

29 April 2024

Chris Schneider
Managing Director
National Ceramic Industries Australia
PO Box 765
Maitland NSW 2320

Dear Chris,

Environmental Monitoring for National Ceramic Industries Australia - March 2024

Please find enclosed the documentation for the environmental monitoring carried out for National Ceramic Industries Australia during March 2024. Sampling methodology and adopted assessment criteria are detailed below.

1.0 Sampling Methodology

Sampling was performed by AECOM Australia Pty Ltd (AECOM) and sample analysis was carried out by ALS NATA accredited laboratory. All sampling and analysis were carried out in accordance with Environmental Protection Authority (EPA) approved methods with reference to the following Australian Standards:

- monitoring of fine suspended particulates (PM₁₀) on the EPA six-day cycle in accordance with:
 - *AS/NZS 3580.9.6 (2015) Methods for the Sampling and Analysis of Ambient Air – Determination of Suspended Particulate Matter – PM₁₀ High Volume Sampler with Size Selective Inlet – Gravimetric Method.*
- monitoring of fluorides in ambient air in accordance with:
 - *AS/NZS 3580.13.2 (2013) Determination of fluorides – Gaseous and acid-soluble particulate fluorides – Manual, double filter paper sampling.*
- meteorological monitoring in accordance with:
 - *AS 3580.1.1 (2016) – Methods for sampling and analysis of ambient air – Part 1.1 – Guide to siting air monitoring equipment.*
 - *AS 3580.14 (2014) – Methods for sampling and analysis of ambient air – Part 14: Meteorological monitoring for ambient air quality monitoring.*
- monitoring of surface water quality in accordance with:
 - *AS/NZS 5667.1:1998 (R2016) Guidance on the design of sampling programs, sampling techniques and the preservation and handling of samples.*
 - *AS/NZS 5667.4:1998 (R2016) Guidance on sampling from lakes, natural and manmade.*

2.0 Assessment Criteria

Suspended particulate loads are assessed against the impact assessment criteria defined in the Project Approval conditions (09_0006 – National Ceramic Industries Australia Tile Manufacturing Facility Expansion Project, 19 January 2012). The assessment criteria for PM₁₀ (particulate matter with an aerodynamic diameter of less than 10 µm) are:

- 50 µg/m³ over a 24-hour period
- 30 µg/m³ as an annual average.

Ambient fluoride concentrations are assessed against the guidelines defined in NSW EPA *Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales* (NSW EPA (2022)).

The NSW EPA impact assessment criteria for ambient fluoride are:

- 2.9 µg/m³ over a 24-hour period
- 1.7 µg/m³ over a 7-day period.

Surface waters are assessed in accordance with default trigger values for physical and chemical stressors for southeast Australia in the *Australian and New Zealand Guidelines for Fresh and Marine Water Quality* (ANZG, 2018). These values are:

- pH in the range of 6.5 - 8.5 (Table 3.3.2 - NSW Lowland River)
- electrical conductivity (EC) in the range of 125 – 2200 µS/cm (Table 3.3.3 - NSW Lowland River).

3.0 Monitoring Results

Monitoring results for the month of March 2024 are presented in the attachments to this letter. Monitoring results for the preceding two months are also presented to demonstrate quarterly trends in results.

The March 2024 monitoring results show that all ambient PM₁₀ results were below the short-term impact assessment criterion (50 µg/m³) as defined in the DPIE Project Approval (Schedule 3, Condition 15, Table 2).

The PM₁₀ rolling annual average concentration at the Southeast site remains below the Project Approval annual criterion of 30 µg/m³ with an average of 16.0 µg/m³ following the March monitoring period. The Northwest annual average is also below the criteria and is sitting at 21.5 µg/m³ following the completion of the March monitoring period.

Fluoride results for March remain below the relevant assessment criteria at both the Northwest and Southeast monitoring sites with no exceedances of either the 24 hour (2.9 µg/m³) or 7-day (1.7 µg/m³) criteria this month. The following fluoride sampling runs were impacted during the March period:

- North West weekly sample, 7 - 14 March – Did not run
- North West 24hr sample, 30 March – Did not run
- South East 24hr sample, 24 March – Sample volume significantly higher than required

Catch up samples will be performed for the 24hr samples above, and reported in the April report.

Pond 4, being the last detention pond on site before water potentially leaves the site is monitored for pH, Electrical Conductivity and Temperature on a weekly basis. The adopted ANZG 2018 guidelines for pH and conductivity are the default trigger values for slightly disturbed aquatic ecosystems in NSW lowland rivers.

pH measurements for March 2024 were within both the upper and lower limits of the adopted guidelines, with the exception of the 7 March result which exceeded the upper bound limit. No water was observed to be flowing offsite on this occasion.

All electrical conductivity measurements for March were within both upper and lower limits of the adopted guidelines. Water temperature was also measured weekly however no guideline is available for assessment. Pond 4 was not observed to be flowing offsite throughout March 2024.

A figure showing the monitoring locations and monitoring results and plots can be found attached along with the wind rose for March. Laboratory certificates, field sheets and calibration data along with relevant meteorology data can be provided on request.

If you require any further information, please contact Cye Buckland on 0488 777 160.

Yours faithfully,

A handwritten signature in grey ink, appearing to read 'Cye Buckland', with a stylized, cursive script.

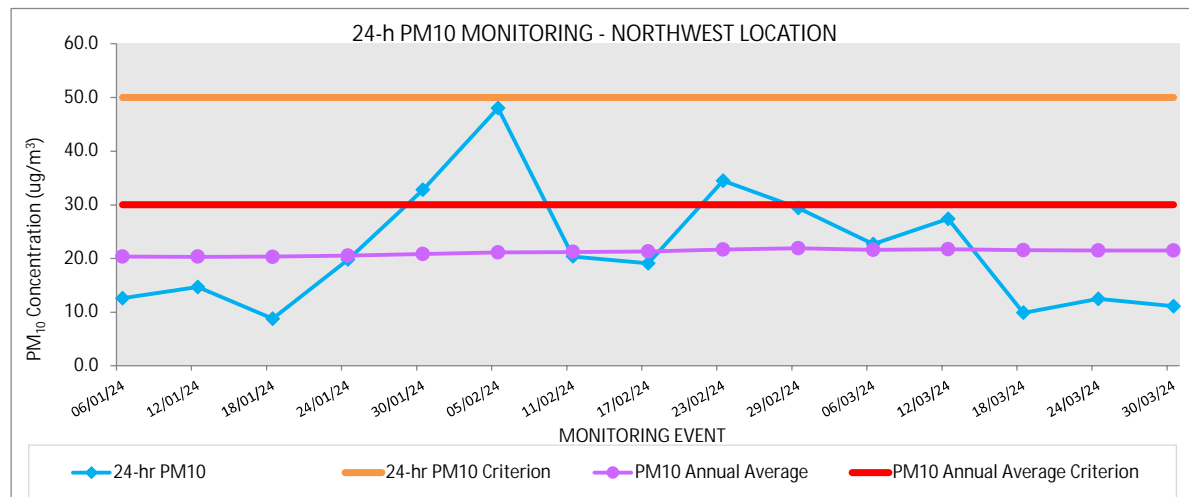
cye.buckland@aecom.com

Mobile: +61 488 777 160

encl: Monitoring data tables and charts, wind rose, monitoring locations

North West Monitoring Location - 24 hour PM10 Monitoring

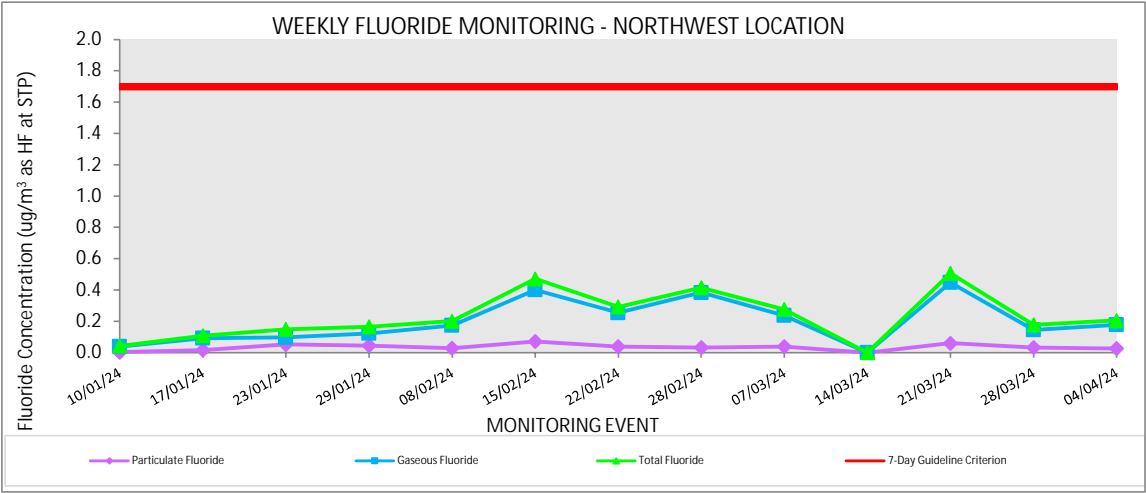
North West - 24 hour PM10 Monitoring				
January 2024 to March 2024				
Monitoring Event	24-hr PM ₁₀	24-hr PM ₁₀ Criterion	PM ₁₀ Annual Average	PM ₁₀ Annual Average Criterion
	(µg/m ³)	(µg/m ³)	(µg/m ³)	
6-Jan-24	12.6	50	20.4	30
12-Jan-24	14.7	50	20.3	30
18-Jan-24	8.8	50	20.3	30
24-Jan-24	19.8	50	20.6	30
30-Jan-24	32.8	50	20.8	30
5-Feb-24	48.0	50	21.2	30
11-Feb-24	20.4	50	21.2	30
17-Feb-24	19.1	50	21.3	30
23-Feb-24	34.5	50	21.7	30
29-Feb-24	29.4	50	21.9	30
6-Mar-24	22.7	50	21.6	30
12-Mar-24	27.4	50	21.7	30
18-Mar-24	9.9	50	21.6	30
24-Mar-24	12.5	50	21.5	30
30-Mar-24	11.1	50	21.5	30



North West Monitoring Location - 7 Day Fluoride Monitoring

North West - 7 Day Fluoride Monitoring					
January 2024 to April 2024					
Monitoring Event		Particulate Fluoride	Gaseous Fluoride	Total Fluoride	7-Day Guideline Criterion
Start Date	End Date	(µg/m³ as HF at STP)	(µg/m³ as HF at STP)	(µg/m³ as HF at STP)	(µg/m³ as HF at STP)
3-Jan-24	10-Jan-24	0.003	0.039	0.042	1.7
10-Jan-24	17-Jan-24	0.016	0.092	0.108	1.7
17-Jan-24	23-Jan-24	0.052	0.097	0.149	1.7
23-Jan-24	29-Jan-24	0.044	0.122	0.166	1.7
29-Jan-24	8-Feb-24	0.028	0.173	0.201	1.7
8-Feb-24	15-Feb-24	0.071	0.400	0.471	1.7
15-Feb-24	22-Feb-24	0.038	0.254	0.292	1.7
22-Feb-24	28-Feb-24	0.032	0.383	0.415	1.7
28-Feb-24	7-Mar-24	0.039	0.237	0.276	1.7
7-Mar-24	14-Mar-24	--	--	--	1.7
14-Mar-24	21-Mar-24	0.060	0.447	0.507	1.7
21-Mar-24	28-Mar-24	0.032	0.145	0.177	1.7
28-Mar-24	4-Apr-24	0.027	0.178	0.205	1.7

Note: 7 March sample failed to run

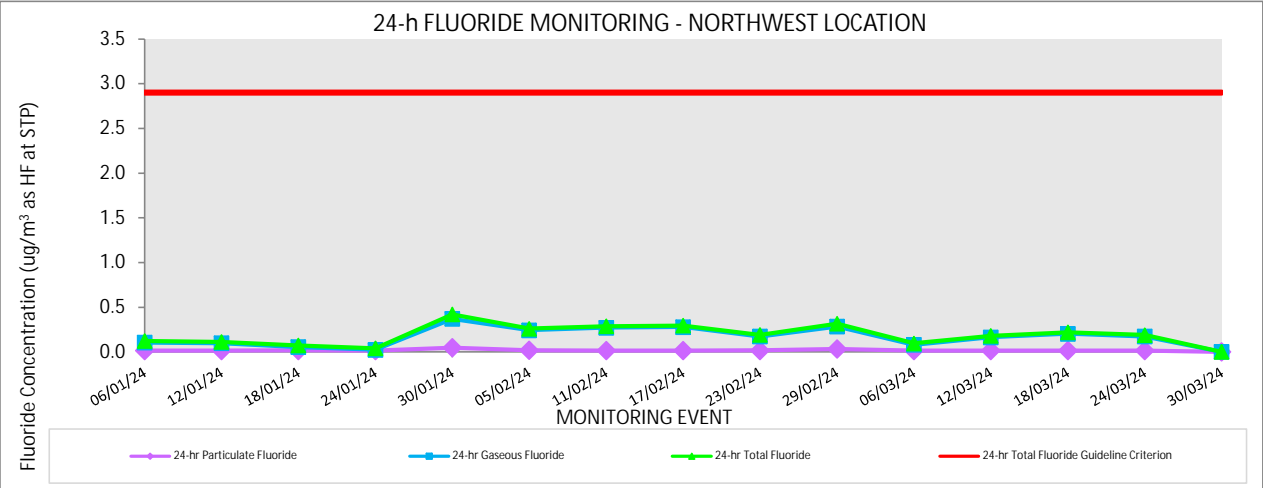


North West Monitoring Location - 24 hour Fluoride Monitoring

North West - 24 hour Fluoride Monitoring
January 2024 to March 2024

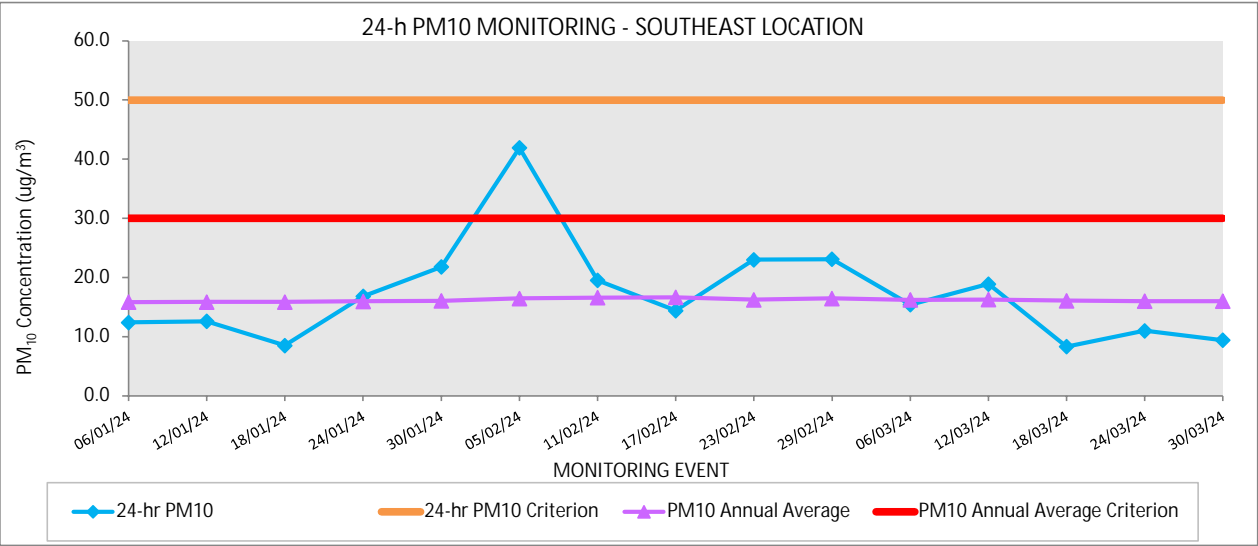
Monitoring Event	24-hr Particulate Fluoride	24-hr Gaseous Fluoride	24-hr Total Fluoride	24-hr Total Fluoride Guideline Criterion
	(µg/m³ as HF at STP)	(µg/m³ as HF at STP)	(µg/m³ as HF at STP)	(µg/m³ as HF at STP)
06-Jan-24	0.016	0.106	0.122	2.9
12-Jan-24	0.015	0.097	0.112	2.9
18-Jan-24	0.017	0.056	0.073	2.9
24-Jan-24	0.016	0.024	0.040	2.9
30-Jan-24	0.049	0.371	0.420	2.9
05-Feb-24	0.018	0.243	0.261	2.9
11-Feb-24	0.015	0.272	0.287	2.9
17-Feb-24	0.016	0.279	0.295	2.9
23-Feb-24	0.017	0.173	0.190	2.9
29-Feb-24	0.033	0.284	0.317	2.9
06-Mar-24	0.016	0.080	0.096	2.9
12-Mar-24	0.016	0.164	0.180	2.9
18-Mar-24	0.016	0.204	0.220	2.9
24-Mar-24	0.015	0.174	0.189	2.9
30-Mar-24	--	--	--	2.9

Note - 30 March sample did not run.



South East Monitoring Location - 24 hour PM10 Monitoring

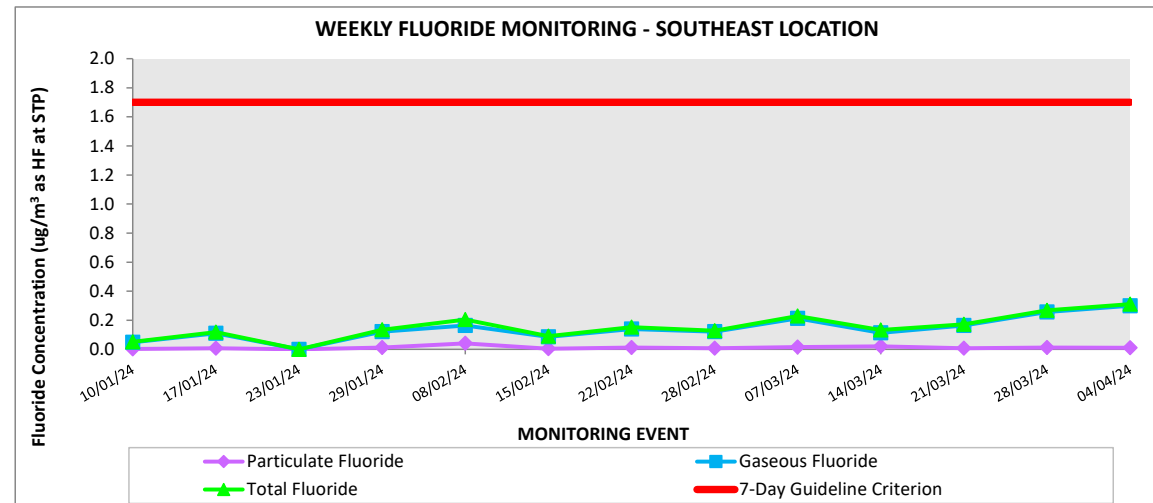
South East - 24 hour PM10 Monitoring				
January 2024 to March 2024				
Monitoring Event	24-hr PM ₁₀	24-hr PM ₁₀ Criterion	PM ₁₀ Annual Average	PM ₁₀ Annual Average Criterion
	(µg/m ³)	(µg/m ³)	(µg/m ³)	
06-Jan-24	12.4	50	15.9	30
12-Jan-24	12.6	50	15.9	30
18-Jan-24	8.5	50	15.9	30
24-Jan-24	16.8	50	16.0	30
30-Jan-24	21.8	50	16.1	30
05-Feb-24	41.9	50	16.5	30
11-Feb-24	19.5	50	16.6	30
17-Feb-24	14.4	50	16.6	30
23-Feb-24	23.0	50	16.2	30
29-Feb-24	23.1	50	16.5	30
06-Mar-24	15.4	50	16.2	30
12-Mar-24	18.9	50	16.3	30
18-Mar-24	8.3	50	16.1	30
24-Mar-24	11.0	50	16.0	30
30-Mar-24	9.4	50	16.0	30



South East Monitoring Location - 7 Day Fluoride Monitoring

South East - 7 Day Fluoride Monitoring					
January 2024 to April 2024					
Monitoring Event		Particulate Fluoride	Gaseous Fluoride	Total Fluoride	7-Day Guideline Criterion
Start Date	End Date	($\mu\text{g}/\text{m}^3$ as HF at STP)	($\mu\text{g}/\text{m}^3$ as HF at STP)	($\mu\text{g}/\text{m}^3$ as HF at STP)	($\mu\text{g}/\text{m}^3$ as HF at STP)
3-Jan-24	10-Jan-24	0.003	0.048	0.051	1.7
10-Jan-24	17-Jan-24	0.008	0.110	0.118	1.7
17-Jan-24	23-Jan-24	0.02C	0.897C	0.917C	1.7
23-Jan-24	29-Jan-24	0.012	0.122	0.134	1.7
29-Jan-24	8-Feb-24	0.041	0.164	0.205	1.7
8-Feb-24	15-Feb-24	0.005	0.086	0.091	1.7
15-Feb-24	22-Feb-24	0.013	0.140	0.153	1.7
22-Feb-24	28-Feb-24	0.007	0.121	0.128	1.7
28-Feb-24	7-Mar-24	0.016	0.213	0.229	1.7
7-Mar-24	14-Mar-24	0.020	0.113	0.133	1.7
14-Mar-24	21-Mar-24	0.008	0.164	0.172	1.7
21-Mar-24	28-Mar-24	0.012	0.257	0.269	1.7
28-Mar-24	4-Apr-24	0.011	0.300	0.311	1.7

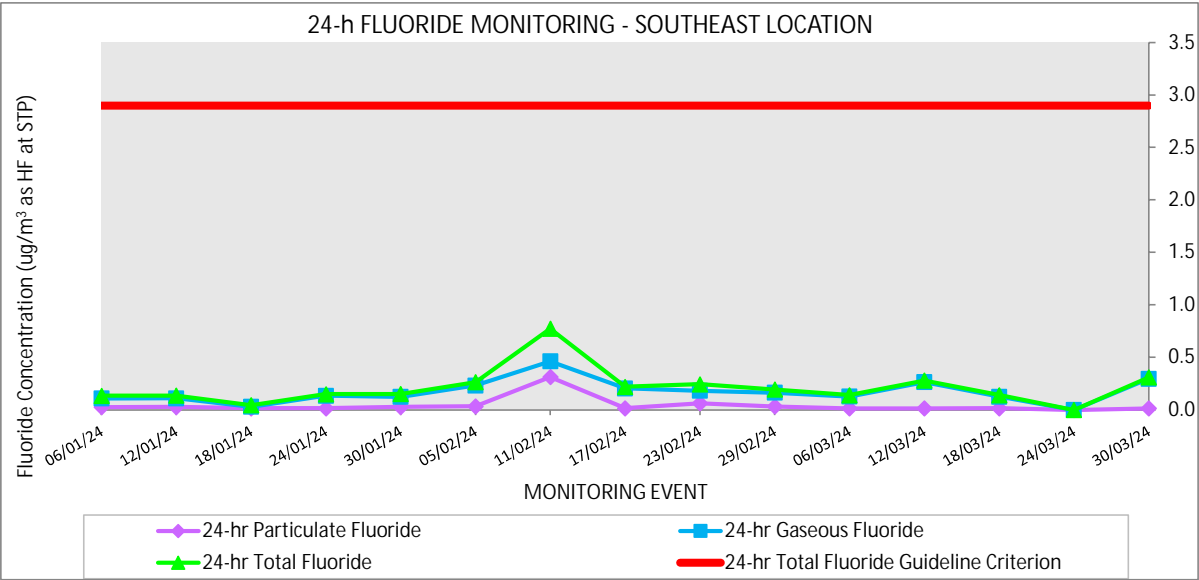
Note: 17 Jan sample only ran for approx. 1 day due to power issue.
As a result this sample has not been included in calculations.



South East Monitoring Location - 24 hour Fluoride Monitoring

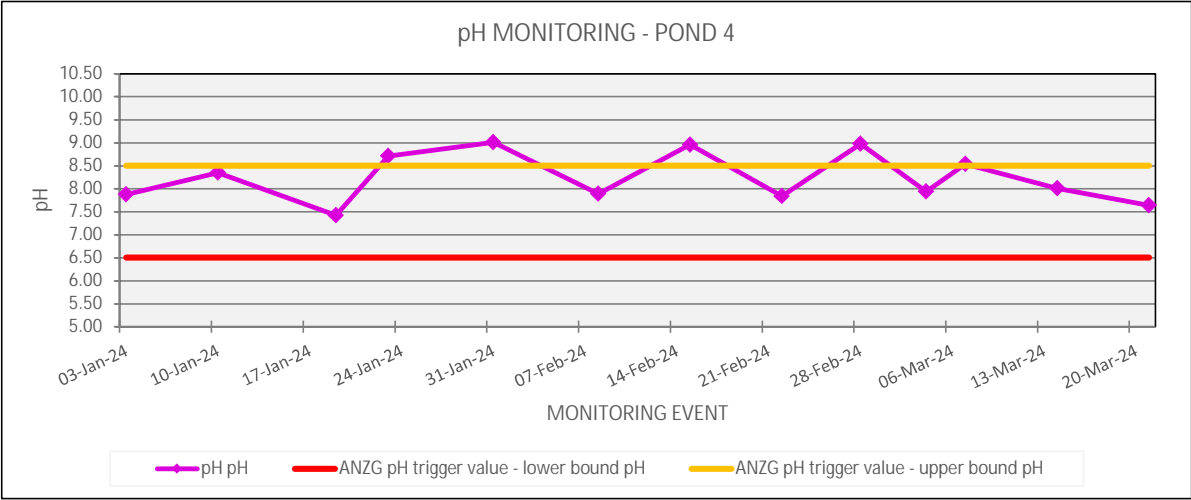
South East - 24 hour Fluoride Monitoring				
January 2024 to March 2024				
Monitoring Event	24-hr Particulate Fluoride	24-hr Gaseous Fluoride	24-hr Total Fluoride	24-hr Total Fluoride Guideline Criterion
	(µg/m³ as HF at STP)	(µg/m³ as HF at STP)	(µg/m³ as HF at STP)	(µg/m³ as HF at STP)
6-Jan-24	0.026	0.108	0.134	2.9
12-Jan-24	0.027	0.109	0.136	2.9
18-Jan-24	0.015	0.028	0.043	2.9
24-Jan-24	0.015	0.134	0.149	2.9
30-Jan-24	0.027	0.123	0.150	2.9
5-Feb-24	0.033	0.231	0.264	2.9
11-Feb-24	0.312	0.461	0.773	2.9
17-Feb-24	0.015	0.204	0.219	2.9
23-Feb-24	0.062	0.181	0.243	2.9
29-Feb-24	0.032	0.162	0.194	2.9
6-Mar-24	0.014	0.126	0.140	2.9
12-Mar-24	0.014	0.264	0.278	2.9
18-Mar-24	0.015	0.125	0.140	2.9
24-Mar-24	--	--	--	2.9
30-Mar-24	0.014	0.295	0.309	2.9

24 March sample not analysed due to sampling time being significantly more than 24hrs due to timer issue.



Pond 4 - Weekly pH Monitoring
January 2024 to March 2024

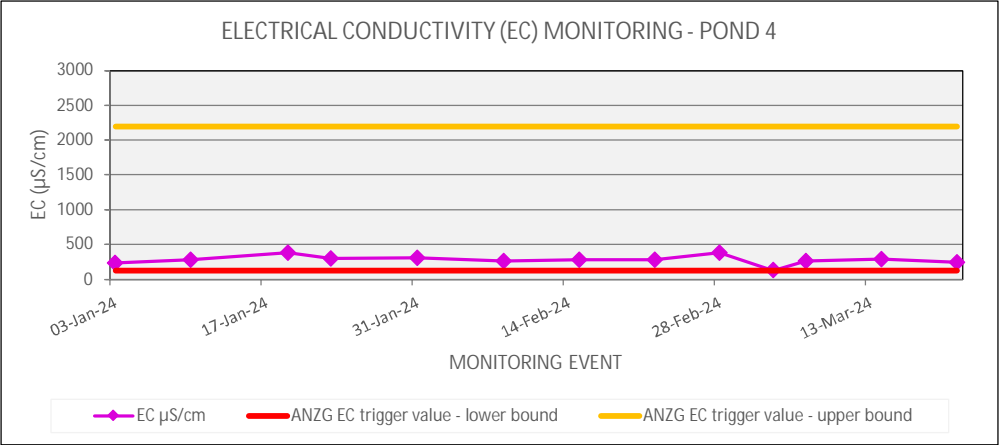
Monitoring Event	pH	ANZG pH trigger value - lower bound	ANZG pH trigger value - upper bound	Unable to sample
	pH	pH	pH	
03-Jan-24	7.88	6.5	8.5	
10-Jan-24	8.35	6.5	8.5	
19-Jan-24	7.42	6.5	8.5	
23-Jan-24	8.71	6.5	8.5	
31-Jan-24	9.01	6.5	8.5	
08-Feb-24	7.89	6.5	8.5	
15-Feb-24	8.96	6.5	8.5	
22-Feb-24	7.84	6.5	8.5	
28-Feb-24	8.98	6.5	8.5	
04-Mar-24	7.94	6.5	8.5	
07-Mar-24	8.54	6.5	8.5	
14-Mar-24	8.01	6.5	8.5	
21-Mar-24	7.64	6.5	8.5	
28-Mar-24	7.19	6.5	8.5	



Pond 4 - Weekly EC Monitoring

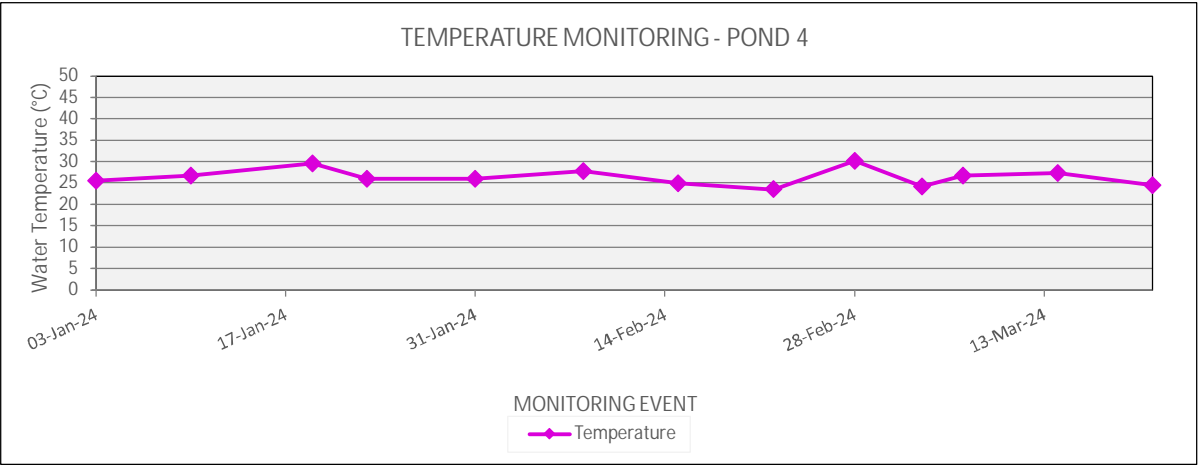
January 2024 to March 2024

Monitoring Event	EC	ANZG EC trigger value - lower bound	ANZG EC trigger value - upper bound	Unable to sample
	µS/cm	µS/cm	µS/cm	
03-Jan-24	237	125	2200	
10-Jan-24	278	125	2200	
19-Jan-24	384	125	2200	
23-Jan-24	298	125	2200	
31-Jan-24	303	125	2200	
08-Feb-24	261	125	2200	
15-Feb-24	275	125	2200	
22-Feb-24	282	125	2200	
28-Feb-24	378	125	2200	
04-Mar-24	129	125	2200	
07-Mar-24	262	125	2200	
14-Mar-24	291	125	2200	
21-Mar-24	246	125	2200	
28-Mar-24	281	125	2200	



Pond 4 - Weekly Temperature Monitoring
January 2024 to March 2024

Monitoring Event	Temperature	Unable to sample
	°C	
03-Jan-24	25.5	
10-Jan-24	26.7	
19-Jan-24	29.6	
23-Jan-24	26.0	
31-Jan-24	25.9	
08-Feb-24	27.7	
15-Feb-24	24.9	
22-Feb-24	23.5	
28-Feb-24	30.2	
04-Mar-24	24.1	
07-Mar-24	26.7	
14-Mar-24	27.3	
21-Mar-24	24.5	
28-Mar-24	21.2	





Legend

 Ambient Air Monitoring Station

 NCIA Site Boundary

 Watercourse

0 250 500 Meters



AECOM

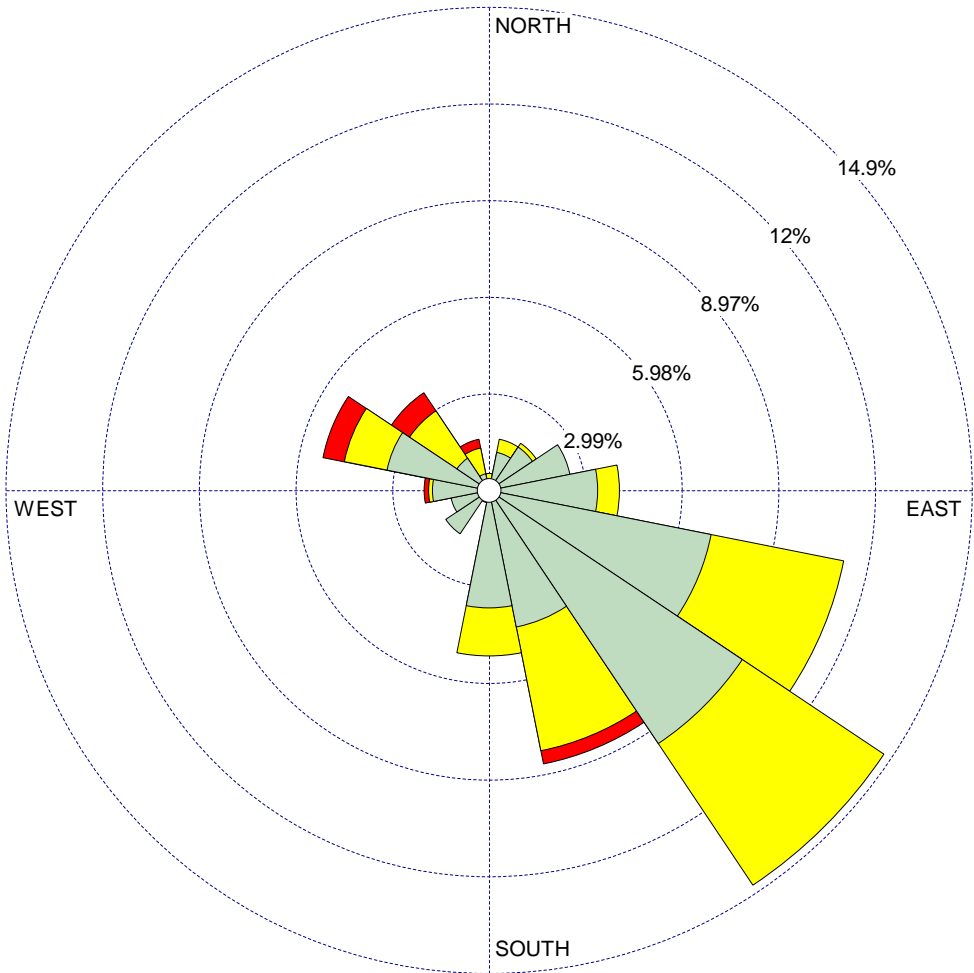
Source: Imagery © Nearmap 2021

WIND ROSE PLOT:

NCIA Meteorology Data
March 2024

DISPLAY:

Wind Speed
Direction (blowing from)



COMMENTS:

DATA PERIOD:

Start Date: 1/03/2024 - 00:00
End Date: 31/03/2024 - 23:00

COMPANY NAME:

MODELER:

CALM WINDS:

34.14%

TOTAL COUNT:

743 hrs.

AVG. WIND SPEED:

1.17 m/s

DATE:

26/04/2024

PROJECT NO.:

60613063