Environmental Dust Assessment Report

Tweed Valley Hospital Project

Prepared for: Delta Group

DLT-01-Q1013 / EDM5 / v1.1f
14th January 2020

ADE CONSULTING GROUP
SOLUTIONS THROUGH INNOVATION

Prepared for:

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Version	Details	Date
v1.1f	Written by [redacted]	14th January 2020

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Date: 14th January 2020

Written By:

[redacted]

[redacted]

Environmental Consultant

Reviewed By:

[redacted]

[redacted]

Project Manager

1 INTRODUCTION

1.1 General

ADE Consulting Group Pty Ltd (ADE) was commissioned by Delta Group (DLT) Pty Ltd to measure the levels of dust within the Tweed Valley Hospital Project, located at 771 Cudgen Road, Kingscliff NSW hereafter referred to as 'the Site'. At the time of the dust monitoring, Delta Group are continuing to conduct earthworks.

Real time dust monitoring was carried out to determine and quantify the levels of dust created during the days in which the contractors/employees are undertaking the earthworks.

Table 1. Summary of Site Information and Project Information.

Site and Project Details	
Client:	Delta Group
ADE Project No.:	DLT-01-Q1013
Site Location:	771 Cudgen Road, Kingscliff NSW
Monitoring Time and Dates:	Sunday 1st December – Tuesday 31st December (continuous): - Day shift from 07:00 to 17:59 - Night Shift from 18:00 to 06:59
Date of Report:	14.01.2020
Monitoring Parameters:	Particulate Matter <10 micrometers (PM10); and Data recording frequency: 1 minute.
Exposure Standard	Australian Institute of Occupational Hygienists (AIOH) recommendation for PM10 Dust **5 mg/m^3** (expressed as 8-hour time weighted average)

1.2 Scope of Work

The scope of work involved the following:

- Completion of a Safety, Health & Environment Work Method Statement prior to undertaking any works;
- Real time continuous monitoring of PM10 in three locations along the boundary of the site adjacent Cudgen Road; and
- Preparation of an Environmental Dust Assessment Report outlining the site data, conclusions and recommendations.

1.3 Whole Report

No one section or part of a section, of this report should be taken as giving an overall idea of this report. Each section must be read in conjunction with the whole of this report, including its appendices and attachments.

1.4 Previous Report

Refer to the previous report (DLT-01-Q1013 / EDM4 / v1f / v1) for details from earlier monitoring periods.

1.5 Monitoring locations

The Site is located at 771 Cudgen Road, bounded by Tweed Coast Road to the West, Turncock Street to the East and Cudgen Road to the South at Kingscliff, NSW as per the Figure 1 below.

The DustTrak monitoring locations are indicated by the blue dots in Figure 1, all within the confines of the construction barriers in compliance with condition C29 of the consent.

Dust levels are recorded at these locations to determine the dust levels at the eastern and southern boundaries of the project during the alterations on site, and ensure the nearby sensitive receivers listed in the Lendlease Air Quality Management Plan remain undisturbed. The dust monitoring stations have been operational 24 hours a day since 31st July 2019.

1.6 Exposure limits

ADE has adopted the recommended exposure standard for PM10 to be 5 mg/m^3 (8-hour time weighted average) as per the recommendation of the Australian Institute of Occupational Hygienists (AIOH) for works on-site. If this standard is exceeded, cease works immediately, and review controls and relevant practices listed in the Lendlease Air Quality Management Plan (2019). An action limit of 2.5 mg/m^3 (8-hour time weighted average) has been implemented to minimize the likelihood of an exceedance.

1.7 Bureau of Meteorology (BOM) Climate Data

Summary of climate data for Coolangatta has been included in Table 2 below.

Table 2. Summary of Climate Data at Coolangatta, QLD.

Date	Wind direction	Highest wind gusts (km/h)	Maximum time of wind gust	Minimum temperature (°C)	Maximum temperature (°C)	Rain (mm)
01/12/19	NNW	57	15:09	21.2	28.5	10.6
02/12/19	NW	61	15:09	19.7	33.7	10.6
03/12/19	ESE	30	09:10	16.2	29.5	0
04/12/19	SE	35	10:31	13.0	31.0	0
05/12/19	ENR	28	10:46	14.4	31.2	0
06/12/19	NNE	35	13:38	14.1	32.4	0
07/12/19	ESE	44	12:46	17.2	31.2	0

Table 2. Continued...

Date	Wind direction	Highest wind gusts (km/h)	Time of maximum wind gust	Minimum temperature (°C)	Maximum temperature (°C)	Rain (mm)
08/12/19	ESE	46	13:07	19.9	28.7	0
09/12/19	SE	39	09:43	22.1	29.1	0
10/12/19	NNE	41	12:05	20.1	30.6	0
11/12/19	SSW	54	22:02	23.6	30.0	0
12/12/19	N	57	01:23	21.1	29.5	0.6
13/12/19	E	46	13:25	22.9	25.2	3.6
14/12/19	N	31	20:36	18.4	27.6	21.8
15/12/19	N	39	11:06	23.3	28.6	0
16/12/19	SSE	65	16:09	23.3	34.2	0
17/12/19	SE	57	14:39	20.8	27.7	0
18/12/19	SE	41	12:30	19.0	27.5	0
19/12/19	N	31	15:18	14.9	27.5	0
20/12/19	E	28	11:37	19.3	27.8	0
21/12/19	N	35	20:37	19.4	28.6	0
22/12/19	N	31	04:22	22.4	27.2	0
23/12/19	SSE	43	14:25	21.2	30.7	1.0
24/12/19	ENE	33	21:59	22.5	27.6	0.2
25/12/19	ESE	41	07:37	20.6	27.4	18.4
26/12/19	SSE	46	13:52	20.7	28.3	0.6
27/12/19	SSE	41	12:12	19.2	28.1	3.8
28/12/19	E	37	14:12	18.9	28.6	0.2
29/12/19	NE	30	14:37	18.4	28.3	0
30/12/19	NE	37	21:35	18.7	28.7	0
31/12/19	NE	33	13:48	20.8	29.4	0.6

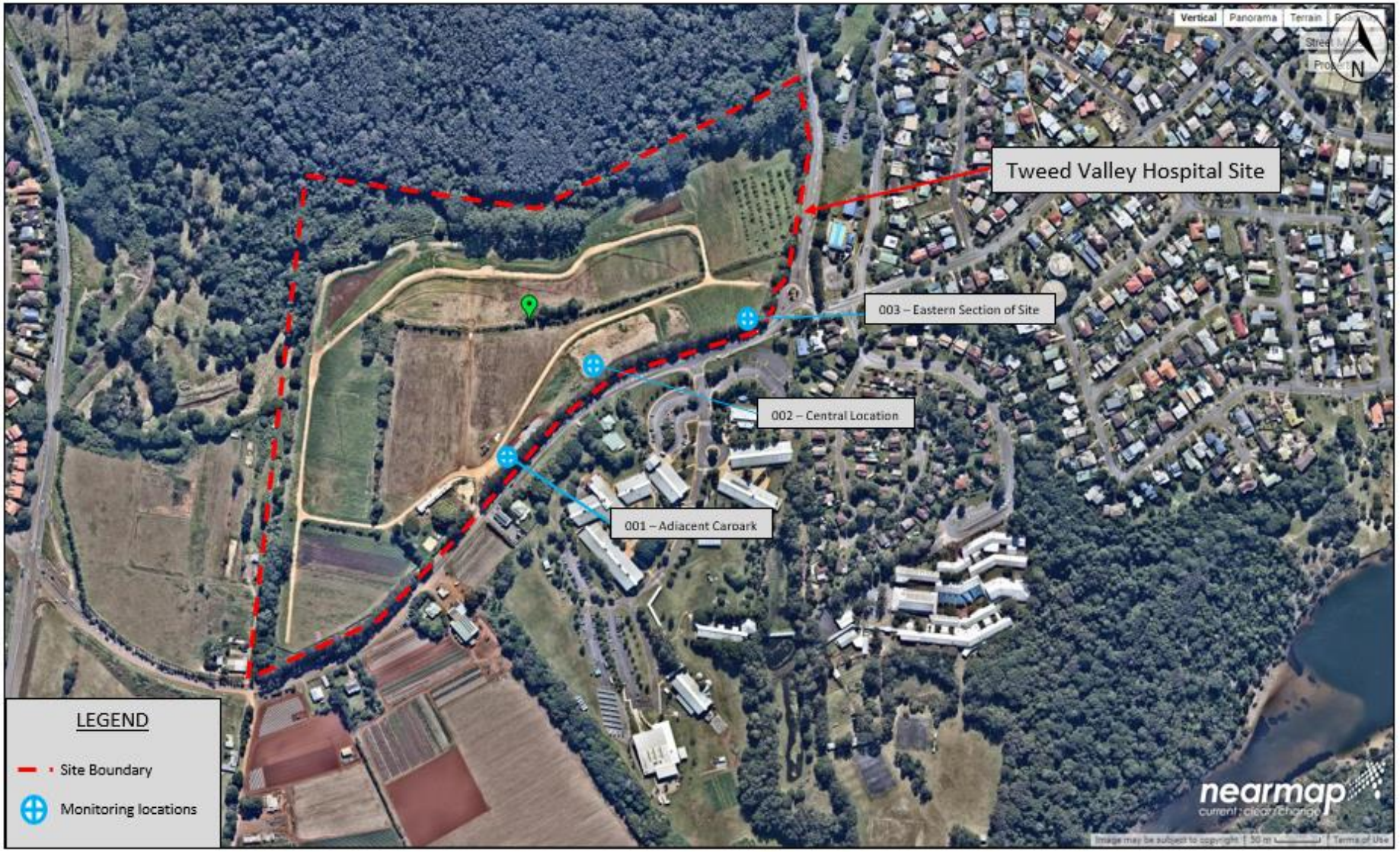

Figure 1. Aerial photograph of the DLT works area at 771 Cudgen Road, Kingscliff NSW.

2. SAMPLING METHODOLOGY

2.1 Air Monitoring Samples

The implementation of continuous dust monitoring using a light scattering instrument (Dust Trak™ DRX Aerosol Monitor) as a supplemented analysis technique for dust deposition and directional dust analysis techniques. This supplemental technique is used as a guide and first response to allow change to dust control measures to be implemented to avoid exceedances within deposition and directional dust analysis techniques.

The Dust Trak™ DRX continuous dust monitor was used to determine the concentration of the dust that has been created by the earthworks. Two (2) Dust Trak™ DRX continuous dust monitors were installed on the 31st July 2019 and one (1) was installed on the 2nd August 2019.

2.2 Controls

As per Lendlease Air Quality Management Plan (2019):

"Works must be undertaken in accordance with the Lendlease GMRs, the Project EHS Plan, this Sub Plan and the Lendlease Building WDC. These documents detail Lendlease's approach and commitment to pro-active and responsible site management.

The following site-specific controls have been implemented to prevent or minimise the impacts of construction related air emissions on the environment and community. These may include but are not limited to:

- *Use of water cart to dampen work areas and exposed soils to prevent the emission of excessive dust;*
- *Installation of a wheel shaker grid and/or wash down facilities at the vehicle egress point;*
- *Ensuring trucks transporting materials to and from the site use covers to prevent windblown dust or spillage;*
- *Ensuring truck tailgate locking mechanisms are operational and in use;*
- *Periodic inspection of surrounding roads to ensure no construction contamination and initiation of road sweeping if required;*
- *Careful selection of materials for temporary road surfacing;*
- *Watercarts/water trucks will be in permanent use on site during excavation and civil works.*
- *Temporary stockpiles that are not required for imminent use will be stabilised with spray grass or appropriate fabric.*
- *Continuous monitoring of weather forecast to stop dust generating activities in case that high winds are expected.*
- *Before extended breaks (e.g., Easter, Christmas), areas will be treated with spray grass.*
- *Only those areas where immediate structures are to be build will be stripped. Areas will be stripped at the latest possible date to comply with the program.*
- *Construction haul roads and temporary carparking will maximise the use of permanent infrastructure. These roads/carparks will have a sacrificial seal to minimise dust generation.*
- *Subcontractors to maintain equipment / machinery to ensure exhaust emissions comply with relevant legislation and guidelines;*
- *All waste material to be sorted, collected and removed from site (for recycling where possible);*

- *If rock crushing is assessed to be safe and feasible (i.e. cost effective and meets noise restrictions) the following management provisions will be in place:*
    - *rock crushers will have a water attachment for dust suppression at the source. The water is sprayed at the face of the crusher before, during and after the crushing.*
    - *Crushers will be located as far as practicable from Cudgen Road and immediate neighbours (i.e., on the north-west area of the site).*
    - *All crushed rock suitable for re-use will be recycled on site as fill, sediment control, pavements, hardstands, construction exits and pipe bedding materials.*
    - *Where possible, the oversize material from hard rock projects is also reused for vehicle entry shake downs and erosion control.*
- *Air quality monitoring;*
- *Dust screens and airlocks to be utilised with interior works;*
- *Controlling dust close to its source by installing sprays and sprinkler systems to prevent off-site migration; and*
- *Maintaining the site access to prevent dust generation and tracking off-site.*
- *No blasting will be performed as part of the proposed construction works program."*

3. DATA

Note – All graphs below express dust levels as an hourly average.

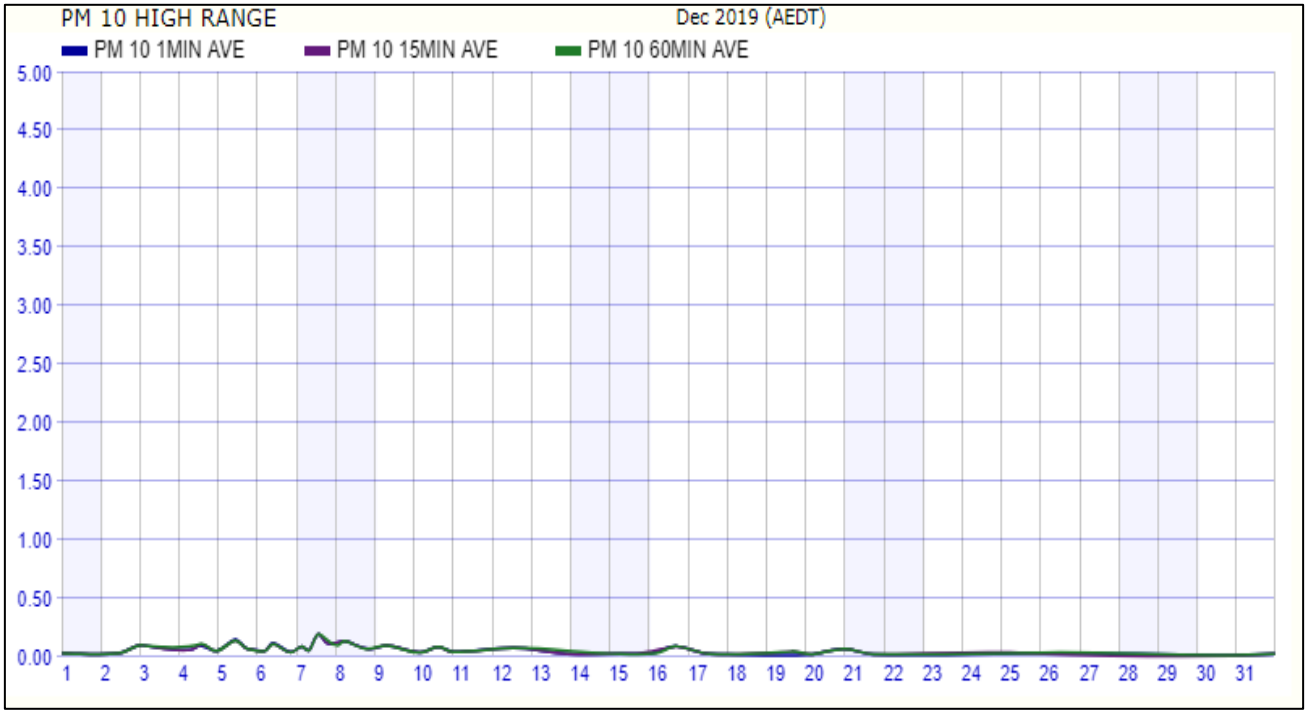

Figure 2. Summary of PM10 from the real time monitoring at location 001 – Adjacent the carpark.

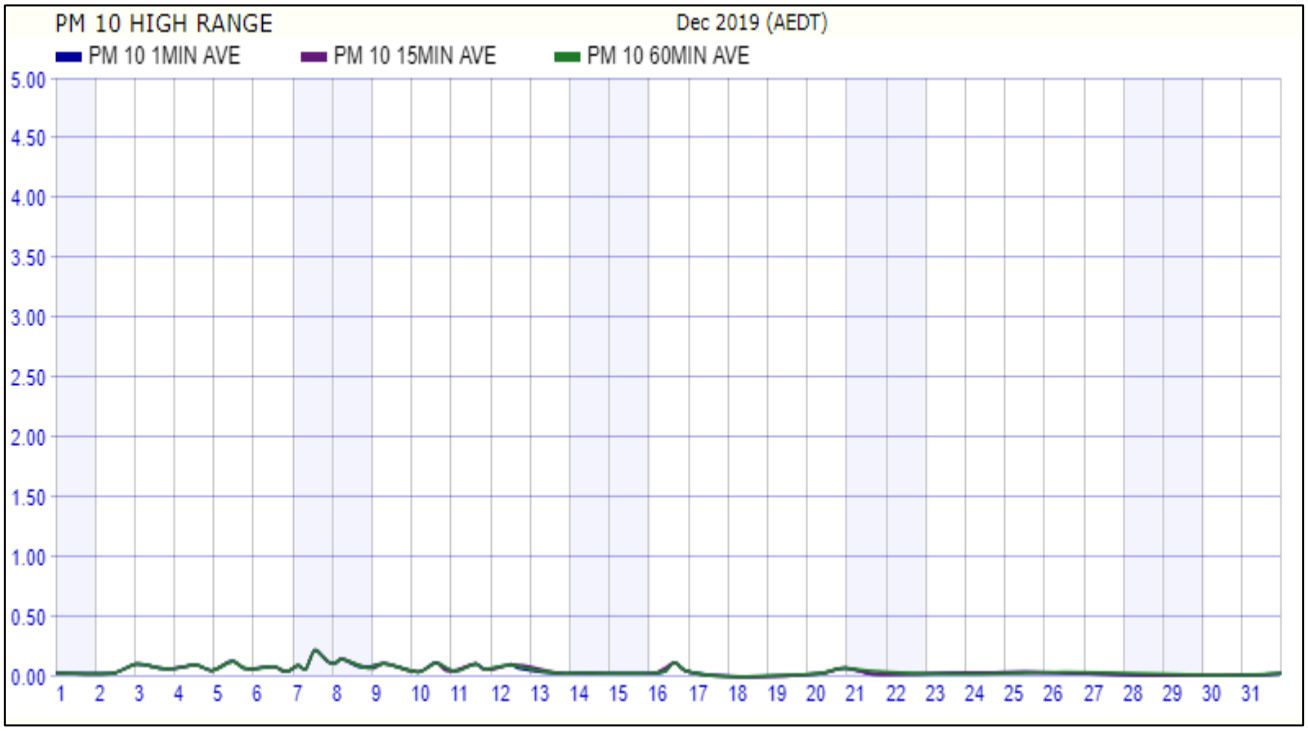

Figure 3. Summary of PM10 from the real time monitoring at location 002 – Central location.

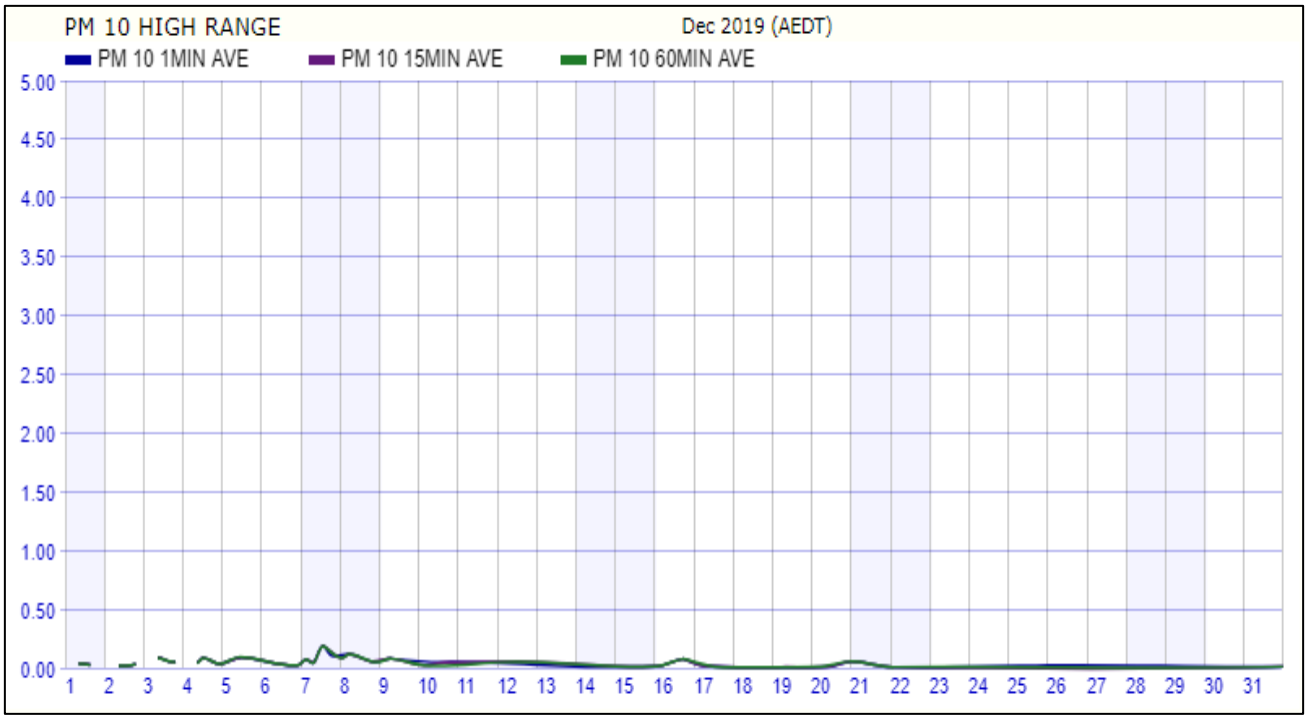

Figure 4. Summary of PM10 from the real time monitoring at location 003 – Eastern end of site.

4. CONCLUSIONS

The peak dust concentration recorded was 4.07 mg/m^3 Adjacent the carpark. This peak occurred over a one-minute period on the 5th of December at 10:38.

The central monitoring location had a peak dust concentration of 2.86 mg/m^3 which occurred over a one-minute period on the 12th of December at 12:04. It is noted that wind gusts on the 12th of December reached 57 km/h.

The eastern monitoring location had a peak dust concentration of 1.01 mg/m^3 which occurred over a one-minute period on the 11th of December at 08:40. It is noted that wind gusts on the 11th of December reached 54 km/h.

The peak dust level recorded adjacent the carpark occurred on a day with the lowest recorded wind gust of the month (refer to Table 2 - Summary of Climate Data at Coolangatta, QLD). This indicates relatively 'dusty' activities were undertaken on the 5th of December.

As the above-mentioned max concentrations were over a period of <1 hour they are not shown clearly in the monthly graphs (refer to Figures 2, 3 and 4). As per the AIOH position paper Dust not otherwise specified (Dust NOS) and Occupational Health Issues, dust 'trigger' values are expressed as an 8-hour time weighted average.

As such dust concentrations across all monitoring location remained below the action limit of 2.5 mg/m^3 (refer to Figures 2, 3 and 4 above).

5. RECOMMENDATIONS

Ensure adequate dust control measures are being implemented as per the Lendlease Air Quality Management Plan (2018) and continued monitoring of PM10 for the duration of the project. If the action limit of 2.5 mg/m^3 (8-hour time weighted average) is exceeded, cease works and review and implement additional dust prevention techniques.

6. LIMITATIONS

This report has been prepared for use by the client who has commissioned the works in accordance with the project brief only and has been based on information provided by the client. The advice herein relates only to this project and all results, conclusions and recommendations made should be reviewed by a competent person with experience in environmental investigations, before being used for any other purpose. ADE Consulting Group Pty Ltd accepts no liability for use or interpretation by any person or body other than the client who commissioned the works. This report should not be reproduced or amended in any way without prior approval by the client or ADE and should not be relied upon by any other party, who should make their own independent enquiries.

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7. REFERENCES

- AIOH Position Paper, Dust not otherwise specified (Dust NOS) AND Occupational Health Issues, published by the Australian Institute of Occupational Hygienists (AIOH), May 2016.

- Lendlease Building Pty Ltd Tweed Valley Hospital – Management Plan – Air Quality, dated 04/02/2019.