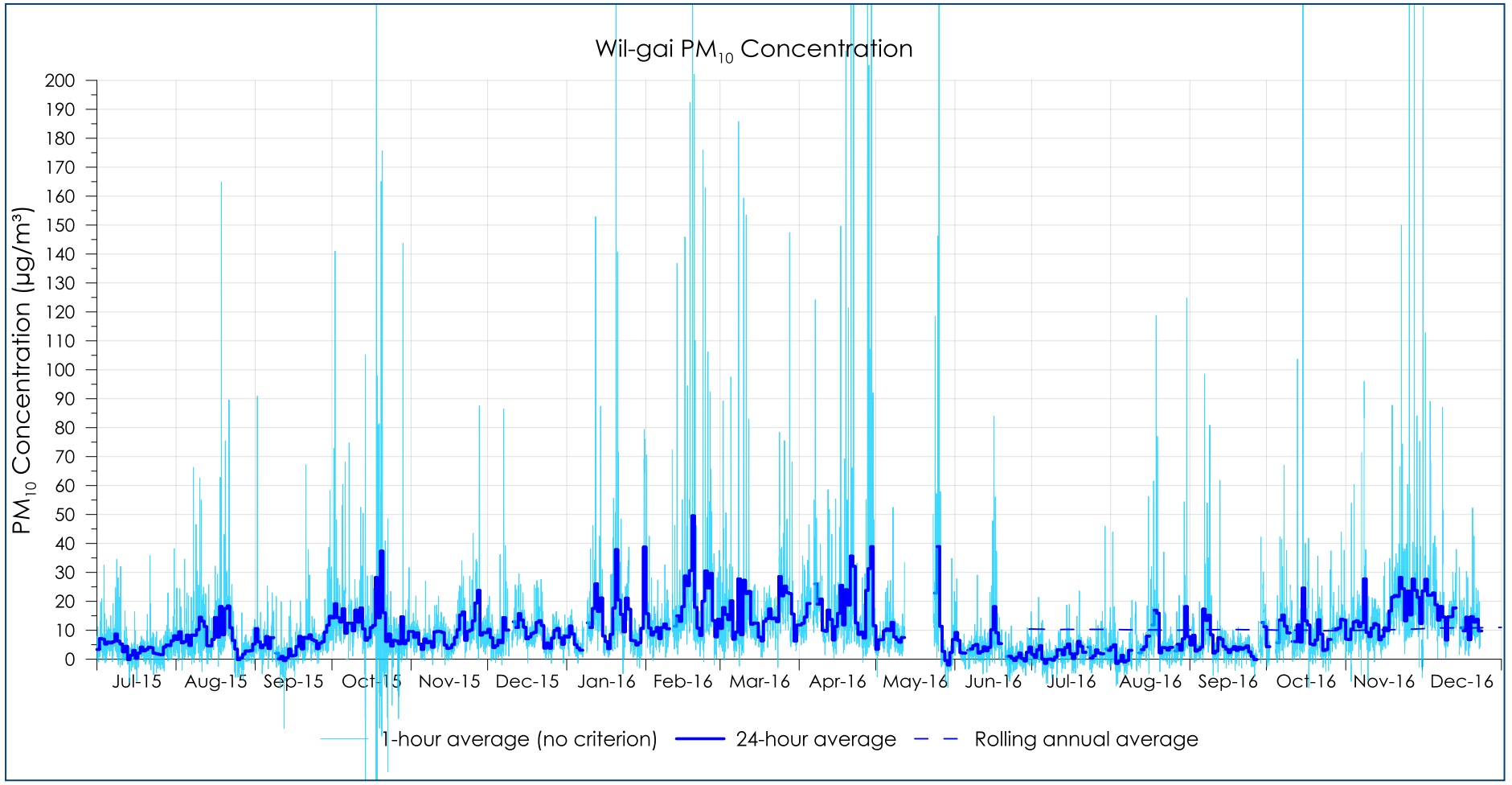


Figure B-4: Wil-gai PM_{10} (1-hour, 24-hour and rolling annual average) concentration – July 2015 to December 2016

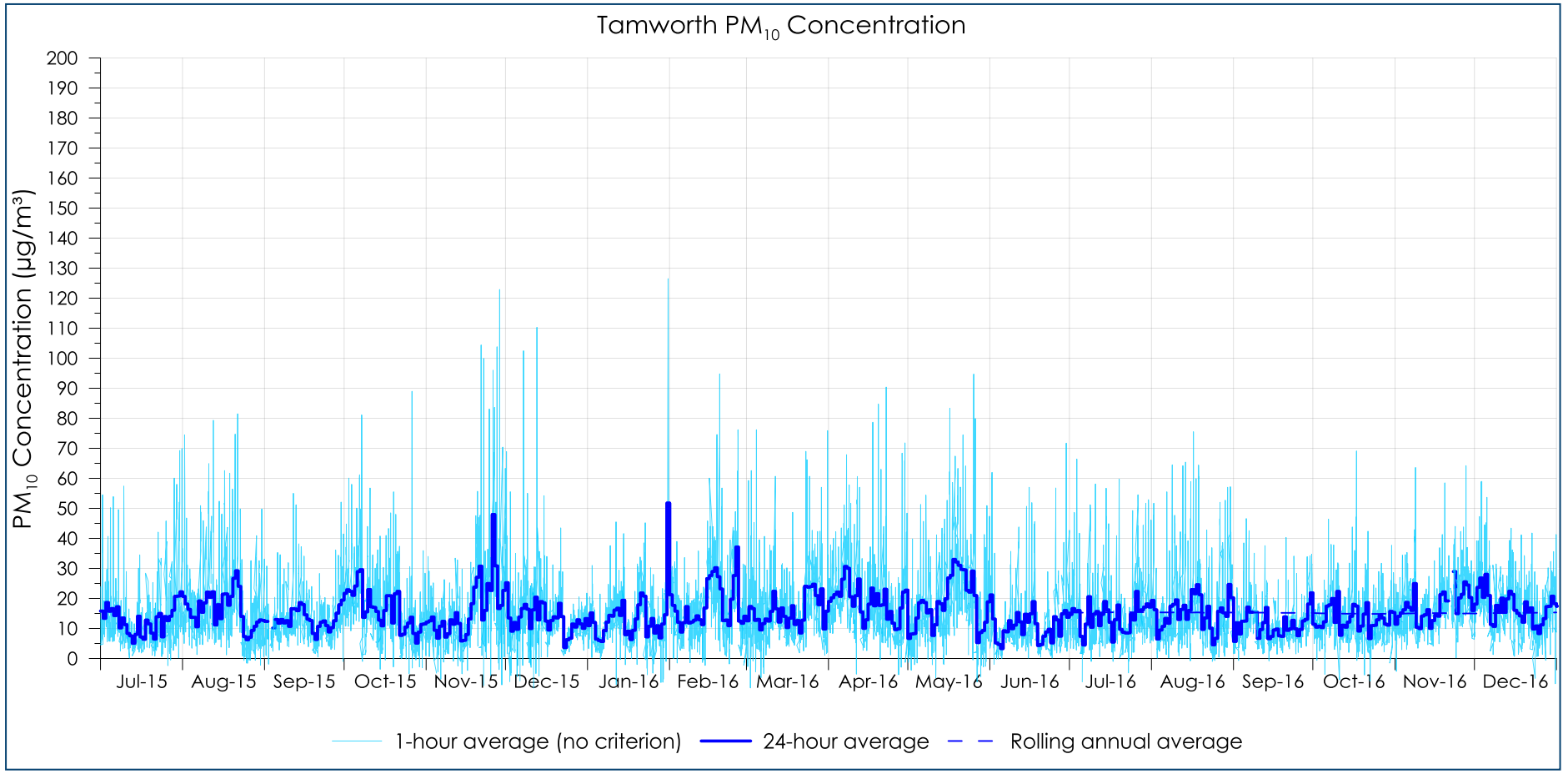


Figure B-5: Tamworth PM_{10} (1-hour, 24-hour and rolling annual average) concentration – July 2015 to December 2016

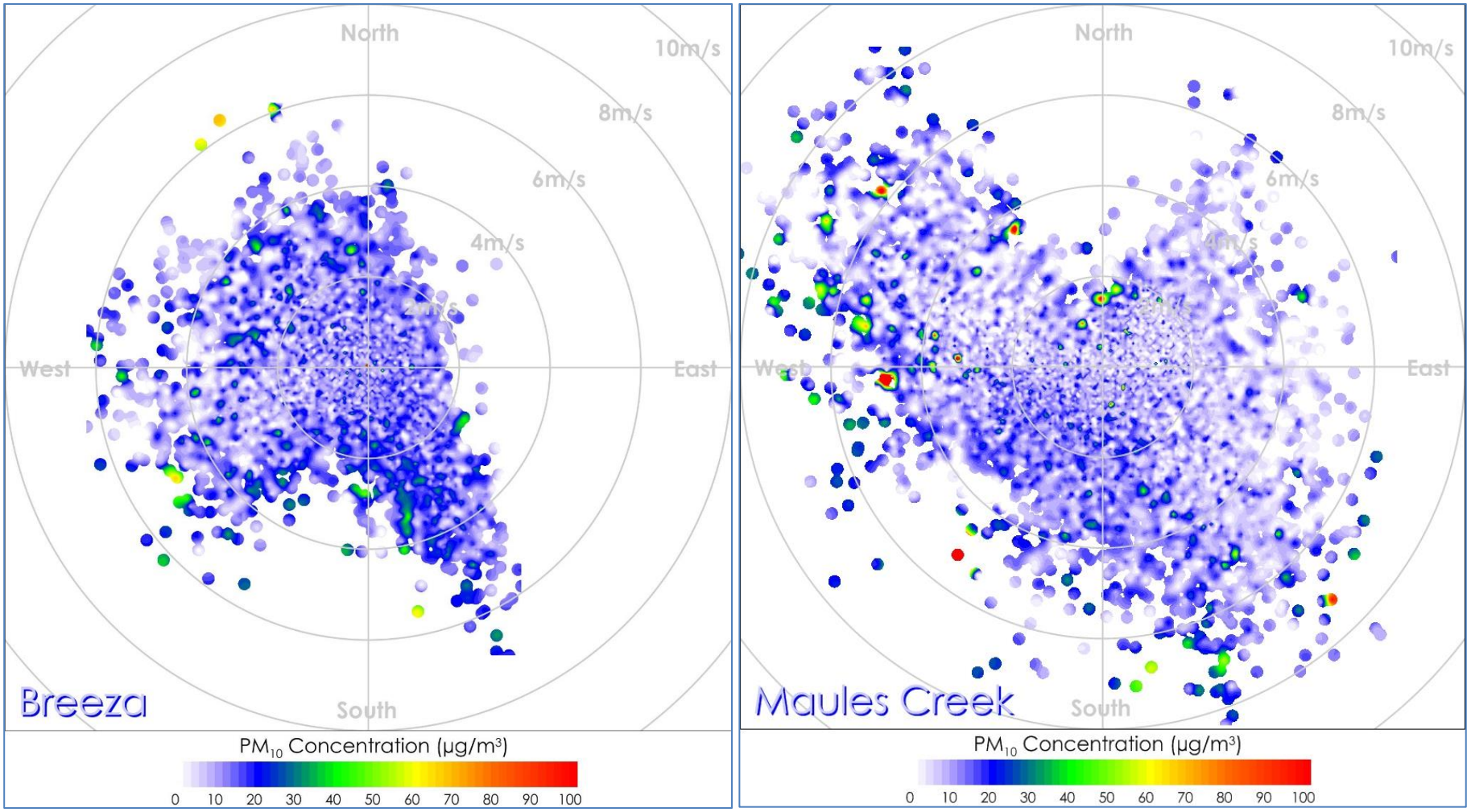


Figure B-6: PM_{10} pollution roses – Breeza (left) and Maules Creek (right) – July 2015 to December 2016

The Breeza and Maules Creek monitors generally recorded low PM_{10} levels in the July 2015 to December 2016 period. Maules Creek recorded some relatively high results under increased wind speed conditions.

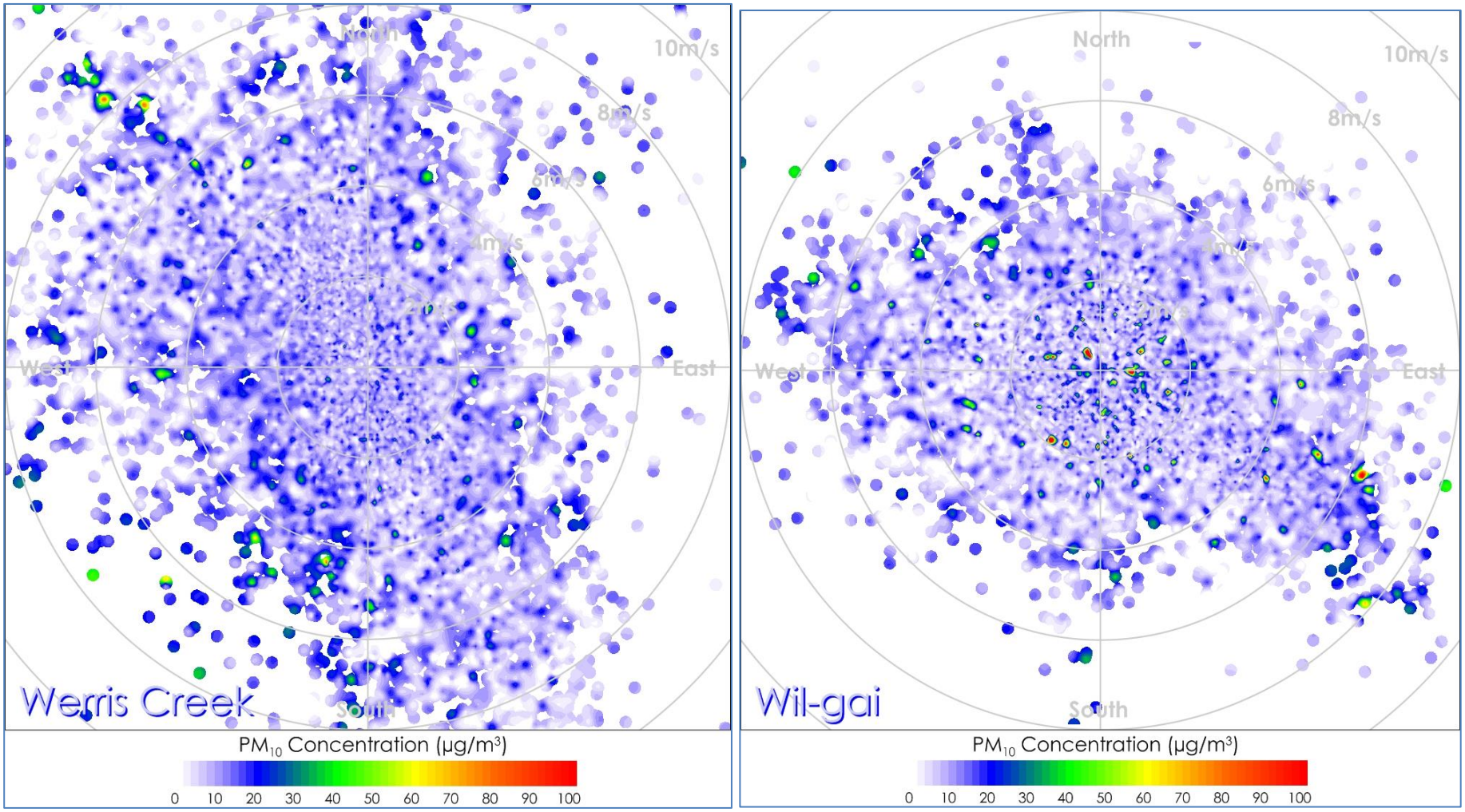


Figure B-7: PM_{10} pollution roses – Werris Creek (left) and Wil-gai (right) – July 2015 to December 2016

The Werris Creek and Wil-gai monitors generally recorded low PM_{10} levels in the July 2015 to December 2016 period. Wil-gai recorded some relatively high concentrations under low conditions.

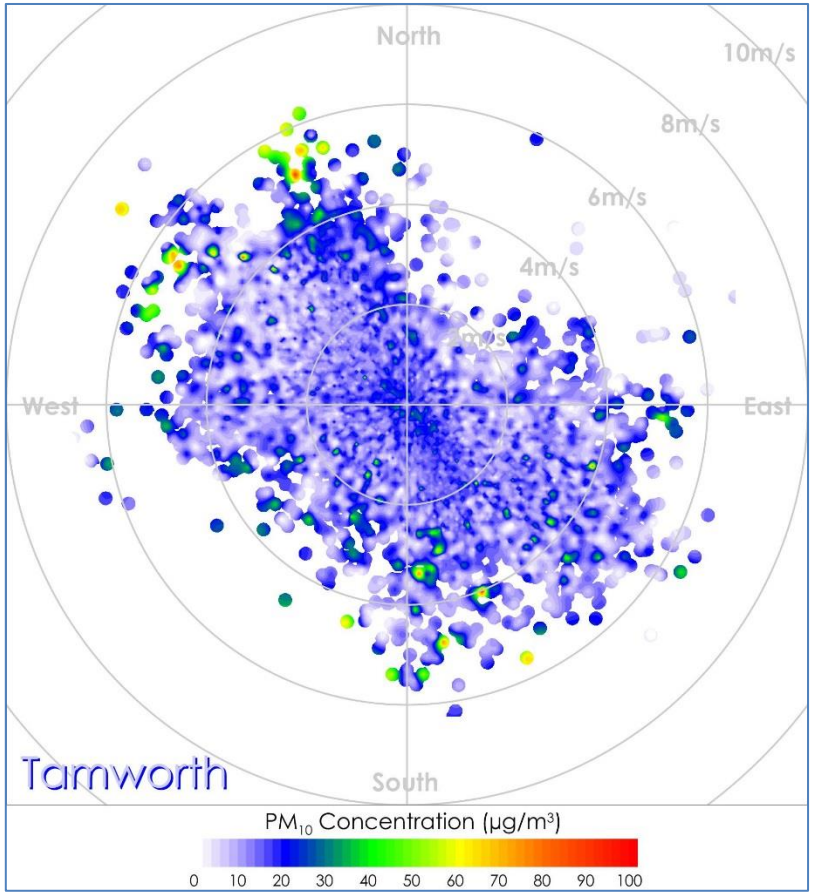


Figure B-8: PM_{10} pollution rose – Tamworth – July 2015 to December 2016

The Tamworth monitor generally recorded low PM_{10} levels in the July 2015 to December 2016 period. Relatively higher levels were recorded under wind speeds of approximately 5m/s in both southerly and north-westerly directions.

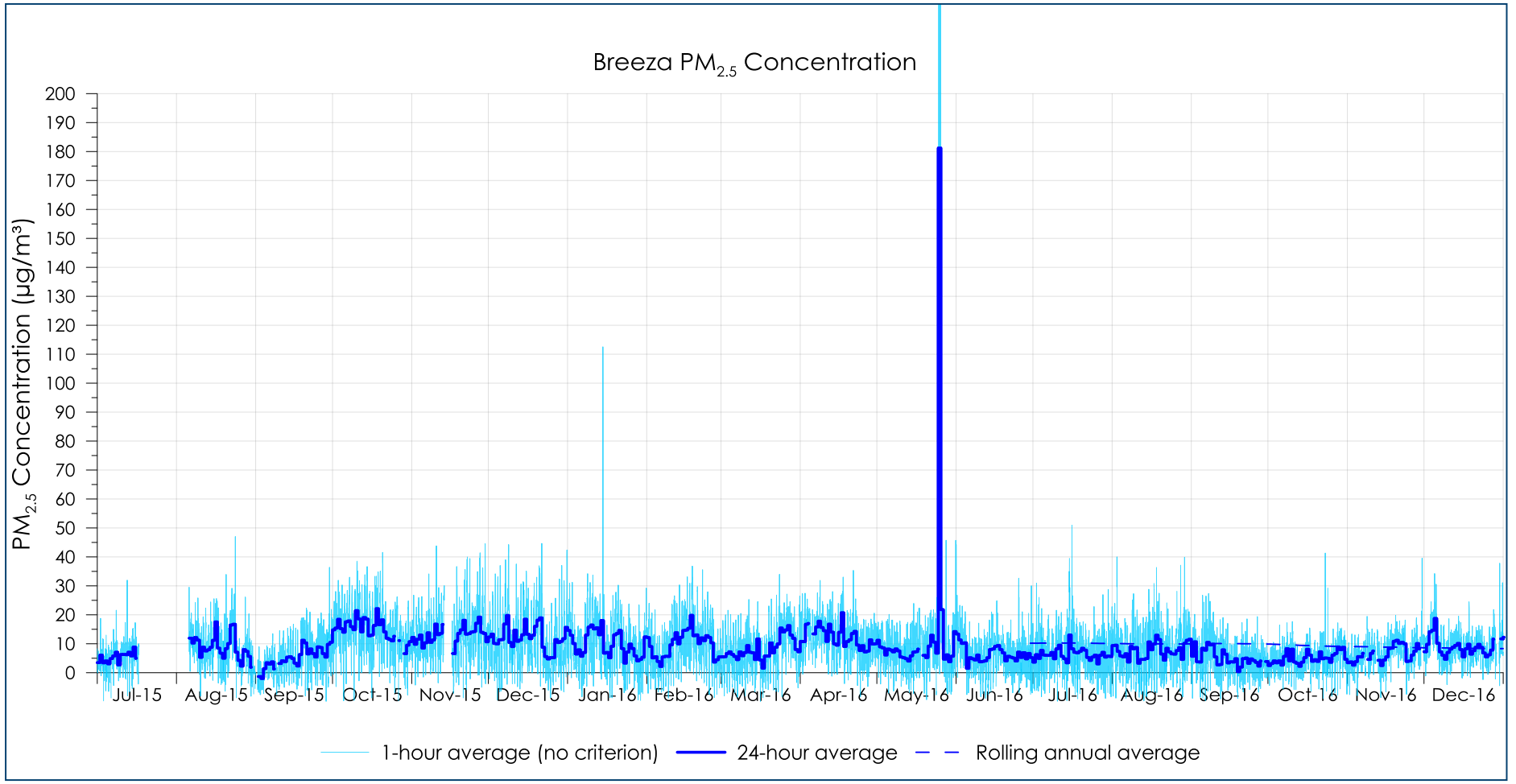


Figure B-9: Breeza $PM_{2.5}$ (1-hour, 24-hour and rolling annual average) concentration – July 2015 to December 2016

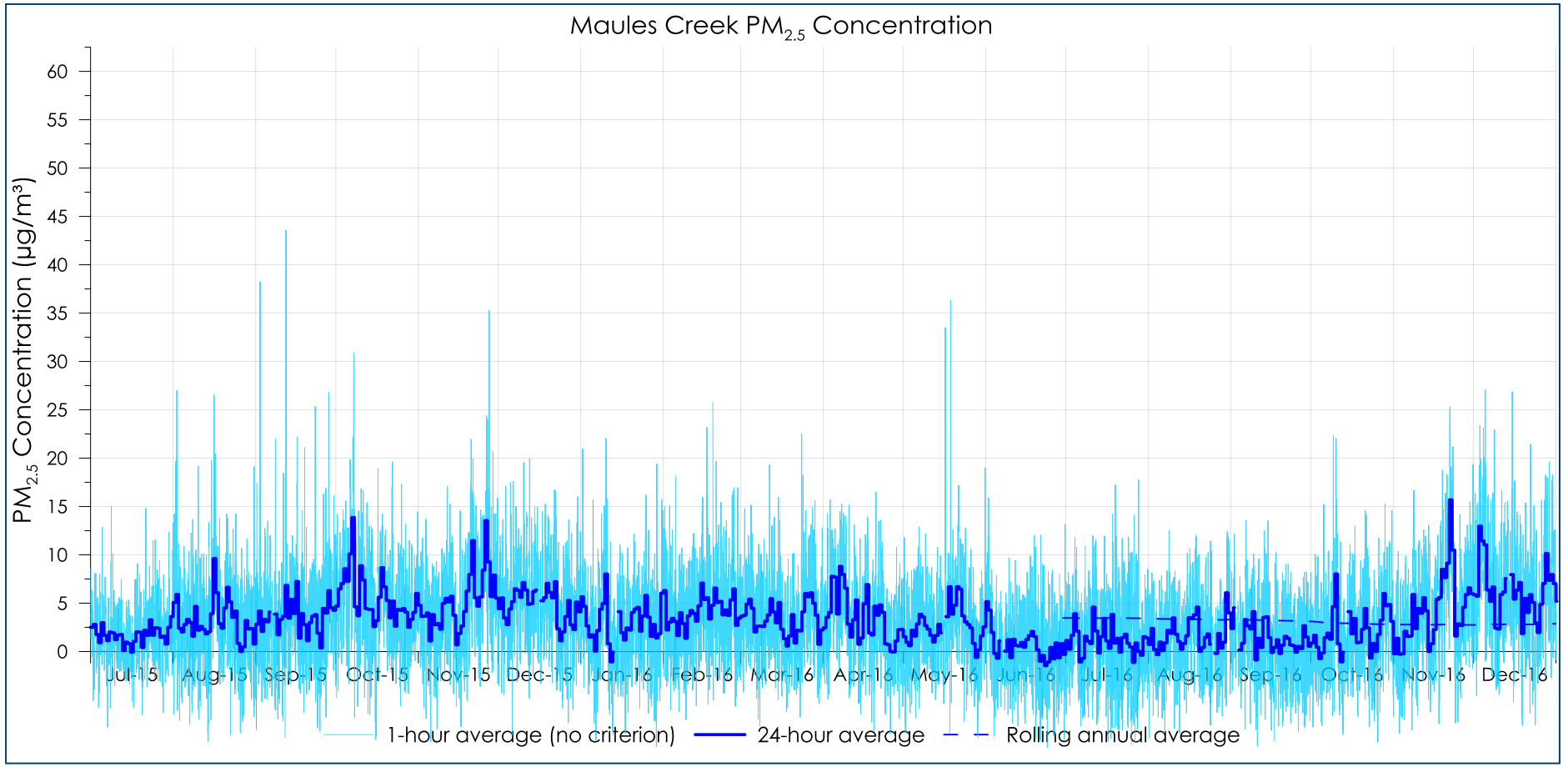


Figure B-10: Maules Creek $PM_{2.5}$ (1-hour, 24-hour and rolling annual average) concentration – July 2015 to December 2016

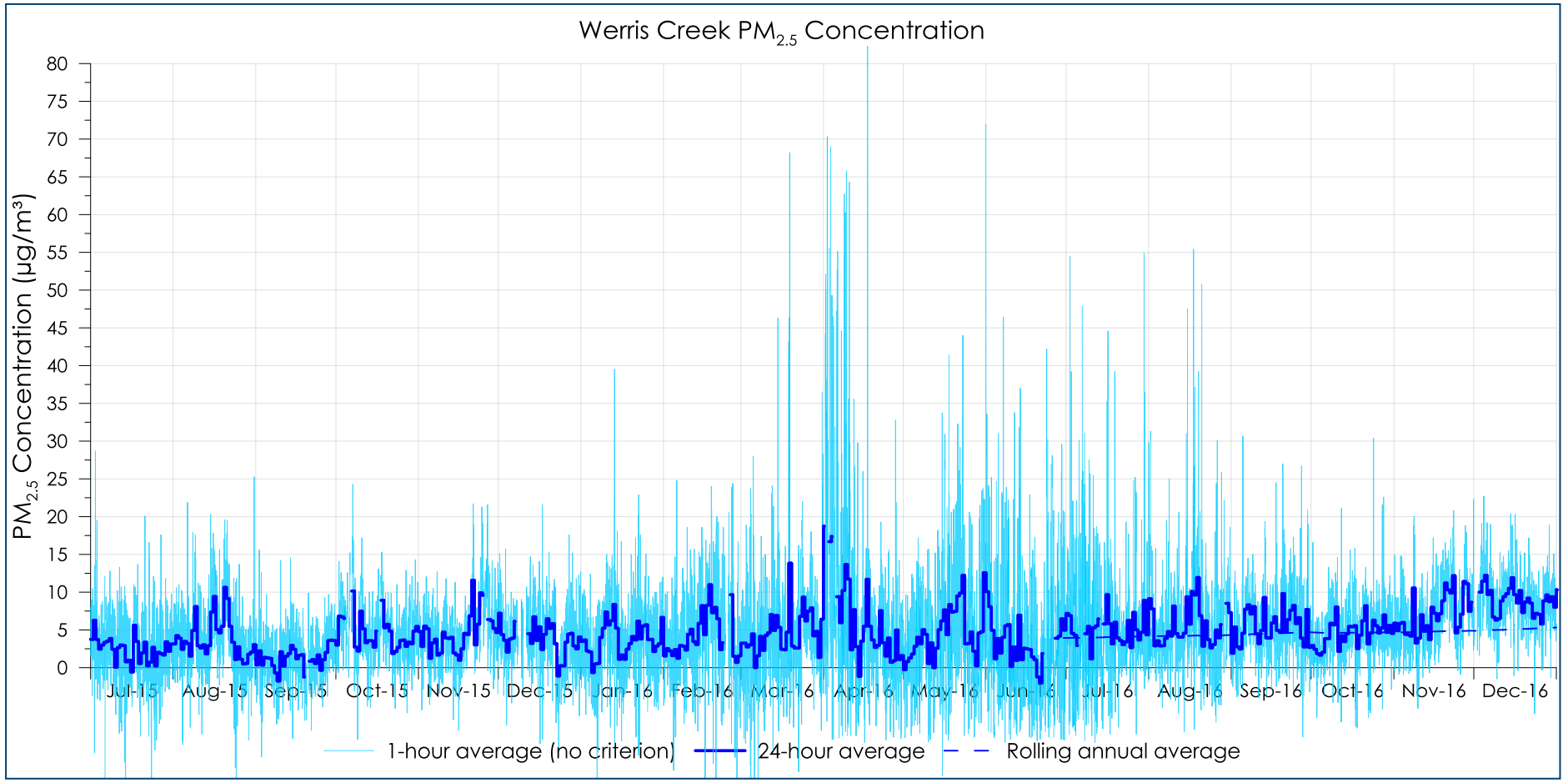


Figure B-11: Werris Creek $PM_{2.5}$ (1-hour, 24-hour and rolling annual average) concentration – July 2015 to December 2016

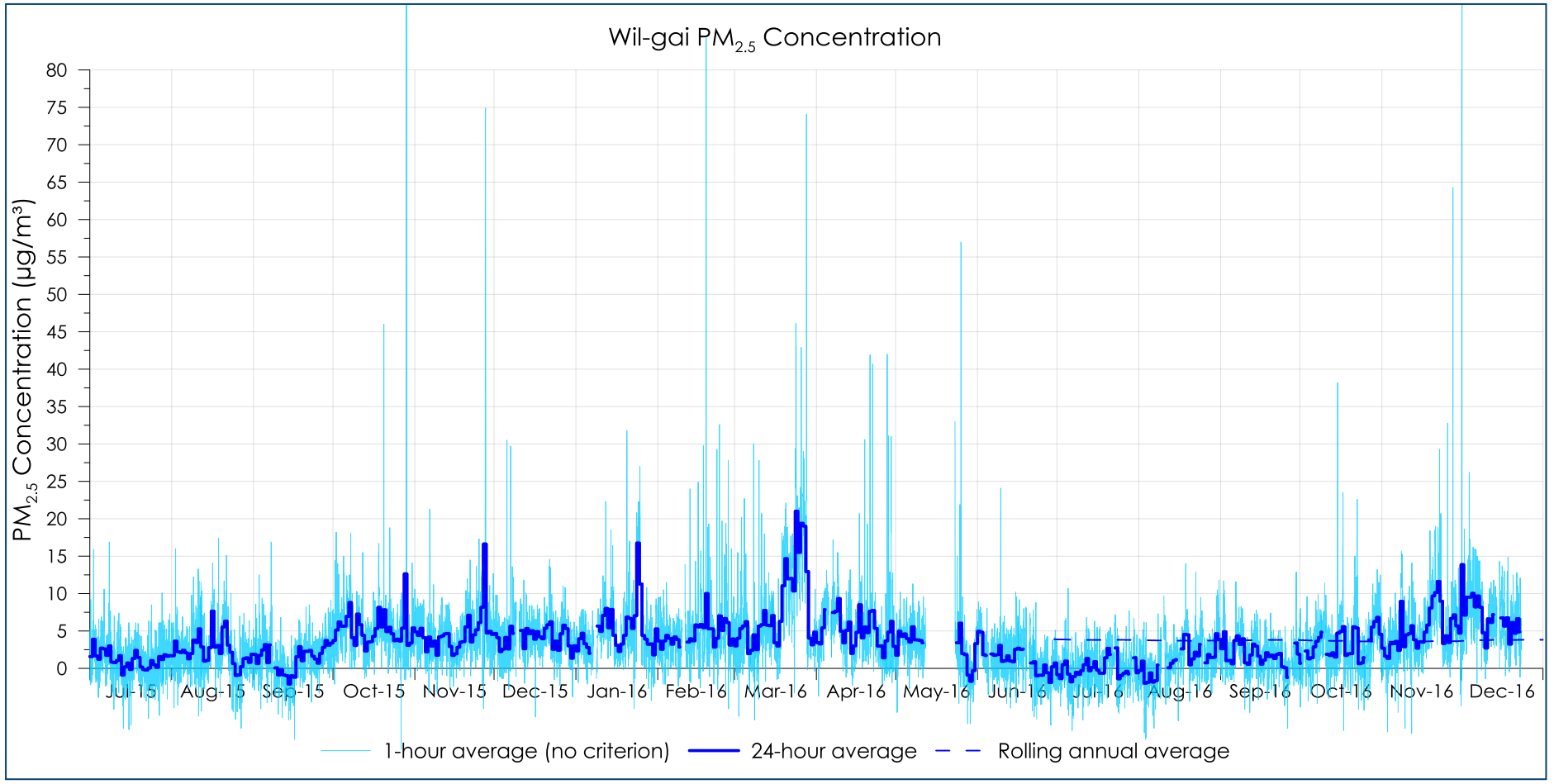


Figure B-12: Wil-gai $PM_{2.5}$ (1-hour, 24-hour and rolling annual average) concentration – July 2015 to December 2016

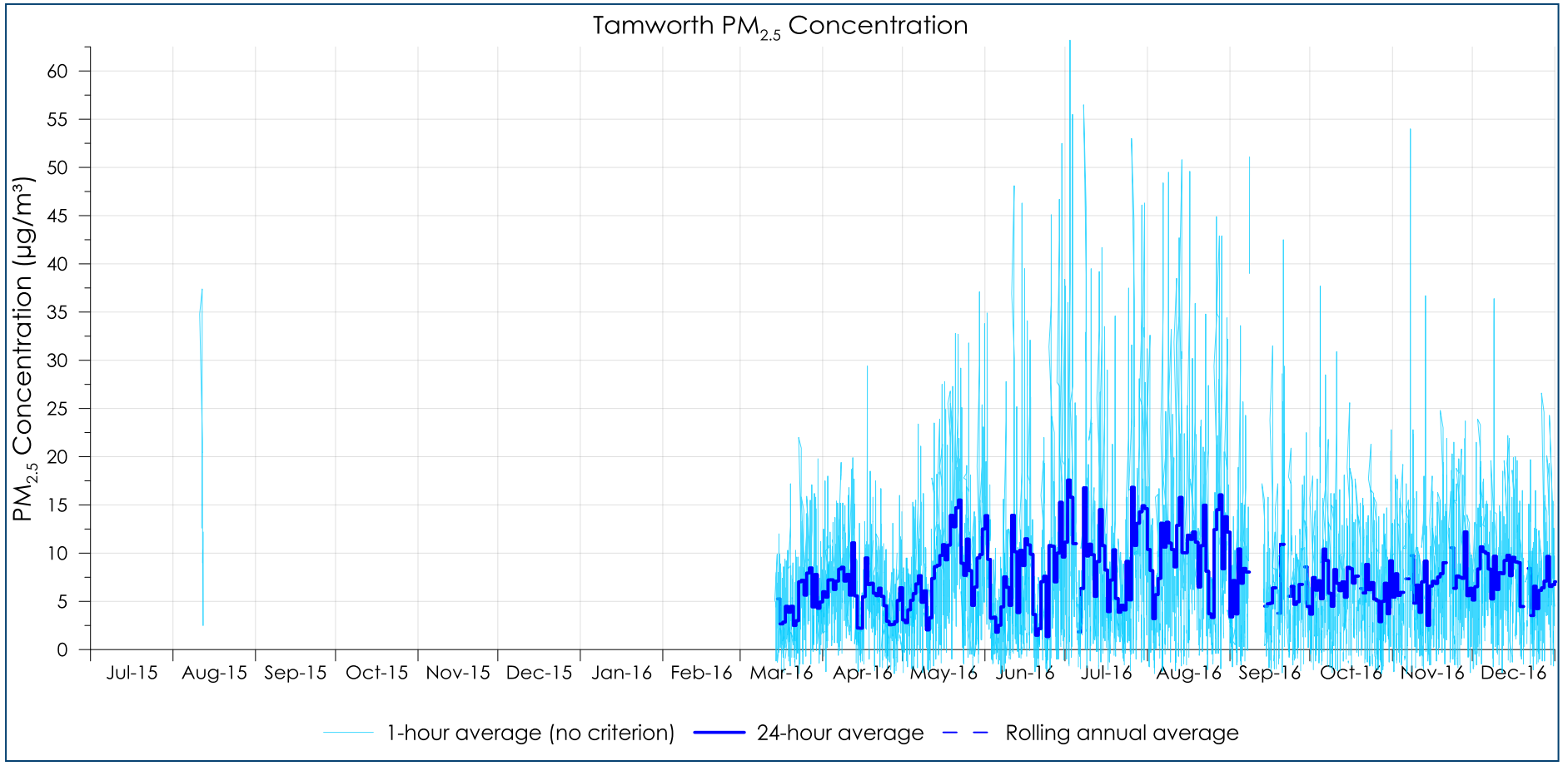


Figure B-13: Tamworth $PM_{2.5}$ (1-hour, 24-hour and rolling annual average) concentration – July 2015 to December 2016

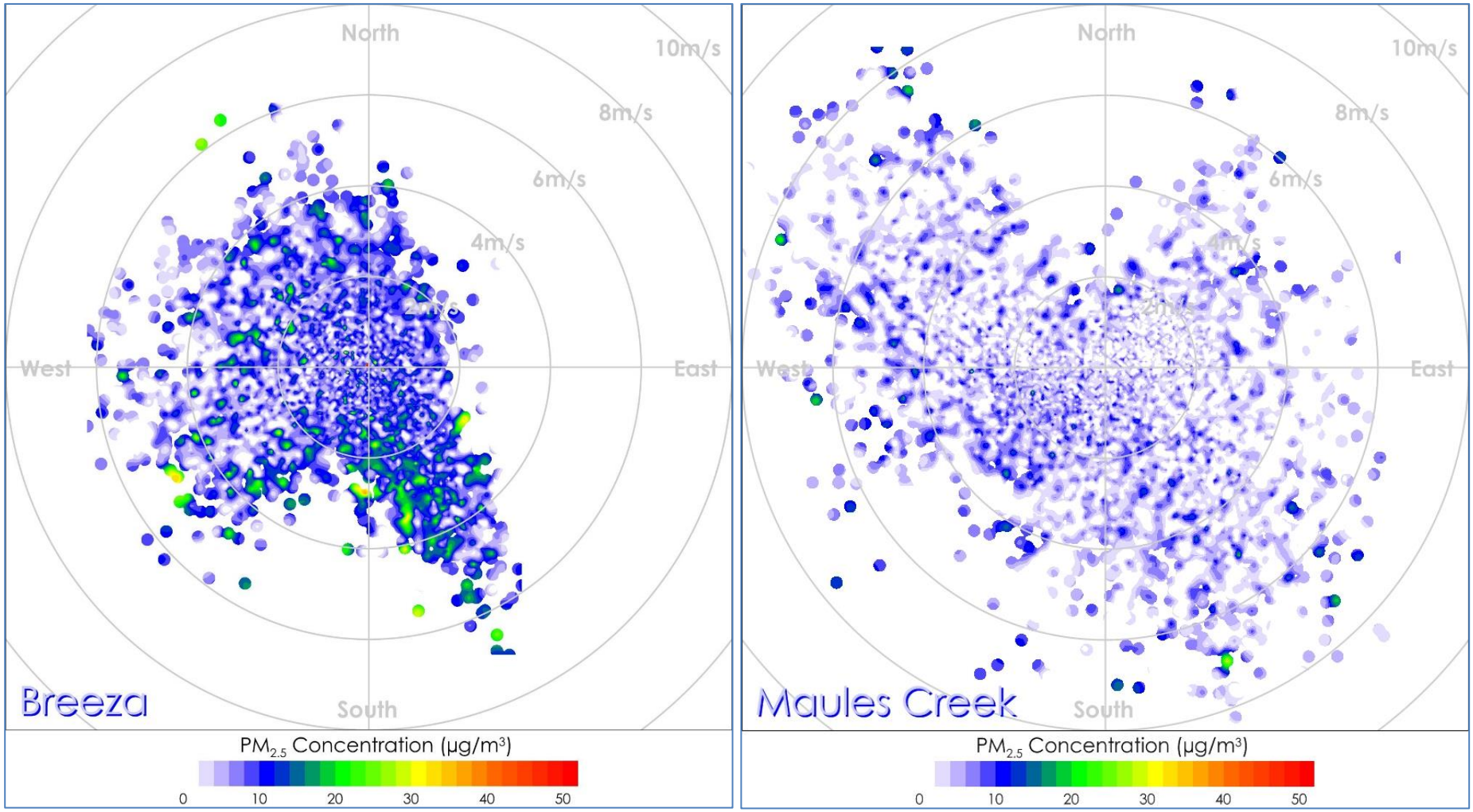


Figure B-14: $PM_{2.5}$ pollution roses – Breeza (left) and Maules Creek (right) – July 2015 to December 2016

The Breeza monitor showed slightly elevated $PM_{2.5}$ levels in comparison with the other monitors. Levels were relatively higher from a south-easterly direction. The Maules Creek monitor generally recorded low $PM_{2.5}$ levels in the July 2015 to December 2016 period.

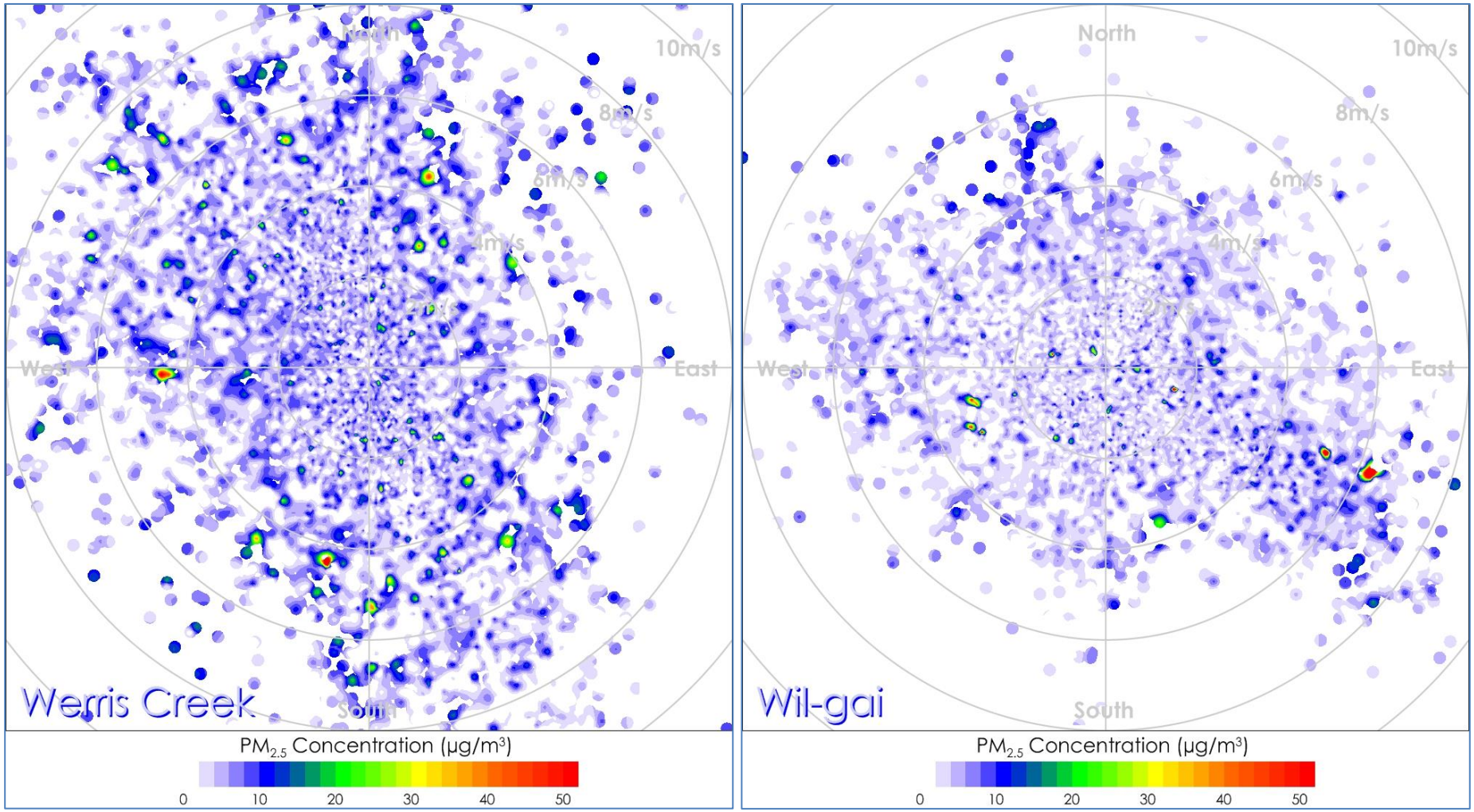


Figure B-15: $PM_{2.5}$ pollution roses – Werris Creek (left) and Wil-gai (right) – July 2015 to December 2016

The Werris Creek and Wil-gai monitors generally recorded low $PM_{2.5}$ levels in the July 2015 to December 2016 period.

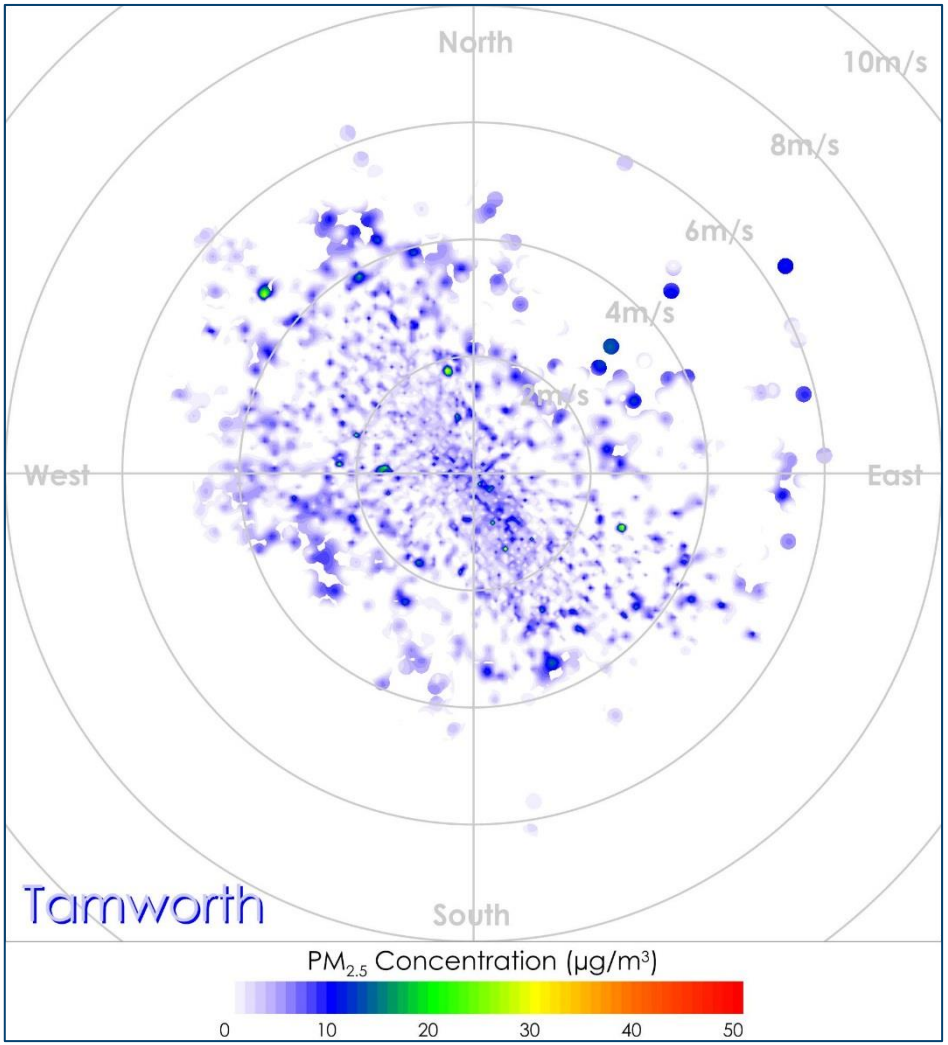


Figure B-16: $PM_{2.5}$ pollution rose – Tamworth – July 2015 to December 2016

The Tamworth monitor generally recorded low $PM_{2.5}$ levels in the July 2015 to December 2016 period.

Appendix C

Monitoring Data (Tabulated)

Table C-1: 24-hour average monitoring data

Date	PM_{10} (µg/m³)					$PM_{2.5}$ (µg/m³)				
	Breeza	Maules Creek	Werris Creek	Wil-gai	Tamworth	Breeza	Maules Creek	Werris Creek	Wil-gai	Tamworth
01/07/2015	4.8	4.6	6.1	3.4	15.8	3.5	2.5	3.7	1.6	-
02/07/2015	8.2	3.7	8.9	7.1	13.4	6.1	2.8	6.3	3.9	-
03/07/2015	5.8	4.6	7.9	6.9	18.6	3.4	1.8	3.7	1.7	-
04/07/2015	7.0	3.5	6.1	5.2	15.7	4.1	0.9	2.5	1.2	-
05/07/2015	5.8	5.2	6.8	6.0	16.6	3.1	3.0	3.0	2.7	-
06/07/2015	7.6	4.4	6.9	5.6	14.3	4.9	1.7	3.4	2.6	-
07/07/2015	9.3	4.4	7.8	6.1	17.2	5.8	1.1	3.5	1.7	-
08/07/2015	9.8	5.1	6.7	8.7	10.2	7.1	2.0	3.9	3.0	-
09/07/2015	7.8	6.6	7.9	6.2	13.5	2.7	1.9	2.4	0.8	-
10/07/2015	8.9	3.3	3.0	5.3	11.3	6.3	1.2	0.1	0.8	-
11/07/2015	8.0	3.4	5.1	2.5	8.3	6.3	1.7	2.7	1.1	-
12/07/2015	8.7	4.4	6.2	4.5	7.5	6.2	1.8	3.0	1.7	-
13/07/2015	7.8	0.5	4.5	-0.1	5.1	7.1	0.1	2.9	-0.9	-
14/07/2015	6.8	2.1	2.9	1.4	8.0	5.8	1.0	0.8	0.2	-
15/07/2015	10.4	1.6	2.6	3.1	14.1	8.9	0.8	1.0	0.7	-
16/07/2015	5.6	0.2	0.8	0.3	7.2	5.0	-0.1	-0.6	-0.1	-
17/07/2015	-	1.3	7.0	2.2	6.4	-	1.1	5.6	1.3	-
18/07/2015	-	3.4	5.7	4.2	12.8	-	2.0	3.5	2.4	-
19/07/2015	-	4.4	2.7	2.9	11.5	-	2.0	0.5	1.5	-
20/07/2015	-	2.6	4.7	3.4	8.5	-	0.4	2.0	0.2	-
21/07/2015	-	4.0	6.0	4.2	6.4	-	2.2	3.4	-0.2	-
22/07/2015	-	5.5	3.6	4.0	13.9	-	1.7	0.2	-0.2	-
23/07/2015	-	5.5	3.6	2.1	15.0	-	3.3	0.7	0.0	-
24/07/2015	-	2.7	4.6	1.8	7.2	-	1.7	2.7	1.0	-
25/07/2015	-	4.2	2.3	1.7	14.0	-	2.5	0.2	0.5	-
26/07/2015	-	3.6	4.2	1.6	12.6	-	2.4	2.0	0.1	-
27/07/2015	-	4.3	6.5	4.2	14.0	-	1.5	1.9	1.6	-
28/07/2015	-	6.3	5.9	4.9	16.1	-	1.6	1.7	1.2	-
29/07/2015	-	2.7	7.9	4.7	20.7	-	0.8	3.4	1.8	-
30/07/2015	-	5.4	6.6	6.4	20.8	-	2.5	2.2	1.6	-
31/07/2015	-	6.5	7.7	8.1	22.2	-	3.6	3.1	1.7	-
01/08/2015	-	8.6	7.4	6.8	20.7	-	5.1	3.1	1.7	-
02/08/2015	-	10.3	9.4	9.5	18.1	-	5.9	4.2	3.6	-
03/08/2015	-	6.3	10.1	5.6	16.4	-	2.4	3.9	2.2	-
04/08/2015	-	5.5	6.4	6.1	13.7	-	2.0	2.4	2.1	-
05/08/2015	-	6.0	8.7	8.3	13.7	-	2.8	3.5	2.4	-
06/08/2015	13.2	5.2	7.0	4.8	10.6	11.9	3.3	3.2	2.1	-
07/08/2015	11.9	7.6	5.5	8.4	19.2	10.2	3.0	1.5	1.3	-
08/08/2015	14.7	5.4	8.2	8.3	15.4	12.2	1.6	4.9	2.0	-
09/08/2015	15.3	8.1	12.0	10.2	18.5	11.2	4.7	8.1	3.8	-
10/08/2015	8.4	4.9	6.6	14.5	22.1	5.3	2.2	2.9	3.5	-
11/08/2015	13.6	9.3	8.6	13.1	20.4	8.8	2.6	2.6	5.3	-
12/08/2015	13.6	10.7	10.9	11.2	22.2	7.5	2.3	3.0	2.9	-
13/08/2015	9.8	5.1	4.0	4.7	11.2	7.9	1.8	1.8	1.0	-
14/08/2015	12.2	7.0	6.5	4.6	17.9	8.7	2.0	2.9	1.1	-
15/08/2015	15.0	10.6	10.8	6.9	13.3	11.2	3.9	7.4	2.8	-
16/08/2015	22.7	15.2	13.6	14.4	21.4	17.5	9.6	9.4	7.7	-
17/08/2015	11.4	10.7	9.2	7.6	21.5	8.5	6.1	5.0	2.8	-
18/08/2015	11.6	7.2	8.9	18.2	17.7	6.7	2.9	4.6	3.1	-
19/08/2015	13.8	6.9	11.7	8.5	20.7	5.0	2.4	5.5	2.0	-
20/08/2015	17.5	12.6	17.2	17.5	26.7	8.3	4.5	10.6	5.5	-
21/08/2015	21.9	14.9	15.8	18.4	29.2	10.1	6.7	9.2	6.3	-
22/08/2015	26.3	10.2	11.1	10.9	24.0	16.5	5.1	5.5	3.1	-
23/08/2015	21.4	7.8	7.4	6.5	14.0	16.8	3.5	3.4	2.1	-
24/08/2015	9.9	9.1	3.4	3.5	7.3	7.1	4.2	1.1	0.6	-
25/08/2015	5.3	2.1	4.4	-0.2	6.2	4.2	0.8	2.8	-0.9	-
26/08/2015	3.0	0.9	2.3	0.4	7.1	2.3	0.0	1.1	-0.9	-
27/08/2015	9.1	1.5	2.5	1.7	9.4	8.0	0.5	0.5	0.3	-
28/08/2015	8.5	4.5	2.4	2.8	10.7	7.4	3.2	0.6	1.3	-
29/08/2015	6.6	4.2	3.4	2.8	12.2	5.6	2.3	1.8	1.4	-
30/08/2015	3.5	4.6	4.1	3.0	12.9	1.9	2.4	2.1	0.8	-
31/08/2015	-	2.8	5.9	5.3	12.7	-	0.8	3.0	1.9	-
01/09/2015	-	6.2	3.5	10.6	12.4	-	2.8	0.4	1.9	-
02/09/2015	3.1	8.9	6.3	6.0	-	-1.3	4.2	2.2	0.6	-

Date	PM_{10} (µg/m³)					$PM_{2.5}$ (µg/m³)				
	Breeza	Maules Creek	Werris Creek	Wil-gai	Tamworth	Breeza	Maules Creek	Werris Creek	Wil-gai	Tamworth
03/09/2015	0.1	4.5	2.9	3.9	-	-2.0	2.1	0.3	1.7	-
04/09/2015	3.6	7.2	4.4	4.9	10.1	1.4	3.3	1.4	2.5	-
05/09/2015	5.8	5.8	4.3	7.8	13.0	3.4	3.1	1.3	3.2	-
06/09/2015	5.8	7.4	4.2	3.7	11.8	3.0	4.1	1.2	0.8	-
07/09/2015	7.4	-	5.4	7.5	13.0	3.7	-	0.3	3.1	-
08/09/2015	4.6	7.1	4.0	-	11.8	1.3	3.9	-0.7	-	-
09/09/2015	-	4.1	1.7	2.1	12.6	-	1.7	-1.8	0.1	-
10/09/2015	7.2	8.5	7.7	0.1	10.7	3.2	3.3	2.1	-0.9	-
11/09/2015	8.7	9.5	5.1	1.0	16.6	4.1	3.6	0.2	-0.2	-
12/09/2015	9.3	12.9	8.0	-0.5	16.5	3.8	6.8	1.5	-0.9	-
13/09/2015	11.7	9.3	6.2	0.5	15.9	5.3	3.5	1.9	-1.0	-
14/09/2015	12.9	11.9	8.5	3.5	18.6	5.5	5.4	3.0	-2.1	-
15/09/2015	12.5	11.2	9.8	1.2	18.0	4.9	3.9	2.4	-1.0	-
16/09/2015	9.1	15.2	7.8	1.4	14.6	3.3	7.2	1.2	-1.2	-
17/09/2015	6.2	7.3	9.6	4.4	13.1	2.3	1.4	1.6	1.6	-
18/09/2015	11.4	9.0	5.9	7.9	12.6	6.2	3.9	1.7	2.9	-
19/09/2015	15.1	6.7	1.7	3.6	8.3	11.2	2.8	-1.2	1.0	-
20/09/2015	13.6	6.9	-	7.6	6.3	10.3	1.1	-	2.3	-
21/09/2015	11.8	7.5	4.5	7.2	10.7	6.5	3.0	0.9	2.3	-
22/09/2015	12.9	10.7	9.5	8.4	12.1	8.2	3.7	1.1	2.4	-
23/09/2015	11.6	11.2	5.9	6.7	12.5	6.6	3.8	0.5	1.6	-
24/09/2015	9.7	7.7	6.0	6.3	10.9	5.4	1.9	1.7	1.2	-
25/09/2015	12.8	3.8	1.9	3.6	8.8	8.9	0.4	-0.3	0.7	-
26/09/2015	13.1	8.8	4.5	5.5	10.3	8.7	4.5	1.1	2.0	-
27/09/2015	10.8	8.9	6.5	6.0	12.5	6.6	4.0	2.0	2.8	-
28/09/2015	11.8	11.8	9.6	9.3	15.1	5.4	6.3	3.6	3.7	-
29/09/2015	18.7	12.7	9.7	11.7	17.9	9.8	4.5	3.7	3.1	-
30/09/2015	18.5	11.7	10.6	14.8	19.4	10.5	4.3	3.6	3.4	-
01/10/2015	22.9	12.6	10.0	14.3	21.7	14.8	4.7	3.0	3.7	-
02/10/2015	25.7	15.8	16.0	19.2	22.9	15.4	6.5	6.8	5.1	-
03/10/2015	28.3	16.3	14.7	14.4	22.3	18.4	7.0	6.7	6.2	-
04/10/2015	24.3	16.5	14.2	12.8	21.0	15.2	8.6	6.5	5.6	-
05/10/2015	23.5	18.5	-	17.4	24.1	14.0	7.3	-	5.6	-
06/10/2015	29.4	20.1	-	9.0	29.0	17.6	10.1	-	6.9	-
07/10/2015	30.1	29.1	23.7	12.5	29.6	17.9	13.9	10.2	8.8	-
08/10/2015	24.0	15.3	10.2	12.5	13.7	15.9	4.6	2.7	4.1	-
09/10/2015	22.1	17.0	10.8	9.8	15.5	14.9	3.7	2.2	3.1	-
10/10/2015	30.5	25.4	18.0	17.0	23.0	21.4	8.9	7.5	7.3	-
11/10/2015	25.9	17.1	14.1	12.8	17.2	18.6	7.4	5.1	5.8	-
12/10/2015	23.0	17.1	12.6	17.7	17.0	14.1	4.4	3.3	4.4	-
13/10/2015	25.0	15.2	11.5	10.5	15.6	19.0	4.4	3.6	2.3	-
14/10/2015	24.9	9.3	9.1	6.6	12.8	18.5	4.4	3.6	3.5	-
15/10/2015	17.3	7.5	7.4	7.5	10.9	12.7	2.6	2.7	3.6	-
16/10/2015	20.7	11.9	10.7	10.9	16.0	13.0	3.2	4.8	4.3	-
17/10/2015	24.9	16.6	-	11.7	20.9	16.3	5.6	-	5.3	-
18/10/2015	30.4	23.9	17.1	28.2	20.9	22.1	8.7	8.9	8.2	-
19/10/2015	22.9	15.4	11.3	14.3	11.8	16.5	6.7	5.3	5.5	-
20/10/2015	25.7	14.6	13.3	37.4	21.5	18.2	5.3	5.7	7.8	-
21/10/2015	23.6	13.5	14.7	16.1	22.3	14.1	3.5	4.8	4.9	-
22/10/2015	15.0	9.4	4.6	6.2	7.7	11.9	5.2	1.9	5.5	-
23/10/2015	16.3	6.7	6.9	8.7	8.1	11.5	2.6	2.1	4.6	-
24/10/2015	15.3	12.9	7.8	4.5	10.5	11.0	4.4	2.7	3.7	-
25/10/2015	16.8	11.1	8.0	6.5	11.8	12.6	4.2	3.6	3.9	-
26/10/2015	-	12.1	8.2	6.3	13.8	-	4.5	3.7	3.7	-
27/10/2015	16.8	10.9	5.9	5.3	8.3	11.1	4.1	2.8	5.4	-
28/10/2015	-	10.4	6.5	14.6	5.1	-	2.5	3.4	12.6	-
29/10/2015	11.0	8.7	7.3	5.3	8.8	6.6	3.3	3.2	3.1	-
30/10/2015	14.3	11.6	10.0	6.5	11.4	9.5	4.0	4.9	3.4	-
31/10/2015	14.8	15.1	9.7	9.6	11.5	10.7	6.0	5.5	5.4	-
01/11/2015	19.1	13.6	10.3	9.6	12.1	12.2	4.8	4.8	4.9	-
02/11/2015	14.4	9.3	7.1	7.5	12.5	9.8	3.6	2.8	4.4	-
03/11/2015	17.9	10.4	11.7	9.1	13.8	11.5	3.7	5.5	5.4	-
04/11/2015	15.9	7.8	7.7	5.2	9.4	13.0	4.0	5.1	4.1	-
05/11/2015	11.1	3.4	3.2	3.4	6.8	8.5	1.1	1.3	2.2	-
06/11/2015	16.0	9.1	9.2	7.0	10.8	10.4	3.8	3.3	4.2	-

Date	PM_{10} (µg/m³)					$PM_{2.5}$ (µg/m³)				
	Breeza	Maules Creek	Werris Creek	Wil-gai	Tamworth	Breeza	Maules Creek	Werris Creek	Wil-gai	Tamworth
07/11/2015	19.0	8.7	8.2	5.7	12.4	13.8	2.8	3.8	3.0	-
08/11/2015	15.1	7.3	3.7	6.2	7.1	10.5	2.9	1.7	3.7	-
09/11/2015	16.5	8.8	5.2	4.1	8.3	11.3	2.3	1.9	1.8	-
10/11/2015	23.2	13.7	10.3	9.4	12.9	16.8	5.0	4.7	4.2	-
11/11/2015	19.4	19.5	7.7	9.7	11.4	13.1	5.5	3.9	4.3	-
12/11/2015	21.1	12.8	10.1	9.5	15.3	13.6	5.1	3.9	4.6	-
13/11/2015	23.3	13.0	8.9	9.2	11.7	16.7	5.7	4.0	4.7	-
14/11/2015	-	7.3	4.5	4.9	5.9	-	3.7	1.9	2.9	-
15/11/2015	-	4.9	4.2	3.7	6.1	-	0.7	1.7	1.7	-
16/11/2015	-	5.9	4.0	3.9	8.0	-	1.9	1.0	1.9	-
17/11/2015	13.4	6.5	7.5	5.1	13.1	6.6	2.6	2.5	2.8	-
18/11/2015	20.5	9.5	12.4	7.6	18.3	10.9	4.1	4.5	3.5	-
19/11/2015	27.6	15.1	14.2	10.2	23.8	13.6	6.3	4.4	3.6	-
20/11/2015	31.9	21.3	19.9	15.3	27.1	14.8	8.0	6.9	5.5	-
21/11/2015	36.5	27.0	27.9	16.3	30.8	18.1	11.5	11.6	7.1	-
22/11/2015	21.9	13.2	8.4	6.6	12.8	13.3	5.6	3.0	3.5	-
23/11/2015	23.1	11.3	16.5	9.7	16.0	13.5	4.7	5.8	4.5	-
24/11/2015	27.2	13.4	20.2	10.1	25.0	14.0	5.6	9.9	5.2	-
25/11/2015	28.6	16.4	21.2	13.3	22.7	14.2	8.4	9.6	6.1	-
26/11/2015	44.6	29.2	-	19.4	48.0	17.1	13.5	-	8.2	-
27/11/2015	33.9	21.0	19.1	23.7	30.9	19.2	9.3	6.4	16.6	-
28/11/2015	25.0	13.5	14.4	8.4	16.7	13.9	5.7	6.2	4.7	-
29/11/2015	25.1	16.3	13.2	9.2	17.6	13.6	7.9	5.2	5.0	-
30/11/2015	23.9	13.5	15.8	9.2	22.7	10.7	5.5	4.6	4.5	-
01/12/2015	31.7	9.9	22.3	10.4	25.2	12.3	4.4	7.2	4.7	-
02/12/2015	23.3	11.7	12.6	7.5	13.5	13.3	5.6	4.4	4.1	-
03/12/2015	16.1	7.0	8.2	4.0	9.1	10.1	3.5	3.6	2.3	-
04/12/2015	16.0	8.5	8.8	4.7	12.0	10.0	2.8	2.1	2.6	-
05/12/2015	18.0	9.2	8.1	6.6	9.7	11.4	4.4	3.8	4.1	-
06/12/2015	20.1	13.0	8.9	5.7	13.8	11.5	5.2	3.9	2.6	-
07/12/2015	29.7	13.2	13.2	14.4	16.7	16.8	6.5	6.1	5.6	-
08/12/2015	32.0	13.5	-	10.0	18.0	19.8	6.3	-	4.7	-
09/12/2015	14.8	9.8	-	-	16.4	10.5	5.6	-	-	-
10/12/2015	12.0	11.1	-	-	10.0	9.0	7.1	-	-	-
11/12/2015	22.8	13.3	-	12.9	16.2	14.7	6.4	-	5.1	-
12/12/2015	20.6	12.0	14.6	10.9	20.4	10.8	4.9	4.5	2.6	-
13/12/2015	19.8	11.2	8.2	15.7	12.8	11.3	4.9	3.2	5.3	-
14/12/2015	21.9	12.0	14.7	13.6	18.9	13.1	6.2	6.7	4.6	-
15/12/2015	29.3	13.4	10.2	11.0	18.5	18.5	6.4	3.6	5.0	-
16/12/2015	20.1	-	9.4	7.1	12.4	13.2	-	5.4	3.9	-
17/12/2015	15.0	7.6	5.4	7.7	9.5	11.8	5.3	2.4	4.9	-
18/12/2015	17.1	10.6	8.7	8.9	12.6	12.9	5.6	4.4	4.2	-
19/12/2015	20.7	12.7	11.3	9.3	13.9	16.0	7.1	6.5	4.0	-
20/12/2015	23.1	11.4	10.4	12.7	13.5	18.1	6.1	5.2	5.4	-
21/12/2015	23.7	12.1	12.8	13.3	18.4	18.9	5.6	5.8	5.8	-
22/12/2015	11.1	12.9	6.5	11.6	14.0	8.8	7.2	3.2	6.2	-
23/12/2015	6.5	4.2	0.0	3.8	3.6	5.6	2.3	-1.1	2.6	-
24/12/2015	7.8	2.1	2.5	5.6	6.2	4.7	1.1	0.3	3.7	-
25/12/2015	7.3	3.4	2.4	3.8	6.8	5.2	2.0	0.2	2.4	-
26/12/2015	7.7	5.7	6.3	7.3	11.5	5.2	3.6	3.4	4.6	-
27/12/2015	15.2	9.3	8.1	9.9	10.5	11.4	5.3	4.4	5.8	-
28/12/2015	15.1	7.4	9.6	10.7	12.9	10.4	2.8	4.6	5.3	-
29/12/2015	14.0	5.8	6.9	7.4	11.5	10.9	2.3	2.9	3.0	-
30/12/2015	14.3	9.5	6.5	5.1	10.0	11.7	5.1	2.5	1.4	-
31/12/2015	19.0	8.6	9.5	8.1	13.3	15.6	4.1	4.1	3.0	-
01/01/2016	19.5	16.0	8.4	7.6	10.9	14.6	5.7	3.5	2.3	-
02/01/2016	17.6	12.1	9.8	11.5	15.2	12.9	4.7	3.7	4.0	-
03/01/2016	13.1	5.5	6.9	8.7	12.0	10.1	2.6	2.2	4.7	-
04/01/2016	8.4	3.2	3.8	5.0	6.4	6.4	1.5	2.1	3.3	-
05/01/2016	9.0	3.9	2.6	3.9	6.0	7.9	1.7	-0.6	2.8	-
06/01/2016	6.5	2.0	1.7	3.1	5.6	5.7	0.0	0.5	2.0	-
07/01/2016	9.3	4.7	3.6	-	9.3	7.0	2.2	0.6	-	-
08/01/2016	16.4	10.7	9.4	-	12.1	13.0	4.4	4.0	-	-
09/01/2016	19.8	20.3	13.0	12.6	14.4	15.7	5.0	5.2	5.7	-
10/01/2016	20.9	19.1	12.9	11.0	14.1	16.5	8.0	7.4	4.9	-

Date	PM_{10} (µg/m³)					$PM_{2.5}$ (µg/m³)				
	Breeza	Maules Creek	Werris Creek	Wil-gai	Tamworth	Breeza	Maules Creek	Werris Creek	Wil-gai	Tamworth
11/01/2016	20.1	8.3	11.9	17.5	16.1	15.1	0.8	5.7	7.1	-
12/01/2016	21.2	3.4	13.9	26.1	16.8	15.5	-1.1	6.2	8.0	-
13/01/2016	18.5	4.4	17.0	16.5	14.3	13.1	-0.1	8.4	5.4	-
14/01/2016	25.9	-	13.0	21.2	19.4	18.0	-	5.2	7.9	-
15/01/2016	8.8	12.5	3.1	8.0	7.9	6.7	4.1	1.1	4.4	-
16/01/2016	10.0	8.3	5.8	6.1	9.1	7.0	1.9	1.7	3.1	-
17/01/2016	6.8	4.1	3.3	3.6	6.3	5.1	1.2	1.1	2.3	-
18/01/2016	12.0	7.4	5.8	8.6	9.4	9.1	2.4	2.5	3.3	-
19/01/2016	17.6	8.2	8.5	17.7	13.2	13.1	2.2	3.2	4.4	-
20/01/2016	20.1	11.1	12.8	37.9	17.9	13.6	4.1	4.1	6.9	-
21/01/2016	25.2	12.2	13.3	20.4	21.8	14.6	4.4	3.7	6.7	-
22/01/2016	12.5	13.5	13.8	15.4	20.8	8.3	4.6	6.2	5.3	-
23/01/2016	5.9	6.2	6.0	9.5	7.2	3.3	2.1	3.8	7.0	-
24/01/2016	10.9	7.7	8.6	21.1	10.8	7.1	3.7	5.5	16.8	-
25/01/2016	13.7	10.4	11.4	17.3	13.4	9.9	5.8	5.7	11.3	-
26/01/2016	11.2	6.3	5.9	6.5	8.5	8.4	3.6	3.7	4.4	-
27/01/2016	8.1	4.8	6.7	6.4	10.9	5.8	1.6	3.8	3.9	-
28/01/2016	5.8	5.6	4.1	4.9	6.9	4.1	2.8	2.1	3.2	-
29/01/2016	6.7	4.6	5.6	5.7	11.5	4.6	1.4	2.9	3.3	-
30/01/2016	12.0	10.6	11.4	10.6	14.6	5.4	1.8	3.2	1.8	-
31/01/2016	29.1	**62.8**	41.2	38.8	**51.7**	12.4	6.0	6.6	5.3	-
01/02/2016	17.3	37.6	13.3	15.7	21.2	12.1	6.3	1.6	3.7	-
02/02/2016	12.8	11.8	9.0	10.8	17.7	9.1	2.2	2.5	2.6	-
03/02/2016	8.5	7.2	6.4	8.4	15.8	5.1	3.0	2.2	3.7	-
04/02/2016	9.7	9.3	5.5	9.5	12.1	5.5	3.4	1.6	4.4	-
05/02/2016	8.2	8.0	5.3	11.0	8.8	3.9	3.1	2.4	4.0	-
06/02/2016	5.2	5.6	4.8	7.1	11.9	2.2	1.7	1.2	3.2	-
07/02/2016	10.6	11.9	10.1	10.9	17.3	5.4	4.0	2.9	4.2	-
08/02/2016	10.0	9.8	7.2	12.2	11.8	5.7	2.9	2.9	3.9	-
09/02/2016	9.8	6.1	6.2	10.5	12.2	5.6	1.4	2.3	2.8	-
10/02/2016	14.4	13.4	11.0	-	12.8	9.6	3.7	4.4	-	-
11/02/2016	17.5	13.8	11.8	-	14.2	11.5	4.2	5.1	-	-
12/02/2016	19.3	14.8	7.7	11.4	12.9	13.8	3.9	3.5	3.5	-
13/02/2016	15.2	9.7	6.7	15.0	11.3	10.0	3.1	3.1	4.0	-
14/02/2016	18.0	12.8	10.9	13.1	16.8	12.2	4.7	5.9	3.7	-
15/02/2016	23.7	20.7	18.7	18.2	26.6	14.6	7.1	8.2	5.8	-
16/02/2016	24.0	19.9	18.1	28.7	27.6	14.8	5.4	4.4	5.5	-
17/02/2016	23.6	20.9	20.5	25.4	29.0	15.3	5.6	8.3	5.9	-
18/02/2016	28.9	17.4	23.5	30.6	30.2	19.8	3.4	11.0	5.4	-
19/02/2016	21.2	15.9	17.1	49.5	27.2	12.8	4.8	7.3	10.0	-
20/02/2016	21.9	20.4	16.3	17.9	23.1	13.1	6.6	8.0	5.3	-
21/02/2016	14.5	10.8	10.3	10.7	12.6	10.0	5.1	6.5	5.3	-
22/02/2016	17.6	12.5	8.3	8.2	12.8	12.1	5.2	2.4	2.9	-
23/02/2016	21.9	11.1	8.9	20.0	10.9	11.1	3.8	3.3	4.0	-
24/02/2016	20.9	16.0	-	30.5	19.8	12.8	4.3	-	7.0	-
25/02/2016	22.2	13.0	-	24.6	27.6	12.2	3.7	-	5.1	-
26/02/2016	21.7	20.9	24.4	29.7	37.1	10.3	5.3	9.7	6.7	-
27/02/2016	8.2	15.4	5.6	13.4	12.5	3.7	6.5	1.5	6.1	-
28/02/2016	9.0	7.7	3.9	7.7	11.7	4.5	2.7	0.7	3.1	-
29/02/2016	10.2	12.2	6.6	13.8	14.1	5.5	3.5	1.6	3.9	-
01/03/2016	10.1	12.6	9.1	10.7	12.5	5.4	3.7	3.2	3.0	-
02/03/2016	11.4	12.3	10.5	17.8	17.3	5.5	3.8	3.2	4.0	-
03/03/2016	13.0	15.0	10.4	15.5	16.6	6.6	4.9	2.8	5.3	-
04/03/2016	12.6	17.3	9.4	13.7	12.7	7.2	5.4	3.0	5.7	-
05/03/2016	11.3	12.6	11.0	20.2	13.0	6.3	4.5	4.5	6.3	-
06/03/2016	10.1	7.8	5.4	6.9	9.5	5.6	2.0	0.0	2.0	-
07/03/2016	8.6	13.2	6.8	9.4	11.6	4.5	2.6	1.6	2.4	-
08/03/2016	13.3	11.9	9.7	27.7	13.2	7.2	2.6	4.2	4.5	-
09/03/2016	11.0	7.2	9.5	8.4	12.5	5.9	2.6	2.3	2.5	-
10/03/2016	12.8	13.9	11.4	27.3	15.7	7.0	3.2	4.3	5.7	-
11/03/2016	15.0	21.8	12.2	22.7	22.4	9.4	3.8	4.6	5.8	-
12/03/2016	13.2	33.4	14.2	23.4	16.5	7.0	5.5	7.0	7.7	-
13/03/2016	11.8	12.4	9.5	12.1	12.1	6.9	4.1	4.9	5.8	-
14/03/2016	8.2	21.3	11.6	12.5	16.8	4.5	3.0	6.9	5.7	-
15/03/2016	15.9	11.4	8.1	12.5	14.0	11.7	5.1	5.3	7.1	5.3

Date	PM_{10} (µg/m³)					$PM_{2.5}$ (µg/m³)				
	Breeza	Maules Creek	Werris Creek	Wil-gai	Tamworth	Breeza	Maules Creek	Werris Creek	Wil-gai	Tamworth
16/03/2016	7.7	8.0	4.9	7.6	10.3	4.4	2.3	2.4	3.4	2.7
17/03/2016	3.3	6.2	7.3	6.3	13.4	1.5	1.3	2.4	3.0	2.8
18/03/2016	9.7	4.7	9.3	13.1	17.6	5.8	0.6	4.7	6.3	4.5
19/03/2016	9.4	8.2	17.5	14.0	11.3	5.7	1.6	13.8	11.1	3.9
20/03/2016	15.5	10.0	8.2	17.4	12.7	10.3	3.8	2.9	14.7	4.5
21/03/2016	9.5	7.2	5.4	14.0	8.5	6.8	0.9	2.6	12.0	2.5
22/03/2016	12.0	6.8	5.8	14.3	12.8	8.8	2.2	2.6	12.0	3.0
23/03/2016	13.6	11.8	12.1	13.0	24.1	10.0	2.1	6.8	10.3	7.0
24/03/2016	23.9	11.9	15.2	28.6	23.8	15.4	4.1	9.3	21.0	7.2
25/03/2016	21.1	14.0	12.8	21.9	24.0	14.0	6.0	6.2	15.5	5.6
26/03/2016	21.9	11.8	12.9	25.3	24.7	14.8	5.7	7.5	19.4	7.9
27/03/2016	23.0	13.5	13.0	23.0	21.0	16.3	6.1	7.9	19.0	8.5
28/03/2016	19.1	14.9	11.2	22.7	17.9	13.0	5.0	4.2	12.9	4.4
29/03/2016	19.5	9.1	14.6	15.6	23.2	11.9	3.8	4.8	4.0	7.8
30/03/2016	11.1	2.3	4.6	6.3	9.8	8.0	0.7	1.4	3.2	4.3
31/03/2016	11.3	7.7	10.6	11.8	15.8	7.2	2.2	6.4	4.8	4.9
01/04/2016	15.1	27.1	21.9	11.9	19.0	10.8	2.5	18.7	3.5	6.0
02/04/2016	15.8	28.2	22.9	12.4	20.2	10.7	3.5	-	3.3	5.4
03/04/2016	25.2	17.1	23.5	14.6	21.3	16.8	4.1	16.7	5.4	7.2
04/04/2016	24.7	20.4	24.7	19.3	22.1	17.0	7.8	17.4	7.9	7.2
05/04/2016	-	22.4	16.8	-	20.7	-	7.7	-	-	6.2
06/04/2016	20.4	15.5	17.6	-	26.4	13.4	3.9	9.4	-	7.1
07/04/2016	25.0	28.2	18.4	26.0	30.7	15.8	8.8	6.0	7.5	8.4
08/04/2016	24.4	28.3	16.8	19.0	30.1	17.8	8.0	10.2	7.6	8.5
09/04/2016	21.4	20.1	17.3	20.8	20.6	15.6	6.6	13.7	9.3	7.1
10/04/2016	19.5	10.8	15.0	9.9	17.4	14.5	2.8	11.7	5.0	7.8
11/04/2016	15.6	11.5	10.7	9.7	20.9	10.8	1.5	2.4	3.4	5.7
12/04/2016	23.0	9.7	18.5	17.0	26.5	16.8	3.3	7.7	5.1	11.1
13/04/2016	17.8	13.3	7.9	13.8	15.5	14.0	5.3	2.8	6.2	5.6
14/04/2016	13.1	5.6	2.2	6.6	10.1	10.0	0.8	-1.2	2.0	2.2
15/04/2016	13.2	9.2	8.1	11.3	12.9	9.5	1.4	3.5	3.0	2.2
16/04/2016	18.8	14.0	9.2	15.8	18.1	14.0	5.0	5.5	4.8	5.5
17/04/2016	26.5	16.0	16.8	25.5	23.5	20.7	6.9	11.7	8.5	9.5
18/04/2016	11.0	8.8	11.0	11.9	17.5	9.1	1.9	5.5	4.1	6.7
19/04/2016	14.4	8.4	11.8	24.0	21.6	10.7	1.7	3.7	5.5	6.9
20/04/2016	15.1	13.8	10.3	18.7	17.6	11.4	4.7	2.7	4.8	5.8
21/04/2016	17.0	16.5	10.0	35.7	17.9	13.6	3.8	3.0	7.6	5.6
22/04/2016	19.4	16.4	19.2	32.1	23.1	14.3	4.8	7.6	7.8	6.4
23/04/2016	12.9	12.8	6.6	12.6	13.1	9.5	4.1	3.3	5.4	5.5
24/04/2016	11.4	9.9	8.5	8.6	15.7	7.6	0.8	1.5	3.0	4.5
25/04/2016	13.3	6.7	9.8	9.4	11.7	9.4	0.7	3.9	3.0	2.9
26/04/2016	10.7	4.0	4.9	7.3	9.6	7.2	0.0	0.7	1.4	2.6
27/04/2016	11.2	6.6	4.1	23.8	9.9	7.5	0.0	0.9	3.7	2.6
28/04/2016	15.8	12.8	14.4	31.3	16.8	11.4	1.1	5.0	4.9	2.9
29/04/2016	17.1	15.1	9.1	38.9	22.2	9.9	2.3	1.1	6.3	5.1
30/04/2016	16.8	12.4	7.0	11.6	22.8	10.0	2.3	1.6	2.9	6.4
01/05/2016	12.7	5.1	2.0	3.4	6.7	11.2	1.5	-0.3	1.8	3.1
02/05/2016	11.0	2.3	3.1	6.7	8.2	8.9	1.0	0.8	5.0	2.8
03/05/2016	10.4	-0.5	3.8	6.8	8.3	8.5	0.6	1.3	4.3	4.1
04/05/2016	9.1	1.7	6.3	9.8	13.5	6.1	2.2	1.8	4.6	5.1
05/05/2016	13.2	2.2	9.7	10.5	18.6	8.2	1.6	2.8	4.0	5.8
06/05/2016	13.0	6.9	11.4	9.9	19.3	7.8	2.9	4.0	3.5	6.8
07/05/2016	11.4	10.3	8.6	12.7	18.6	7.2	3.9	3.2	5.6	7.7
08/05/2016	12.1	9.1	7.2	7.7	15.2	8.2	3.6	5.0	3.8	4.9
09/05/2016	10.8	4.4	8.9	6.7	16.3	7.5	2.7	4.4	3.8	6.1
10/05/2016	7.7	3.8	4.2	5.9	7.7	5.4	2.3	0.6	3.7	2.0
11/05/2016	8.1	4.0	6.0	7.5	11.2	5.2	1.7	3.3	3.4	3.3
12/05/2016	7.6	4.6	5.2	-	19.0	4.9	1.0	0.0	-	7.4
13/05/2016	7.1	5.1	6.3	-	18.3	4.0	1.7	2.6	-	8.6
14/05/2016	10.3	7.0	12.3	-	16.0	5.8	2.8	5.0	-	8.8
15/05/2016	11.2	6.6	11.8	-	19.9	7.1	1.9	6.2	-	9.8
16/05/2016	15.5	-	10.7	-	26.8	7.3	-	7.7	-	10.9
17/05/2016	15.3	12.7	14.6	-	27.7	8.1	3.6	4.4	-	9.3
18/05/2016	-	30.9	17.8	-	33.0	-	6.7	8.4	-	10.8
19/05/2016	10.9	15.2	15.4	-	32.1	6.0	3.9	7.3	-	13.9

Date	PM_{10} (µg/m³)					$PM_{2.5}$ (µg/m³)				
	Breeza	Maules Creek	Werris Creek	Wil-gai	Tamworth	Breeza	Maules Creek	Werris Creek	Wil-gai	Tamworth
20/05/2016	10.8	17.5	22.6	-	31.0	5.2	4.8	7.5	-	12.7
21/05/2016	15.0	21.2	28.8	-	29.7	9.2	6.7	9.5	-	14.7
22/05/2016	20.6	17.8	16.7	-	29.5	13.0	6.5	9.9	-	15.5
23/05/2016	16.5	19.7	20.8	-	22.7	10.6	3.7	12.2	-	9.0
24/05/2016	9.1	11.4	6.9	22.8	22.1	6.8	3.1	3.2	3.4	7.7
25/05/2016	**206.5**	12.1	15.1	38.9	29.1	**181.2**	2.8	3.2	6.1	11.5
26/05/2016	28.5	9.0	7.4	11.4	21.0	21.8	2.5	4.7	2.0	8.2
27/05/2016	6.2	0.9	4.1	2.7	5.3	4.6	0.8	2.2	1.8	4.6
28/05/2016	7.8	-0.8	2.2	-0.5	8.6	6.2	-0.6	0.3	-0.9	6.5
29/05/2016	4.8	-1.0	5.1	-2.0	9.3	3.8	0.2	4.6	-1.7	9.5
30/05/2016	7.4	2.2	7.6	2.3	12.1	5.7	1.6	4.8	-0.3	9.9
31/05/2016	17.2	5.0	18.8	6.8	18.9	14.2	2.6	12.6	3.3	12.5
01/06/2016	16.6	7.3	15.7	9.3	21.2	13.4	5.2	10.1	5.0	13.9
02/06/2016	13.6	3.7	11.9	6.5	13.2	11.3	4.3	8.1	4.8	9.4
03/06/2016	12.1	0.4	3.8	2.3	5.2	10.1	2.0	4.9	1.8	3.2
04/06/2016	11.8	-2.8	2.3	2.1	4.7	10.4	-0.2	1.2	1.7	3.4
05/06/2016	2.7	-3.4	4.3	-	3.3	1.5	-0.7	3.9	-	1.8
06/06/2016	6.9	-0.7	3.2	3.1	9.3	5.2	1.1	1.9	1.9	2.5
07/06/2016	6.6	-	6.2	3.5	8.9	4.8	-	4.0	1.8	4.4
08/06/2016	6.3	-0.1	7.3	4.7	12.6	4.4	0.0	5.6	1.8	7.5
09/06/2016	7.5	0.7	6.3	5.1	9.9	6.1	1.2	5.7	3.1	6.5
10/06/2016	5.1	-1.4	1.9	2.1	11.1	3.7	-0.6	0.1	0.9	4.6
11/06/2016	5.1	1.2	4.3	2.6	15.3	3.9	1.3	2.7	1.0	13.9
12/06/2016	5.9	2.0	3.0	4.3	12.2	4.1	0.6	1.0	1.7	10.2
13/06/2016	7.0	1.3	8.3	2.9	8.0	5.2	0.6	7.0	1.0	3.8
14/06/2016	10.6	3.3	7.4	4.1	14.8	8.0	0.9	1.0	0.9	10.3
15/06/2016	9.3	2.8	8.7	10.2	12.1	8.2	0.4	2.6	2.6	8.7
16/06/2016	11.2	2.8	5.5	18.2	14.9	9.1	1.2	2.5	2.7	11.5
17/06/2016	13.9	3.8	5.7	9.1	18.9	9.4	1.6	2.4	2.5	10.9
18/06/2016	10.6	3.2	3.6	5.4	11.6	8.0	2.1	1.4	2.6	9.9
19/06/2016	8.1	1.5	2.2	-	4.3	6.9	1.6	1.1	-	3.6
20/06/2016	4.7	-0.6	0.4	-	4.7	4.1	0.2	-1.2	-	1.5
21/06/2016	6.8	-0.8	-0.2	0.9	7.4	5.7	-1.0	-2.0	0.7	2.2
22/06/2016	6.1	-1.2	2.5	1.1	8.8	5.3	-0.4	1.9	0.9	7.0
23/06/2016	6.3	-2.0	-	0.4	9.7	5.1	-1.5	-	-1.0	7.6
24/06/2016	5.4	-1.1	4.1	-0.4	5.2	4.0	-1.1	-	-0.9	1.4
25/06/2016	8.7	1.6	-	0.7	13.9	7.1	0.4	-	-0.9	10.8
26/06/2016	5.0	-0.5	1.9	2.1	12.8	5.3	-0.8	-	0.5	10.7
27/06/2016	7.6	0.7	5.3	0.2	7.4	6.9	0.9	3.9	-0.6	7.0
28/06/2016	6.1	-0.1	6.6	-0.6	14.9	4.8	-0.6	4.1	-1.9	10.0
29/06/2016	8.0	1.8	8.8	2.4	16.0	6.7	0.8	6.5	0.2	15.3
30/06/2016	6.6	0.0	5.7	4.2	13.7	5.2	-0.3	5.0	0.7	9.6
01/07/2016	5.2	1.8	7.0	1.7	14.7	3.6	1.2	7.2	-0.9	11.1
02/07/2016	7.5	0.5	6.4	0.7	16.6	6.3	0.3	6.9	-1.4	17.6
03/07/2016	6.3	2.8	6.0	3.3	15.7	4.9	1.7	4.5	0.5	15.8
04/07/2016	10.3	7.5	6.4	4.7	16.0	7.7	3.9	4.3	1.0	11.0
05/07/2016	7.5	1.7	2.2	0.0	7.4	6.1	2.1	2.9	-0.8	-
06/07/2016	6.7	-2.2	5.9	-1.4	4.5	6.0	-1.1	-	-1.8	1.8
07/07/2016	7.3	-0.9	7.5	0.0	11.4	6.0	-0.7	-	-1.1	6.3
08/07/2016	7.8	1.4	5.1	0.0	20.6	7.0	1.6	4.5	-0.5	16.8
09/07/2016	6.7	1.0	6.5	-0.3	10.4	4.8	1.1	5.5	-0.8	9.7
10/07/2016	9.4	1.4	2.9	0.7	14.8	8.3	0.8	1.2	-0.3	10.9
11/07/2016	12.7	6.9	6.2	3.3	15.7	9.5	4.6	5.3	0.5	9.8
12/07/2016	8.4	3.6	6.9	3.2	10.9	5.6	2.1	5.5	1.3	5.5
13/07/2016	7.4	0.8	10.3	1.6	14.7	4.8	-0.1	6.4	-0.3	9.1
14/07/2016	5.8	6.3	2.1	4.0	19.0	3.4	1.5	-	0.1	14.5
15/07/2016	15.1	11.5	10.0	5.3	16.2	13.0	3.4	5.8	0.9	10.8
16/07/2016	10.8	5.4	14.4	1.9	12.0	8.2	1.1	9.7	-0.2	8.2
17/07/2016	8.8	2.7	6.5	0.2	5.5	7.0	0.3	5.8	-0.7	3.9
18/07/2016	9.8	5.1	5.5	1.9	12.9	6.9	3.8	3.2	-0.7	7.2
19/07/2016	11.2	4.3	8.9	6.2	17.8	7.4	0.9	6.0	1.4	10.3
20/07/2016	10.4	1.7	5.0	4.5	9.7	8.5	1.4	3.9	2.7	5.3
21/07/2016	9.2	-1.0	4.1	2.4	8.8	7.8	-0.1	3.6	1.9	3.9
22/07/2016	6.6	1.5	3.5	-	8.5	5.3	1.5	3.0	-	4.6
23/07/2016	6.5	3.4	5.8	4.2	8.6	4.3	1.8	3.4	2.7	4.1

Date	PM_{10} (µg/m³)					$PM_{2.5}$ (µg/m³)				
	Breeza	Maules Creek	Werris Creek	Wil-gai	Tamworth	Breeza	Maules Creek	Werris Creek	Wil-gai	Tamworth
24/07/2016	6.6	2.4	8.6	0.3	14.7	5.4	0.8	6.3	-1.4	9.2
25/07/2016	7.8	1.6	4.8	1.2	12.8	6.1	0.5	2.7	-0.9	5.2
26/07/2016	4.8	0.3	10.0	3.2	22.3	3.0	-1.1	7.3	-0.6	16.8
27/07/2016	7.7	2.0	6.9	2.2	16.0	6.0	0.9	5.0	-0.4	10.8
28/07/2016	8.6	2.4	6.0	1.9	16.2	7.1	0.0	3.7	-0.7	13.1
29/07/2016	7.5	2.0	8.2	-	17.1	5.4	-0.4	4.7	-	14.3
30/07/2016	8.4	4.0	11.5	3.6	18.2	5.8	1.5	8.9	1.4	14.9
31/07/2016	7.6	4.2	7.9	3.1	17.1	5.6	1.4	4.3	-0.6	14.6
01/08/2016	10.3	3.5	13.0	4.2	19.4	9.4	0.7	9.1	-0.3	10.4
02/08/2016	12.7	6.5	13.9	5.0	16.2	9.5	2.4	7.8	1.0	8.2
03/08/2016	9.0	1.1	4.3	-1.5	6.5	7.4	0.2	2.9	-2.0	3.2
04/08/2016	7.7	1.9	5.2	-0.7	9.5	5.8	-0.3	3.6	-1.9	5.7
05/08/2016	7.1	2.4	4.7	1.4	10.7	5.5	1.0	2.9	-0.6	7.4
06/08/2016	7.4	0.9	4.1	-1.0	13.3	6.5	0.1	2.9	-1.8	13.1
07/08/2016	5.4	2.1	5.5	-0.5	11.7	3.7	0.9	3.9	-1.7	10.6
08/08/2016	10.2	4.3	7.5	3.1	17.4	9.1	2.2	4.8	0.4	13.2
09/08/2016	10.7	4.0	7.3	-	18.0	8.2	1.9	4.2	-	11.1
10/08/2016	11.0	7.0	12.2	-	19.5	8.7	3.5	8.2	-	10.4
11/08/2016	4.4	3.5	7.5	-	13.0	3.3	1.8	4.5	-	8.6
12/08/2016	6.1	2.3	6.3	2.2	16.3	4.6	1.0	4.0	0.1	12.9
13/08/2016	6.3	2.0	7.8	3.3	17.7	4.6	0.2	4.0	0.7	15.8
14/08/2016	6.1	6.1	7.1	4.3	13.0	4.9	0.8	4.6	1.0	10.0
15/08/2016	12.9	6.6	11.4	8.0	16.0	10.7	1.6	9.4	1.2	10.0
16/08/2016	11.3	12.1	11.8	-	23.0	7.9	3.5	5.8	-	11.9
17/08/2016	12.8	10.8	15.2	11.9	21.6	9.9	3.5	10.1	2.6	11.4
18/08/2016	17.1	9.7	15.2	16.9	24.6	13.0	3.8	9.6	4.5	12.2
19/08/2016	15.2	8.9	16.2	15.9	21.2	11.5	4.6	11.9	4.5	11.1
20/08/2016	8.3	1.7	7.2	2.2	9.7	6.4	0.0	6.9	0.5	6.5
21/08/2016	5.9	3.0	4.0	4.0	13.5	4.3	0.4	2.8	1.3	10.8
22/08/2016	9.2	2.3	8.3	3.9	17.4	8.4	1.5	6.2	2.2	15.0
23/08/2016	8.6	2.2	4.3	3.1	10.1	7.2	1.8	3.7	1.7	8.1
24/08/2016	7.9	0.5	3.4	4.1	4.5	6.5	0.8	2.6	3.2	3.7
25/08/2016	7.2	-	3.7	-	6.7	6.4	-	3.1	-	3.3
26/08/2016	8.3	0.8	6.6	2.9	15.7	7.7	-0.2	5.0	0.8	12.4
27/08/2016	10.3	3.6	7.3	5.1	16.9	8.7	1.9	4.0	1.9	14.5
28/08/2016	6.0	1.1	7.0	3.1	15.2	4.6	0.4	5.7	1.4	16.0
29/08/2016	11.4	4.5	-	7.1	14.0	10.1	1.0	-	1.5	8.4
30/08/2016	15.2	10.7	13.5	18.2	24.7	11.2	6.1	8.5	4.6	13.8
31/08/2016	14.4	7.8	11.1	7.8	20.2	11.6	4.0	7.3	3.9	12.2
01/09/2016	7.4	4.0	3.1	4.9	5.7	5.7	2.4	1.9	2.6	3.4
02/09/2016	13.3	7.7	8.8	8.3	11.9	10.7	4.5	5.4	4.9	7.2
03/09/2016	5.1	-	5.0	2.8	8.1	3.8	-	2.8	1.0	3.7
04/09/2016	5.0	1.6	3.7	3.3	12.4	3.7	0.2	2.5	1.1	10.4
05/09/2016	10.0	3.9	9.2	4.2	12.5	8.4	0.9	4.6	0.6	6.9
06/09/2016	9.4	7.9	13.0	17.3	17.1	7.8	3.3	7.7	3.7	8.4
07/09/2016	14.2	6.2	16.3	13.4	15.4	10.5	2.7	8.3	4.4	8.0
08/09/2016	13.4	7.3	13.9	15.2	-	9.6	2.3	7.1	3.2	-
09/09/2016	13.0	7.9	13.3	8.4	15.4	9.8	4.1	8.1	4.0	-
10/09/2016	7.2	0.4	6.6	2.1	6.7	5.5	-0.9	4.5	0.8	-
11/09/2016	4.1	4.3	6.4	2.8	9.7	2.7	1.4	3.2	0.5	-
12/09/2016	5.0	3.1	9.8	7.5	12.0	2.8	0.4	4.9	1.8	-
13/09/2016	10.5	6.9	13.7	6.9	17.0	7.9	3.5	9.3	3.2	-
14/09/2016	7.5	4.8	4.5	4.4	6.6	6.4	3.6	3.9	3.0	4.5
15/09/2016	4.0	2.8	5.3	3.4	7.3	3.4	1.4	3.9	1.6	4.7
16/09/2016	4.8	0.5	6.9	2.3	9.5	3.8	-0.1	5.9	0.6	4.8
17/09/2016	5.1	2.4	8.9	3.4	9.8	3.7	0.4	6.8	1.1	6.4
18/09/2016	6.1	3.9	6.5	4.4	7.5	4.9	1.2	4.9	2.1	-
19/09/2016	1.5	0.4	5.9	3.0	7.3	0.3	-0.2	4.7	1.6	3.8
20/09/2016	3.3	3.6	14.3	4.2	13.9	2.0	0.7	9.8	1.8	10.9
21/09/2016	6.4	3.4	6.5	3.4	9.4	4.9	1.6	4.7	1.3	-
22/09/2016	7.0	3.0	8.8	4.0	9.8	5.1	1.4	6.4	1.9	-
23/09/2016	4.8	2.3	9.2	4.6	12.7	3.2	0.7	7.6	2.0	5.5
24/09/2016	6.5	2.6	10.6	2.6	9.9	4.8	0.6	8.2	0.2	6.6
25/09/2016	5.3	1.3	7.2	0.9	7.6	4.2	-0.1	5.8	0.1	4.7
26/09/2016	5.7	3.2	9.0	-0.1	9.7	3.6	0.5	6.6	-1.2	5.0

Date	PM_{10} (µg/m³)					$PM_{2.5}$ (µg/m³)				
	Breeza	Maules Creek	Werris Creek	Wil-gai	Tamworth	Breeza	Maules Creek	Werris Creek	Wil-gai	Tamworth
27/09/2016	5.0	3.6	8.8	-	12.5	2.3	0.3	3.9	-	6.8
28/09/2016	6.7	6.1	6.3	-	13.0	4.1	2.7	2.7	-	-
29/09/2016	-	11.8	15.7	12.7	18.2	-	1.5	7.7	3.4	8.6
30/09/2016	10.1	10.8	12.7	11.2	21.9	3.9	0.6	2.7	1.9	4.5
01/10/2016	4.9	3.0	6.4	4.3	11.4	2.5	0.9	2.9	0.7	3.7
02/10/2016	6.1	4.2	6.3	-	10.4	3.2	1.7	2.4	-	7.5
03/10/2016	6.8	3.6	5.9	-	10.8	4.1	0.4	1.9	2.3	6.2
04/10/2016	6.5	2.8	5.4	-	10.3	3.4	-0.7	1.7	1.3	7.1
05/10/2016	7.0	4.5	5.8	5.7	12.2	4.1	-0.1	2.0	1.4	5.3
06/10/2016	6.4	6.2	8.9	13.5	17.5	2.6	1.4	3.8	2.9	10.4
07/10/2016	10.3	7.0	10.7	15.3	17.9	5.7	1.9	3.9	3.6	9.2
08/10/2016	13.7	8.7	11.5	11.4	20.0	8.3	1.3	5.9	4.1	5.8
09/10/2016	7.9	12.0	9.0	9.1	12.0	4.1	4.6	5.7	4.8	4.5
10/10/2016	15.7	19.1	15.2	-	22.4	8.2	8.0	8.0	-	8.3
11/10/2016	6.3	8.3	6.3	6.1	7.7	3.7	0.8	2.1	1.9	6.9
12/10/2016	5.0	3.4	8.4	6.1	11.1	3.2	-1.1	4.2	1.7	6.1
13/10/2016	4.7	4.4	6.3	11.9	10.4	2.2	-0.1	3.5	2.1	7.0
14/10/2016	6.5	-	8.2	5.9	12.1	3.6	-	4.5	1.5	5.4
15/10/2016	9.1	12.5	8.6	24.6	14.0	5.2	4.1	5.5	4.7	8.5
16/10/2016	15.0	8.4	11.1	13.2	18.0	8.1	1.8	5.4	4.9	8.4
17/10/2016	9.7	9.4	9.9	11.8	17.5	6.1	3.4	5.6	5.6	6.9
18/10/2016	5.5	3.3	4.3	5.3	9.1	3.9	0.9	2.5	1.7	7.6
19/10/2016	7.0	4.8	7.9	5.0	10.8	4.5	1.0	4.3	1.9	-
20/10/2016	7.5	8.8	12.4	6.6	14.8	3.9	2.3	6.2	2.0	6.3
21/10/2016	12.8	11.5	12.7	13.6	18.6	7.2	4.5	8.2	5.6	5.9
22/10/2016	7.3	5.4	5.5	8.7	6.6	4.8	2.4	3.1	5.4	8.8
23/10/2016	7.3	3.2	7.1	3.0	10.9	5.1	-0.7	4.6	0.6	6.2
24/10/2016	6.7	3.1	8.7	3.3	11.1	5.0	0.8	6.3	0.7	7.0
25/10/2016	7.0	3.4	8.9	6.8	12.9	3.6	0.0	5.5	1.4	5.2
26/10/2016	11.0	6.5	10.3	-	14.4	6.1	1.8	4.6	-	5.1
27/10/2016	11.9	8.9	11.0	10.5	13.5	6.6	3.2	5.3	3.8	2.9
28/10/2016	13.5	13.5	12.9	10.4	11.4	8.9	6.0	7.0	5.5	5.0
29/10/2016	11.9	8.7	11.0	10.8	11.1	8.0	4.7	4.7	6.3	6.9
30/10/2016	13.7	10.1	10.3	13.8	15.7	8.8	4.9	5.6	6.8	3.7
31/10/2016	11.2	10.9	13.5	13.5	15.4	4.6	3.1	4.5	4.6	9.2
01/11/2016	6.9	3.9	11.8	7.0	11.4	3.4	-0.2	5.9	2.7	5.4
02/11/2016	7.1	6.4	10.0	6.8	14.0	3.8	1.4	4.9	1.6	7.9
03/11/2016	5.8	3.8	12.6	10.4	15.2	2.6	-0.3	5.9	1.3	5.6
04/11/2016	9.3	5.2	12.9	12.9	16.2	3.8	-0.2	6.0	3.3	5.9
05/11/2016	12.7	14.6	14.7	13.2	18.7	5.6	2.1	4.4	3.3	-
06/11/2016	10.3	7.9	11.7	11.3	17.1	5.4	1.6	4.4	3.6	7.3
07/11/2016	13.3	9.5	11.8	12.6	16.0	6.7	1.6	4.2	2.4	-
08/11/2016	-	17.6	22.0	27.8	25.0	-	5.9	10.6	9.0	9.7
09/11/2016	8.6	6.8	7.8	9.2	10.4	4.6	2.4	3.3	2.9	4.8
10/11/2016	10.1	11.7	9.7	7.8	10.0	6.7	4.5	3.9	4.5	6.7
11/11/2016	13.1	8.7	12.3	10.8	14.1	7.5	4.0	7.0	4.7	3.9
12/11/2016	-	11.2	10.0	12.3	14.6	-	5.6	4.8	5.7	7.0
13/11/2016	11.8	17.9	15.5	11.8	16.3	4.3	4.2	5.6	3.8	9.2
14/11/2016	4.8	3.9	6.9	6.7	10.0	2.5	0.0	3.7	2.7	2.5
15/11/2016	7.2	4.2	12.0	7.9	12.6	4.4	0.8	8.0	3.6	6.6
16/11/2016	9.3	11.1	13.8	10.8	14.4	5.5	2.3	7.2	3.5	7.1
17/11/2016	12.8	12.8	9.4	9.9	14.1	8.4	5.4	6.2	4.8	6.9
18/11/2016	15.3	14.3	13.3	16.7	21.3	8.5	5.6	7.1	5.8	7.5
19/11/2016	18.7	22.7	16.5	21.4	22.2	10.9	8.5	8.9	8.1	7.9
20/11/2016	24.5	23.1	19.4	22.0	19.2	11.2	7.6	11.2	9.7	9.0
21/11/2016	17.6	23.7	16.7	21.7	-	10.1	9.1	10.3	10.1	-
22/11/2016	17.6	29.6	16.7	28.3	-	10.5	15.7	9.9	11.6	-
23/11/2016	18.6	25.9	24.5	24.3	29.0	10.0	10.5	12.2	9.0	10.6
24/11/2016	8.1	9.3	9.9	13.3	15.0	3.9	1.6	4.6	3.3	6.4
25/11/2016	9.7	14.3	12.7	23.6	20.2	4.0	2.9	5.4	4.3	7.6
26/11/2016	12.8	13.9	14.0	15.3	21.4	6.1	2.7	7.1	3.5	7.5
27/11/2016	16.4	18.0	20.2	27.7	25.5	7.5	4.6	11.4	6.7	7.4
28/11/2016	18.6	17.8	21.0	23.8	24.5	10.1	5.9	11.1	7.2	12.2
29/11/2016	18.7	18.5	17.1	21.4	20.3	8.2	6.6	7.5	5.7	5.6
30/11/2016	-	20.2	17.3	12.3	15.9	-	6.0	8.7	4.7	6.4

Date	PM_{10} (µg/m³)					$PM_{2.5}$ (µg/m³)				
	Breeza	Maules Creek	Werris Creek	Wil-gai	Tamworth	Breeza	Maules Creek	Werris Creek	Wil-gai	Tamworth
01/12/2016	17.3	17.4	-	23.6	18.1	7.2	5.9	-	13.9	5.1
02/12/2016	23.3	18.1	-	27.6	23.7	9.8	5.7	-	7.1	6.5
03/12/2016	25.5	28.7	20.6	22.0	26.8	14.2	13.0	10.0	9.5	8.4
04/12/2016	26.8	23.0	23.0	22.2	20.4	14.7	11.4	11.4	9.5	10.7
05/12/2016	31.1	22.6	22.2	22.9	28.0	18.8	11.0	12.2	10.0	10.2
06/12/2016	20.9	16.7	19.3	18.8	21.0	10.1	6.4	9.7	8.2	10.0
07/12/2016	14.7	8.6	14.5	13.5	11.3	7.2	5.2	10.2	9.7	8.3
08/12/2016	15.1	18.3	10.7	18.2	10.7	6.0	6.7	6.7	8.2	5.2
09/12/2016	11.1	13.5	14.3	14.6	17.7	4.6	2.4	6.3	4.7	9.7
10/12/2016	15.5	7.4	12.0	6.6	15.5	7.0	2.3	6.5	2.7	6.2
11/12/2016	16.0	15.1	15.5	14.7	20.1	8.1	5.9	8.8	6.6	8.0
12/12/2016	16.9	25.9	14.8	14.7	15.4	8.8	6.2	9.4	6.1	7.9
13/12/2016	19.0	21.4	17.8	17.7	19.9	9.4	7.5	9.8	7.2	9.2
14/12/2016	24.0	-	18.8	-	22.4	10.1	-	10.5	-	9.8
15/12/2016	14.5	21.3	18.2	-	21.4	8.0	8.0	11.9	-	7.7
16/12/2016	11.4	8.9	12.4	10.9	16.1	5.4	5.4	9.7	6.7	9.6
17/12/2016	14.8	12.5	12.0	9.8	15.0	8.3	6.4	8.6	5.6	9.1
18/12/2016	16.7	17.2	16.1	14.5	14.2	9.8	7.1	10.2	6.8	9.0
19/12/2016	12.1	7.0	11.5	6.7	12.1	6.4	1.9	7.3	3.2	4.5
20/12/2016	13.6	11.4	14.6	14.7	18.9	7.6	5.5	8.7	6.1	-
21/12/2016	15.9	8.1	17.5	12.8	15.7	8.8	4.0	9.2	4.7	-
22/12/2016	16.4	14.0	13.6	13.8	16.8	9.8	5.9	8.6	6.7	8.4
23/12/2016	14.3	10.1	9.9	9.8	9.8	8.8	5.1	6.5	4.9	3.5
24/12/2016	12.1	7.4	10.2	-	10.8	6.8	3.0	7.2	-	6.6
25/12/2016	10.8	4.7	9.0	-	8.3	5.5	2.0	7.1	-	4.2
26/12/2016	11.1	8.0	8.8	-	11.2	6.2	4.9	5.8	-	6.1
27/12/2016	13.7	12.0	12.8	-	13.3	7.8	7.0	8.9	-	6.4
28/12/2016	18.5	17.6	14.3	-	17.3	11.6	10.1	9.6	-	7.1
29/12/2016	-	13.8	14.4	-	17.4	-	7.4	8.7	-	9.7
30/12/2016	-	13.8	18.3	-	20.8	-	8.0	9.4	-	6.5
31/12/2016	16.8	14.7	17.7	-	18.3	11.7	7.0	8.0	-	6.7

- Not applicable