Environmental Dust Assessment Report (April 2020)

Tweed Valley Hospital Project

Prepared for: Delta Group

DLT-01-Q1013 / EDM9 / v1.4f
28th May 2020

ADECONSULTINGGROUP
SOLUTIONS THROUGH INNOVATION

Prepared for:

Delta Group

Environmental Dust Assessment Report

Tweed Valley Hospital Project

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Report No: DLT-01-Q1013 / EDM9 / v1.4f

Date: 28th May 2020

Written By:

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BSc (Ecology & Cons. Bio.)
Environmental Consultant

Reviewed By:

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BSc Hons. (Env. Sci.)
Project Manager

EXECUTIVE SUMMARY

ADE Consulting Pty Ltd (ADE) has been commissioned by the Delta Group to prepare an assessment of the Dust aspects of the construction phase for Tweed Hospital Valley project located at 771 Cudgen Road, Kingscliff NSW. Kingscliff is located in the Northern Rivers region of New South Wales. The Site is bounded by the Tweed Coast Road to the West, Cudgen Road to the South and Turnock Street to the East.

The Dust Assessment consisted of the real time data observation and discussion to achieve the following:

- Compliance with Tweed Valley Hospital Management Plan – Air Quality (2020);
- Avoid excessive dust generation through site planning and the adoption of appropriate work methods and practices; and
- Prevent or minimize to the greatest extent, the impact of construction dust on neighbors and to establish and maintain positive relationships with project stakeholders.

Data gaps at locations 001 and 002 from the 1st - 6th April are due to these monitors being relocated on the 31st of March 2020 at the request of Delta Group to allow for tree clearing works. None of the alternative monitoring locations considered prior to the tree clearing works were deemed viable; as such, the monitors were stored inside of the Delta site office until tree clearing works were completed on the 6th of April 2020.

Data gaps from the 11th - 16th at location 003 were due to equipment malfunction. Data gaps from the 30th of April 2020 at location 004 were due to power outage.

Outcome of the dust assessment did not identify any health exposures presenting an immediate danger to life, health or environment. The report details the outcome of the real time dust assessment conducted in April 2020 by ADE from 1st April to 30th April 2020.

Results from dust monitoring undertaken during the monitoring period April 2020 were below 0.5 mg/m^3, as such dust concentrations across all monitoring location remained below the action limit of 2.5 mg/m^3. **No exceedances occurred throughout the month of April.**

Works were only conducted between 7am and 6pm, Monday – Friday from the 1st – 30th and only data within this range should be considered.

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:	Wednesday 1st April – Thursday 30th April (continuous): - Day shift from 07:00 to 17:59 - Night Shift from 18:00 to 06:59
Date of Report:	25.05.2020
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 seven locations along the Eastern, Southern and Western boundaries of the site; 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 / EDM8 / v1.1f) 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 on the following pages.

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 Western, Eastern and Southern boundaries of the project during the alterations on site, and ensure the nearby sensitive receivers listed in the Tweed Valley Hospital Management Plan – Air Quality (2020) remain undisturbed (refer to **Appendix I – Monitoring Locations**). Dust monitoring location 001 was installed on the 2nd of August 2019. Dust monitoring locations 002 & 003 were installed on the 31st of July 2019. Dust monitoring locations 004, 005, 006 & 007 were installed on the 16th of January 2020. All dust monitors have been operational 24 hours a day since their installation.

Dust monitors at locations 001 and 002 were removed on the 1st April whilst tree clearing took place as they were obstructing works. The monitors were reinstalled on the 6th of April 2020 at the client's request.

The battery and solar panels powering the dust monitor at location 004 (North Eastern section) were stolen around 22:00 on the 30th of April 2020. As a result, there is a 2-hour data gap between 22:00 and 24:00. ADE visited the site on the 1st of May 2020 and increased security measures at each monitoring station.

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 Tweed Valley Hospital Management Plan – Air Quality (2020). 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)	Time of maximum wind gust	Minimum temperature (°C)	Maximum temperature (°C)	Rain (mm)
01/04/20	ESE	41	13:39	21.2	28.6	0
02/04/20	ENE	33	10:47	19	26.8	0.8
03/04/20	N	37	15:35	19.4	28.4	0.2
04/04/20	NNW	43	10:38	23.5	30	0
05/04/20	ESE	37	13:54	15.8	27.4	0
06/04/20	SE	35	14:52	15.7	26.8	0
07/04/20	SSE	43	14:49	19.4	27.3	0
08/04/20	S	43	13:48	18.4	26.4	3.2
09/04/20	SE	41	12:48	18.1	25.5	4
10/04/20	N	28	15:29	18.8	24.4	14.6
11/04/20	NW	39	8:31	19.9	30.6	6.8
12/04/20	SSE	48	11:57	13.9	24.6	0.2
13/04/20	E	26	14:45	12.2	25.1	0
14/04/20	ESE	30	14:50	14.8	26.1	0
15/04/20	SE	33	15:38	15.4	26.2	0
16/04/20	N	41	15:54	15	27.4	0
17/04/20	NNW	33	7:00	19.6	31.7	0
18/04/20	NNW	19	13:28	19.2	26.1	0
19/04/20	NNE	22	13:15	13.2	25.8	1.4
20/04/20	NNE	22	12:11	10.2	25.8	0.2
21/04/20	NE	20	11:41	13.5	26.4	0
22/04/20	ESE	37	13:54	17.1	29.4	0
23/04/20	E	28	12:20	14.8	26.8	0
24/04/20	N	30	13:41	14.2	28.4	0
25/04/20	SSE	26	12:14	14.4	27.2	0
26/04/20	NNE	33	12:20	14.7	26.9	0.2
27/04/20	SE	31	13:08	15.8	27.0	0
28/04/20	ESE	33	13:12	18.7	25.9	0.4
29/04/20	NE	24	18:03	16.9	26.2	1.8
30/04/20	N	50	17:11	15.6	27.8	0.2

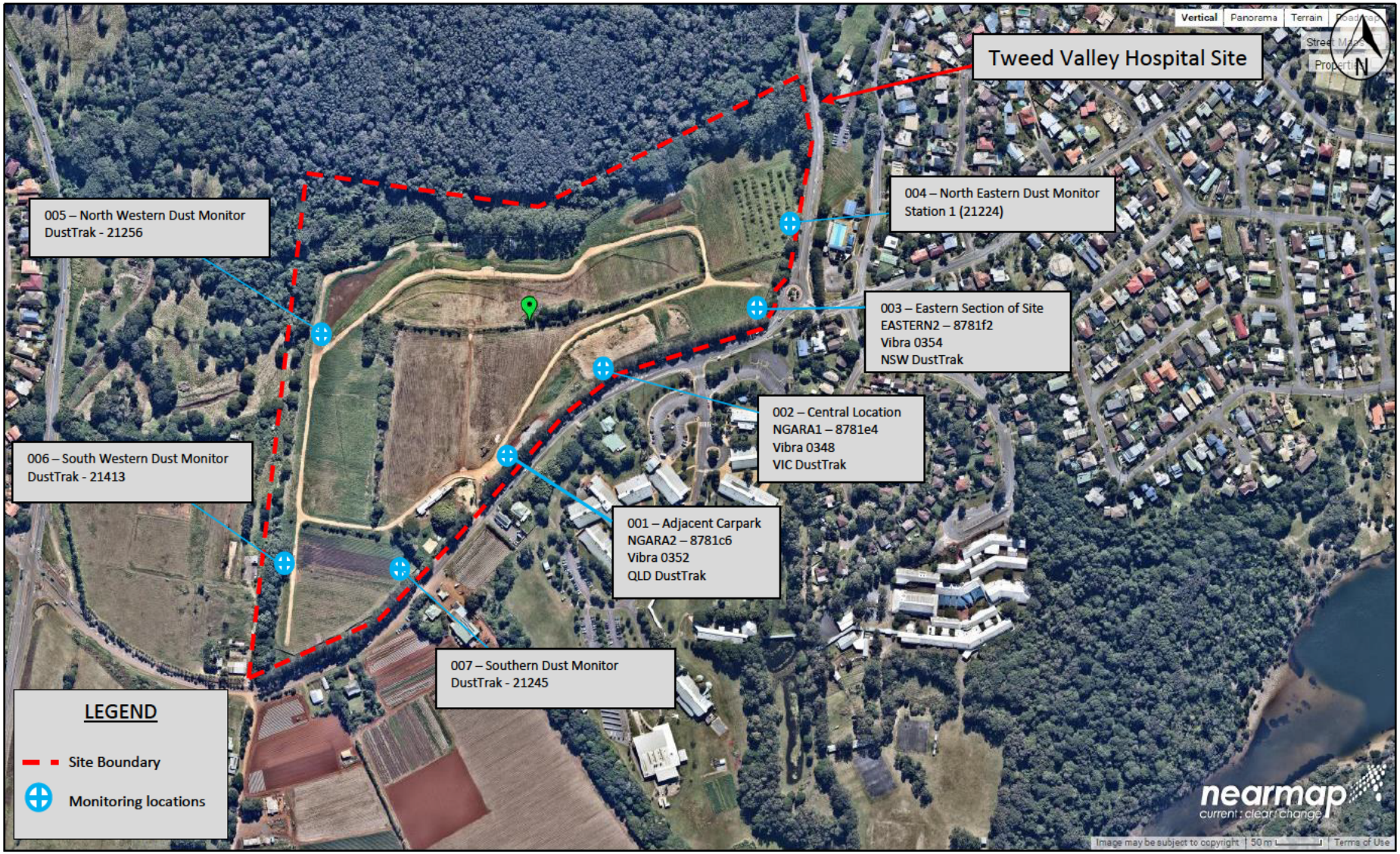

Figure 1. Aerial Photograph of the DLT Works Area at Kingscliff

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.

2.2 Controls

As per Lendlease Tweed Valley Hospital Management Plan – Air Quality (2020):

"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.

Site specific controls, monitoring, reporting and performance measures have been identified in this Sub Plan to prevent or minimise the impacts of construction related air emissions on the environment and community. These may include but are not limited to:

- *Clear definition of trafficable and material storage areas to prevent unnecessary vehicle movement into other areas;*
- *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 Nosie 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 is required for dust only. Given all plant and equipment will be fitted with air filter caps, analytical air quality monitoring except for asbestos works is not required;*
- *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;*
- *Maintaining the site access to prevent dust generation and tracking off-site; and*
- *No blasting will be performed as part of the proposed construction works program.*

Demolition (e.g., existing inground services), excavation and construction stage dust, odour and emission management requirements must be included in relevant specifications, contract agreements, quality assurance documents, and subcontractor work method statements.

Site inspections, monitoring and reporting will be undertaken by Lendlease and subcontractors as detailed in the Project EHS Plan and the following implementation table to ensure controls remain effective overtime"

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3. DATA

Note – All graphs below express dust levels as an hourly average and values <0.01 will not be graphed. Figures below shows monthly dust results expressed as an hourly average for each of the seven (7) monitoring locations.

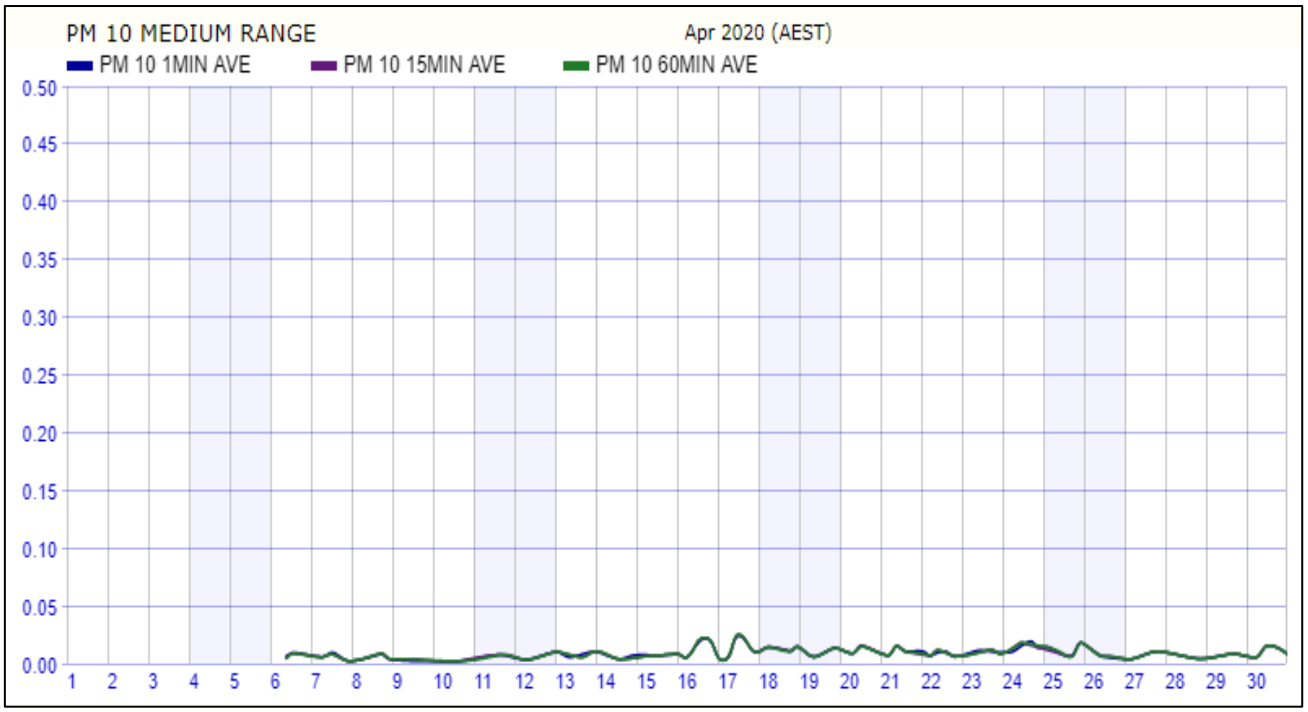

Figure 2. Summary of PM10 from the real time monitoring at location 001 – Adjacent the carpark.

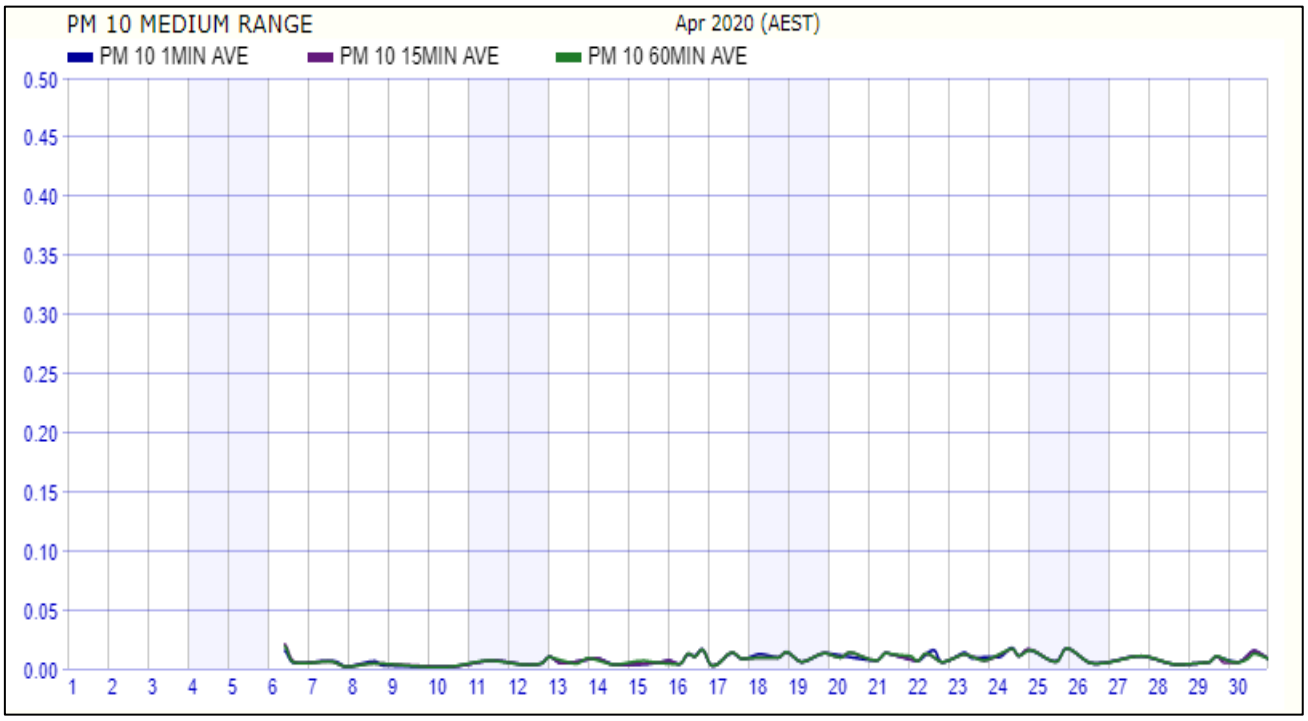

Figure 3. Summary of PM10 from the real time monitoring at location 002 – Central location.

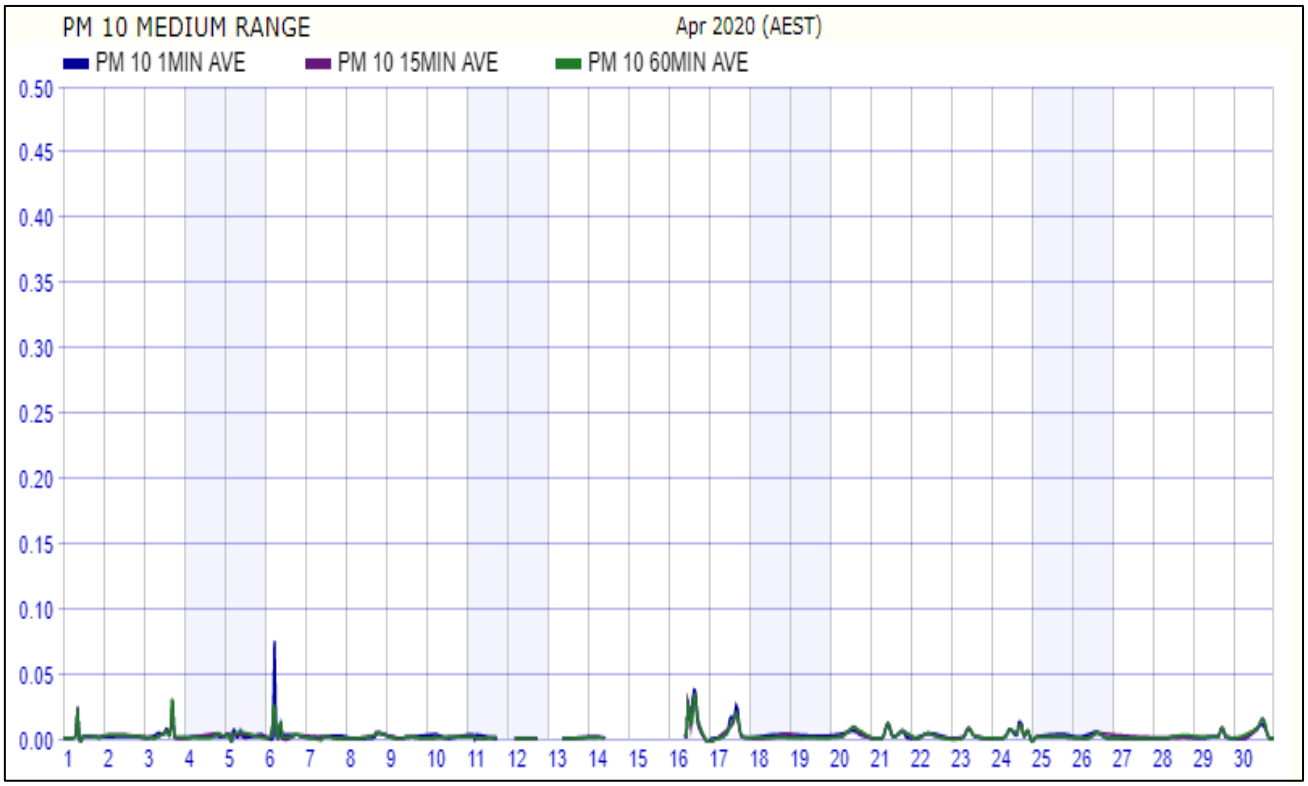

Figure 4. Summary of PM10 from the real time monitoring at location 003 – Eastern end of site.

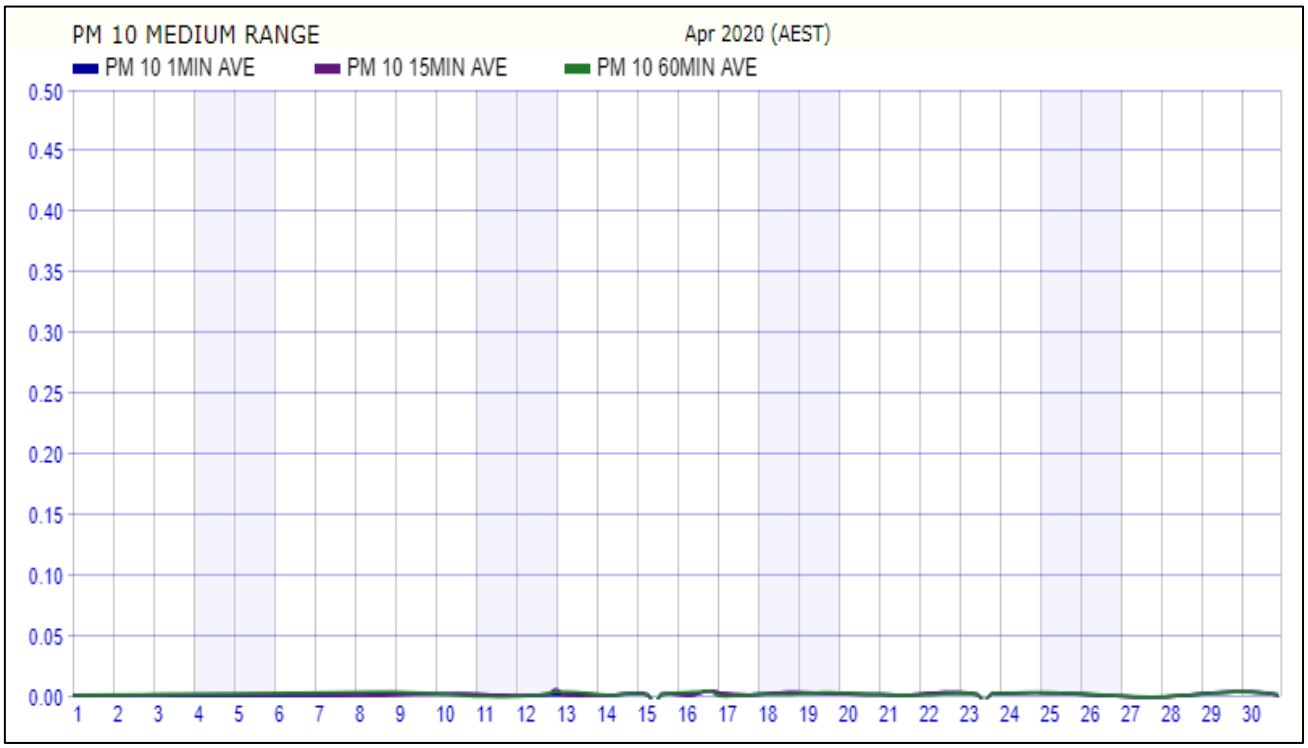

Figure 5. Summary of PM10 from the real time monitoring at location 004 – North Eastern Dust Monitor.

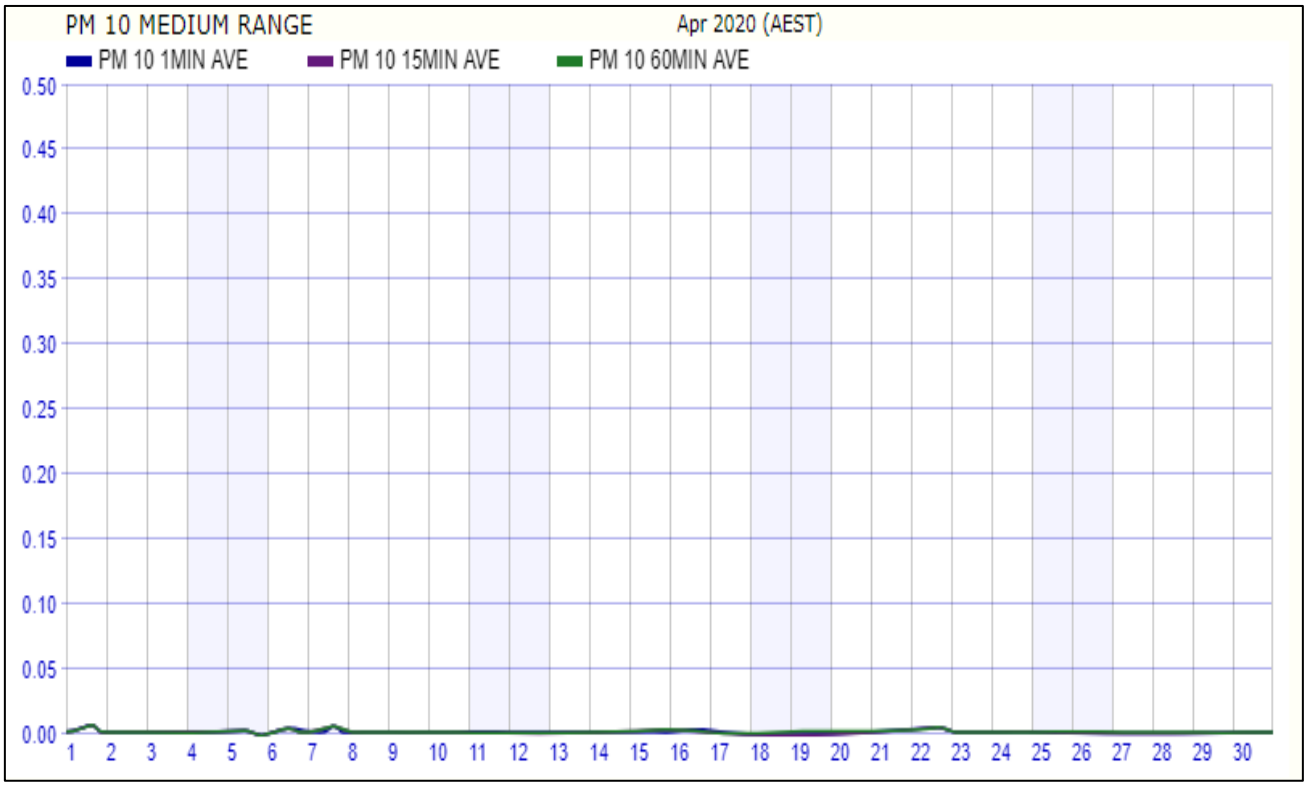

Figure 6. Summary of PM10 from the real time monitoring at location 005 – North Western Dust Monitor.

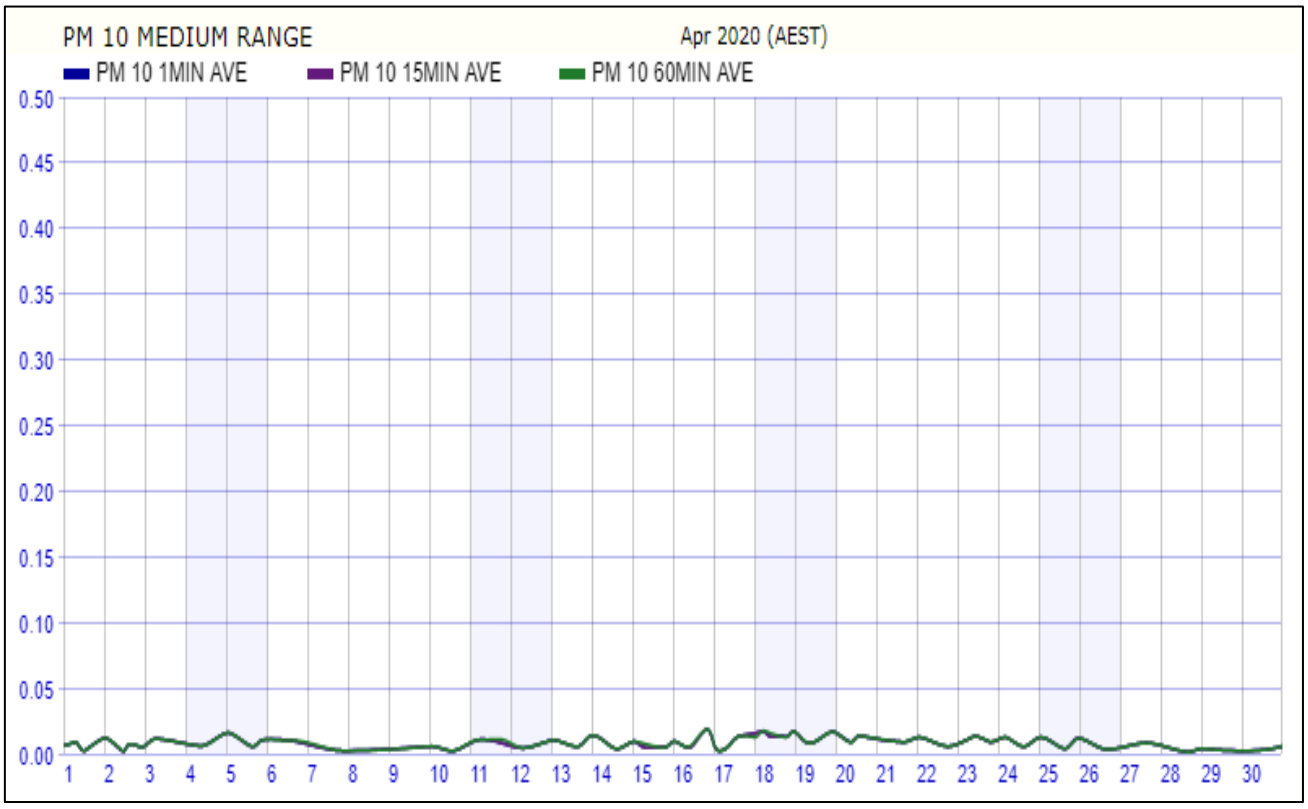

Figure 7. Summary of PM10 from the real time monitoring at location 006 – South Western Dust Monitor.

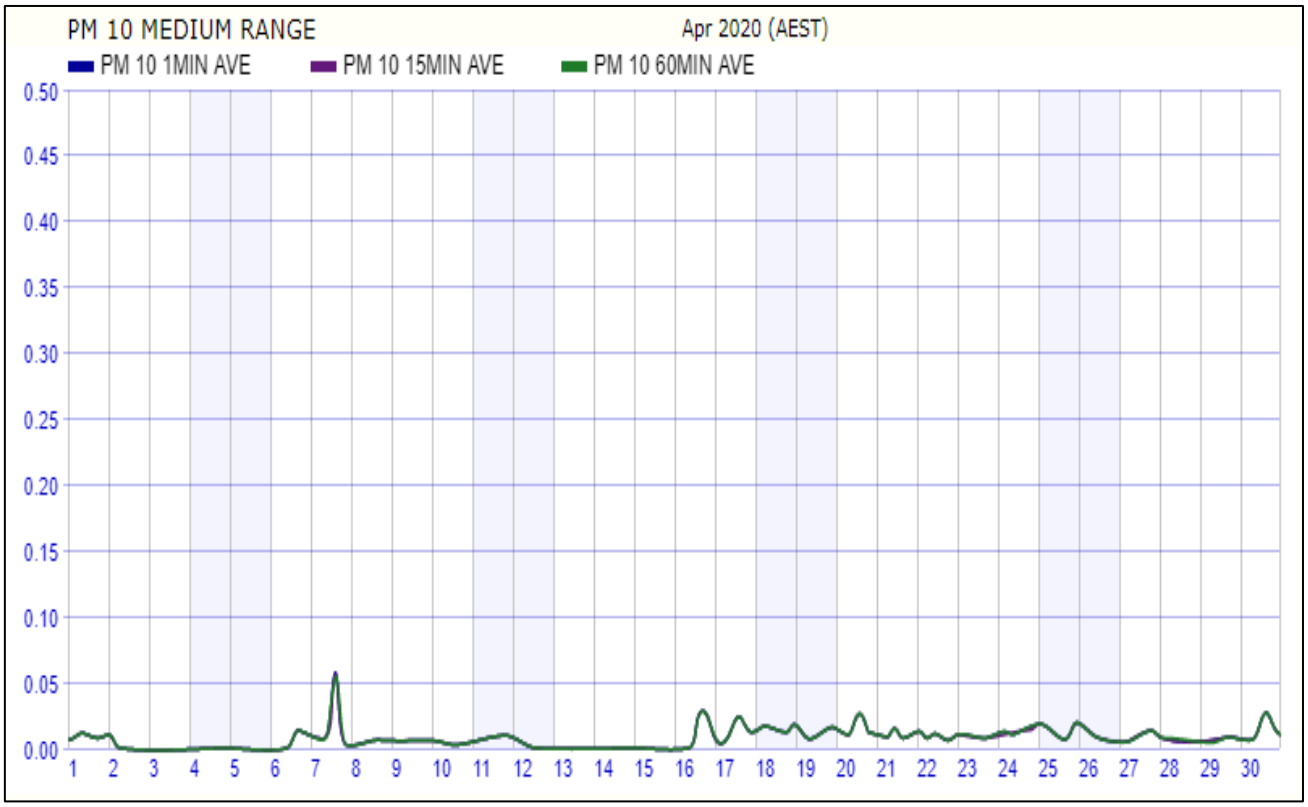

Figure 8. Summary of PM10 from the real time monitoring at location 007 – Southern Dust Monitor.

4. CONCLUSIONS

All dust levels remained below 0.5mg/m^3 during the month of April (*refer to **Section 3. Data**).*

Relatively high dust concentrations (>0.05mg/m^3) were recorded on the 6th of April from 03:45 to 04:00 at monitoring location 003, and on the 7th of April from 11:00 to 14:00 at monitoring location 007. High concentrations on the 6th of April occur outside of work hours and are likely the result of wind gust disturbing soil near the Eastern monitoring section of the site. Whereas the high concentrations on the 7th of April are due to a combination of high wind gusts (*refer to **Table 2.** Summary of Climate Data at Coolangatta, QLD*) and dust created through works conducted in the Southern section of the site.

It should be noted that the DustTrak minimum concentration reading is 0.001mg/m^3 and values of lower concentration will be recorded as zero.

Data gaps were identified during the following period / monitoring location:

- 1st – 6th April: monitoring location 001;
- 1st – 6th April: monitoring location 002;
- 11th – 16th April: monitoring location 003; and
- 30th April: monitoring location 004.

Data gaps from the 1st - 6th at locations 001 and 002 were due to monitors being removed on the 1st of April whilst tree clearing took place and reinstalled on the 6th of April 2020 at the client's request.

Data gaps from the 11th - 16th at location 003 were the result of the monitor displaying constant values of 0.00 and failing to record and upload any readings. ADE attended Site on the 16th of April to investigate and rectify the issues (refer to **Appendix II – ADE Site Time Summary**). The filters of the dust monitor were replaced, all cables and connections were checked for damage, power to the monitor was reset and each monitor was calibrated by ADE while on site.

A data gap was identified on the 30th of April 2020. ADE attended Site on the 1st of May 2020 to investigate, whereby it was determined that the theft of the power supply (solar panels and battery) has caused dust monitor 004 to power down. At the time of writing the report, dust monitor 004 is still inactive and awaiting replacement power supply.

Dust concentrations across all monitoring location remained below the action limit of 2.5 mg/m^3 (refer to Section 3. Data).

5. RECOMMENDATIONS

Ensure adequate dust control measures are being implemented as per the Tweed Valley Hospital Management Plan – Air Quality (2020) 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.

ADE's professional opinions are based upon its professional judgment, experience, training and results from analytical data. In some cases, further testing and analysis may be required, thus producing different results and / or opinions. ADE has limited investigation to the scope agreed upon with its client.

ADE has used a degree of care and skill ordinarily exercised in similar investigations by a reputable member of the Environmental Industry within Australia. No other warranty, expressed or implied, is made or intended.

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 07/02/2020.

APPENDIX I

Monitoring Locations

Photograph 1. Representative photo of the monitoring location 001 – Adjacent Carpark location, as observed on the 05.05.2020.

Photograph 2. Representative photo of the monitoring location 002 – Central location, as observed on the 05.05.2020.

Sydney Office:
ADE Consulting Group Pty Ltd
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Photograph 3. Representative photo of the monitoring location 003 – Eastern Section of Site, as observed on the 01.05.2020.

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Photograph 4. Representative photo of the monitoring location 004 – Eastern Section 2 of Site, as observed on the 05.05.2020.

Photograph 5. Representative photo of the monitoring location 005 – North Western section of Site, as observed on the 05.05.2020.

Photograph 6. Representative photo of the monitoring location 006 – South Western Section of Site, as observed on the 05.05.2020.

Photograph 7. Representative photo of the monitoring location 007 – Southern Section of Site, as observed on the 05.05.2020.

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APPENDIX II

ADE Site Time Summary

Date of site visit	Time of site visit
06.04.2020	0630 to 1100
16.04.2020	0820 to 1020
23.04.2020	0830 to 1030
01.05.2020	0730 to 1130
05.05.2020	0730 to 1045