

# Air quality quarterly summary report – October to December (Q4) 2017

Issued March 2018

## Introduction

One of the EPA's environmental goals is good quality air. To support this goal the EPA conducts ambient air quality monitoring at locations around the state.

This report contains a summary of the previous quarter's air quality based on data from the EPA's monitoring network:

- [Adelaide CBD](#)
- Northwestern Adelaide [Le Fevre 1](#)
- Northwestern Adelaide [Le Fevre 2](#)
- [Southern Adelaide](#)
- [Northern Adelaide](#)
- [Eastern Adelaide](#)
- [Western Adelaide](#)
- [Northeastern Adelaide](#)
- [Port Pirie](#)
- [Whyalla](#)

Further information about air quality monitoring can be found on the EPA [website](#).

## 1 Adelaide region

Pollution from fine particles and nitrogen dioxide are among the greatest challenges to managing air quality across metropolitan Adelaide, with the bulk of emissions coming from motor vehicles and domestic sources; significant contributions from industrial sources; and on occasions, from planned burning, bushfires and dust storms. They are also a primary focus of the [National Clean Air Agreement: Towards a clean air future for all Australians](#).

Fine [particles](#) are often a complex mixture of materials arising from many sources, but are generally grouped into two categories, called PM<sub>10</sub> and PM<sub>2.5</sub>, where the number gives an idea of the range of sizes of particles. Both are able to enter the lungs and are known to have health effects.

[Nitrogen dioxide](#) (NO<sub>2</sub>) mostly comes from combustion of fuels such as petrol, diesel or gas. Although it is generally found at concentrations below the national standard in Adelaide, recent Australian research suggests that it may still cause health effects in our communities.

While there is considerable variation in the mix of sources in different parts of the metropolitan area, air pollution knows no boundaries, so emissions in one area may well affect air quality in another. The impacts of emissions into our air

depend heavily on the weather conditions on any given day. For example, very still conditions over the city for several days allow pollutants to build up. In contrast, very windy conditions across the State can raise dust into the air. Either situation can result in exceedences of ground level concentration (GLC) criteria in Adelaide or regional population centres.

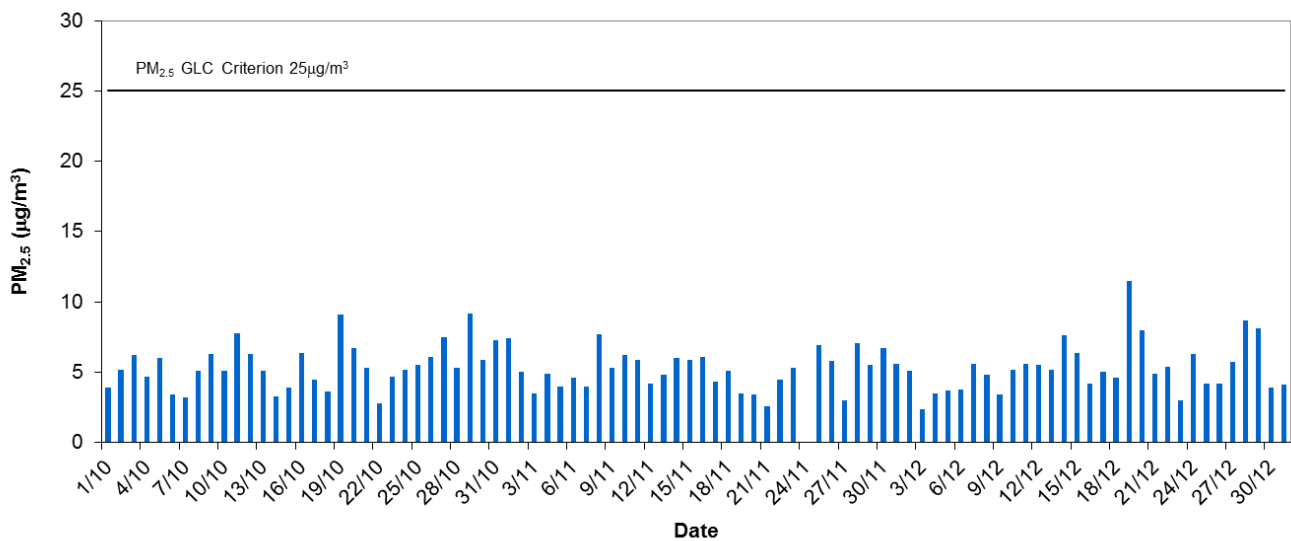
## 1.1 Adelaide CBD

Air quality in Adelaide CBD was generally good this quarter.

### 1.1.1 Particles (PM<sub>2.5</sub>)

- There were no exceedences of the 24-hour ground level concentration criterion for PM<sub>2.5</sub> at Adelaide CBD this quarter.

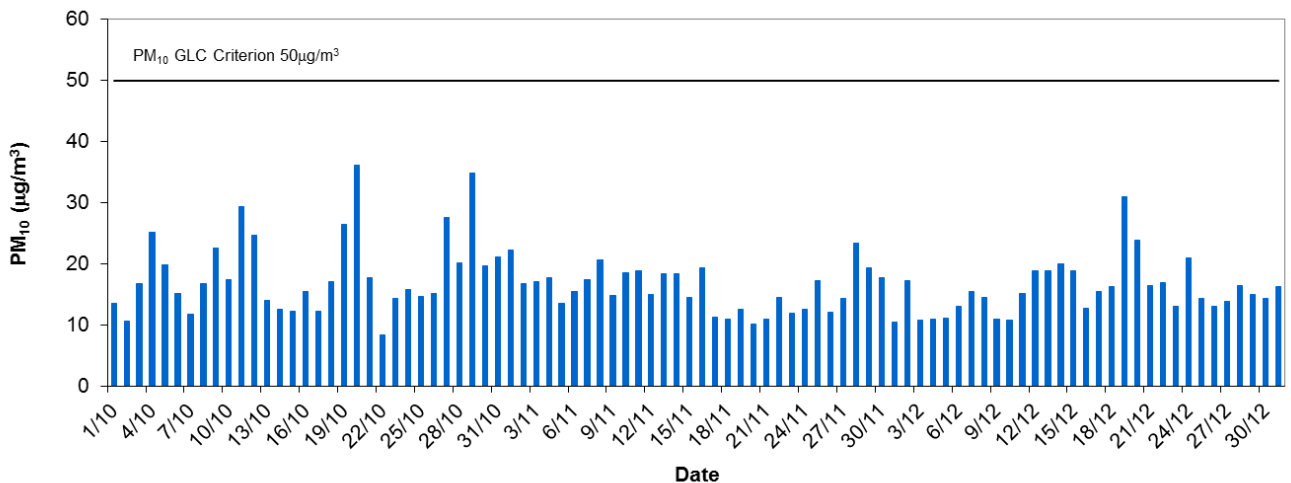
Adelaide CBD Daily Average PM<sub>2.5</sub> - Quarter 4, 2017



### 1.1.2 Particles (PM<sub>10</sub>)

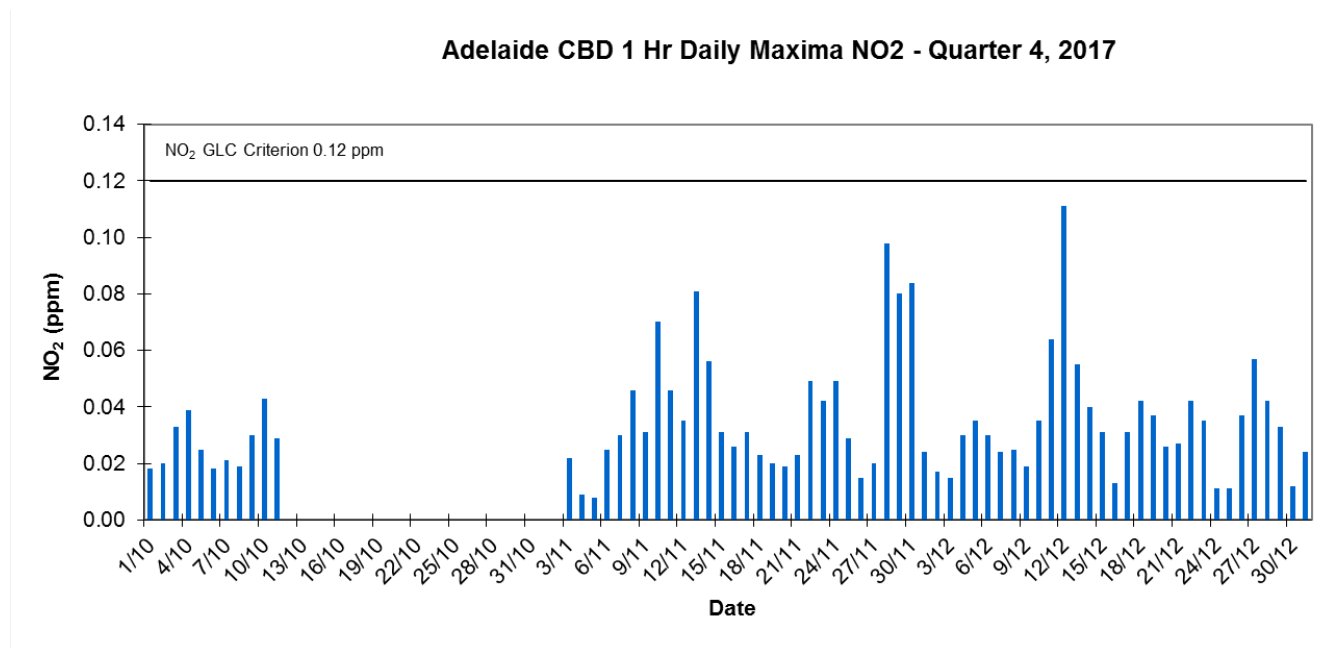
- There were no exceedences of the 24-hour ground level concentration criterion for PM<sub>10</sub> at Adelaide CBD this quarter.

Adelaide CBD Daily Average PM<sub>10</sub> - Quarter 4, 2017



### 1.1.3 Nitrogen dioxide

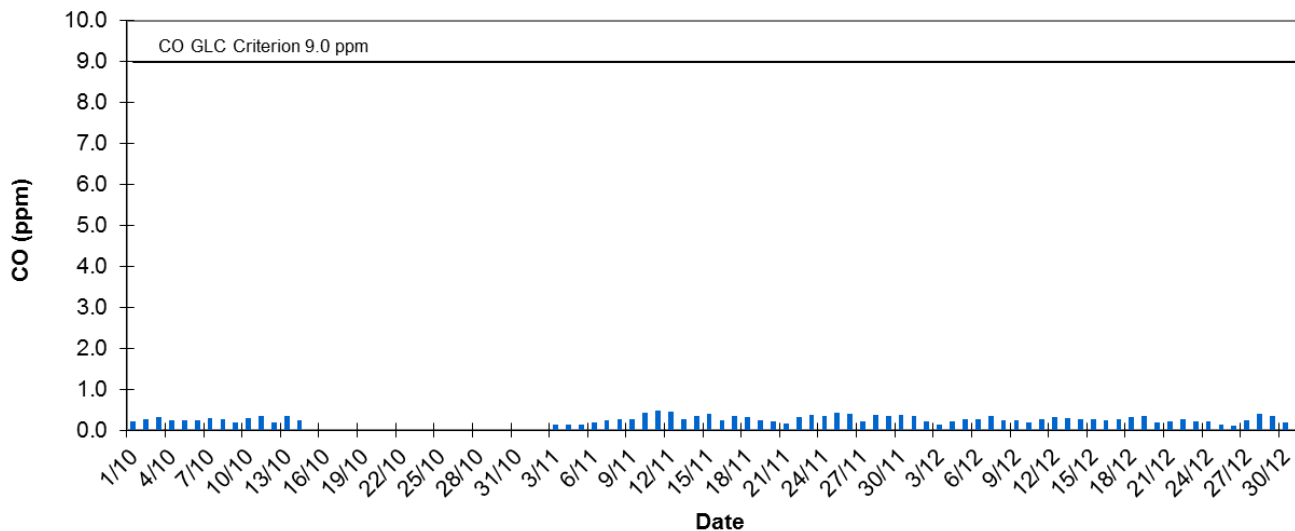
- There were no exceedences of the 1-hour ground level concentration criterion for nitrogen dioxide at Adelaide CBD this quarter.



### 1.1.4 Carbon monoxide

- There were no exceedences of the 8-hour ground level concentration criterion for carbon monoxide at Adelaide CBD this quarter.

**Adelaide CBD 8 Hr Daily Maxima CO - Quarter 4, 2017**



## 1.2 Northwestern Adelaide

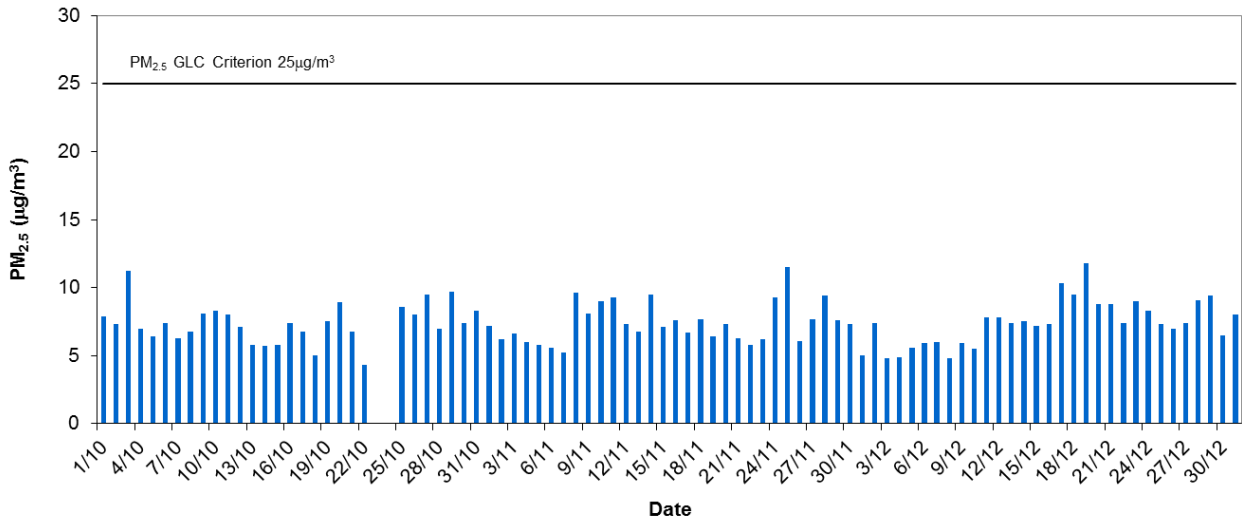
Air quality in Northwestern Adelaide was generally good this quarter.

### Le Fevre 1

#### 1.2.1 Particles (PM<sub>2.5</sub>)

- There were no exceedences of the 24-hour ground level concentration criterion for PM<sub>2.5</sub> at Le Fevre 1 this quarter.
  - There has been 1 exceedence this year.

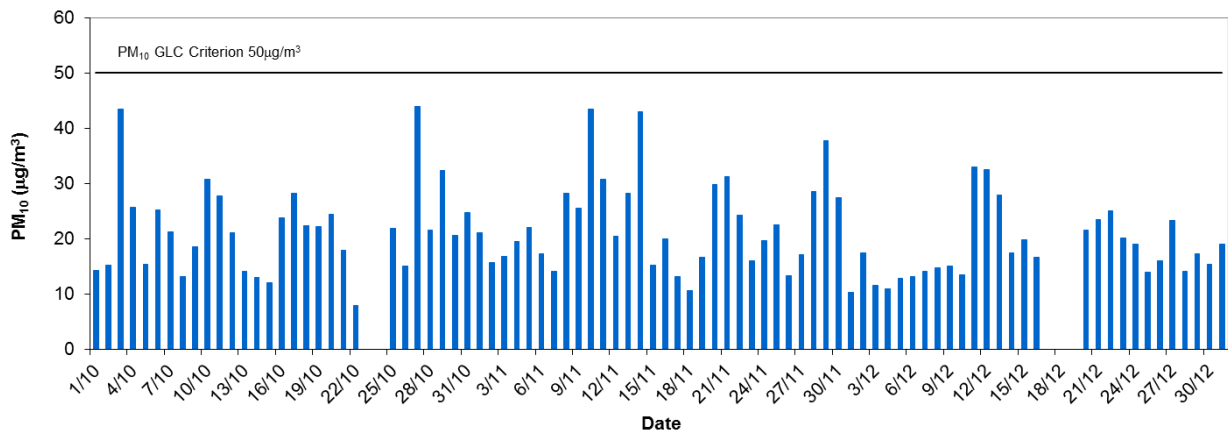
Le Fevre 1 Daily Average PM2.5 - Quarter 4, 2017



1.2.2 Particles (PM<sub>10</sub>)

- There were no exceedences of the 24-hour ground level concentration criterion for PM<sub>10</sub> at Le Fevre 1 this quarter.
  - There have been 5 exceedences this year.

Le Fevre 1 Daily Average PM10 - Quarter 4, 2017

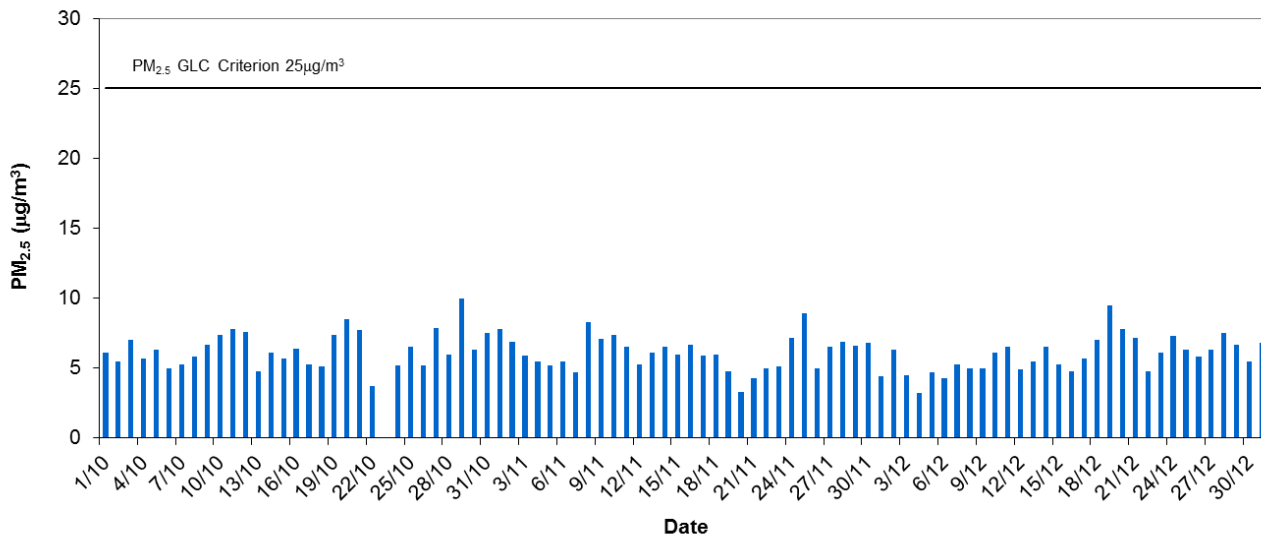


Le Fevre 2

1.2.3 Particles (PM<sub>2.5</sub>)

- There were no exceedences of the 24-hour ground level concentration criterion for PM<sub>2.5</sub> at Le Fevre 2 this quarter.

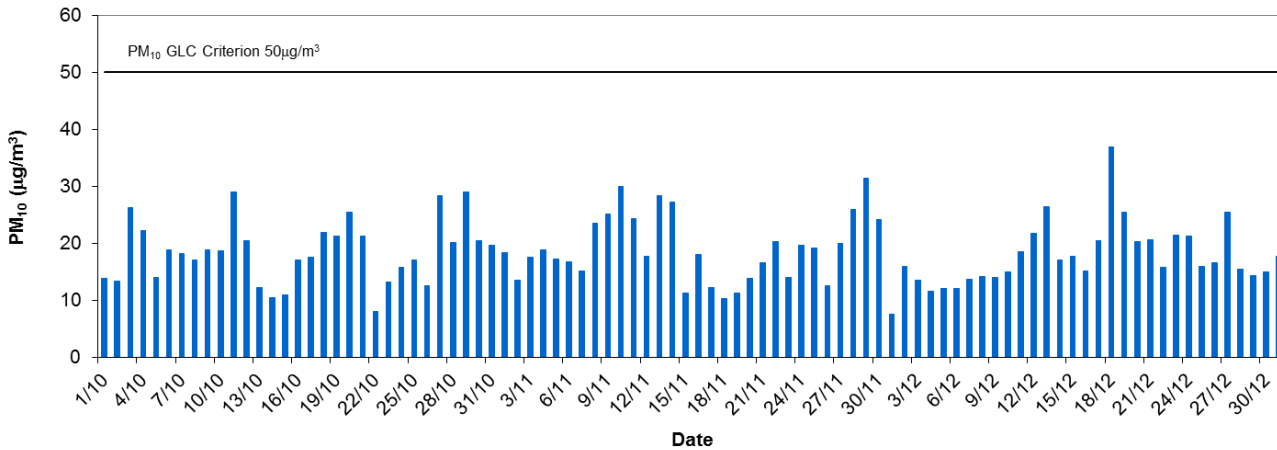
**Le Fevre 2 Daily Average PM2.5 - Quarter 4, 2017**



**1.2.4 Particles (PM<sub>10</sub>)**

- There were no exceedences of the 24-hour ground level concentration criterion for PM<sub>10</sub> particles at Le Fevre 2 this quarter.
- There have been **2** exceedences this year.

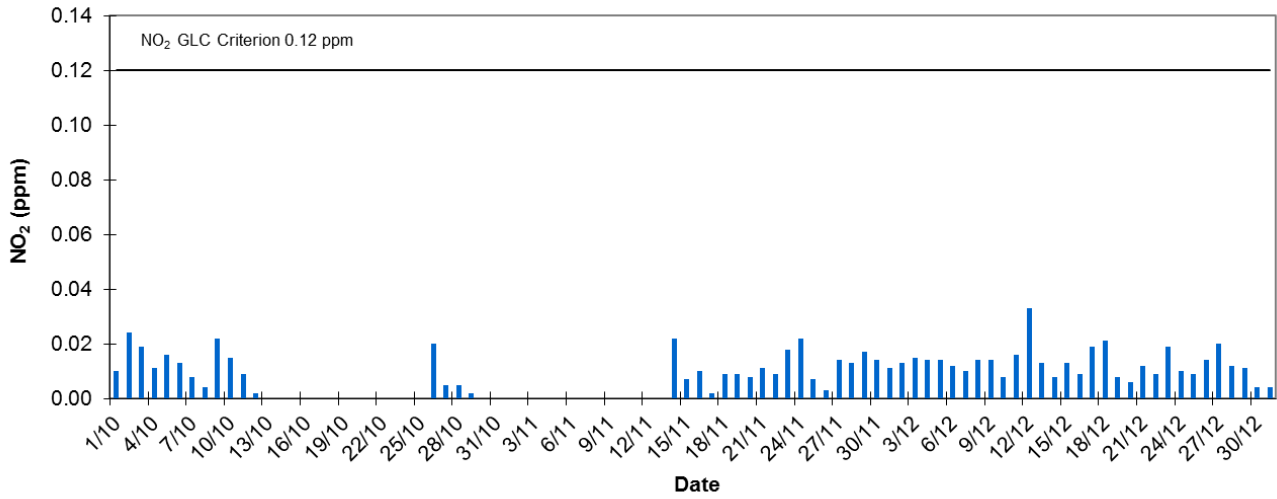
**Le Fevre 2 Daily Average PM10 - Quarter 4, 2017**



**1.2.5 Nitrogen dioxide**

- There were no exceedences of the 1-hour ground level concentration criterion for nitrogen dioxide at Le Fevre 2 this quarter.

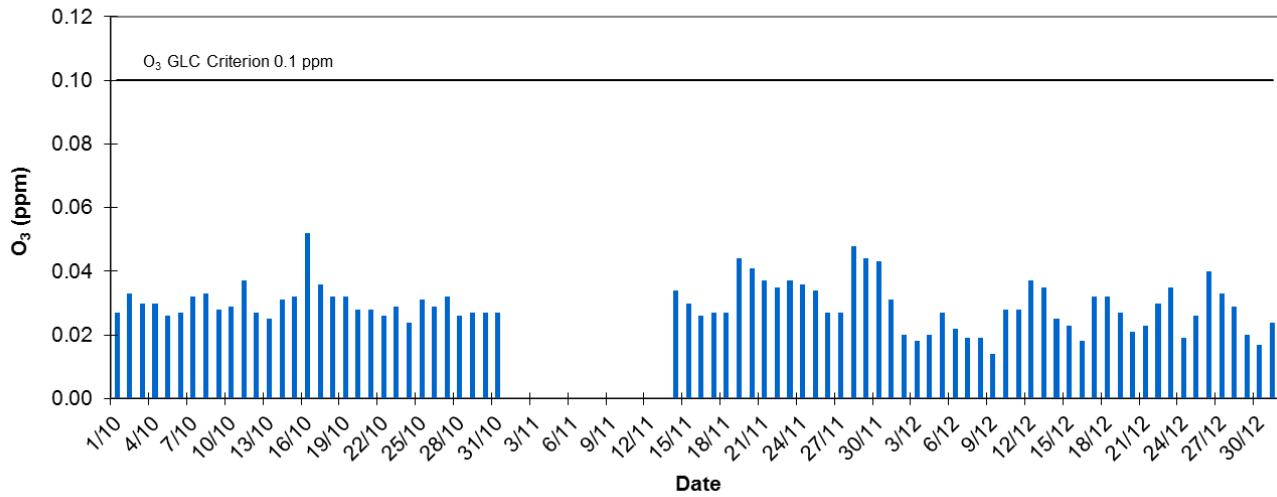
**Le Fevre 2 1 Hr Daily Maxima NO2 - Quarter 4, 2017**



**1.2.6 Ozone**

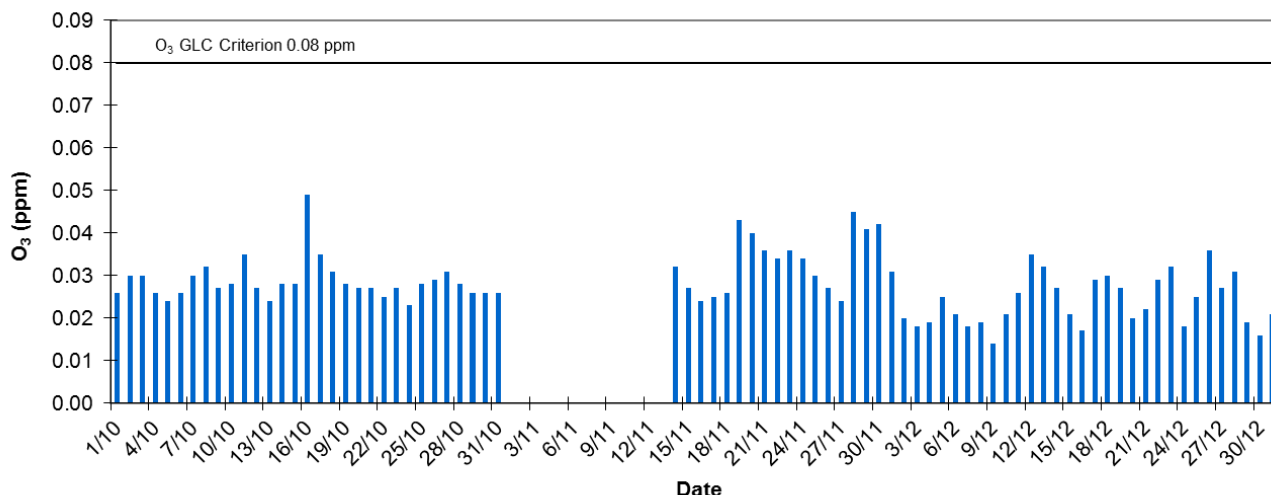
- There were no exceedences of the 1-hour ground level concentration criterion for ozone at Le Fevre 2 this quarter.

**Le Fevre 2 1 Hr Daily Maxima O3 - Quarter 4, 2017**



- There were no exceedences of the 4-hour ground level concentration criterion for ozone at Le Fevre 2 this quarter.

### Le Fevre 2 4 Hr Daily Maxima O3 - Quarter 4, 2017



#### 1.2.7 Sulfur dioxide

- The concentration of sulfur dioxide at Le Fevre 2 is consistently low and well below the relevant ground level concentration criteria, hence the 1-hour daily maxima and daily average graphs are only shown if a significant event occurs.

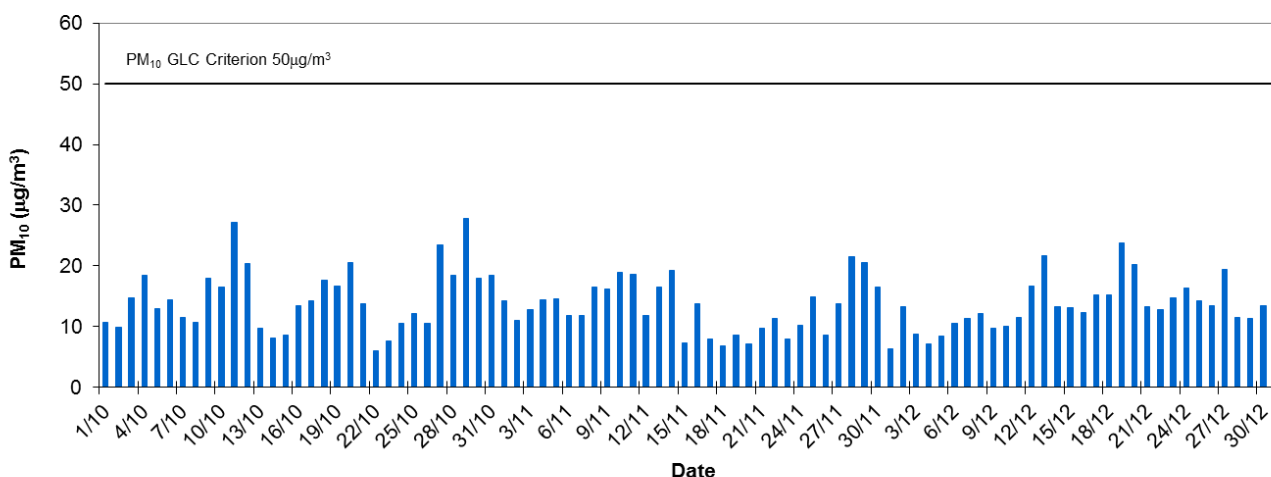
### 1.3 Southern Adelaide

Air quality in Southern Adelaide was generally good this quarter.

#### 1.3.1 Particles (PM<sub>10</sub>)

- There were no exceedences of the 24-hour ground level concentration criterion for PM<sub>10</sub> at Southern Adelaide this quarter.

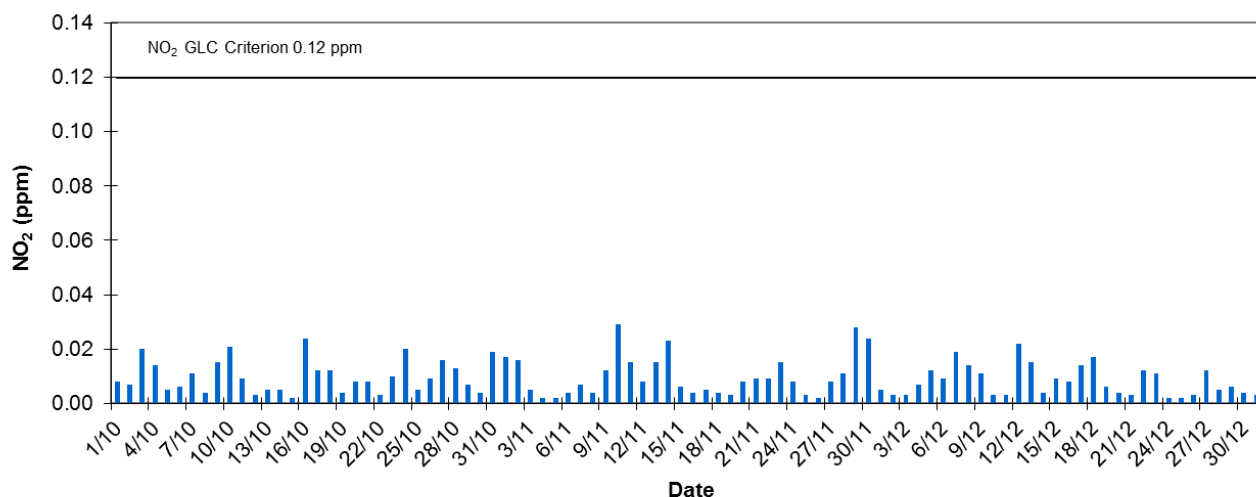
### Southern Adelaide Daily Average PM10 - Quarter 4, 2017



#### 1.3.2 Nitrogen dioxide

- There were no exceedences of the 1-hour ground level concentration criterion for nitrogen dioxide at Southern Adelaide this quarter.

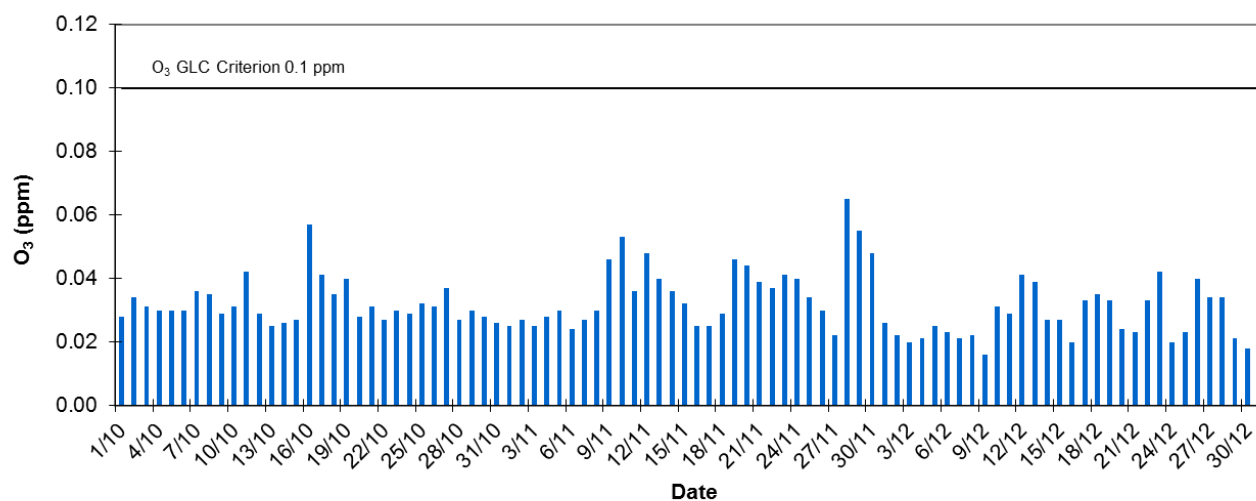
### Southern Adelaide 1 Hr Daily Maxima NO2 - Quarter 4, 2017



### 1.3.3 Ozone

- There were no exceedences of the 1-hour ground level concentration criterion for ozone at Southern Adelaide this quarter.

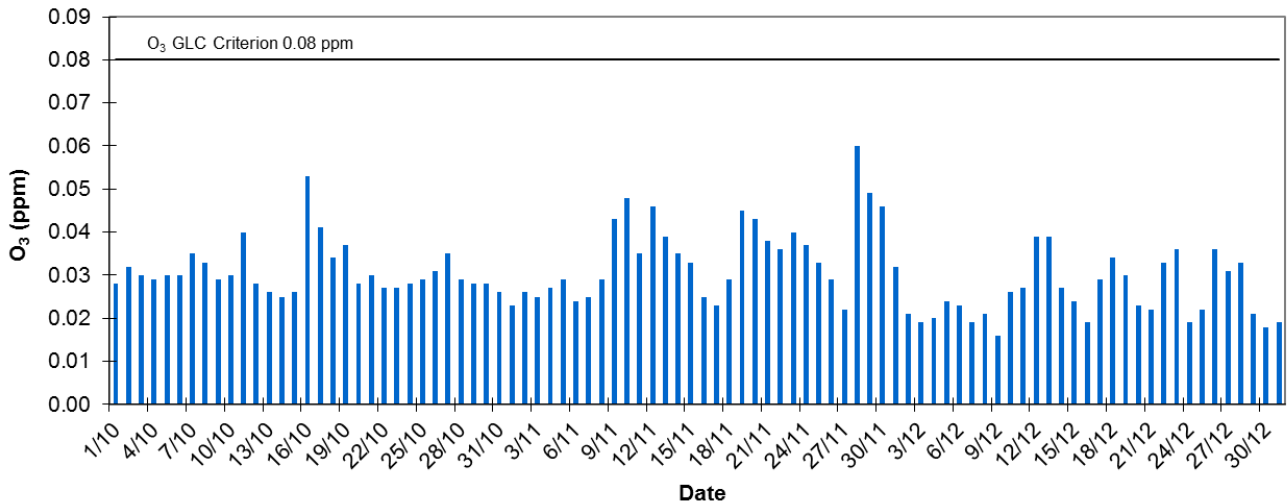
### Southern Adelaide 1 Hr Daily Maxima O3 - Quarter 4, 2017



- There were no exceedences of the 4-hour ground level concentration criterion for ozone at Southern Adelaide this quarter.



### Southern Adelaide 4 Hr Daily Maxima O<sub>3</sub> - Quarter 4, 2017



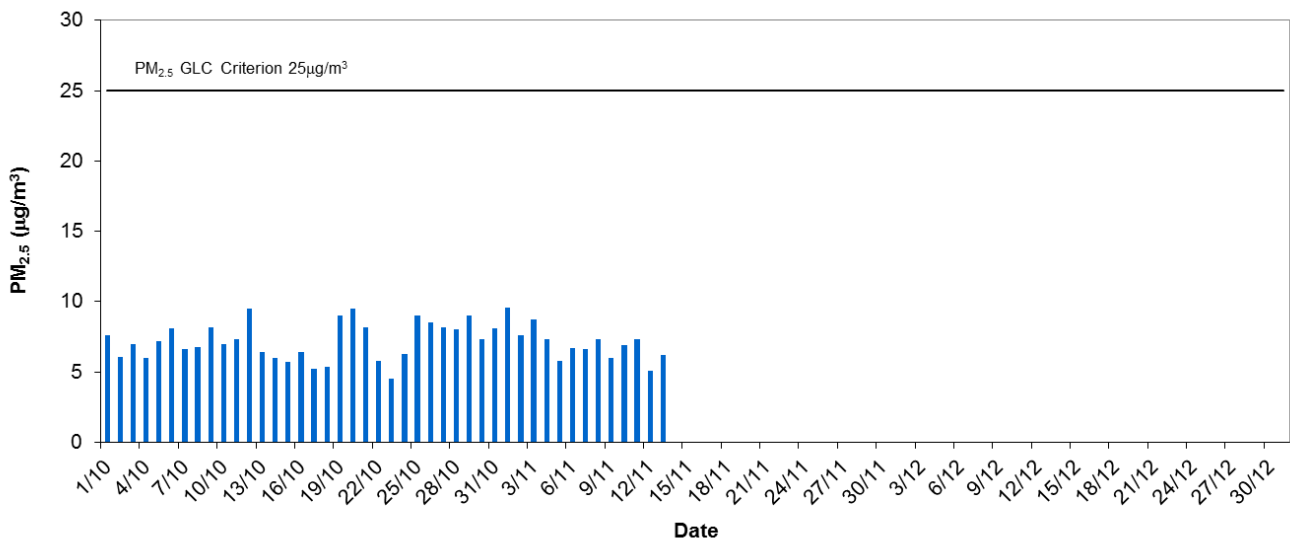
## 1.4 Northern Adelaide

Air quality in Northern Adelaide was generally good this quarter.

### 1.4.1 Particles (PM<sub>2.5</sub>)

- There were no exceedences of the 24-hour ground level concentration criterion for PM<sub>2.5</sub> at Northern Adelaide this quarter. Data missing in this period was due to vandalism to the station and equipment.

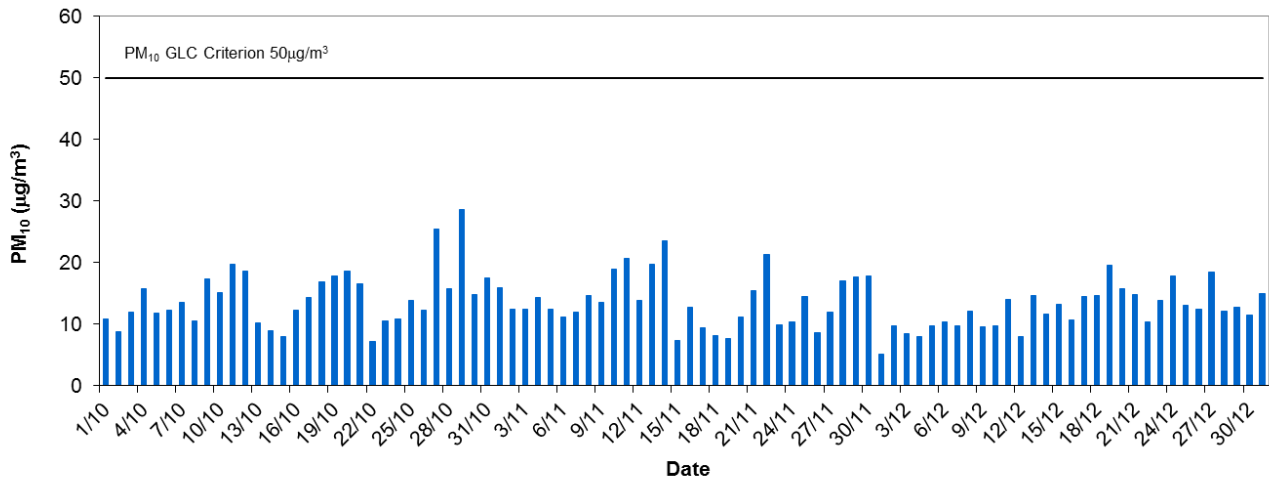
### Northern Adelaide Daily Average PM<sub>2.5</sub> - Quarter 4, 2017



### 1.4.2 Particles (PM<sub>10</sub>)

- There were no exceedences of the 24-hour ground level concentration criterion for PM<sub>10</sub> at Northern Adelaide this quarter.

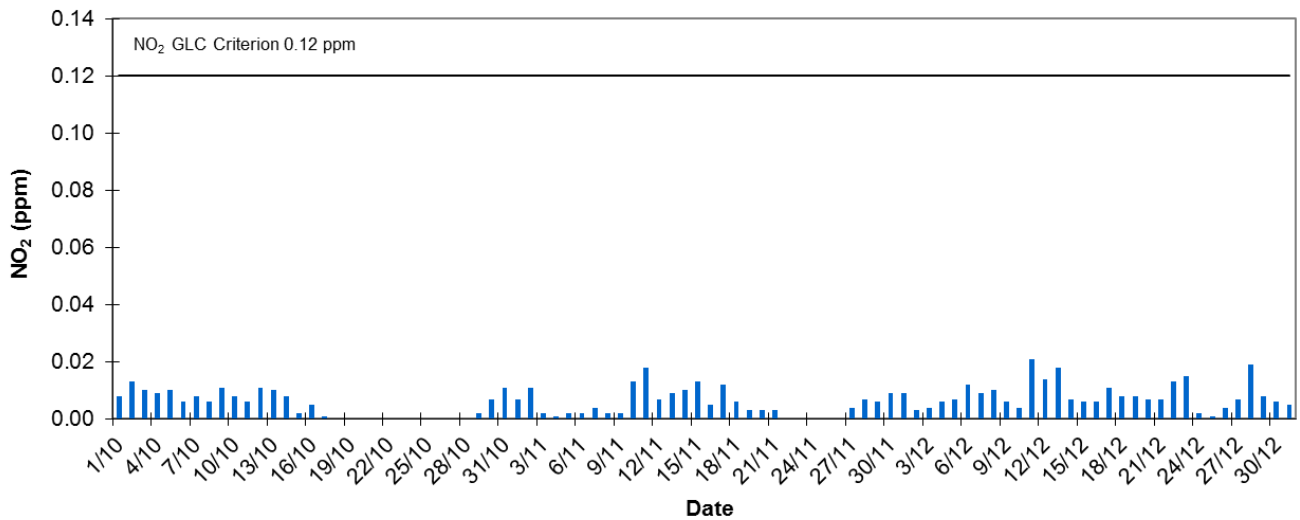
### Northern Adelaide Daily Average PM10 - Quarter 4, 2017



#### 1.4.3 Nitrogen dioxide

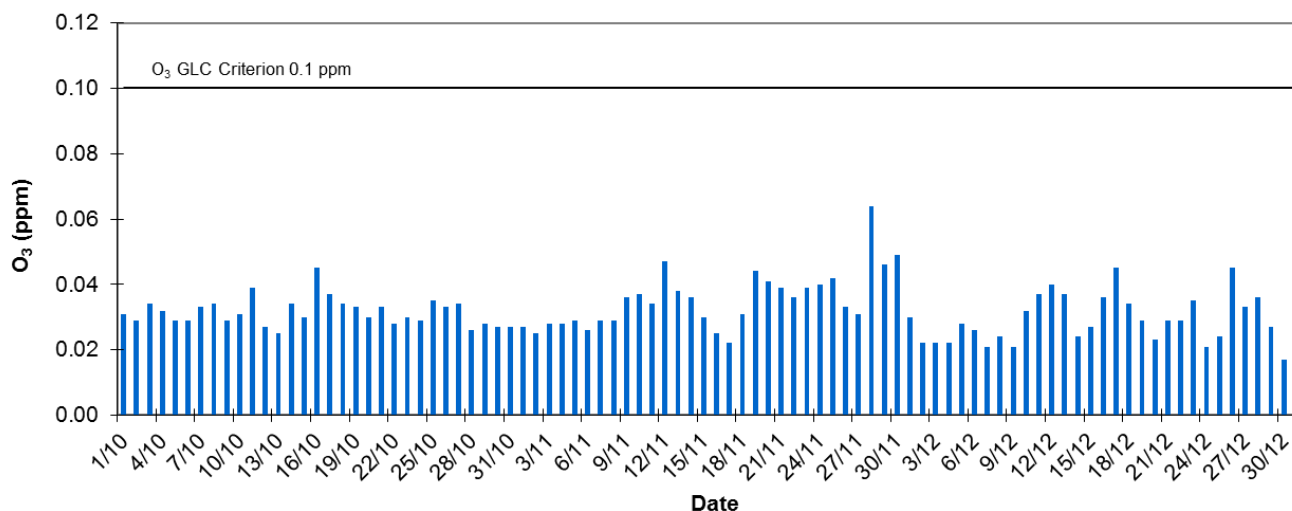
- There were no exceedences of the 1-hour ground level concentration criterion for nitrogen dioxide at Northern Adelaide this quarter.

### Northern Adelaide 1 Hr Daily Maxima NO<sub>2</sub> - Quarter 4, 2017

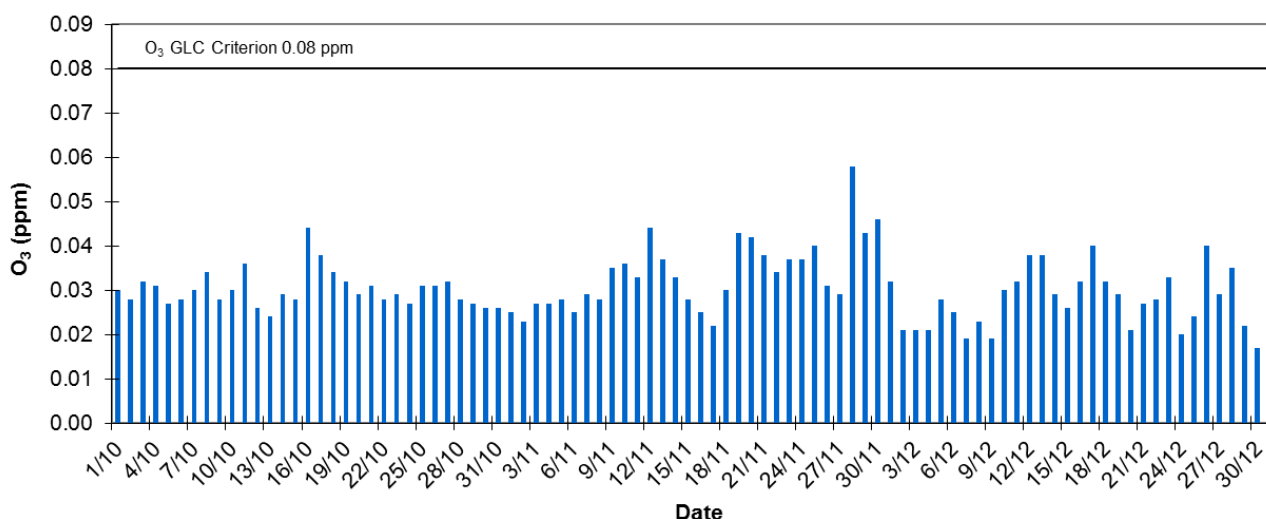


#### 1.4.4 Ozone

- There were no exceedences of the 1-hour ground level concentration criterion for ozone at Northern Adelaide this quarter.

Northern Adelaide 1 Hr Daily Maxima O<sub>3</sub> - Quarter 4, 2017

- There were no exceedences of the 4-hour ground level concentration criterion for ozone at Northern Adelaide this quarter.

Northern Adelaide 4 Hr Daily Maxima O<sub>3</sub> - Quarter 4, 2017

#### 1.4.5 Carbon monoxide

- The concentration of carbon monoxide at Northern Adelaide is consistently very low and well below the relevant ground level concentration criterion. Monitoring of carbon monoxide at this station was ceased.

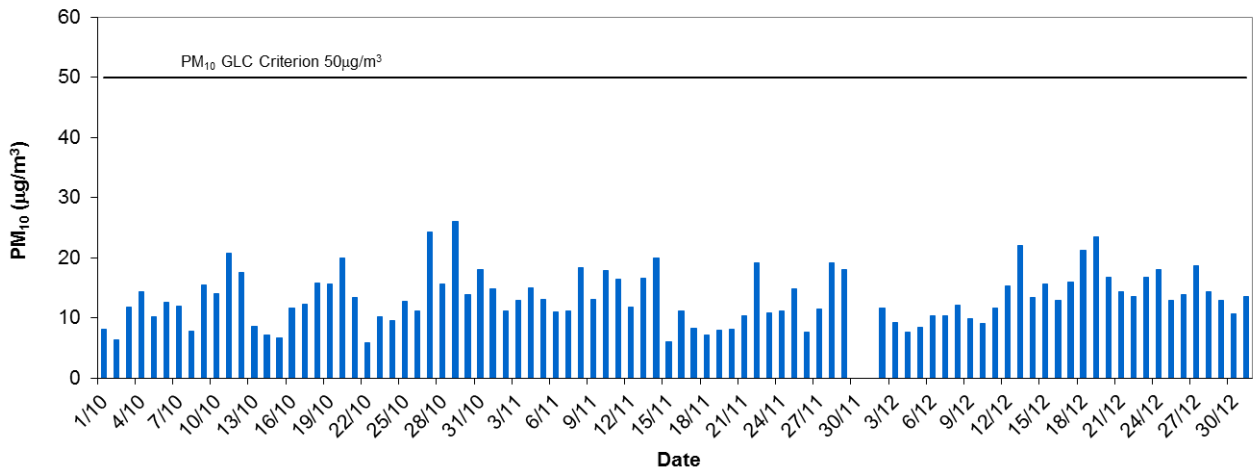
### 1.5 Eastern Adelaide

Air quality in Eastern Adelaide was generally good this quarter.

#### 1.5.1 Particles (PM<sub>10</sub>)

- There were no exceedences of the 24-hour ground level concentration criterion for PM<sub>10</sub> at Eastern Adelaide this quarter.

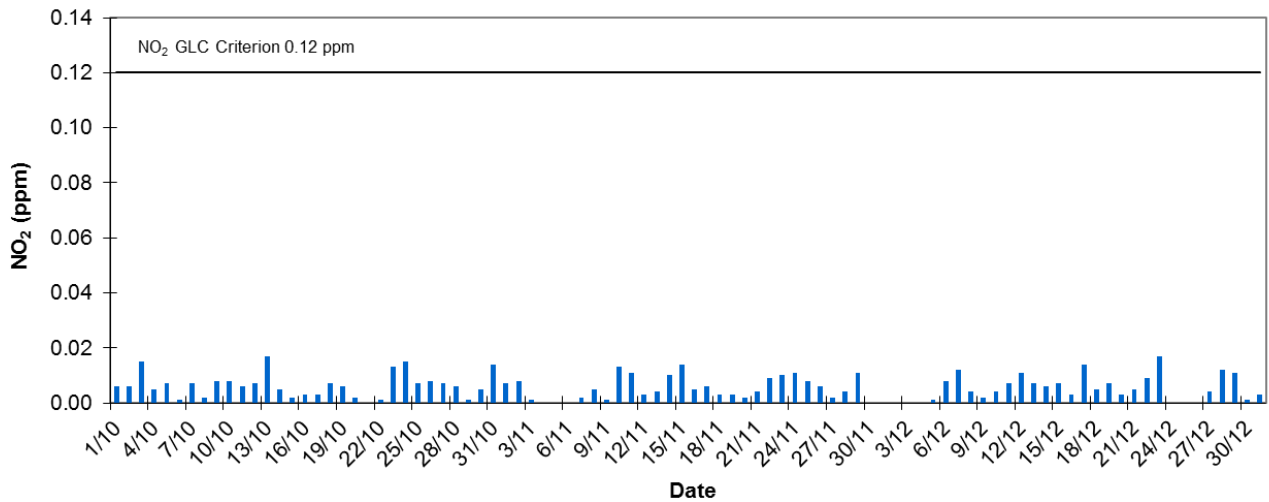
**Eastern Adelaide Daily Average PM10 - Quarter 4, 2017**



**1.5.2 Nitrogen dioxide**

- There were no exceedences of the 1-hour ground level concentration criterion for nitrogen dioxide at Eastern Adelaide this quarter.

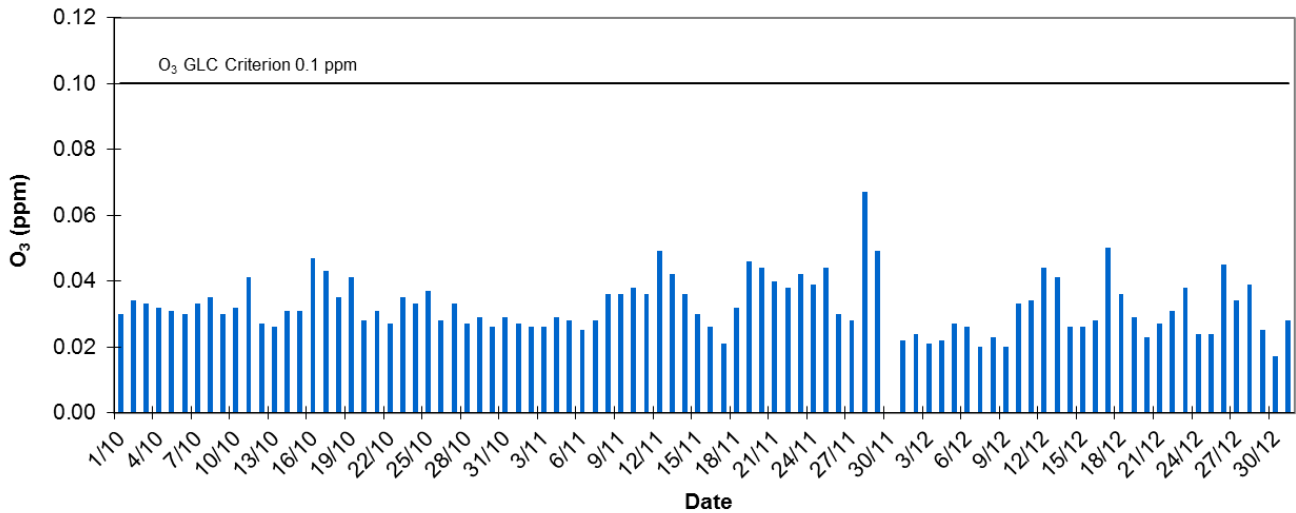
**Eastern Adelaide 1 Hr Daily Maxima NO2 - Quarter 4, 2017**



**1.5.3 Ozone**

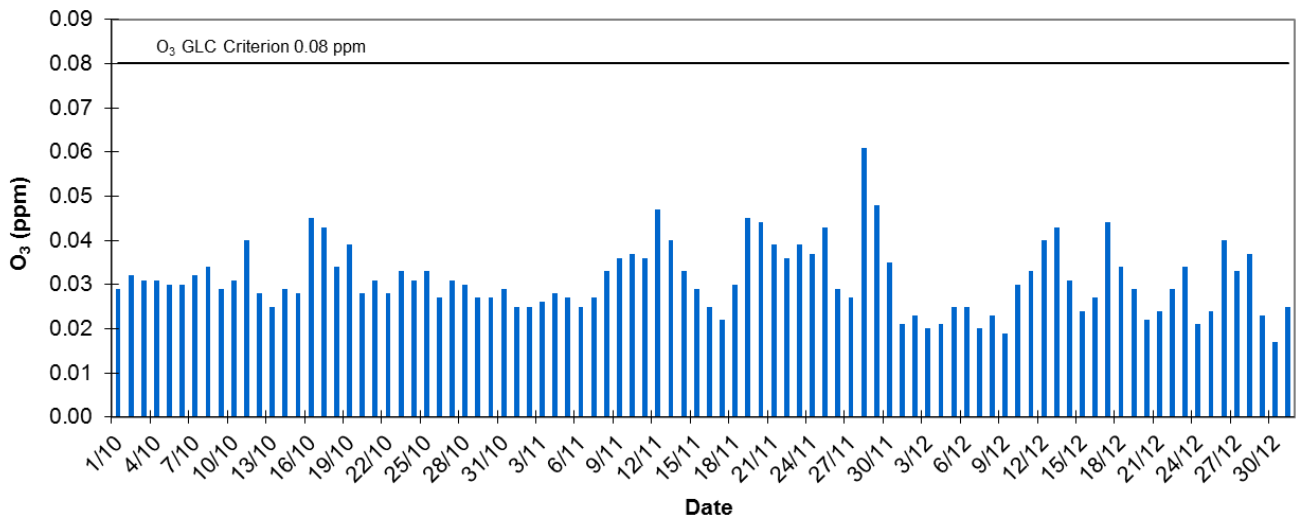
- There were no exceedences of the 1-hour ground level concentration criterion for ozone at Eastern Adelaide this quarter.

### Eastern Adelaide 1 Hr Daily Maxima O<sub>3</sub> - Quarter 4, 2017



- There were no exceedences of the 4-hour ground level concentration criterion for ozone at Eastern Adelaide this quarter.

### Eastern Adelaide 4 Hr Daily Maxima O<sub>3</sub> - Quarter 4, 2017



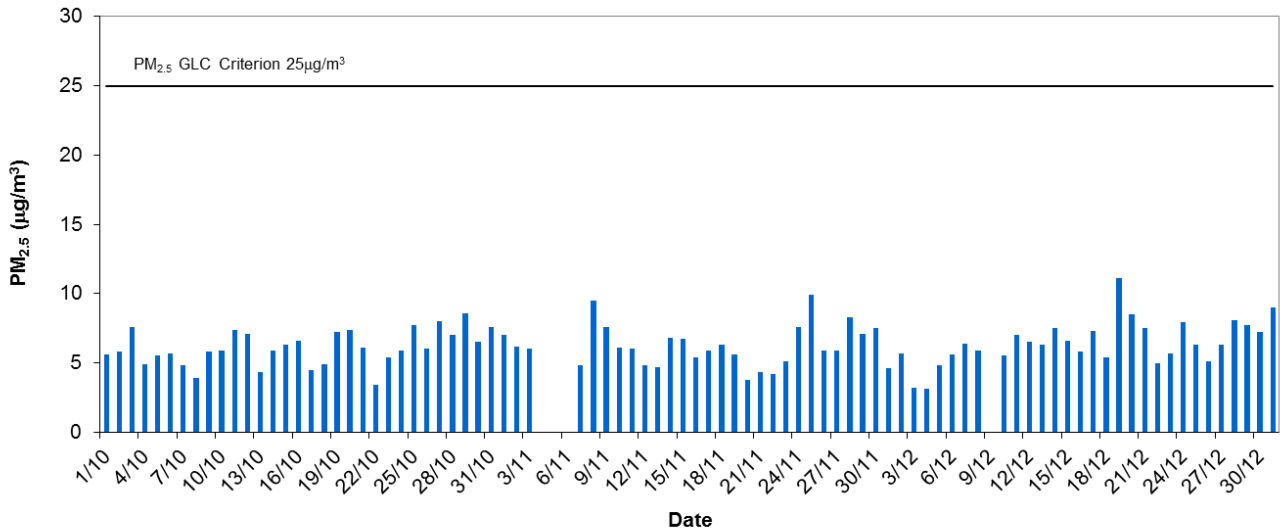
## 1.6 Western Adelaide

Air quality in Western Adelaide was generally good this quarter.

### 1.6.1 Particles (PM<sub>2.5</sub>)

- There were no exceedences of the 24-hour ground level concentration criterion for PM<sub>2.5</sub> at Western Adelaide this quarter.

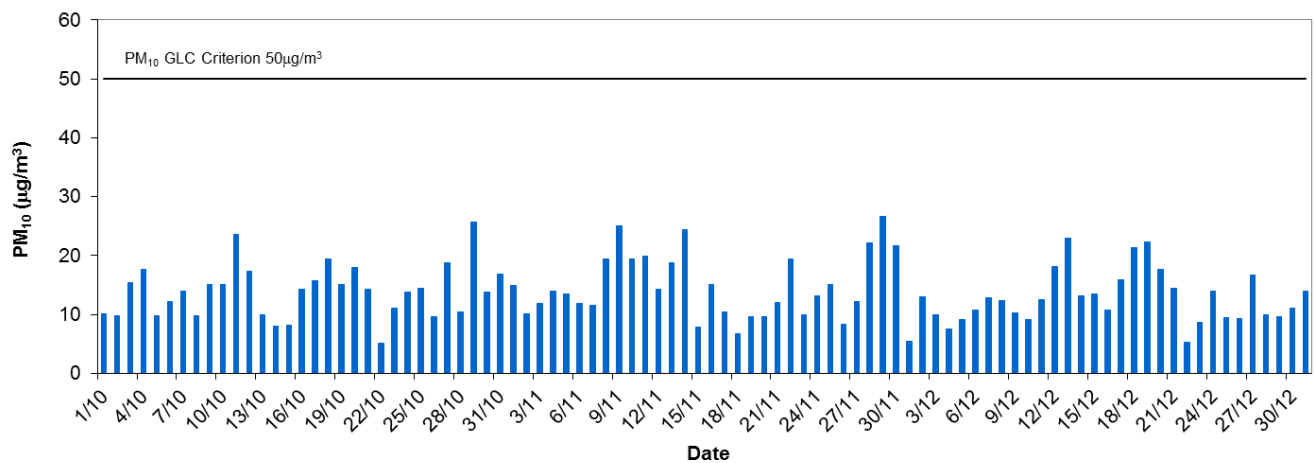
Western Adelaide Daily Average PM2.5 - Quarter 4, 2017



1.6.2 Particles (PM10)

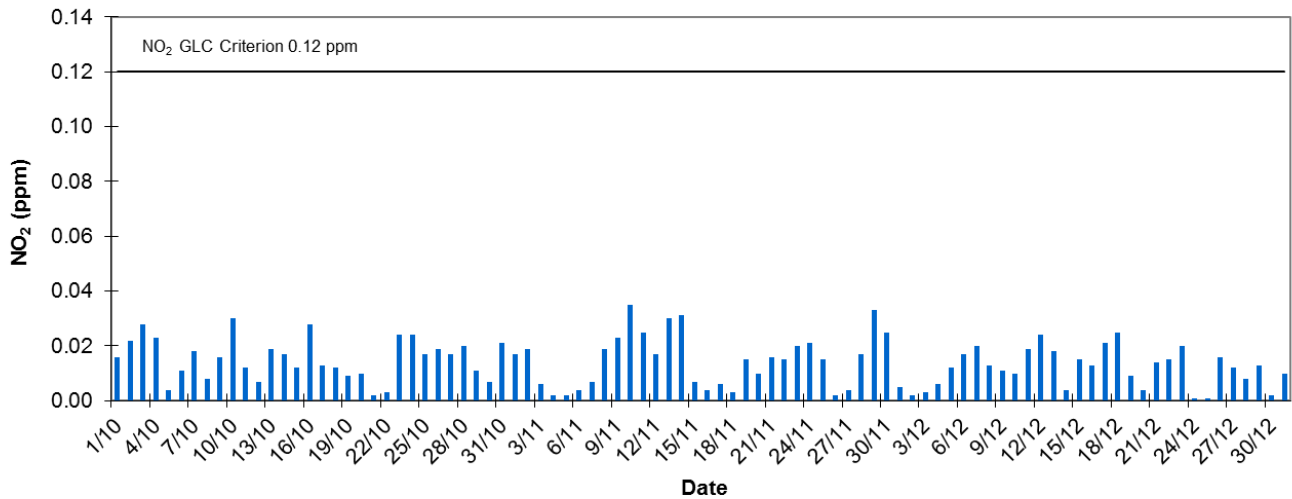
- There were no exceedences of the 24-hour ground level concentration criterion for PM10 at Western Adelaide this quarter.

Western Adelaide Daily Average PM10 - Quarter 4, 2017



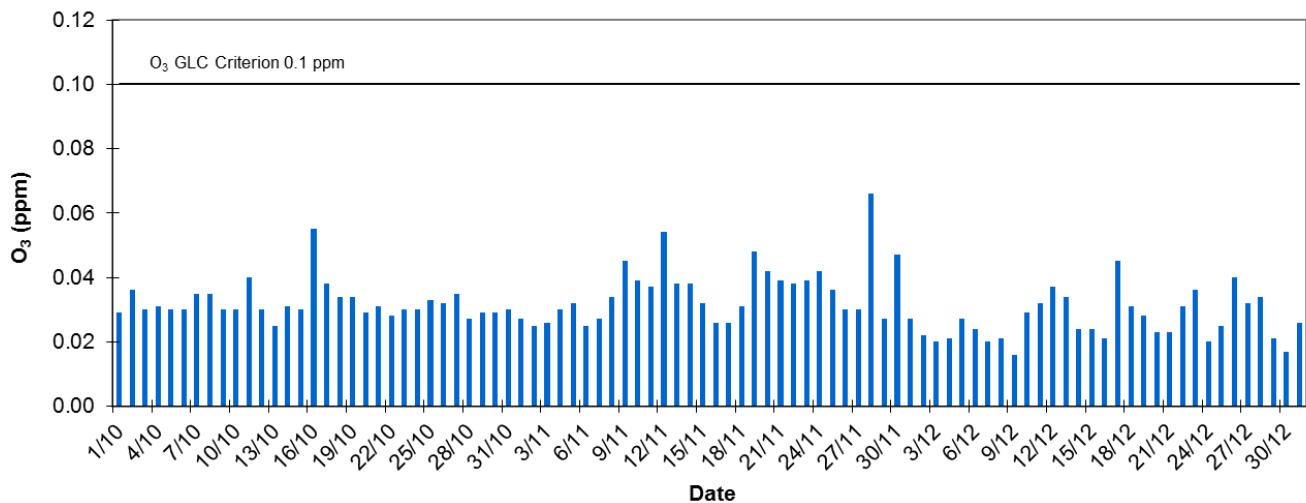
1.6.3 Nitrogen dioxide

- There were no exceedences of the 1-hour ground level concentration criterion for nitrogen dioxide at Western Adelaide this quarter.

Western Adelaide 1 Hr Daily Maxima NO<sub>2</sub> - Quarter 4, 2017

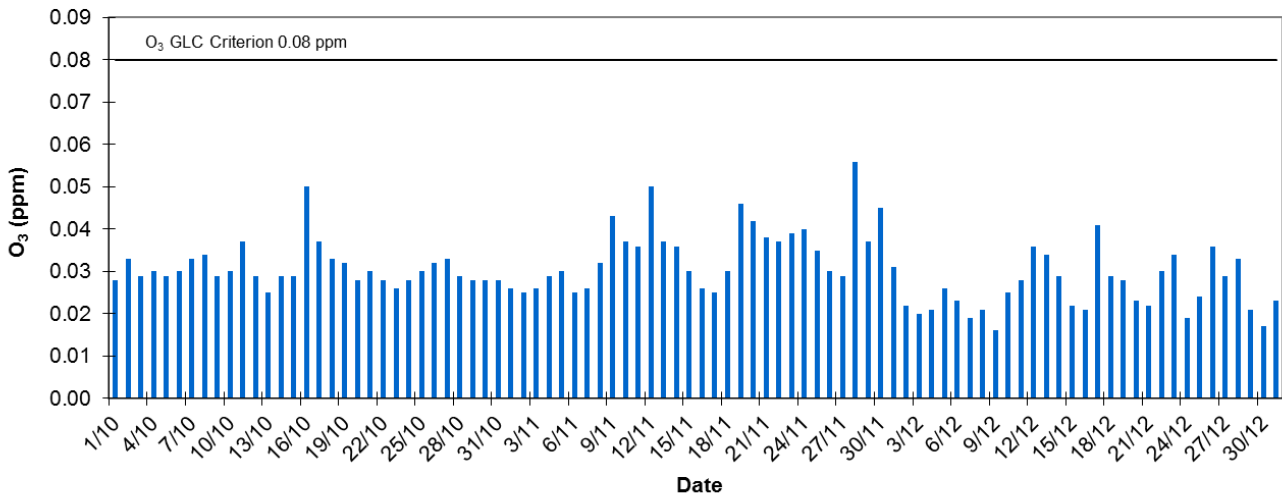
## 1.6.4 Ozone

- There were no exceedences of the 1-hour ground level concentration criterion for ozone at Western Adelaide this quarter.

Western Adelaide 1 Hr Daily Maxima O<sub>3</sub> - Quarter 4, 2017

- There were no exceedences of the 4-hour ground level concentration criterion for ozone at Western Adelaide this quarter.

### Western Adelaide 4 Hr Daily Maxima O3 - Quarter 4, 2017



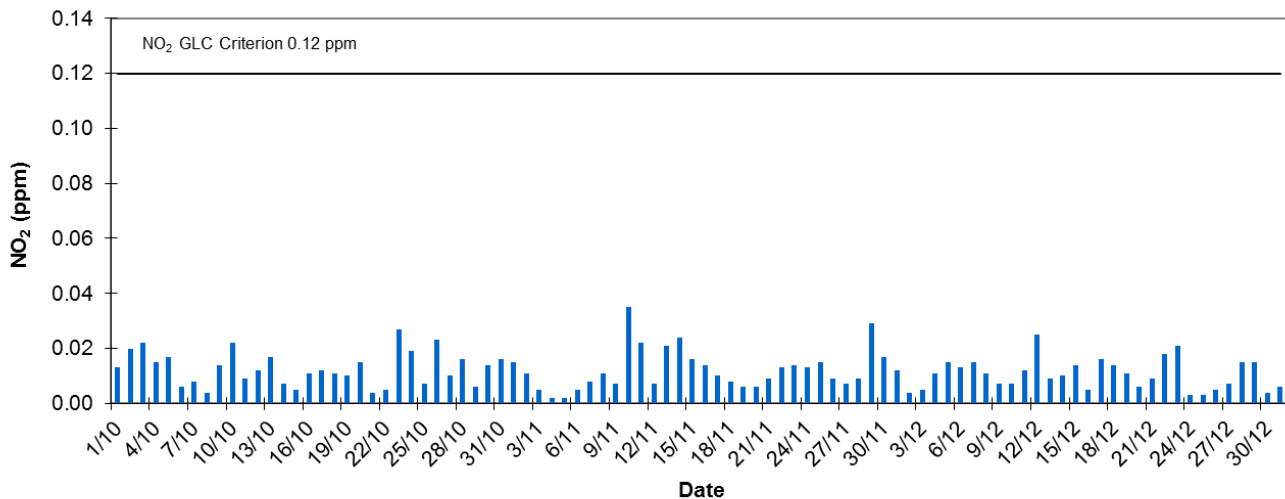
## 1.7 Northeastern Adelaide

Air quality in Northeastern Adelaide was generally good this quarter

### 1.7.1 Nitrogen dioxide

- There were no exceedences of the 1-hour ground level concentration criterion for nitrogen dioxide at Northeastern Adelaide this quarter.

### Northeastern Adelaide 1 Hr Daily Maxima NO<sub>2</sub> - Quarter 4, 2017

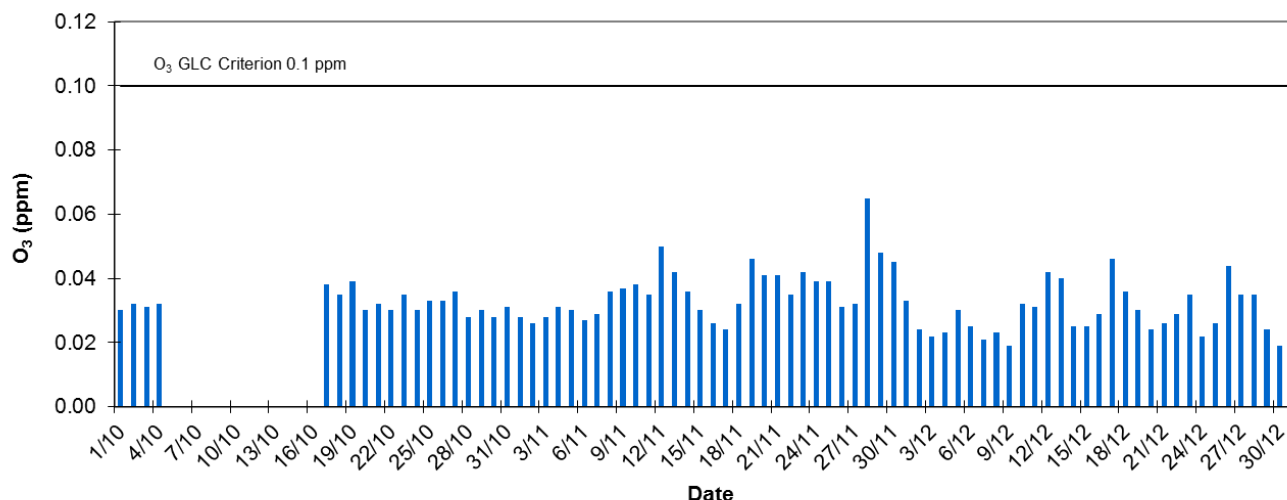


### 1.7.2 Ozone

- There were no exceedences of the 1-hour ground level concentration criterion for ozone at Northeastern Adelaide this quarter.

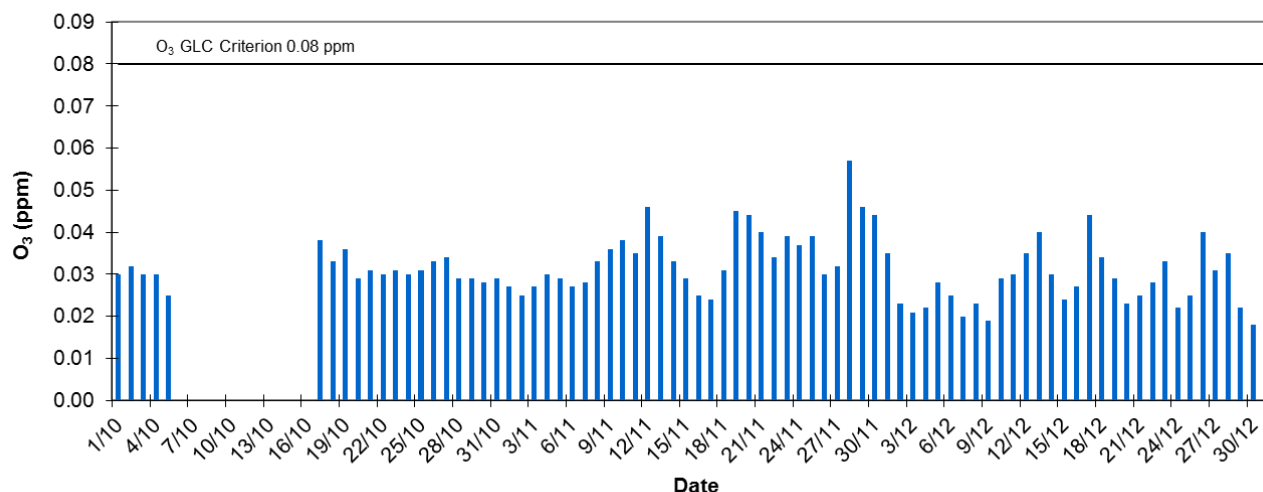


### Northeastern Adelaide 1 Hr Daily Maxima O<sub>3</sub> - Quarter 4, 2017



- There were no exceedences of the 4-hour ground level concentration criterion for ozone at Northeastern Adelaide this quarter.

### Northeastern Adelaide 4 Hr Daily Maxima O<sub>3</sub> - Quarter 4, 2017



#### 1.7.3 Sulfur dioxide

The concentration of sulfur dioxide at Northeastern Adelaide is consistently very low and well below the relevant ground level concentration criteria, hence the 1-hour daily maxima and daily average graphs are only shown if a significant event occurs.

## 2 Spencer Gulf region

### 2.1 Port Pirie

Port Pirie is the location of one of the world's largest primary lead smelters which has a major impact on air quality in the area, particularly in regards to lead and sulfur dioxide. Particles are also an issue with industry and domestic solid fuel burning being the main anthropogenic sources. Naturally occurring windblown dust and agricultural sources are also known to affect air quality in the region.

The Nyrstar smelter is the single largest source of lead in Port Pirie. The smelter is currently undergoing a major transformation to establish new technology to process raw materials (lead concentrates). It is anticipated that the

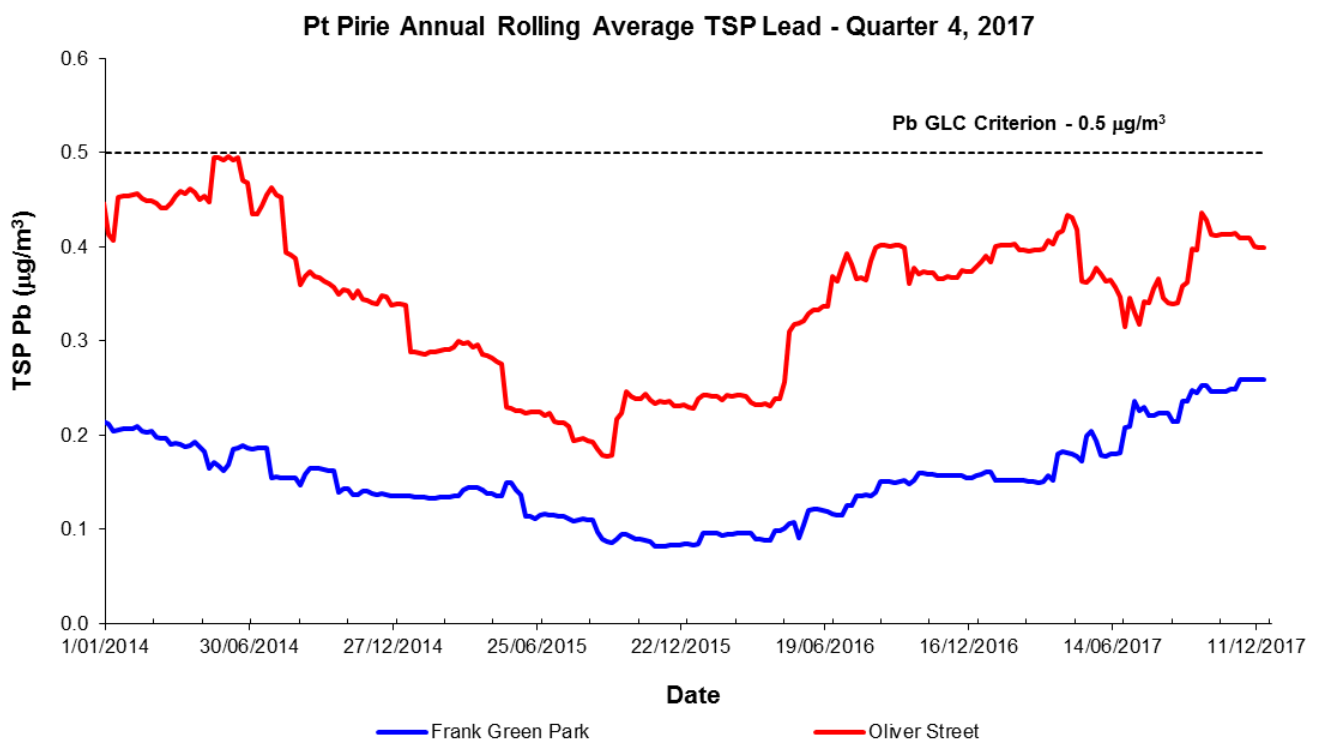
transformation project will significantly reduce lead in air and sulfur dioxide concentrations in the city, mainly due to reduced emissions from the new technology and significant reductions predicted from fugitive sources.

The EPA undertakes monitoring at 4 sites in Port Pirie. All sites monitor for lead whilst Oliver St also monitors sulfur dioxide and particles. At Ellen St, Oliver St and Pirie West lead in air concentrations are monitored for trends against license limits/targets. The EPA also operates a station on behalf of SA Health (The Terrace), which monitors particles as PM<sub>10</sub>.

### 2.1.1 Lead from EPA’s monitoring sites

The annual rolling averages of lead in air at Frank Green Park and Oliver Street sites from 1 January 2014 to 21 December 2017 are shown below.

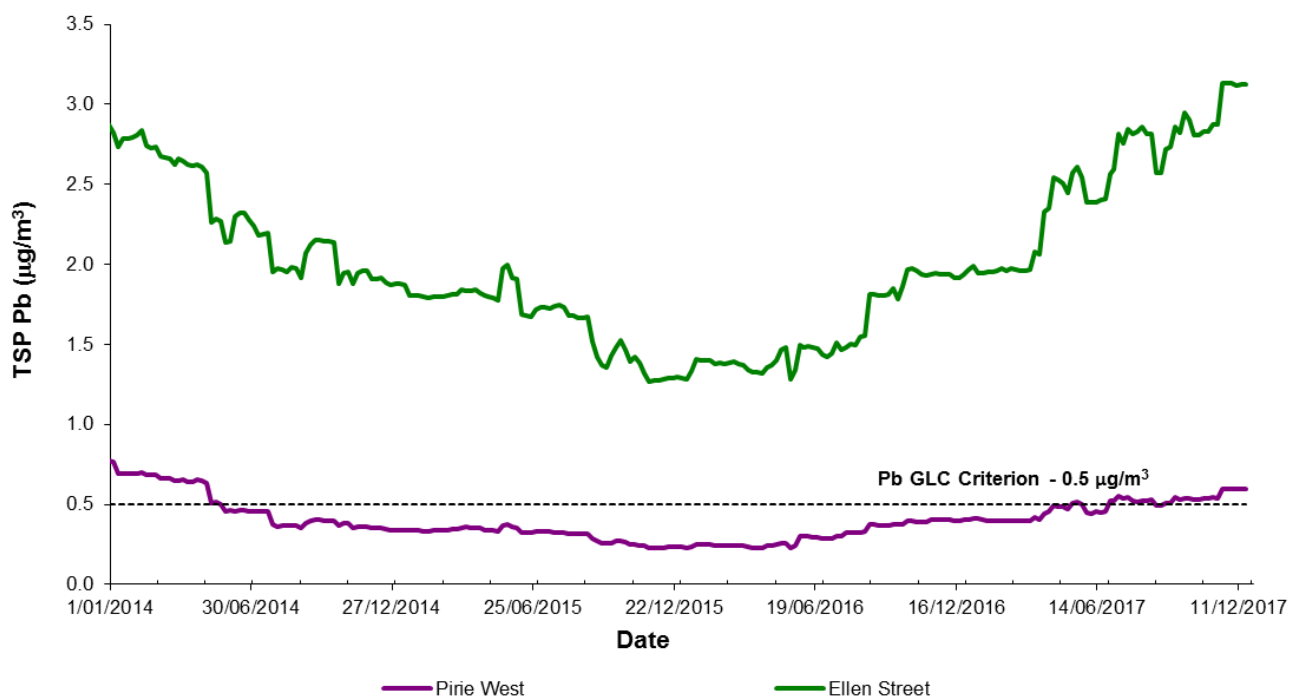
- Since May 2016 the annual average lead in air concentrations have been showing a gradual increasing trend at both sites. There was a significant drop at Oliver Street from June 2017. The annual average at both sites is well below the ground level concentration limit.



The annual rolling averages of lead in air at the Ellen Street and Pirie West sites from 1 January 2014 to 21 December 2017 are shown below.

- Since May 2016 the annual average lead in air concentrations have been showing a gradual increasing trend at both sites. Pirie West has exceeded the ground level concentration at 0.53 µg/m<sup>3</sup> on 28 September 2017.

## Pt Pirie Annual Rolling Average TSP Lead - Quarter 4, 2017

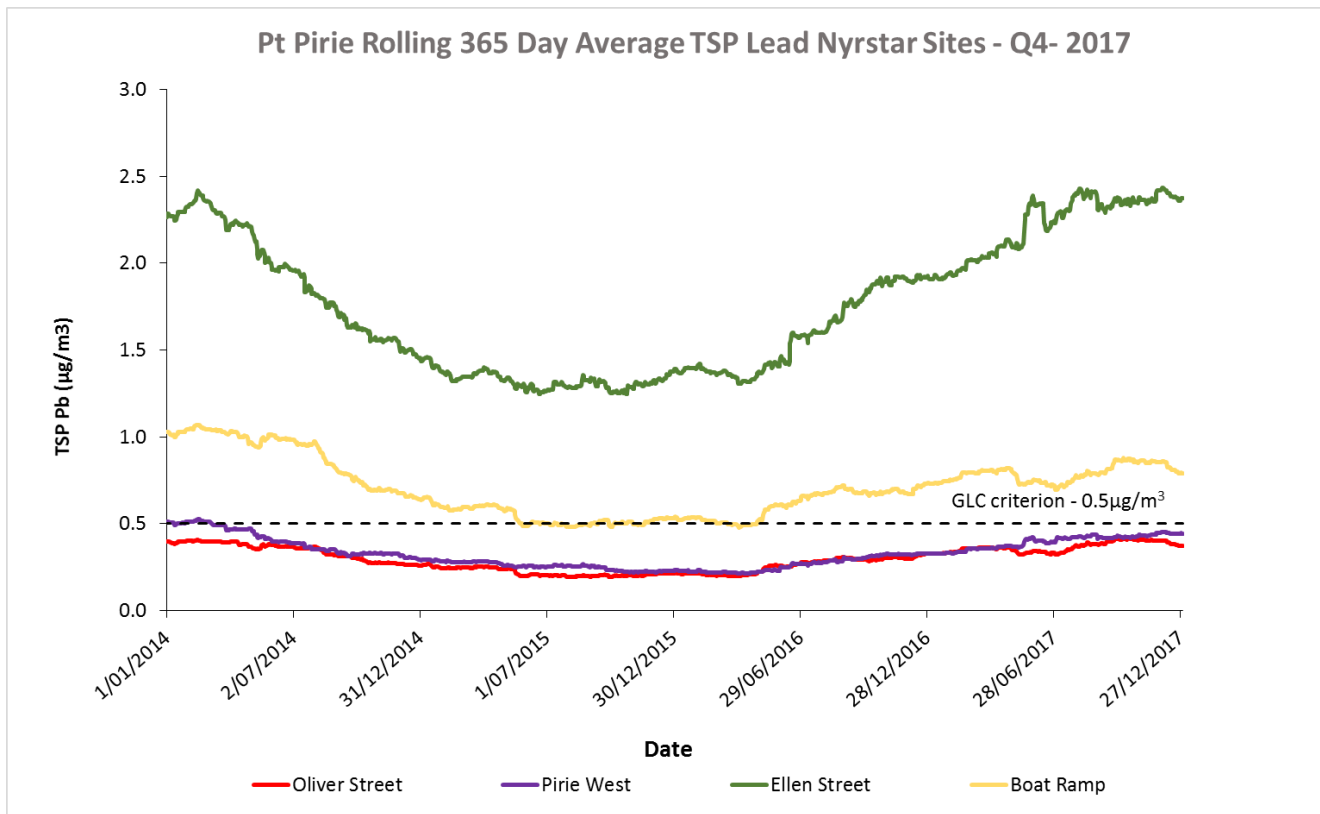


### 2.1.2 Lead from Nyrstar's monitoring sites

Nyrstar undertakes lead in air monitoring as a condition of their EPA license. The purpose of these monitoring stations is to measure emissions from the smelting facilities operated by Nyrstar in Port Pirie. These measurements allow Nyrstar to take steps to adjust its operations to minimise lead in air emissions where possible. Nyrstar conducts their lead in air sampling on a daily basis whereas EPA's sampling frequency is 1 day in every 6.

The rolling annual average concentrations of lead in air at Nyrstar's monitoring locations exhibit a similar trend to EPA's lead in air monitoring data. In general, since early 2014 the lead in air concentrations are decreasing at Nyrstar's Oliver St, Pirie West, Ellen St and Boat Ramp monitoring sites. However, there is an increasing trend at all sites since April 2016.

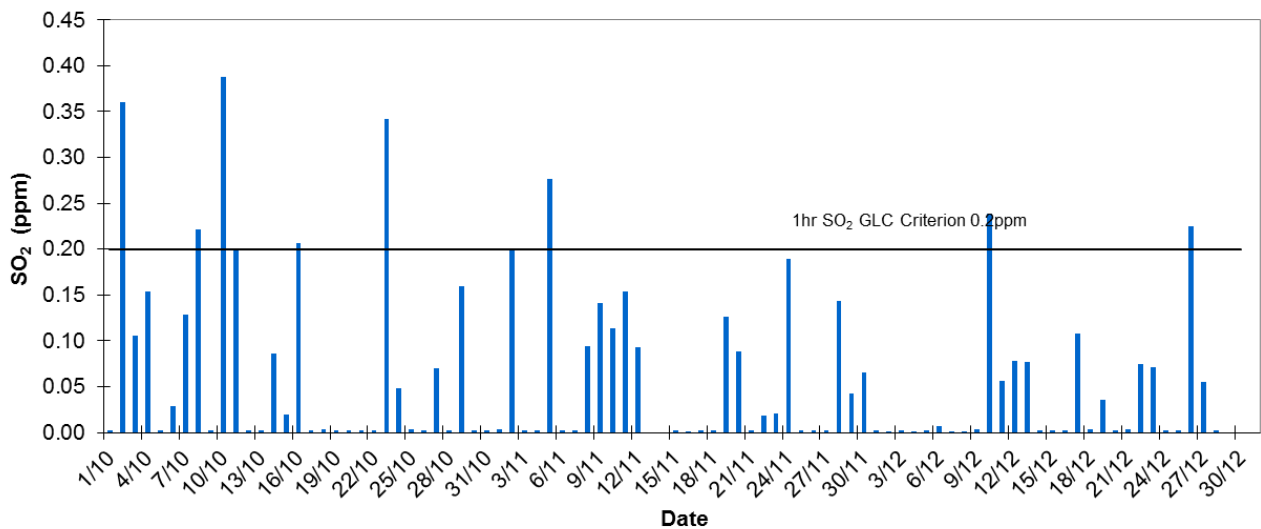
The annual rolling averages of lead in air at Nyrstar sites from 1 January 2014 to 31 December 2017 are shown below.



### 2.1.3 Sulfur dioxide

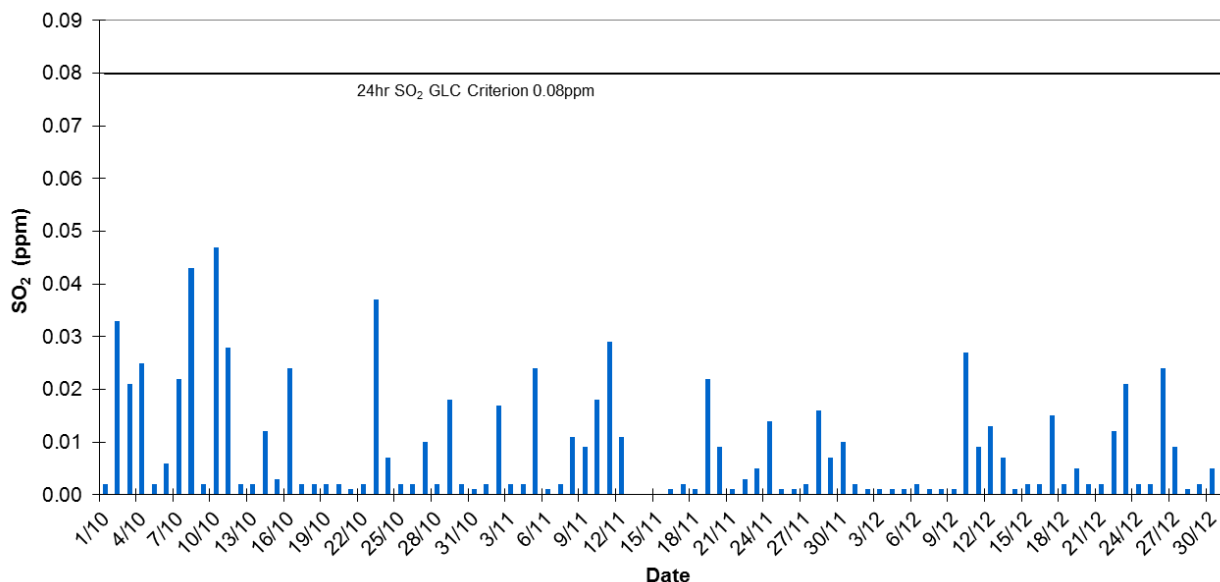
- There were **8** exceedences (days) of the 1-hour ground level concentration criterion for sulfur dioxide at Pt Pirie this quarter.
  - There have been **40** exceedences (days) this year.

Pt Pirie 1 Hr Daily Maxima SO<sub>2</sub> - Quarter 4, 2017



- There were no exceedences of the 24-hour ground level concentration criterion for sulfur dioxide at Pt Pirie this quarter.
  - There have been **3** exceedences this year.

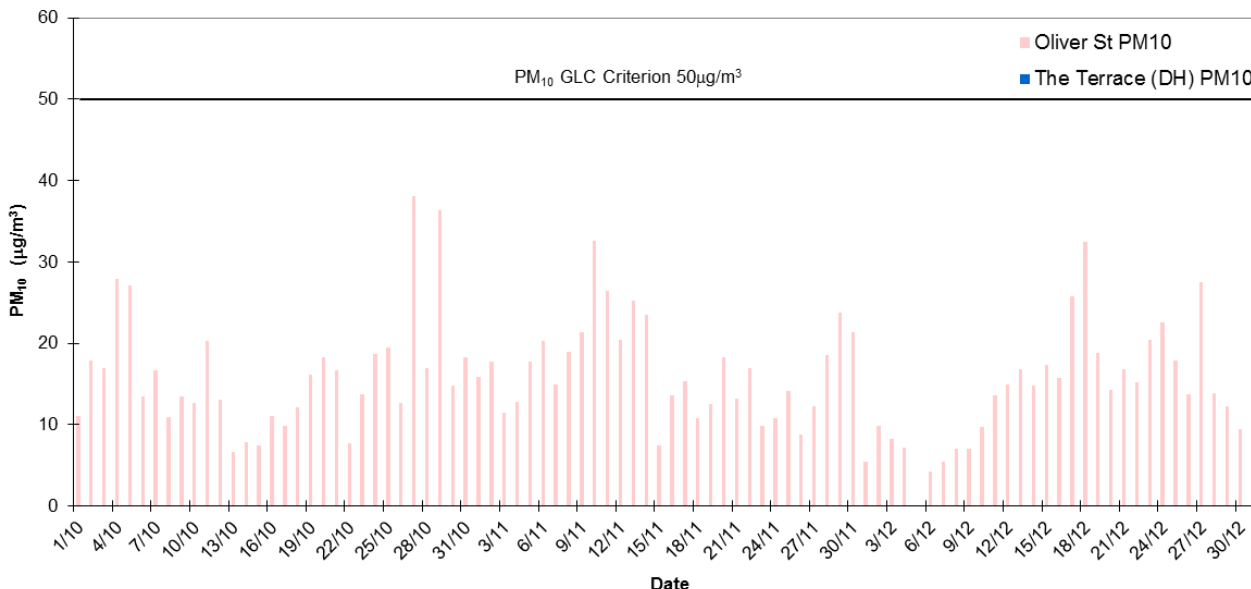
Pt Pirie Daily Average SO<sub>2</sub> - Quarter 4, 2017



**2.1.4 Particles (PM<sub>10</sub>)**

- There were no exceedences of the 24-hour ground level concentration criterion for PM<sub>10</sub> at Oliver Street this quarter.
  - There have been no exceedences at Oliver Street this year.
  - The PM<sub>10</sub> monitor at the Terrace is out of service.

Pt Pirie Daily Average PM<sub>10</sub> - Quarter 4, 2017



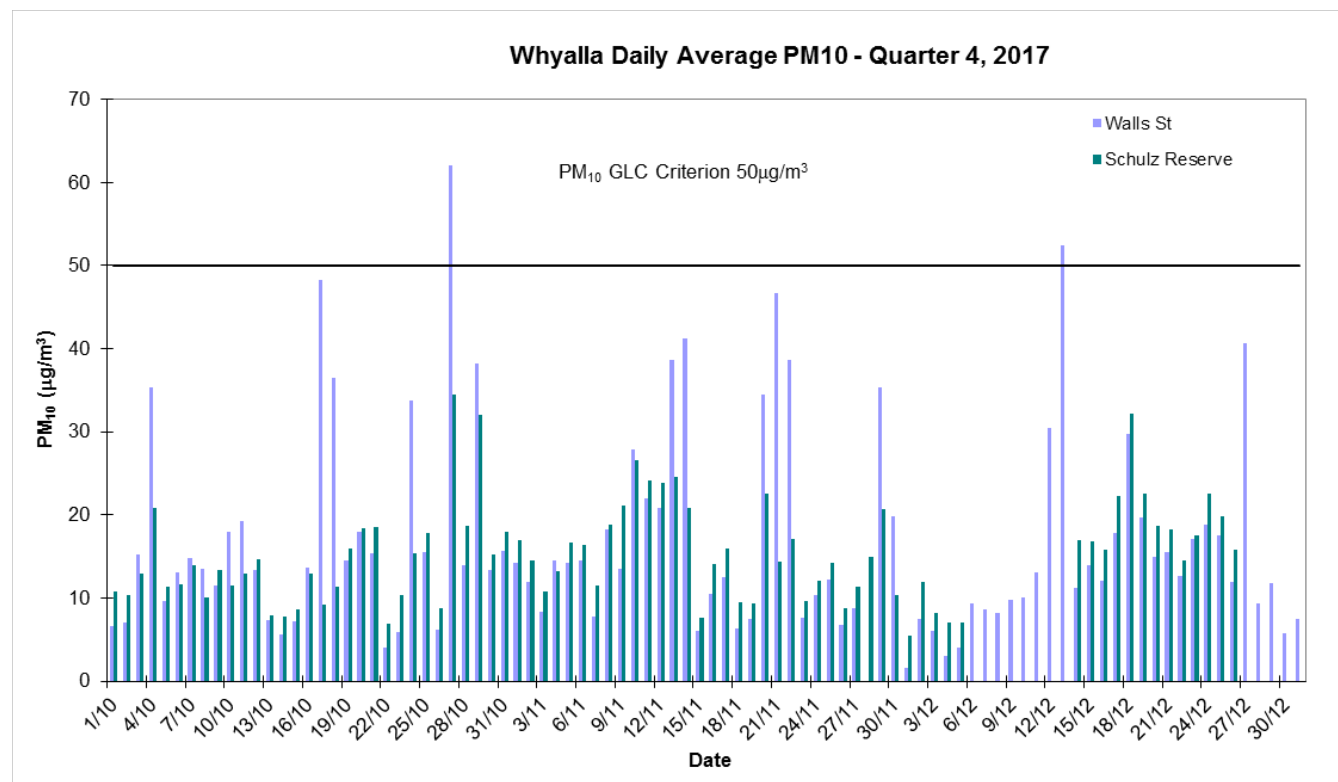
**2.2 Whyalla**

In Whyalla one of the major impacts on air quality are particle emissions from the local steelworks. Windblown dust and particles from other natural sources are other factors that can affect air quality in Whyalla. Monitoring is undertaken at 2 sites; Schulz Reserve and Walls St.

**2.2.1 Particles (PM<sub>10</sub>)**

- There were **2** exceedences of the 24-hour ground level concentration criterion for PM<sub>10</sub> at Walls Street this quarter.

- There have been **4** exceedences at Walls Street this year.
- There have been no exceedences at Schulz Reserve this year.



## Further information

### Legislation

[Online legislation](#) is freely available. Copies of legislation are available for purchase from:

Service SA Government Legislation Outlet  
Adelaide Service SA Centre  
108 North Terrace  
Adelaide SA 5000

Telephone: 13 23 24  
Facsimile: (08) 8204 1909  
Website: <[shop.service.sa.gov.au](http://shop.service.sa.gov.au)>  
Email: <[ServiceSAcustomerservice@sa.gov.au](mailto:ServiceSAcustomerservice@sa.gov.au)>

### General information

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Email: <[epainfo@epa.sa.gov.au](mailto:epainfo@epa.sa.gov.au)>