Air quality bulletin

Southern Queensland

September 2023

Queensland
Government

Introduction

Air quality monitoring gathers information on the quality of the air environment. The objectives of the monitoring are to check compliance with ambient air quality guidelines, identify long-term trends in air quality, investigate local air quality concerns and assess the effectiveness of air quality management strategies.

Air quality monitoring was carried out by the Queensland Government at 18 sites in Southern Queensland during September 2023. Data from Ampol Refineries (Qld) Ltd's monitoring sites at Wynnum North, Wynnum West and Lytton along with the Department of Transport and Main Roads' monitoring sites at South Brisbane and at Coomera and Parkwood on the Gold Coast are also included.

Air pollutants monitored include carbon monoxide, ozone, nitrogen oxides, sulfur dioxide, visibility-reducing particles, PM_{10} (particles less than 10µm in diameter) and $PM_{2.5}$ (particles less than 2.5µm in diameter). Dustfall (dust particles that rapidly settle from the air due to their large size) and total suspended particulate (TSP) matter that can cause nuisance were also monitored.

Air quality summary tables

Tables 3 to 11 present summaries of air quality data for each month of the preceding 12 months. These tables show the month-to-month variation in air quality. A monthly entry is given when at least three-fifths of the maximum possible number of observations during the month are available. When data is not available for the entire month this is indicated by the abbreviation 'n.d.' (no data). A dash is inserted when less than three-fifths of the data are available. Where data is not recorded, the reason for the low data availability is summarised in Table 12 at the end of this bulletin.

Reporting Protocol

Data presented in this bulletin are based on clock hours. Hourly or other averages are constrained to start and finish on a clock hour.

Air quality summary graphs

Figures 1 to 30 summarise available air quality data for each day of September. Only the maximum recorded level for each day is used to show the day-to-day variation in air quality. Figures 31 and 32 show the averaged daily dust deposition rate for September.

Guidelines

Air quality measurements are compared against air quality objectives contained in the Queensland Environmental Protection (Air) Policy 2019 (EPP (Air)) to assess whether pollutants levels could affect health and wellbeing. The EPP (Air) visibility objective is used to assess the impact of visibility-reducing particles on visual air quality. Limit values for TSP and dustfall specified in the Department of Environment and Science (DES) guideline document *Application requirements for activities with impacts to air* (Air Impacts Guideline) are used to assess dust nuisance effects. The relevant guidelines are shown in the air quality summary table for each pollutant.

Table 1. Air pollutants monitored at Southern Queensland ambient air quality monitoring sites.

	Nitrogen dioxide	Sulfur dioxide	Carbon monoxide	Ozone	PM_{10}	$PM_{2.5}$	Visibility-reducing particles	TSP	Dustfall
Maryborough					✓	✓			
Nambour					✓	✓			
Mountain Creek	✓			✓	✓	✓	✓		
Deception Bay	✓			✓	✓	✓			
Deagon	✓			✓	✓	✓	✓		
Wynnum North (industry)	✓	✓			✓	✓			
Wynnum West (industry)		✓			✓	✓			
Lytton (industry)		✓			✓	✓			
Cannon Hill	✓			✓	✓	✓		✓	✓
Brisbane CBD					✓	✓	✓		
South Brisbane	✓		✓		✓	✓			
Woolloongabba	✓		✓		✓	✓			
Sherwood									✓
Rocklea	✓			✓	✓	✓	✓		
Springwood	✓	✓		✓	✓	✓			
North Maclean	✓			✓	✓	✓			
Southport	✓			✓	✓	✓			
Coomera	✓		✓		✓	✓			
Parkwood	✓		✓		✓	✓			
Flinders View	✓	✓		✓	✓	✓	✓		
Mutdapilly	✓			✓	✓	✓			
Toowoomba (Brooks St)									✓
Toowoomba (Mort St)									✓
Toowoomba (Tor St)					✓	✓			

Compliance with air quality guidelines

During September, measured pollutant levels with the exception of visibility-reducing particles, PM_{10} and $PM_{2.5}$ did not exceed the relevant EPP (Air) air quality objectives, or DES dust nuisance limit values, at Queensland Government and industry air monitoring sites in Southern Queensland.

During September, smoke from a number of vegetation fires impacted the Southern Queensland region at times. Between 27 and 28 September, smoke from a large bushfire at Silverbark Ridge and Flagstone, south of Brisbane, led to exceedances of the EPP (Air) 24-hour $PM_{2.5}$ and PM_{10} objectives at the North Maclean, Flinders View and Mutdapilly monitoring sites. The smoke also caused visibility to fall below the EPP (Air) 1-hour objective of 20km at the Rocklea and Flinders View monitoring sites for one hour on 28 September.

Visibility was also reduced to less than the EPP (Air) 1-hour objective at the Rocklea monitoring site for one hour on 14 September. At the time corresponding PM_{10} and $PM_{2.5}$ concentrations were very similar, indicationg smoke as the likely cause of the low visibility, although a specific source could not be identified.

Table 2. Number of occasions during September 2023 when measured levels exceeded EPP (Air) objectives for carbon monoxide, ozone, nitrogen dioxide, sulfur dioxide, PM_{10}, $PM_{2.5}$, visibility-reducing particles and TSP, as well as the DES nuisance dust limit values for TSP and dustfall, at Queensland Government and industry air monitoring sites in Southern Queensland.

Air pollutant	Averaging period	Exceedences
Carbon monoxide	*EPP (Air)*	
	8-hour	0
Ozone	*EPP (Air)*	
	4-hour	0
	1-hour	0
Nitrogen dioxide	*EPP (Air)*	
	Annual	0
	1-hour	0
Sulfur dioxide	*EPP (Air)*	
	Annual	0
	24-hour	0
	1-hour	0
Visibility-reducing particles (refers to protecting aesthetic environment, not health and wellbeing).	*EPP (Air)*	
	1-hour	3
$PM_{2.5}$	*EPP (Air)*	
	Annual	0
	24-hour	4
PM_{10}	*EPP (Air)*	
	Annual	0
	24-hour	4
TSP (24-hour period refers to dust nuisance, not health and wellbeing)	*EPP (Air)*	
	Annual	0
	DES limit	
	24-hour	0
Dustfall (30-day period refers to dust nuisance, not health and wellbeing)	*DES limit*	
	30-day	0

Measured ambient concentrations

Carbon monoxide

Figure 1. Ambient concentrations of carbon monoxide at South Brisbane, Woolloongabba, Coomera and Parkwood sites. Daily maximum 8-hour average concentrations (ppm), September 2023.
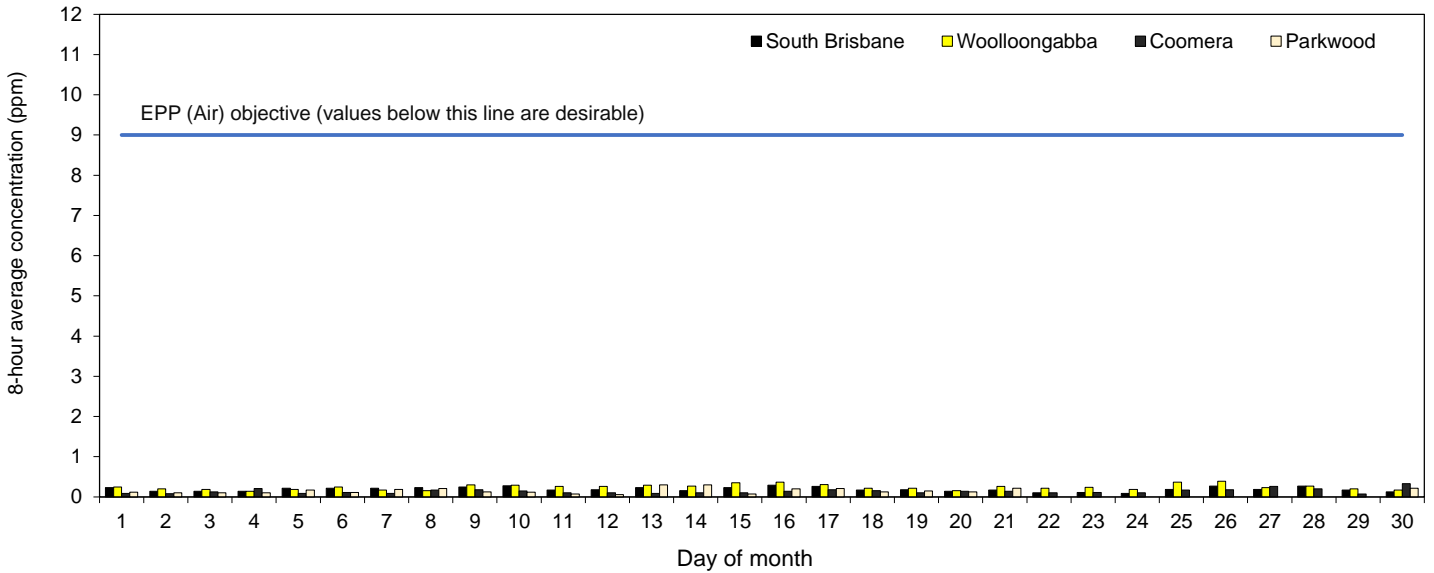
Table 3. Ambient concentrations of carbon monoxide. Monthly maximum 8-hour average concentrations (ppm), October 2022 to September 2023.

Site	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
South Brisbane												
Maximum 8-hour	0.38	0.36	0.28	0.18	0.20	0.41	0.54	0.86	0.65	0.93	0.47	0.29
% I.A.	100	98	100	68	65	100	100	100	100	99	100	100
Woolloongabba												
Maximum 8-hour	0.37	0.30	0.28	n.d.	0.29	0.32	0.71	0.64	0.76	0.83	0.43	0.39
% I.A.	100	100	63	0	95	100	100	100	100	100	100	99
Coomera‡												
Maximum 8-hour	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	0.37	0.34	0.39	0.33
% I.A.	0	0	0	0	0	0	0	0	99	100	100	99
Parkwood‡												
Maximum 8-hour	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	0.68	0.97	0.29	0.30
% I.A.	0	0	0	0	0	0	0	0	73	100	100	74

% I.A. indicates instrument availability. - indicates less than three-fifths of the data are available. n.d. indicates no data are available.

‡ Carbon monoxide monitoring commenced at Coomera and Parkwood in June 2023.

The Environmental Protection (Air) Policy 2019 air quality objective for carbon monoxide is an 8-hour average of 9ppm (not to be exceeded on more than one day per year).

Ozone (photochemical oxidants)

Figure 2. Ambient concentrations of ozone at Mountain Creek, Deception Bay, Deagon and Cannon Hill sites. Daily maximum 4-hour average concentrations (ppm), September 2023.

Figure 3. Ambient concentrations of ozone at Rocklea, Springwood and North Maclean sites. Daily maximum 4-hour average concentrations (ppm), September 2023.

Figure 4. Ambient concentrations of ozone at Southport, Flinders View and Mutdapilly sites. Daily maximum 4-hour average concentrations (ppm), September 2023.

Figure 5. Ambient concentrations of ozone at Mountain Creek, Deception Bay, Deagon and Cannon Hill sites. Daily maximum 1-hour average concentrations (ppm), September 2023.
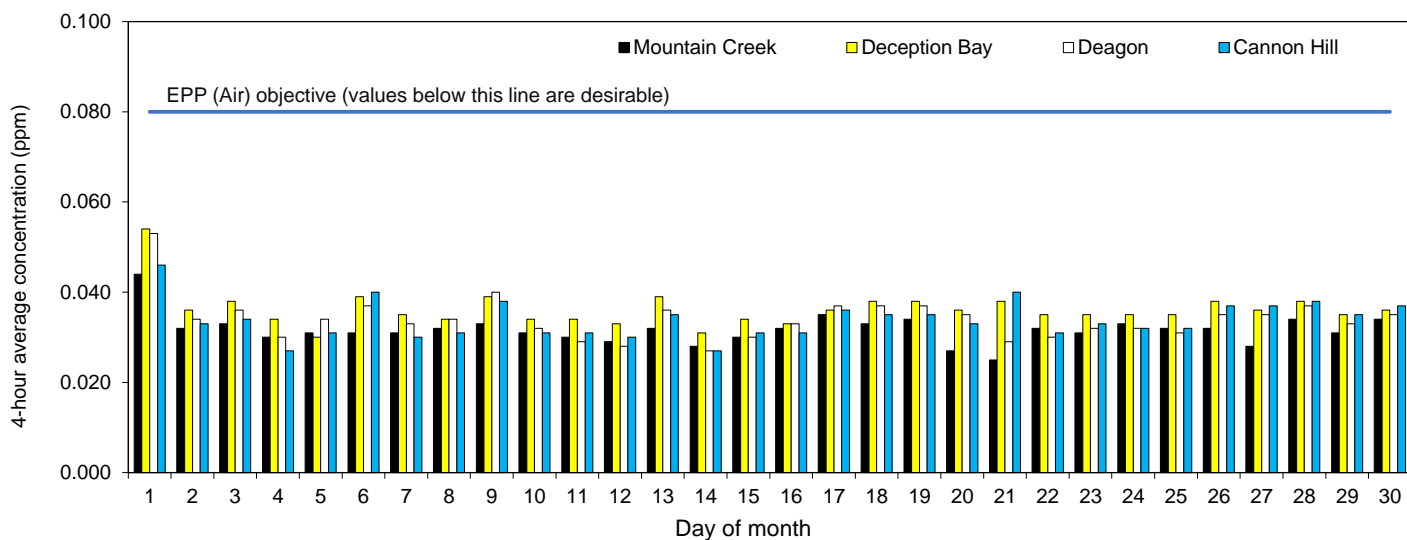

Figure 6. Ambient concentrations of ozone at Rocklea, Springwood and North Maclean sites. Daily maximum 1-hour average concentrations (ppm), September 2023.
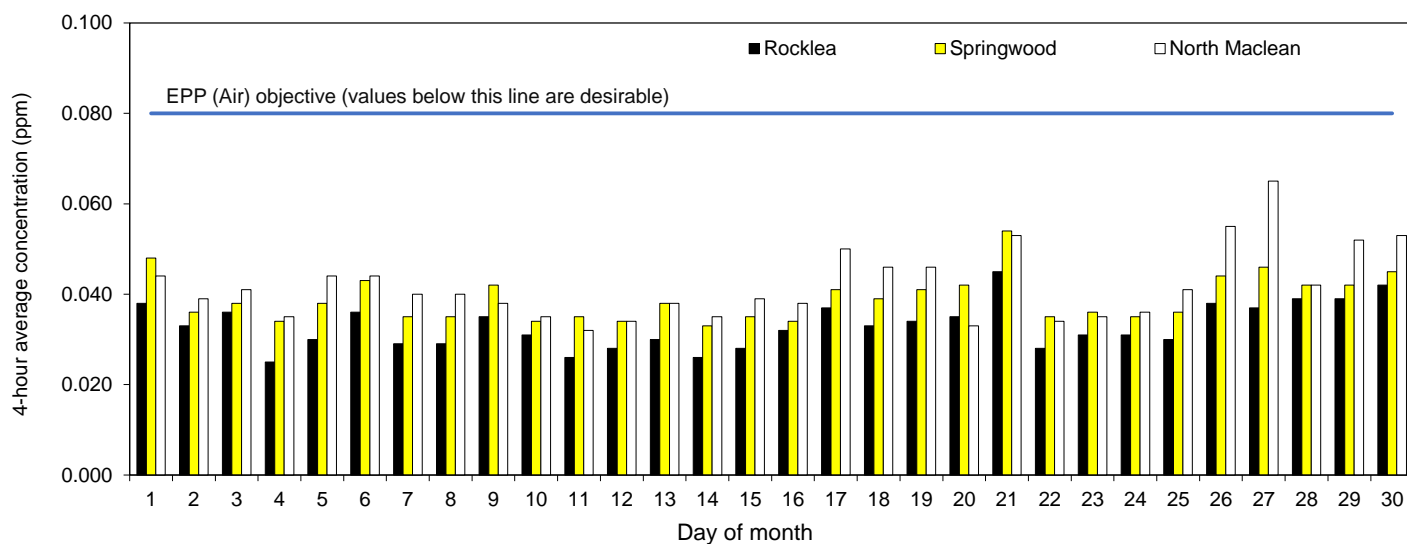

Figure 7. Ambient concentrations of ozone at Southport, Flinders View and Mutdapilly sites. Daily maximum 1-hour average concentrations (ppm), September 2023.
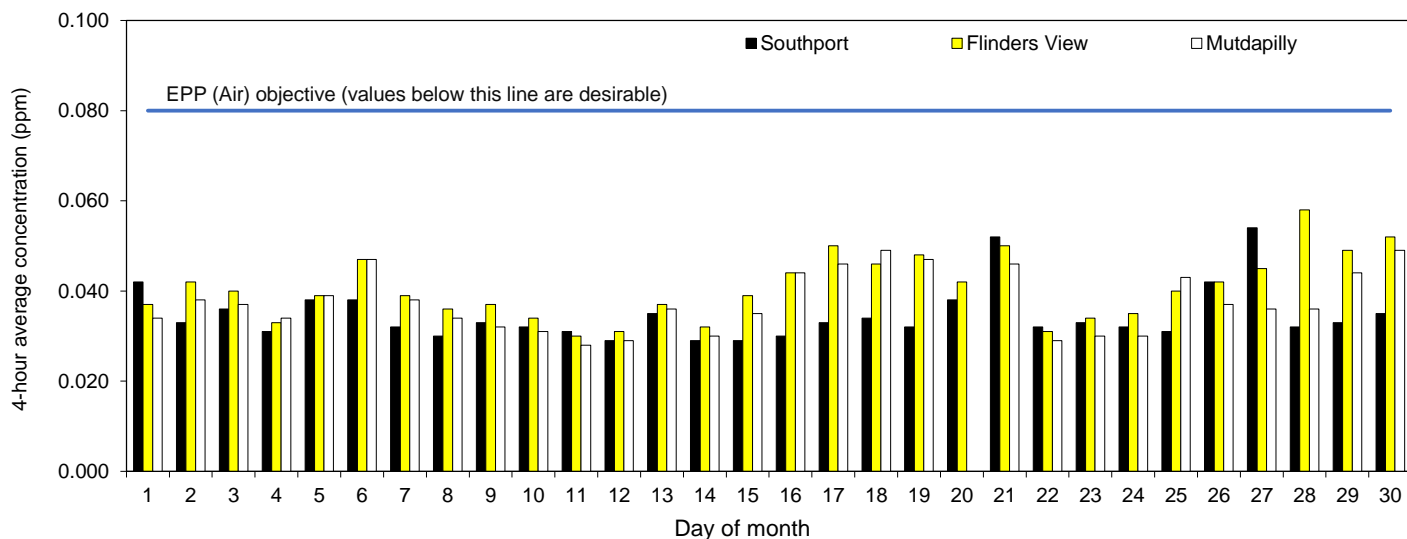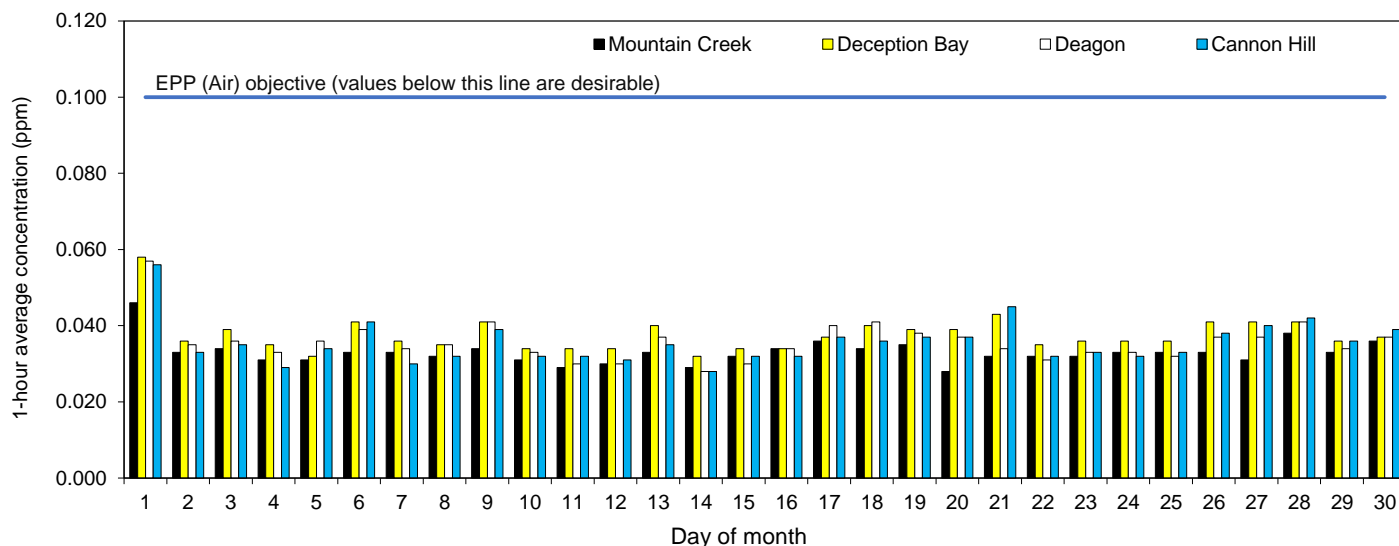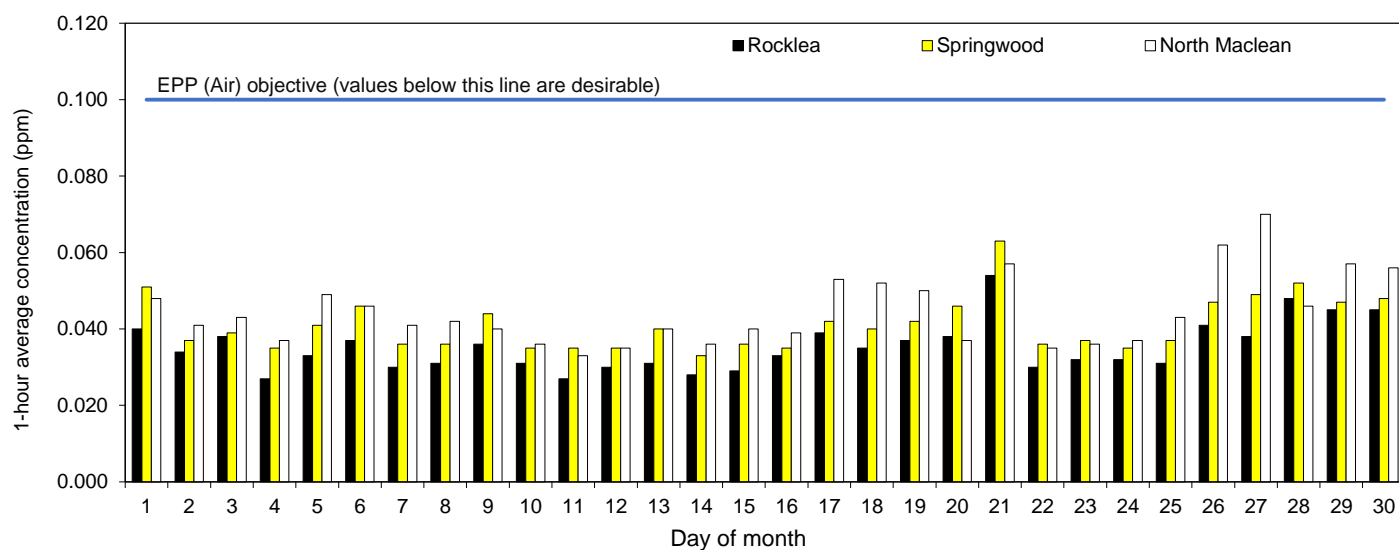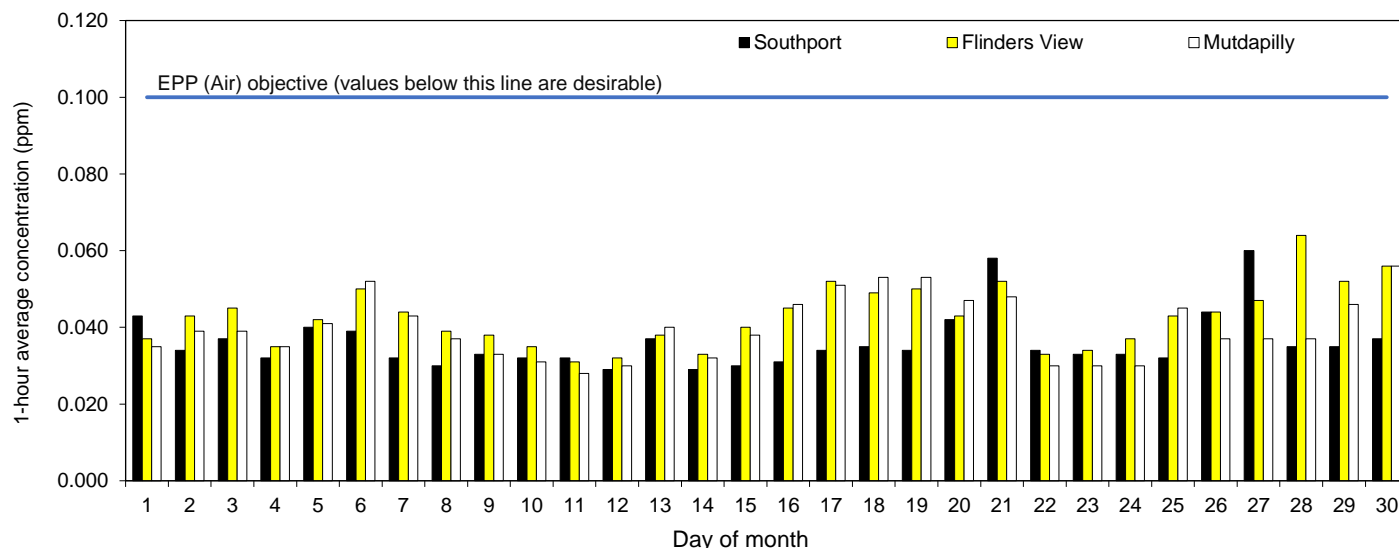
Table 4. Ambient concentrations of ozone. Monthly maximum 4-hour and 1-hour average concentrations (ppm), October 2022 to September 2023.

Site	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Mountain Creek												
Maximum 4-hour	0.045	0.043	0.032	0.035	0.034	0.034	0.046	0.036	0.034	0.036	0.049	0.044
Maximum 1-hour	0.047	0.047	0.034	0.039	0.035	0.035	0.051	0.037	0.035	0.040	0.050	0.046
% I.A.	100	100	98	100	95	99	100	98	100	100	100	100
Deception Bay												
Maximum 4-hour	0.053	0.061	0.040	0.038	0.040	0.047	0.041	0.042	0.037	0.041	0.053	0.054
Maximum 1-hour	0.055	0.063	0.044	0.043	0.043	0.062	0.042	0.046	0.039	0.045	0.061	0.058
% I.A.	100	99	99	100	100	100	100	99	100	100	100	99
Deagon												
Maximum 4-hour	0.047	0.060	0.040	0.035	0.037	0.052	0.038	0.034	0.034	0.039	0.052	0.053
Maximum 1-hour	0.049	0.065	0.040	0.041	0.039	0.059	0.042	0.042	0.036	0.040	0.053	0.057
% I.A.	100	99	100	98	98	98	100	100	100	100	100	99
Cannon Hill												
Maximum 4-hour	0.047	0.061	0.043	0.048	0.050	0.064	0.040	0.034	0.031	0.044	0.042	0.046
Maximum 1-hour	0.051	0.066	0.046	0.057	0.056	0.076	0.044	0.035	0.034	0.046	0.047	0.056
% I.A.	100	100	100	90	100	97	98	100	100	99	100	100
Rocklea												
Maximum 4-hour	0.047	0.055	0.046	0.056	0.056	0.065	0.033	0.038	0.032	0.046	0.042	0.045
Maximum 1-hour	0.052	0.061	0.053	0.062	0.068	0.071	0.036	0.046	0.038	0.050	0.046	0.054
% I.A.	99	100	100	100	100	100	100	97	100	100	100	100
Springwood												
Maximum 4-hour	0.052	-	0.052	0.049	0.057	0.064	0.034	0.036	0.039	0.045	0.052	0.054
Maximum 1-hour	0.059	-	0.056	0.053	0.073	0.070	0.036	0.042	0.040	0.048	0.056	0.063
% I.A.	100	46	99	100	87	98	99	100	99	96	100	100
North Maclean												
Maximum 4-hour	0.058	0.057	0.055	0.055	0.055	0.052	0.040	0.038	0.040	0.045	0.046	0.065
Maximum 1-hour	0.061	0.067	0.056	0.068	0.062	0.058	0.045	0.040	0.044	0.048	0.049	0.070
% I.A.	100	100	99	99	100	100	100	100	100	99	100	100
Southport												
Maximum 4-hour	0.055	0.052	0.042	0.039	0.043	0.054	0.030	0.036	0.038	0.047	0.053	0.054
Maximum 1-hour	0.061	0.058	0.048	0.042	0.048	0.055	0.032	0.039	0.039	0.048	0.056	0.060
% I.A.	100	99	99	100	99	100	99	100	100	100	90	100
Flinders View												
Maximum 4-hour	0.045	0.046	0.049	0.061	0.047	0.052	0.035	0.036	0.036	0.044	0.044	0.058
Maximum 1-hour	0.046	0.053	0.058	0.082	0.057	0.080	0.039	0.037	0.037	0.046	0.048	0.064
% I.A.	99	100	100	89	100	100	99	100	100	100	99	99
Mutdapilly												
Maximum 4-hour	0.046	0.050	0.045	0.050	0.047	0.052	0.035	0.037	0.040	0.044	0.045	0.049
Maximum 1-hour	0.048	0.065	0.054	0.068	0.058	0.073	0.039	0.040	0.042	0.045	0.046	0.056
% I.A.	99	99	84	100	99	100	99	100	99	99	99	99

% I.A. indicates instrument availability. - indicates less than three-fifths of the data are available. n.d. indicates no data are available.

The Environmental Protection (Air) Policy 2019 air quality objectives for ozone are a 4-hour average of 0.080ppm (not to be exceeded on more than one day per year) and a 1-hour average of 0.100ppm (not to be exceeded on more than one day per year).

Nitrogen dioxide

Figure 8. Ambient concentrations of nitrogen dioxide at Mountain Creek, Deception Bay, Deagon and Wynnum North sites. Daily maximum 1-hour average concentrations (ppm), September 2023.
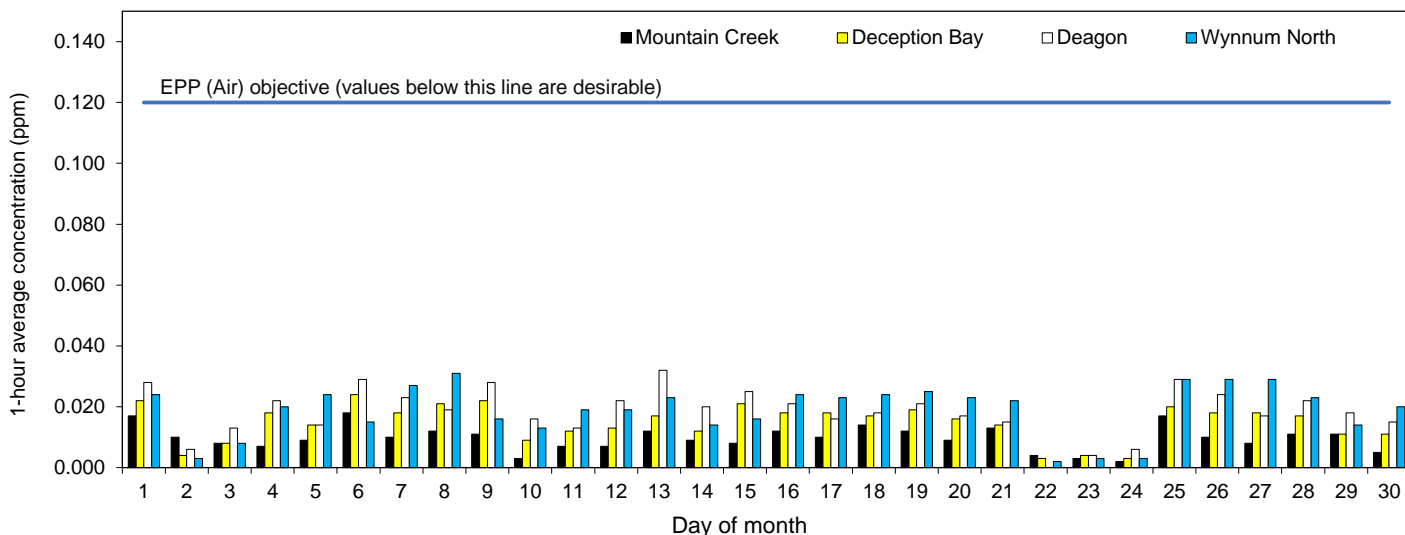

Figure 9. Ambient concentrations of nitrogen dioxide at Cannon Hill, South Brisbane, Woolloongabba and Rocklea sites. Daily maximum 1-hour average concentrations (ppm), September 2023.
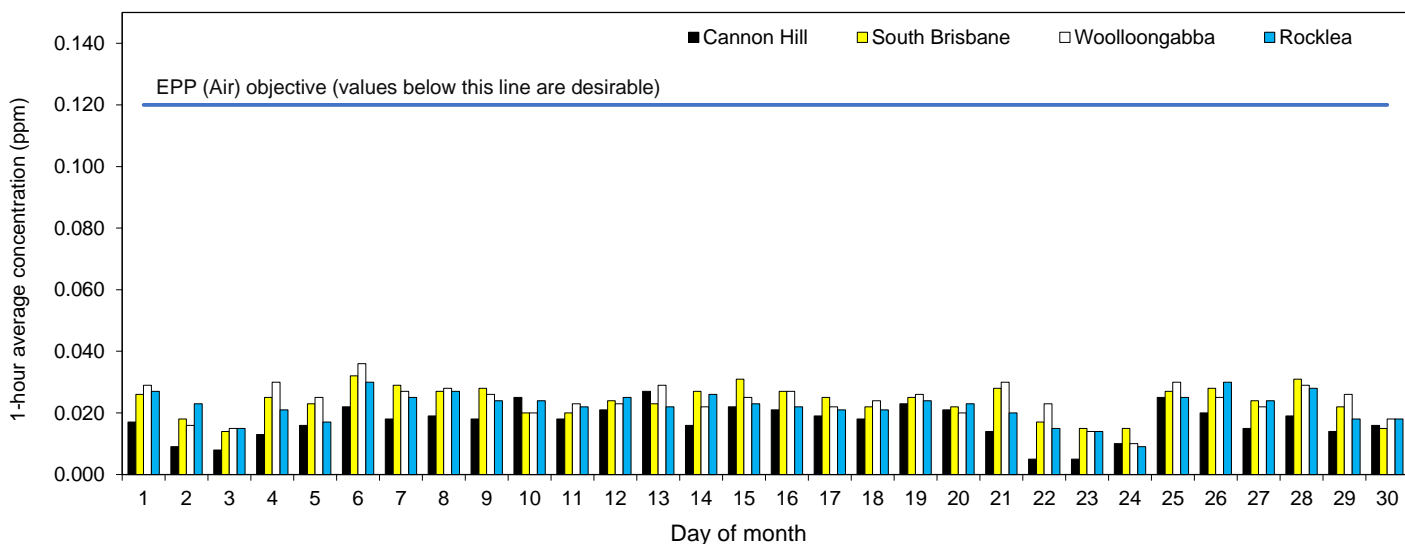

Figure 10. Ambient concentrations of nitrogen dioxide at Springwood, North Maclean, Southport and Coomera sites. Daily maximum 1-hour average concentrations (ppm), September 2023.
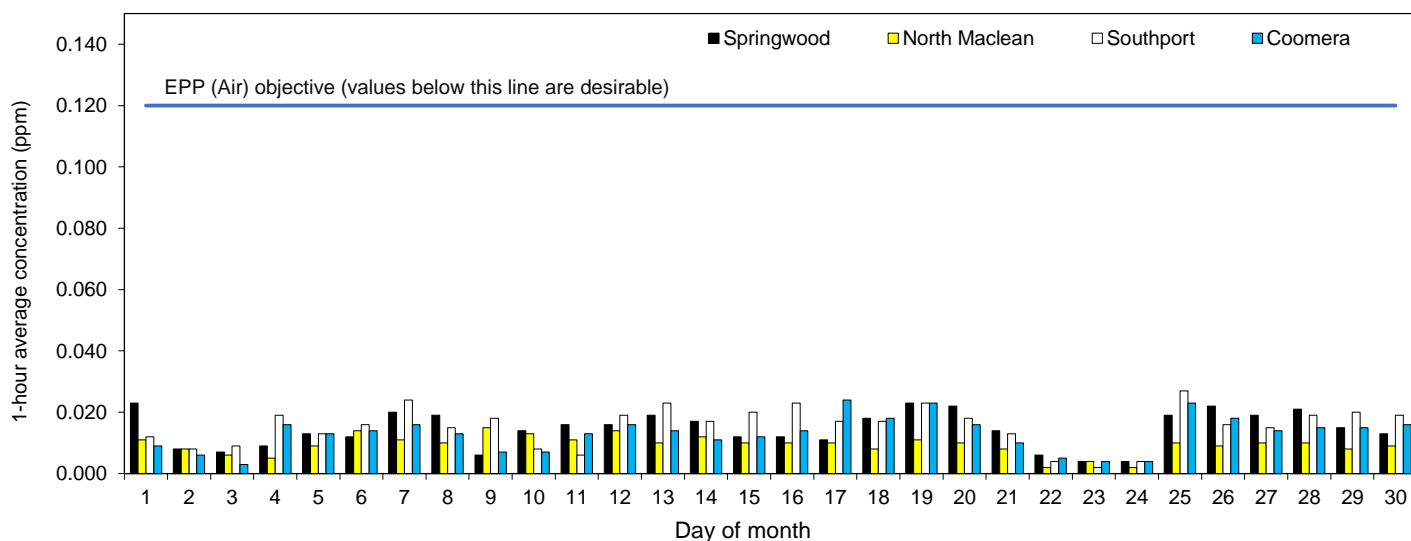
Figure 11. Ambient concentrations of nitrogen dioxide at Parkwood, Flinders View and Mutdapilly sites. Daily maximum 1-hour average concentrations (ppm), September 2023.

Table 5. Ambient concentrations of nitrogen dioxide. Annual average and monthly maximum 1-hour concentrations (ppm), October 2022 to September 2023.

Site		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Mountain Creek													
Annual average:	0.004												
Maximum 1-hour		0.021	0.020	0.010	0.009	0.013	0.021	0.018	0.028	0.024	0.027	0.029	0.018
% I.A.		100	100	98	100	99	97	100	98	100	100	100	100
Deception Bay													
Annual average:	0.005												
Maximum 1-hour		0.019	0.020	0.019	0.011	0.015	0.026	0.031	0.035	0.034	0.034	0.033	0.024
% I.A.		100	100	96	100	100	100	100	99	100	100	100	99
Deagon													
Annual average:	0.007												
Maximum 1-hour		0.024	0.029	0.029	0.018	0.018	0.027	0.032	0.041	0.036	0.037	0.041	0.032
% I.A.		100	99	100	98	98	98	100	100	99	100	100	97
Wynnum North (industry-operated site)													
Annual average:	0.006												
Maximum 1-hour		0.025	0.031	0.021	0.014	0.016	0.033	0.034	0.040	0.036	0.041	0.028	0.031
% I.A.		95	93	95	96	96	94	95	95	94	94	95	94
Cannon Hill													
Annual average:	0.007												
Maximum 1-hour		0.022	0.026	0.034	0.014	0.018	0.031	0.032	0.041	0.034	0.042	0.030	0.027
% I.A.		100	100	100	100	100	100	98	100	100	99	100	99
South Brisbane													
Annual average:	0.012												
Maximum 1-hour		0.033	0.029	0.028	0.026	0.023	0.033	0.042	0.044	0.044	0.051	0.042	0.032
% I.A.		100	99	100	100	99	100	100	100	100	99	100	100

% I.A. indicates instrument availability.   - indicates less than three-fifths of the data are available.   n.d. indicates no data are available.

The Environmental Protection (Air) Policy 2019 air quality objectives for nitrogen dioxide are an annual average of 0.030ppm and a 1-hour average of 0.120ppm.
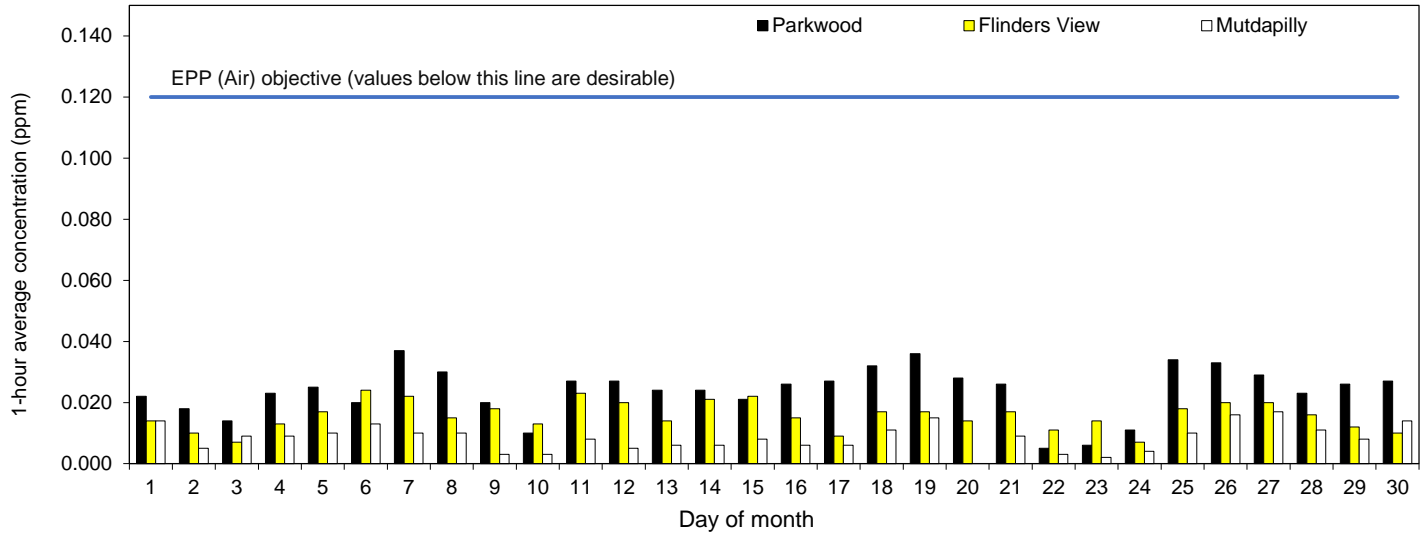
Table 5 (contd). Ambient concentrations of nitrogen dioxide. Annual average and monthly maximum 1-hour concentrations (ppm), October 2022 to September 2023.

Site		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Woolloongabba													
Annual average:	0.013												
Maximum 1-hour		0.033	0.033	0.033	0.030	0.033	0.040	0.041	0.047	0.041	0.051	0.038	0.036
% I.A.		99	100	100	100	99	97	100	100	100	100	100	99
Rocklea													
Annual average:	0.009												
Maximum 1-hour		0.025	0.025	0.021	0.014	0.015	0.021	0.027	0.044	0.036	0.043	0.035	0.030
% I.A.		98	98	100	100	100	100	100	99	100	100	100	100
Springwood													
Annual average:	0.006												
Maximum 1-hour		0.023	-	0.013	0.013	0.014	0.024	0.024	0.028	0.032	0.028	0.026	0.023
% I.A.		100	46	100	100	87	99	99	99	98	96	100	100
North Maclean													
Annual average:	0.003												
Maximum 1-hour		0.011	0.011	0.009	0.012	0.009	0.013	0.014	0.017	0.021	0.024	0.024	0.015
% I.A.		100	100	99	99	100	100	100	100	100	99	100	100
Southport													
Annual average:	0.005												
Maximum 1-hour		0.018	0.022	0.013	0.013	0.012	0.028	0.029	0.034	0.034	0.038	0.030	0.027
% I.A.		100	99	99	99	99	100	99	100	100	100	99	100
Coomera[‡]													
Annual average:	-												
Maximum 1-hour		n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	0.030	0.034	0.027	0.024
% I.A.		0	0	0	0	0	0	0	0	99	100	100	99
Parkwood[‡]													
Annual average:	-												
Maximum 1-hour		n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	0.054	0.050	0.043	0.037
% I.A.		0	0	0	0	0	0	0	0	68	100	100	100
Flinders View													
Annual average:	0.007												
Maximum 1-hour		0.027	0.024	0.019	0.017	0.017	0.028	0.023	0.039	0.041	0.042	0.032	0.024
% I.A.		99	100	100	99	100	100	96	100	100	100	96	99
Mutdapilly													
Annual average:	0.003												
Maximum 1-hour		0.013	0.016	0.013	0.010	0.010	0.017	0.014	0.019	0.028	0.018	0.021	0.017
% I.A.		99	99	99	100	99	100	99	96	99	99	99	99

% I.A. indicates instrument availability. - indicates less than three-fifths of the data are available. n.d. indicates no data are available.

[‡] Nitrogen dioxide monitoring commenced at Coomera and Parkwood in June 2023.

The Environmental Protection (Air) Policy 2019 air quality objectives for nitrogen dioxide are an annual average of 0.030ppm and a 1-hour average of 0.120ppm.

Sulfur dioxide

Figure 12. Ambient concentrations of sulfur dioxide at Wynnum North, Wynnum West and Lytton sites. Daily 24-hour average concentrations (ppm), September 2023.
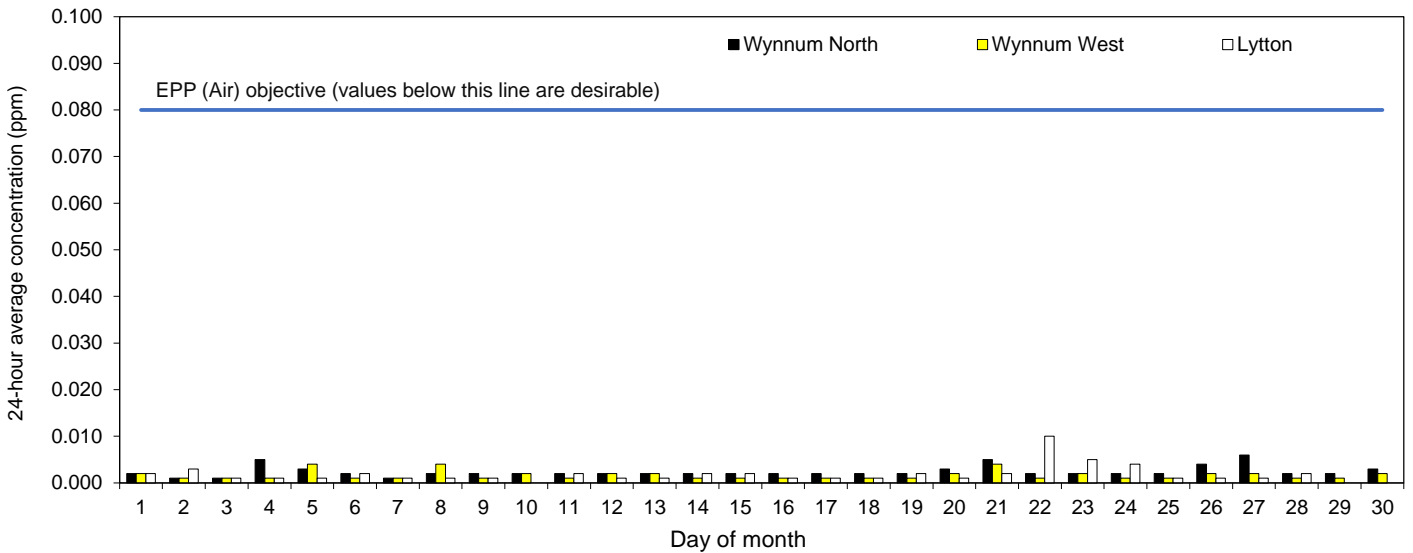

Figure 13. Ambient concentrations of sulfur dioxide at Springwood and Flinders View sites. Daily 24-hour average concentrations (ppm), September 2023.
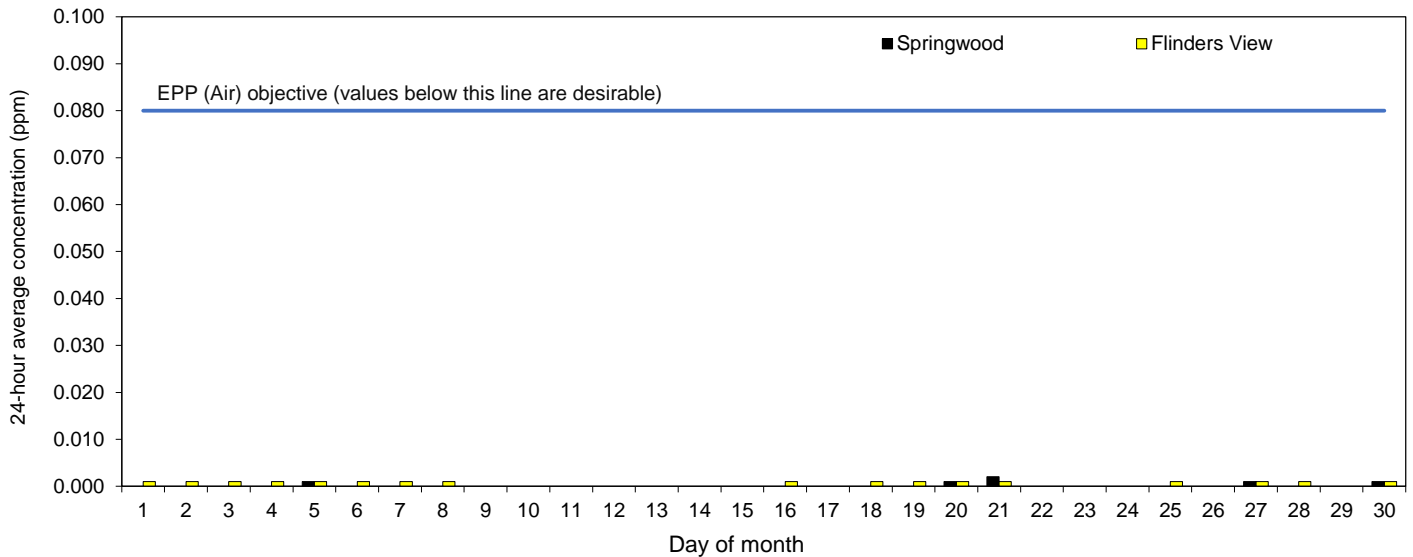

Figure 14. Ambient concentrations of sulfur dioxide at Wynnum North, Wynnum West and Lytton sites. Daily maximum 1-hour average concentrations (ppm), September 2023.
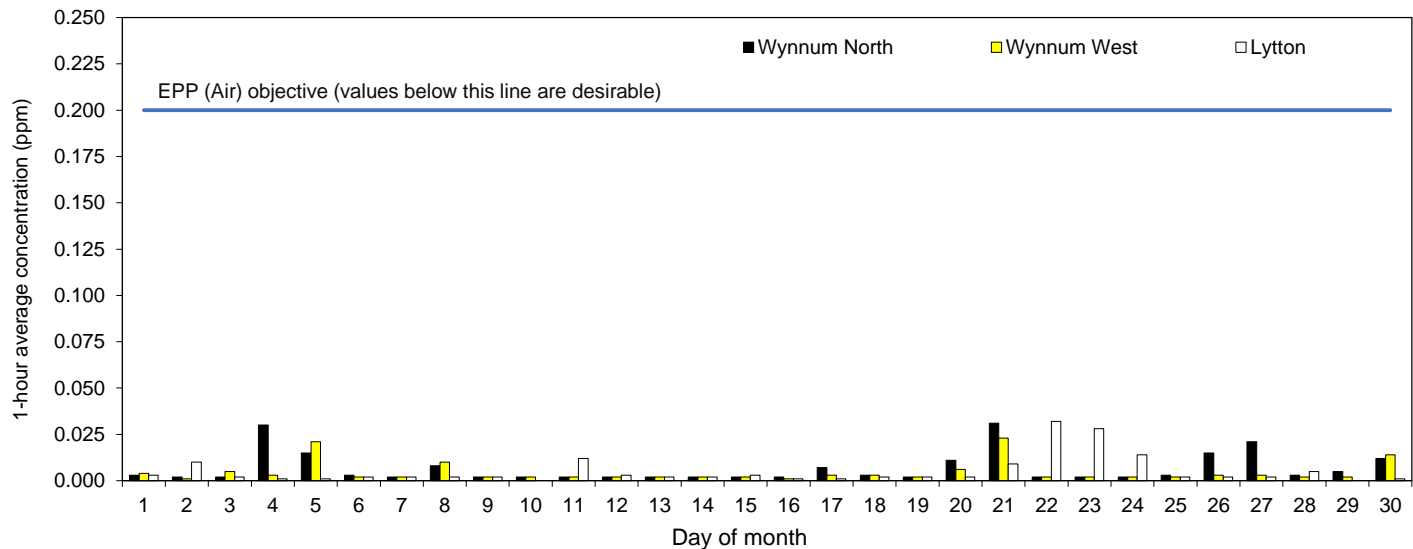
Figure 15. Ambient concentrations of sulfur dioxide at Springwood and Flinders View sites. Daily maximum 1-hour average concentrations (ppm), September 2023.
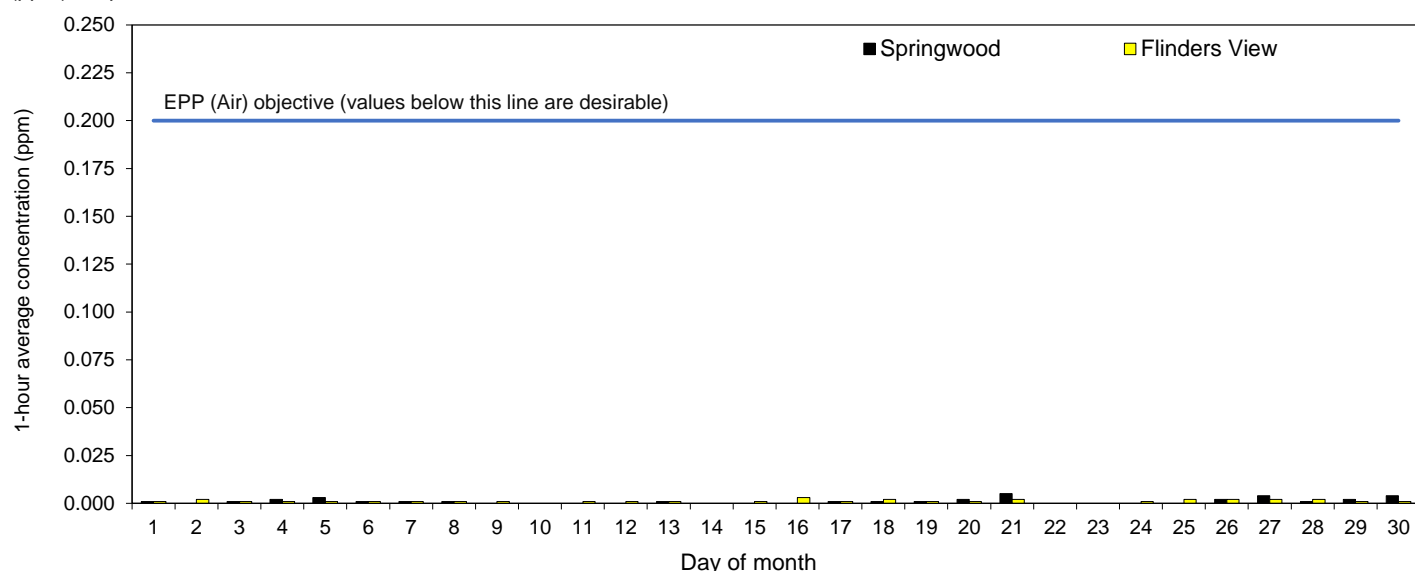

Table 6. Ambient concentrations of sulfur dioxide. Annual average and monthly maximum 24-hour and 1-hour average concentrations (ppm), October 2022 to September 2023.

Site		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Wynnum North (industry-operated site)													
Annual average:	0.001												
Maximum 24-hour		0.007	0.009	0.007	0.002	-	0.004	0.003	0.005	0.004	0.004	0.006	0.006
Maximum 1-hour		0.060	0.058	0.049	0.013	-	0.013	0.017	0.028	0.014	0.016	0.029	0.031
% I.A.		95	93	96	96	48	67	95	96	95	95	96	96
Wynnum West (industry-operated site)													
Annual average:	0.001												
Maximum 24-hour		0.004	0.006	0.007	0.002	0.002	0.002	0.002	0.003	0.004	0.003	0.005	0.004
Maximum 1-hour		0.015	0.031	0.030	0.010	0.010	0.010	0.007	0.011	0.015	0.008	0.020	0.023
% I.A.		76	94	95	95	96	94	95	89	96	85	86	95
Lytton (industry-operated site)													
Annual average:	0.001												
Maximum 24-hour		0.004	0.007	0.010	0.003	0.009	0.003	0.004	0.003	0.005	0.014	0.008	0.010
Maximum 1-hour		0.016	0.035	0.039	0.015	0.042	0.012	0.024	0.013	0.011	0.045	0.029	0.032
% I.A.		85	96	95	96	95	95	78	91	91	91	95	92
Springwood													
Annual average:	0.001												
Maximum 24-hour		0.002	0.001	0.001	0.002	0.002	0.002	0.001	0.001	0.002	0.001	0.001	0.002
Maximum 1-hour		0.005	0.003	0.005	0.002	0.003	0.003	0.002	0.003	0.011	0.004	0.004	0.005
% I.A.		99	92	100	100	87	99	99	100	100	99	100	100
Flinders View													
Annual average:	<0.001												
Maximum 24-hour		0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.002	0.001	0.001
Maximum 1-hour		0.002	0.002	0.001	0.003	0.003	0.002	0.002	0.004	0.003	0.007	0.005	0.003
% I.A.		99	100	100	99	100	100	99	100	100	100	99	99

% I.A. indicates instrument availability.   - indicates less than three-fifths of the data are available.   n.d. indicates no data are available.

The Environmental Protection (Air) Policy 2019 air quality objectives for sulfur dioxide are an annual average of 0.020ppm, a 24-hour average of 0.080ppm (not to be exceeded on more than one day per year) and a 1-hour average of 0.200ppm (not to be exceeded on more than one day per year).

Visibility-reducing particles

Figure 16. Ambient concentrations of visibility-reducing particle levels at Mountain Creek, Deagon and Brisbane CBD sites. Daily maximum 1-hour average light scattering coefficient (B_{sp}) values (Mm^{-1}), September 2023.
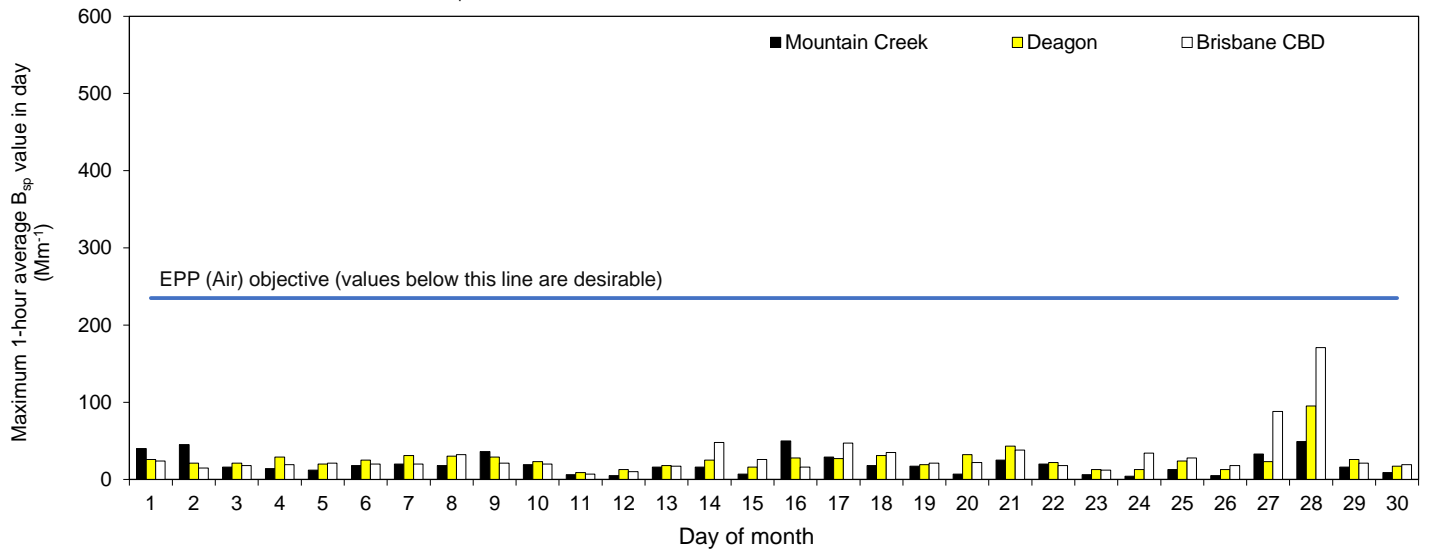

Figure 17. Ambient concentrations of visibility-reducing particle levels at Rocklea and Flinders View sites. Daily maximum 1-hour average light scattering coefficient (B_{sp}) values (Mm^{-1}), September 2023.
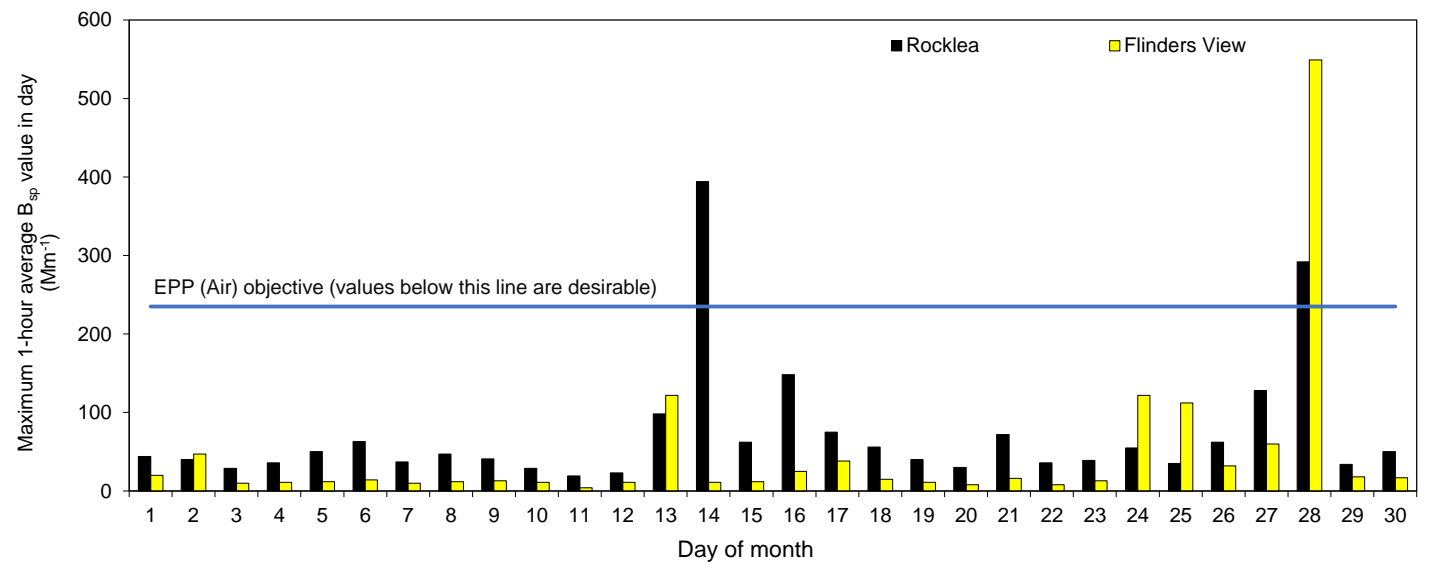
Table 7. Ambient visibility-reducing particle levels. Monthly maximum 1-hour light scattering coefficient (B_{sp}) values (Mm^{-1}), October 2022 to September 2023.

Site	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Mountain Creek												
Maximum 1-hour	56	27	30	25	58	29	24	106	71	108	68	50
% I.A.	100	100	99	100	99	99	100	98	100	100	100	100
Deagon												
Maximum 1-hour	48	85	43	50	210	57	44	731	104	81	131	95
% I.A.	100	99	100	98	98	98	100	100	100	100	100	99
Brisbane CBD												
Maximum 1-hour	45	33	50	47	57	52	29	563	114	97	109	171
% I.A.	100	100	100	100	100	100	100	100	100	100	100	100
Rocklea												
Maximum 1-hour	51	60	118	50	86	72	57	435	159	108	133	394
% I.A.	99	100	100	99	100	100	100	99	100	100	100	100
Flinders View												
Maximum 1-hour	29	33	35	457	30	56	61	116	141	91	65	549
% I.A.	99	100	100	87	100	100	90	100	100	100	99	99

% I.A. indicates instrument availability.   - indicates less than three-fifths of the data are available.   n.d. indicates no data are available.

The Environmental Protection (Air) Policy 2019 air quality objective for visibility-reducing particles is 20km visibility. This equates to light scattering coefficient values of $235Mm^{-1}$ or less.

PM₁₀

Figure 18. Ambient concentrations of PM$_{10}$ at Maryborough, Nambour, Mountain Creek and Deception Bay sites. Daily 24-hour average concentrations (µg/m^3), September 2023.
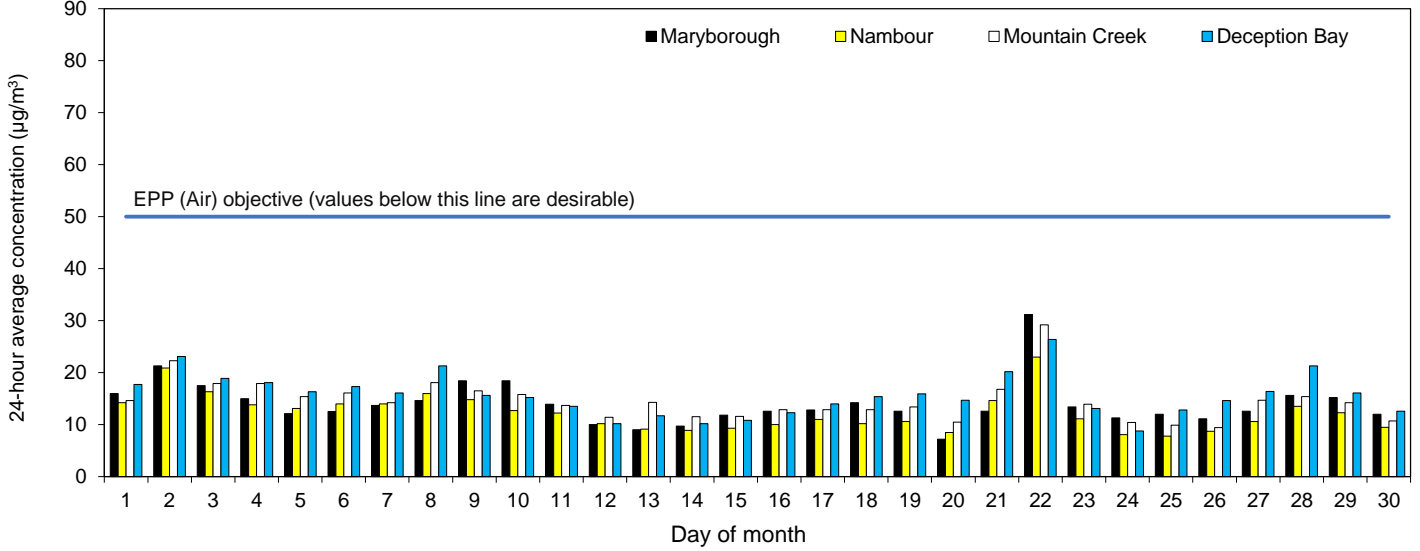
Figure 19. Ambient concentrations of PM$_{10}$ at Deagon, Brisbane CBD, South Brisbane and Woolloongabba sites. Daily 24-hour average concentrations (µg/m^3), September 2023.
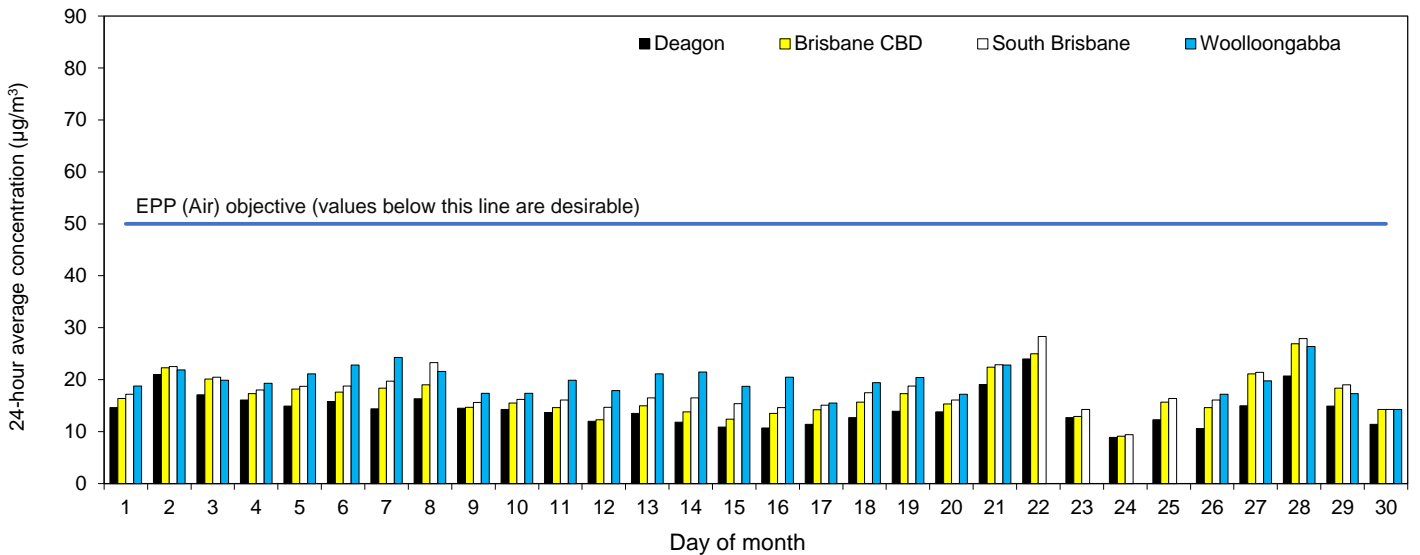
Figure 20. Ambient concentrations of PM$_{10}$ at Cannon Hill, Wynnum North, Wynnum West and Lytton sites. Daily 24-hour average concentrations (µg/m^3), September 2023.

Figure 21. Ambient concentrations of PM_{10} at Rocklea, North Maclean and Springwood sites. Daily 24-hour average concentrations (µg/m³), September 2023.

Figure 22. Ambient concentrations of PM_{10} at Southport, Coomera and Parkwood sites. Daily 24-hour average concentrations (µg/m³), September 2023.

Figure 23. Ambient concentrations of PM_{10} at Flinders View, Mutdapilly and Toowoomba (Tor St) sites. Daily 24-hour average concentrations (µg/m³), September 2023.
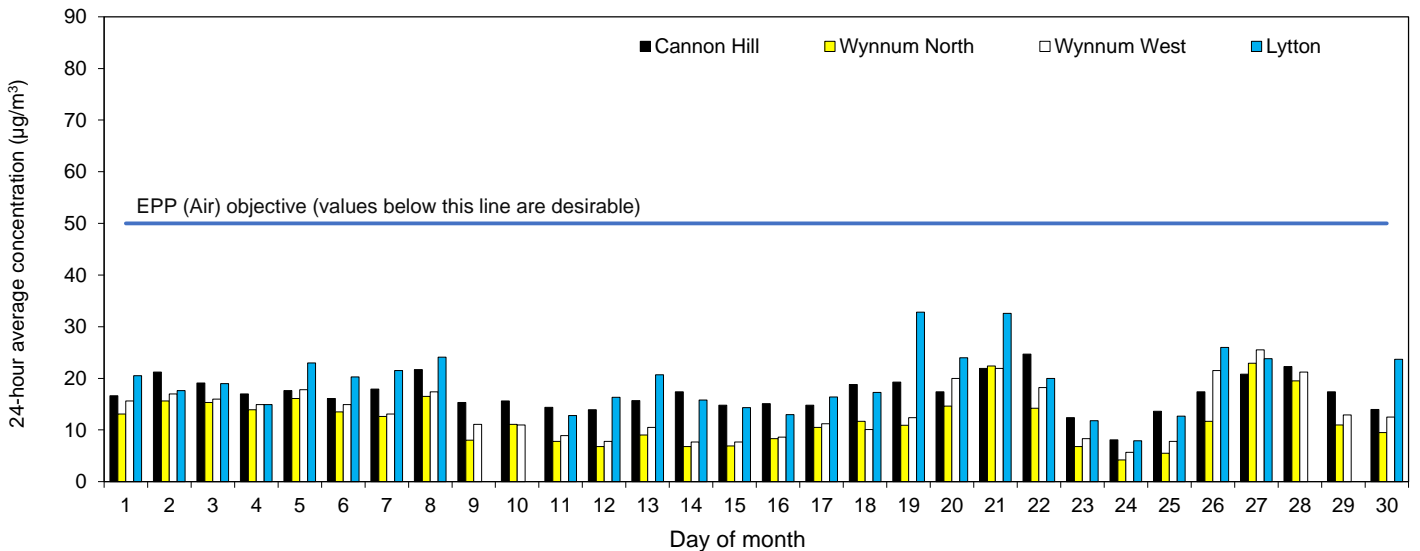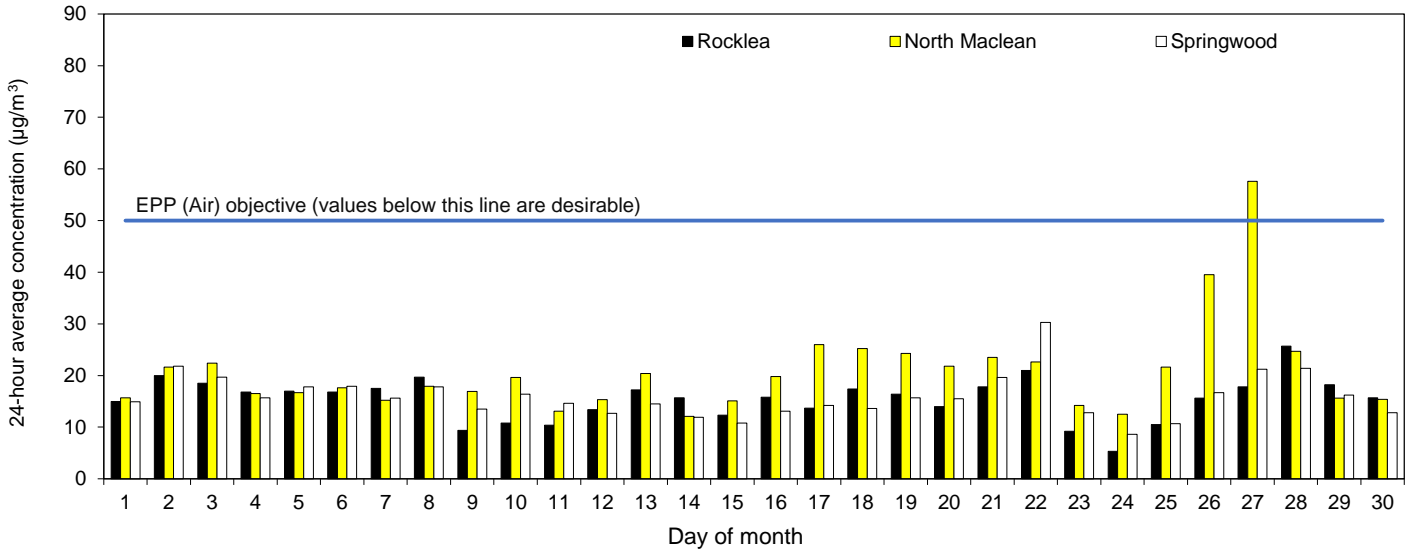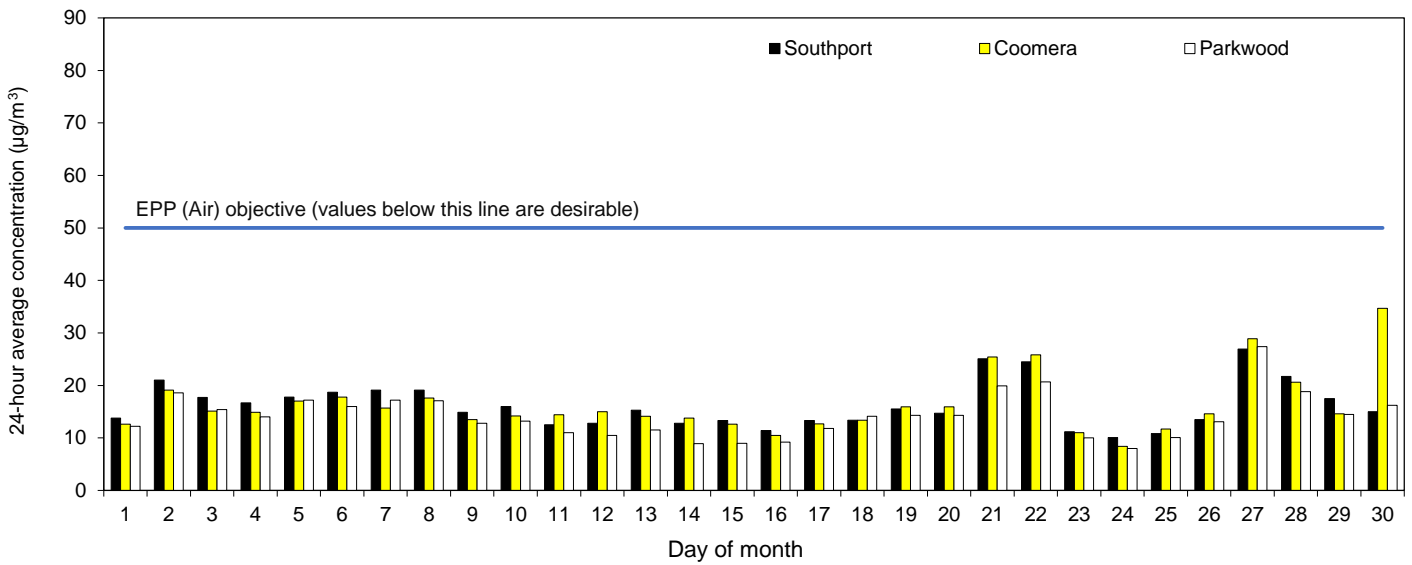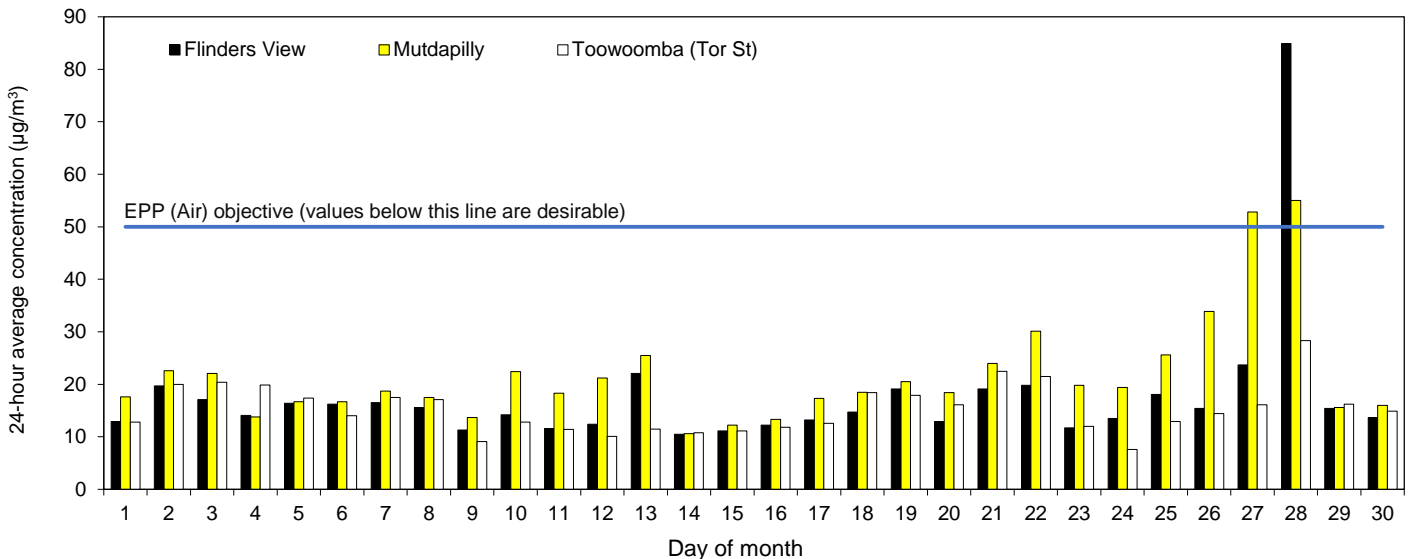
Table 8. Ambient concentrations of PM_{10}. Annual average and monthly maximum 24-hour concentrations ($\mu g/m^3$), October 2022 to September 2023.

Site		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Maryborough													
Annual average:	15.1												
Maximum 24-hour		-	42.9	37.2	27.0	23.1	21.5	25.5	22.8	31.5	25.7	22.8	31.2
% I.A.		11	100	100	100	95	100	100	100	100	100	100	100
Nambour													
Annual average:	12.4												
Maximum 24-hour		21.4	20.5	27.8	21.7	21.9	18.7	19.0	13.4	17.2	16.8	25.9	23.0
% I.A.		84	100	97	100	100	100	100	100	100	100	100	100
Mountain Creek													
Annual average:	15.1												
Maximum 24-hour		31.2	34.6	30.7	24.2	25.2	20.3	22.3	17.8	22.8	23.5	29.0	29.2
% I.A.		100	100	99	100	99	99	100	100	100	100	100	100
Deception Bay													
Annual average:	15.8												
Maximum 24-hour		25.7	27.1	28.7	21.9	24.3	20.4	20.1	52.2	24.3	28.5	28.1	26.4
% I.A.		100	100	100	100	96	100	100	100	100	100	100	100
Deagon													
Annual average:	14.6												
Maximum 24-hour		23.1	23.2	25.6	20.4	25.3	19.2	20.1	60.8	22.0	20.4	26.7	24.0
% I.A.		100	99	100	100	100	100	100	100	100	100	100	100
Brisbane CBD													
Annual average:	16.2												
Maximum 24-hour		22.2	26.1	27.4	21.3	27.0	21.7	19.9	69.3	34.6	26.5	33.3	26.9
% I.A.		100	100	100	100	100	100	100	100	100	100	100	100
South Brisbane													
Annual average:	17.7												
Maximum 24-hour		24.1	27.0	29.2	23.6	28.9	24.4	22.2	61.8	35.9	28.6	36.0	28.3
% I.A.		100	99	100	100	100	98	100	100	100	100	100	100
Woolloongabba													
Annual average:	21.7												
Maximum 24-hour		32.4	46.7	45.1	26.0	34.9	26.6	64.1	50.5	39.6	42.0	36.6	26.4
% I.A.		100	99	100	100	99	100	100	100	100	100	100	88
Cannon Hill													
Annual average:	17.2												
Maximum 24-hour		25.9	44.3	31.8	30.8	34.7	22.1	20.1	76.5	29.6	27.8	33.3	24.7
% I.A.		100	100	100	100	100	100	99	100	100	100	100	100
Wynnum North (industry-operated site)													
Annual average:	11.9												
Maximum 24-hour		21.0	23.4	30.9	20.2	21.0	18.3	28.8	30.5	44.1	20.9	24.7	22.9
% I.A.		98	98	97	88	92	87	99	99	99	98	100	99
Wynnum West (industry-operated site)													
Annual average:	9.3												
Maximum 24-hour		9.0	9.2	10.4	5.8	15.0	14.8	21.4	32.9	31.1	22.5	28.3	25.5
% I.A.		82	98	99	99	97	79	68	98	100	92	100	98
Lytton (industry-operated site)													
Annual average:	18.9												
Maximum 24-hour		29.4	33.1	39.7	23.6	35.7	29.3	24.9	48.5	63.2	36.4	37.0	32.8
% I.A.		96	100	94	87	74	75	98	98	97	98	98	90

% I.A. indicates instrument availability.   - indicates less than three-fifths of the data are available.   n.d. indicates no data are available.

The Environmental Protection (Air) Policy 2019 air quality objectives for PM_{10} are an annual average of 25µg/m3 and a 24-hour average of 50µg/m^3.

Table 8 (contd). Ambient concentrations of PM$_{10}$. Annual average and monthly maximum 24-hour concentrations (µg/m^3), October 2022 to September 2023.

Site		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Rocklea													
Annual average:	16.2												
Maximum 24-hour		18.8	30.9	27.5	19.9	25.3	24.0	23.0	37.6	33.4	27.2	29.0	25.7
% I.A.		99	99	100	100	99	100	100	99	99	100	100	100
North Maclean													
Annual average:	18.4												
Maximum 24-hour		18.2	29.7	25.2	21.1	23.0	24.2	29.3	33.0	41.8	35.8	49.1	57.6
% I.A.		100	100	97	100	100	100	100	100	100	100	100	100
Springwood													
Annual average:	11.6												
Maximum 24-hour		13.5	17.5	18.9	13.2	20.0	15.8	22.7	21.1	19.3	25.1	32.3	30.3
% I.A.		96	96	99	100	88	100	99	100	100	97	100	100
Southport													
Annual average:	11.4												
Maximum 24-hour		17.6	13.3	20.7	17.5	24.4	25.7	14.3	15.6	16.0	20.5	29.6	26.9
% I.A.		100	89	76	100	98	100	99	100	99	97	100	100
Coomera[‡]													
Annual average:	-												
Maximum 24-hour		n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	23.3	22.8	33.0	34.7
% I.A.		0	0	0	0	0	0	0	0	77	100	100	100
Parkwood[‡]													
Annual average:	-												
Maximum 24-hour		n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	-	20.6	25.5	27.4
% I.A.		0	0	0	0	0	0	0	0	49	100	100	100
Flinders View													
Annual average:	15.7												
Maximum 24-hour		19.8	26.7	25.9	44.5	24.0	19.6	19.5	29.5	38.1	31.1	28.7	84.9
% I.A.		100	100	100	100	100	100	100	100	100	100	100	100
Mutdapilly													
Annual average:	20.3												
Maximum 24-hour		33.2	37.8	35.8	47	46	40.1	43.3	40.3	39.1	43.4	38.8	55.0
% I.A.		99	99	99	100	99	100	100	100	99	100	100	99
Toowoomba (Tor St)													
Annual average:	13.7												
Maximum 24-hour		24.3	53.9	19.1	23.4	25.2	22.3	19.3	18.5	25.3	22.3	21.1	28.3
% I.A.		100	99	100	100	100	98	100	100	100	100	100	99

% I.A. indicates instrument availability.   - indicates less than three-fifths of the data are available.   n.d. indicates no data are available.

[‡] PM$_{10}$ monitoring commenced at Coomera and Parkwood in June 2023.

The Environmental Protection (Air) Policy 2019 air quality objectives for PM$_{10}$ are an annual average of 25µg/m3 and a 24-hour average of 50µg/m^3.

PM$_{2.5}$

Figure 24. Ambient concentrations of PM$_{2.5}$ at Maryborough, Nambour, Mountain Creek and Deception Bay sites. Daily 24-hour average concentrations (µg/m^3), September 2023.
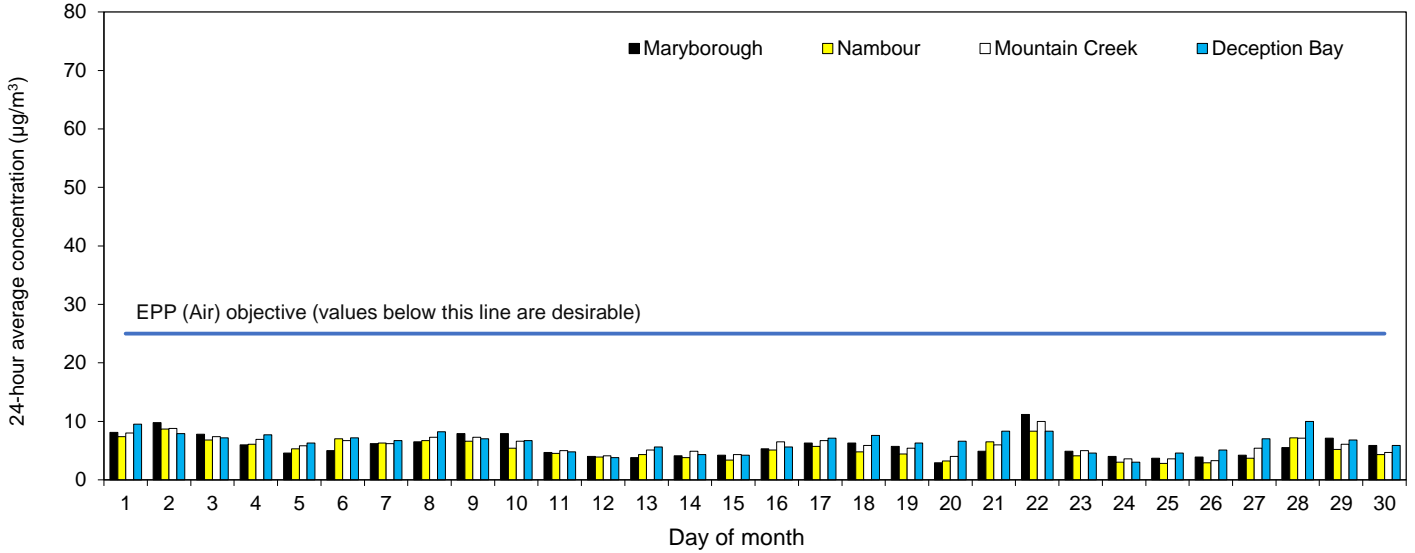

Figure 25. Ambient concentrations of PM$_{2.5}$ at Deagon, Brisbane CBD, South Brisbane and Woolloongabba sites. Daily 24-hour average concentrations (µg/m^3), September 2023.
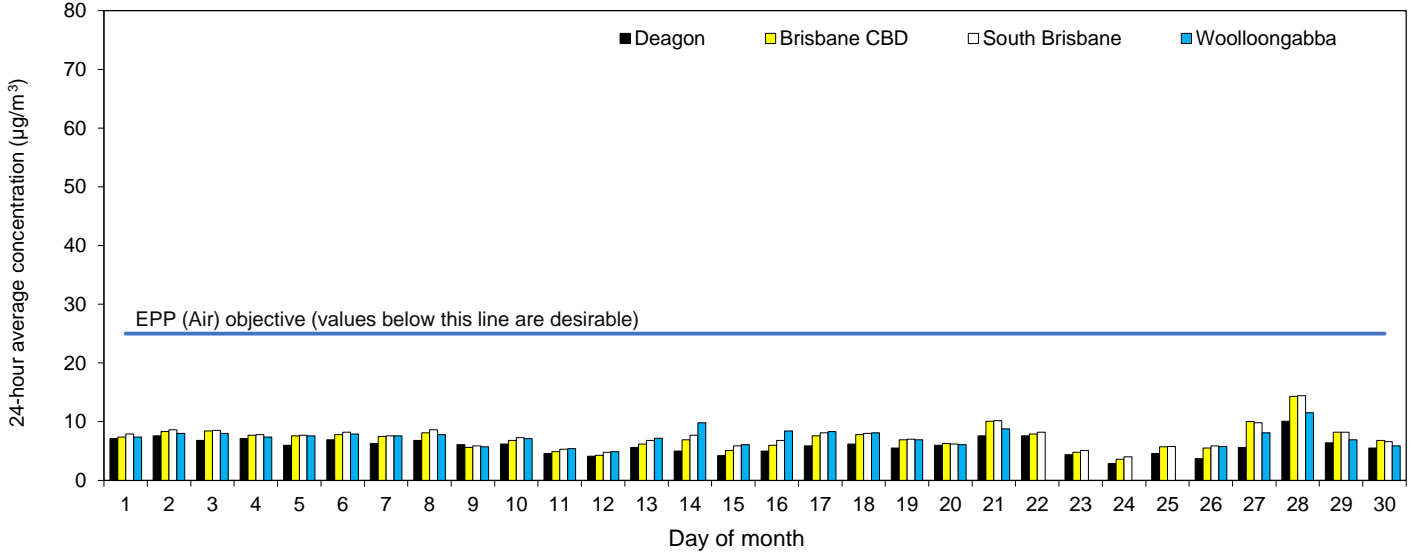
Figure 26. Ambient concentrations of PM$_{2.5}$ at Cannon Hill, Wynnum North, Wynnum West and Lytton sites. Daily 24-hour average concentrations (µg/m^3), September 2023.

Figure 27. Ambient concentrations of PM$_{2.5}$ at Rocklea, North Maclean and Springwood sites. Daily 24-hour average concentrations (µg/m^3), September 2023.
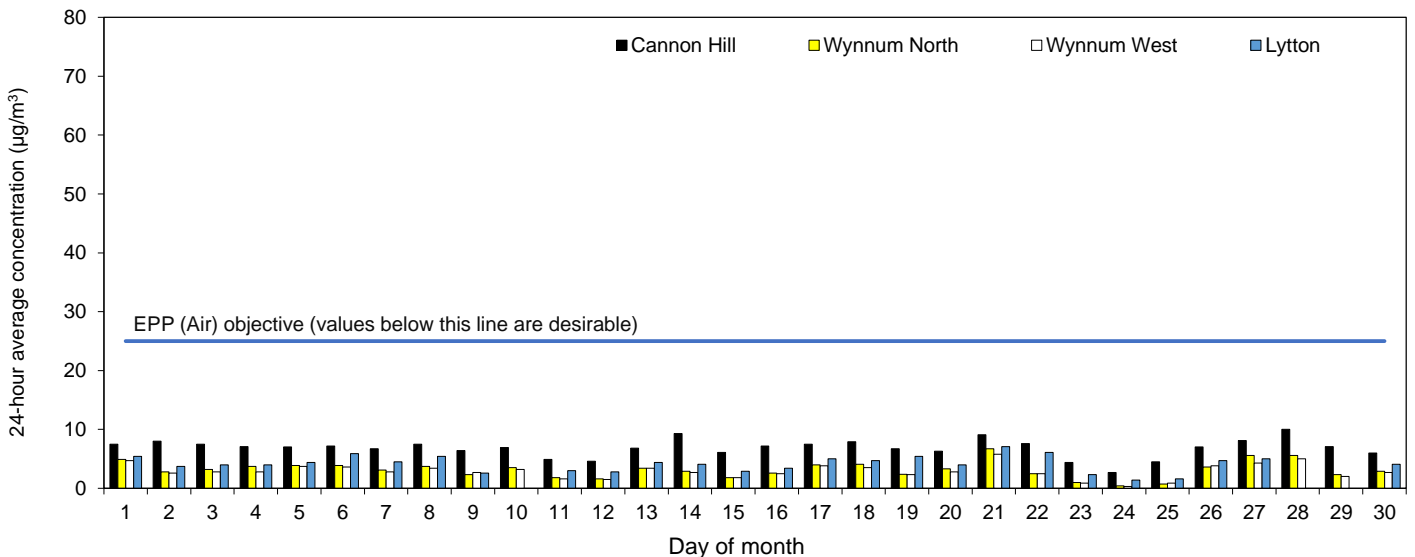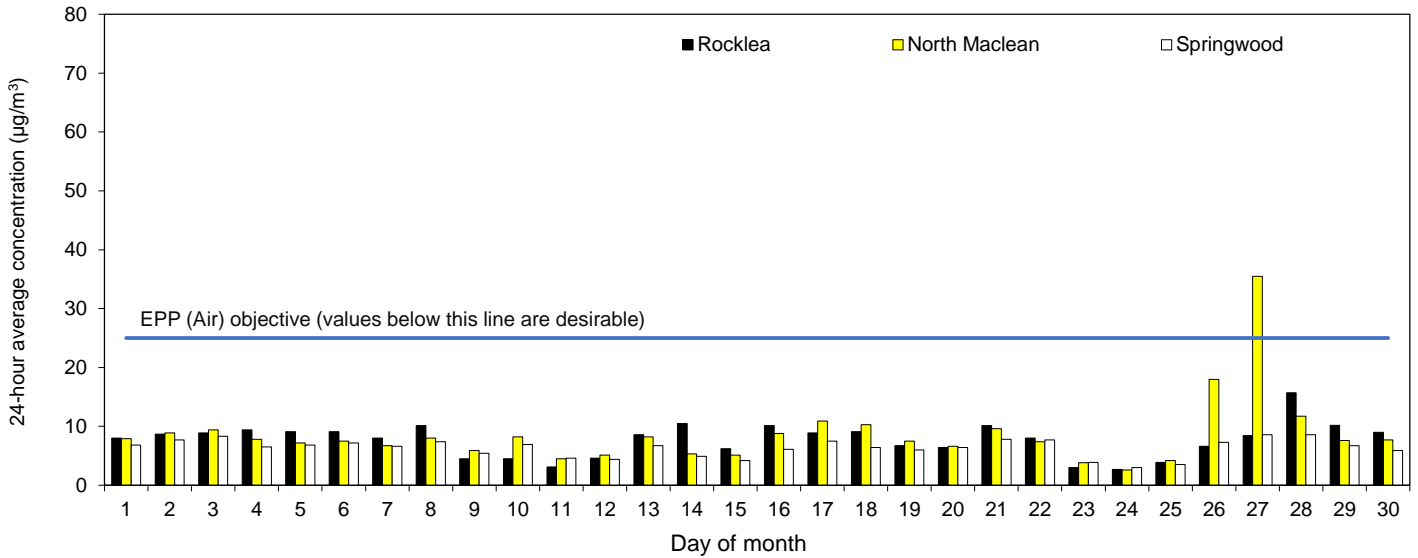

Figure 28. Ambient concentrations of PM$_{2.5}$ at Southport, Coomera and Parkwood sites. Daily 24-hour average concentrations (µg/m^3), September 2023.
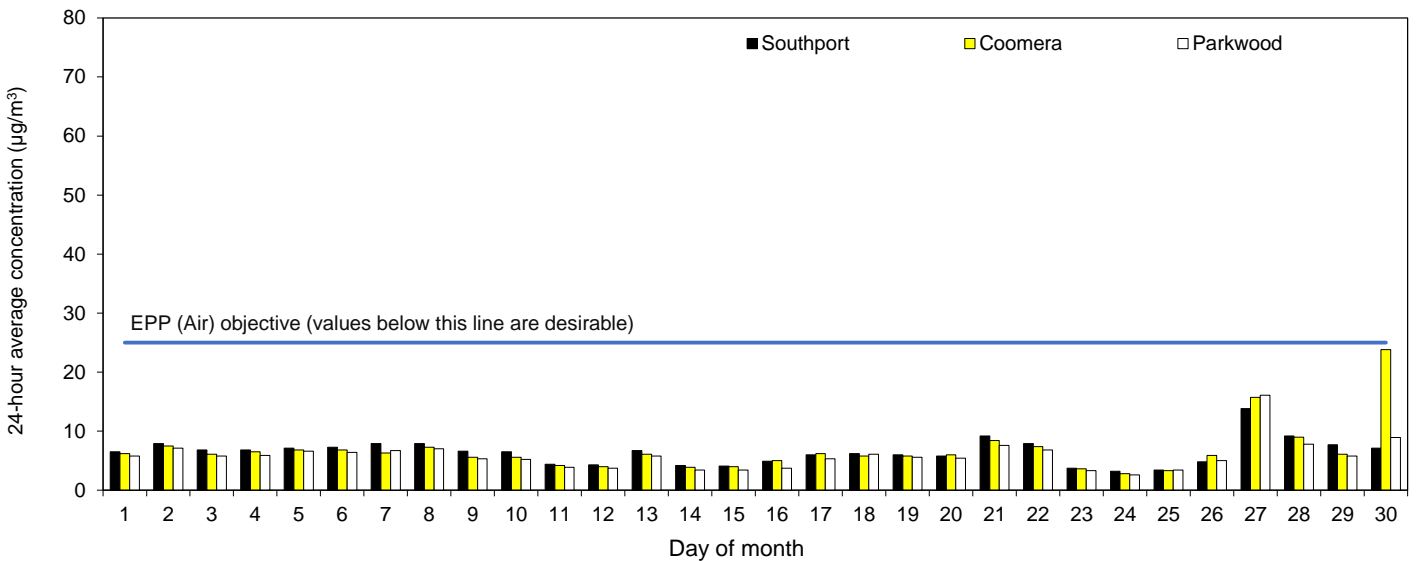

Figure 29. Ambient concentrations of PM$_{2.5}$ at Flinders View, Mutdapilly and Toowoomba (Tor St) sites. Daily 24-hour average concentrations (µg/m^3), September 2023.
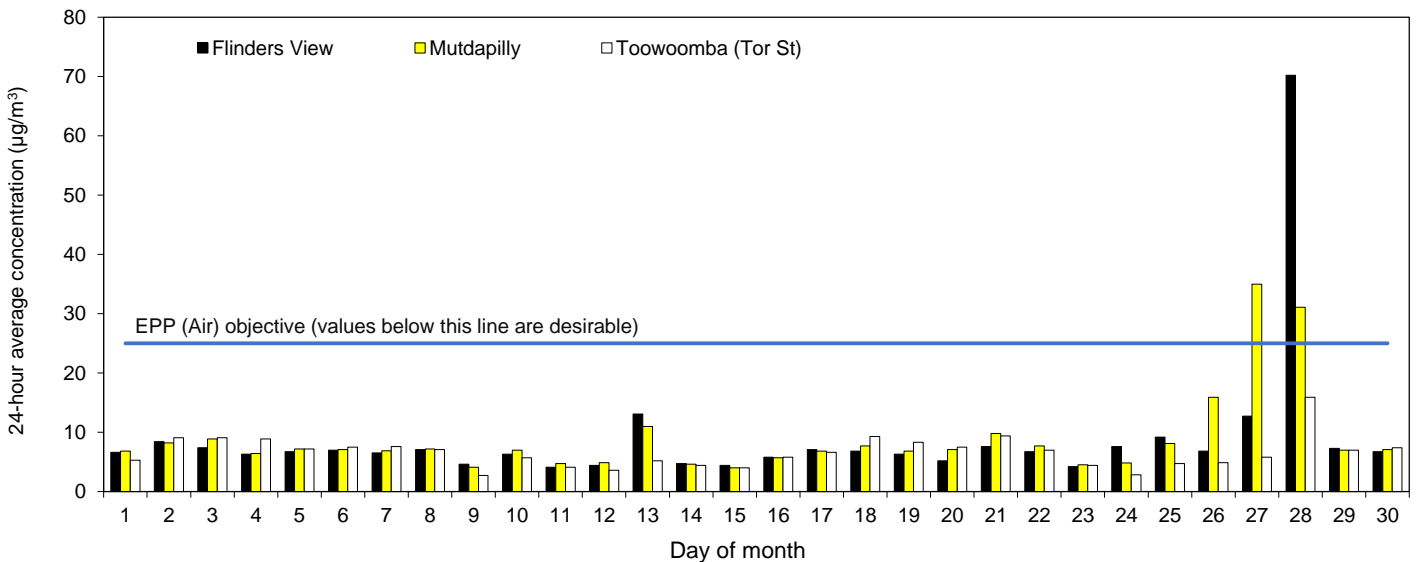
Table 9. Ambient concentrations of $PM_{2.5}$. Annual average and monthly maximum 24-hour concentrations (µg/m^3), October 2022 to September 2023.

Site		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Maryborough													
Annual average:	6.3												
Maximum 24-hour		-	28.9	11.9	9.0	8.9	7.6	8.8	11.6	21.4	17.0	12.1	11.2
% I.A.		11	100	100	100	95	100	100	100	100	100	100	100
Nambour													
Annual average:	4.9												
Maximum 24-hour		8.5	8.0	11.9	7.7	9.1	5.9	6.4	6.4	9.3	10.7	15.8	8.7
% I.A.		84	100	97	100	100	100	100	100	100	100	100	100
Mountain Creek													
Annual average:	5.9												
Maximum 24-hour		11.9	10.6	10.7	8.0	11.2	7.0	7.8	11.5	12.0	13.1	18.5	10.0
% I.A.		100	100	99	100	99	99	100	100	100	100	100	100
Deception Bay													
Annual average:	6.2												
Maximum 24-hour		9.9	8.7	10.7	8.2	11.1	7.9	6.8	35.5	14.2	16.7	16.1	10.0
% I.A.		100	100	100	100	96	100	100	100	100	100	100	100
Deagon													
Annual average:	6.0												
Maximum 24-hour		8.9	8.4	9.7	7.8	10.2	7.7	6.4	46.7	12.3	11.8	16.3	10.1
% I.A.		100	99	100	100	100	100	100	100	100	100	100	100
Brisbane CBD													
Annual average:	6.7												
Maximum 24-hour		8.6	9.0	10.7	8.3	10.2	8.8	6.5	53.1	21.4	14.2	20.8	14.3
% I.A.		100	100	100	100	100	100	100	100	100	100	100	100
South Brisbane													
Annual average:	7.1												
Maximum 24-hour		9.1	9.0	10.7	8.7	10.6	9.9	6.9	45.0	20.5	15.2	22.0	14.4
% I.A.		100	99	100	100	100	98	100	100	100	100	100	100
Woolloongabba													
Annual average:	6.8												
Maximum 24-hour		8.3	8.7	10.5	8.2	10.5	9.4	7.9	32.3	16.5	14.5	20.2	11.5
% I.A.		100	99	100	100	99	100	100	100	100	100	100	88
Cannon Hill													
Annual average:	6.7												
Maximum 24-hour		9.0	8.9	11.2	8.8	10.7	9.7	6.6	64.9	16.8	16.3	19.3	10.0
% I.A.		100	100	100	100	100	100	99	100	100	100	100	100
Wynnum North (industry-operated site)													
Annual average:	3.1												
Maximum 24-hour		5.9	6.8	5.7	4.1	5.1	6.1	5.0	14.7	11.1	9.3	12.6	6.7
% I.A.		99	99	100	100	98	92	99	99	99	99	100	99
Wynnum West (industry-operated site)													
Annual average:	3.2												
Maximum 24-hour		4.4	5.7	5.2	3.8	4.6	5.6	14.8	17.7	9.8	9.7	11.5	5.8
% I.A.		82	98	99	99	98	79	68	98	100	93	100	99
Lytton (industry-operated site)													
Annual average:	4.2												
Maximum 24-hour		6.0	10.2	7.4	4.9	5.5	6.1	6.7	23.7	12.2	12.2	13.9	7.1
% I.A.		97	100	99	100	98	96	99	100	99	98	100	94

% I.A. indicates instrument availability.   - indicates less than three-fifths of the data are available.   n.d. indicates no data are available.

The Environmental Protection (Air) Policy 2019 air quality objectives for $PM_{2.5}$ are an annual average of 8µg/m3 and a 24-hour average of 25µg/m^3.

Table 9 (contd). Ambient concentrations of $PM_{2.5}$. Annual average and monthly maximum 24-hour concentrations ($\mu g/m^3$), October 2022 to September 2023.

Site		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Rocklea													
Annual average:	8.0												
Maximum 24-hour		9.6	17.5	13.6	9.2	10.7	16.4	15.2	28.6	20.3	16.6	17.9	15.7
% I.A.		99	99	100	100	99	100	100	99	99	100	100	100
North Maclean													
Annual average:	7.3												
Maximum 24-hour		6.9	9.4	8.8	8.7	9.9	12.3	7.7	17.1	21.3	19.7	25.7	35.5
% I.A.		100	100	97	100	100	100	100	100	100	100	100	100
Springwood													
Annual average:	5.5												
Maximum 24-hour		8.1	8.1	8.1	6.9	9.4	10.2	7.6	16.8	13.6	14.1	20.2	8.6
% I.A.		96	96	99	100	88	100	99	100	100	97	100	100
Southport													
Annual average:	4.7												
Maximum 24-hour		5.9	8.3	7.9	7.7	8.8	14.1	4.6	10.5	10.1	11.9	18.2	13.8
% I.A.		100	89	76	100	99	100	99	100	99	97	100	100
Coomera[‡]													
Annual average:	-												
Maximum 24-hour		n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	9.3	14.2	21.8	23.8
% I.A.		0	0	0	0	0	0	0	0	77	100	100	100
Parkwood[‡]													
Annual average:	-												
Maximum 24-hour		n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	-	12.4	16.0	16.1
% I.A.		0	0	0	0	0	0	0	0	49	100	100	100
Flinders View													
Annual average:	6.7												
Maximum 24-hour		7.9	8.5	9.8	30.6	8.9	9.9	6.4	18.7	18.8	14.6	17.5	70.2
% I.A.		100	100	100	100	100	100	100	100	100	100	100	100
Mutdapilly													
Annual average:	6.4												
Maximum 24-hour		7.4	10.2	9.5	10.6	10.8	9.9	8.5	8.8	15.7	19.5	18.2	35.0
% I.A.		99	99	99	100	99	100	100	100	99	100	100	99
Toowoomba (Tor St)													
Annual average:	5.5												
Maximum 24-hour		8.7	15.1	10.1	9.0	9.5	11.7	7.0	10.1	14.7	14.2	12.5	15.9
% I.A.		100	99	100	100	100	98	100	100	100	100	100	99

% I.A. indicates instrument availability. - indicates less than three-fifths of the data are available. n.d. indicates no data are available.

[‡] $PM_{2.5}$ monitoring commenced at Coomera and Parkwood in June 2023.

The Environmental Protection (Air) Policy 2019 air quality objectives for $PM_{2.5}$ are an annual average of 8µg/m3 and a 24-hour average of 25µg/m^3.

TSP

Figure 30. Ambient concentrations of TSP at Cannon Hill site. Daily 24-hour average concentrations (µg/m^3), September 2023.
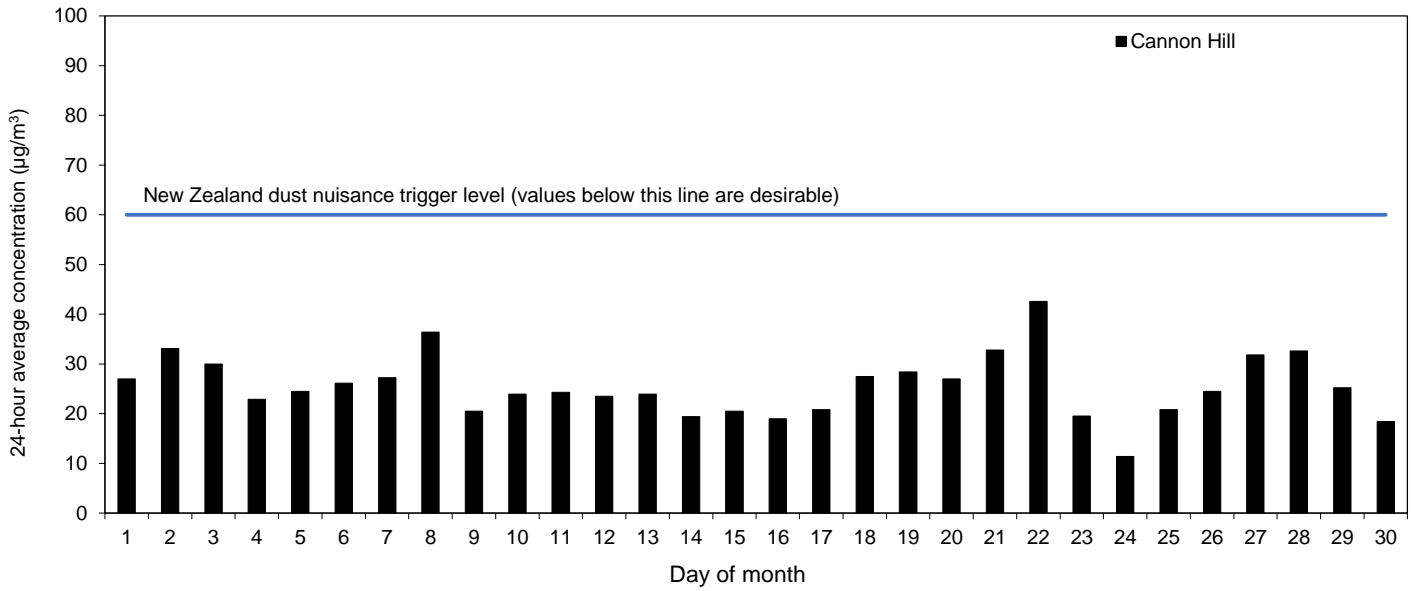

Table 10. Ambient concentrations of TSP. Annual average and monthly maximum 24-hour concentrations (µg/m^3), October 2022 to September 2023.

Site		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Cannon Hill													
Annual average:	22.6												
Maximum 24-hour		31.0	96.6	44.9	43.7	50.0	30.8	45.0	52.6	41.0	31.4	44.0	42.6
% I.A.		99	99	98	99	99	99	98	99	97	99	100	99

% I.A. indicates instrument availability. - indicates less than three-fifths of the data are available. n.d. indicates no data are available.

The Environmental Protection (Air) Policy 2019 air quality objective for TSP is an annual average of 90µg/m^3.

The Department of Environment and Science Air Impacts Guideline recommends that short-term (24-hour) TSP concentrations be compared against the trigger levels provided in the New Zealand Ministry for the Environment's Good Practice Guide for Assessing and Managing Dust (2016) to assess dust nuisance impacts. The New Zealand dust nuisance trigger level for high sensitivity areas is a 24-hour average of 60µg/m^3.

Dustfall

Figure 31. Dust deposition rates at Cannon Hill (north), Cannon Hill (south) and Sherwood sites. Daily dust (insoluble solids fraction) deposition rate (mg/m^2/day), for month of September 2023.
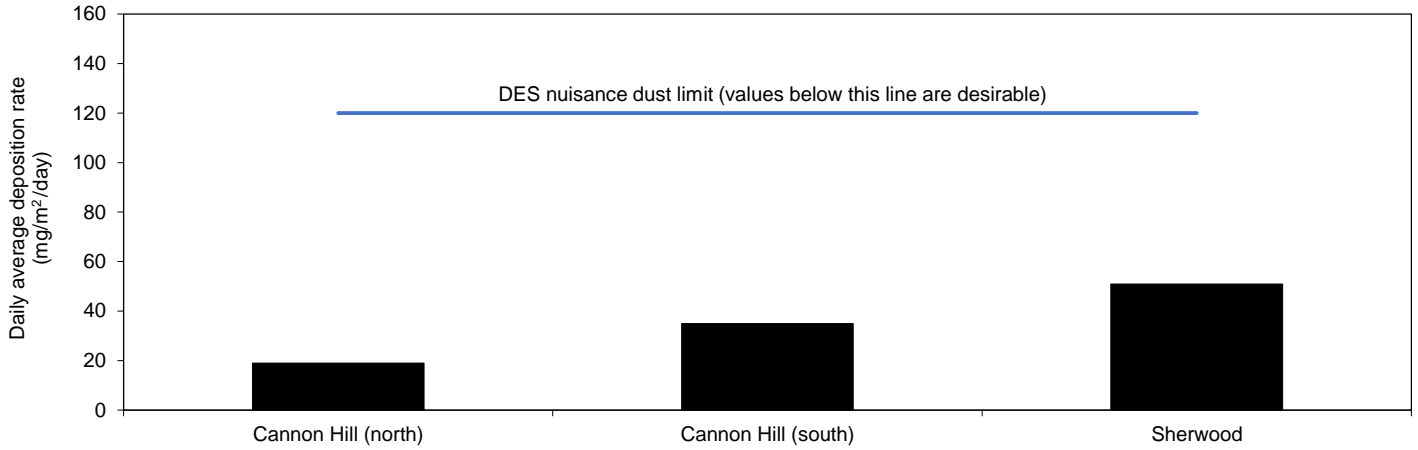

Figure 32. Dust deposition rates at Toowoomba (Brook St) and Toowoomba (Mort St) sites. Daily dust (insoluble solids fraction) deposition rate (mg/m^2/day), for month of September 2023.
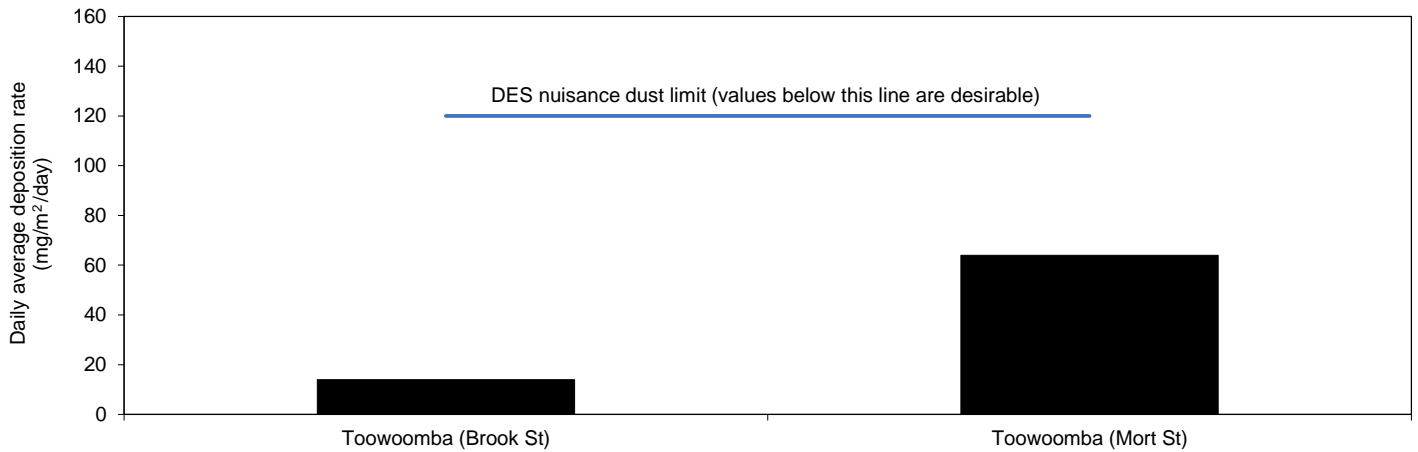

Table 11. Monthly average dust (insoluble fraction) deposition rate (mg/m^2/day), October 2022 to September 2023.

Site	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Cannon Hill (north)[†]												
Daily average	39	63	14	30	39	16	41	17	25	25	4	19
Cannon Hill (south)[†]												
Daily average	41	42	14	22	35	9	37	17	14	25	6	35
Sherwood												
Daily average	47	58	30	27	40	21	49	25	22	53	5	51
Toowoomba (Brook St)												
Daily average	30	27	17	16	47	26	52	3	40	7	1	14
Toowoomba (Mort St)												
Daily average	n.d.	40	25	48	29	127	28	1	32	5	3	64

n.d. indicates no data are available.

[†] At Cannon Hill dustfall monitoring is carried out on both sides of the rail corridor.

The Department of Environment and Science Air Impacts Guideline recommends a dust deposition limit of 120mg/m^2/day, averaged over one month, be used to assess dust nuisance.

There is a minimum dust deposition rate that can be determined with the sampling equipment and laboratory method used. Dust deposition rates below this minimum reporting value are preceded by a "<" sign in this table.

Data availability

When required, Table 12 summarises the reasons for data availability below the minimum criteria for reporting at Southern Queensland monitoring sites.

Table 12. Reasons for low data availability at Southern Queensland ambient air monitoring sites during September 2023.

Station	Air Pollutant	Cause
Nil		

Related air quality information

Current hourly air quality data is available online at https://apps.des.qld.gov.au/air-quality/.

Additional information on air quality monitoring and related issues is also available from the above website.

Further information

For further information about the data presented in this bulletin or related publications, contact:
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Figure 31. Southern Queensland ambient air quality monitoring site locations.