Newman Quarrying Pty Ltd

Slys Quarry, Lot 2 DP 1055044, Tullymorgan-Jackybulbin Road, Mororo

Dust Impact Assessment

June 2018

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Glossary of terms

Term/Abbreviation	Definition
AWS	Automatic Weather Station
BOM	Bureau of Meteorology
DML	Dust monitoring location
mg/m^3	Milligram per cubic meter
NATA	National Association of Testing Authorities
PM	Particulate matter
PM_{10}	Particulate matter with an average aerodynamic diameter of 10 micrometres or less
TES	Thomson Environmental Systems
TSP	Total suspended particulate
$\mu g/m^3$	Microgram per cubic meter

1. Introduction

1.1 Context

GHD Pty Ltd (GHD) was engaged by Newman Quarrying Pty Ltd (Newman Quarrying) to undertake dust monitoring in relation to the expansion of Sly's Quarry, located at Lot 2 DP 1055044, Tullymorgan-Jackybulbin Road, Mororo (herein after 'the subject site'). The primary purpose of the quarry is to supply quarry materials required for current and proposed Pacific Highway works, and for supply to local Councils and contractors.

1.2 Purpose of this report

The purpose of this assessment is to interrogate collected air quality monitoring data to assess if there are any off-site air quality and dust impacts associated with the expansion of Sly's Quarry.

1.3 Limitations

This report has been prepared by GHD for Newman Quarrying Pty Ltd and may only be used and relied on by Newman Quarrying Pty Ltd for the purpose agreed between GHD and the Newman Quarrying Pty Ltd as set out in section 1.2 of this report.

GHD otherwise disclaims responsibility to any person other than Newman Quarrying Pty Ltd arising in connection with this report. GHD also excludes implied warranties and conditions, to the extent legally permissible.

The services undertaken by GHD in connection with preparing this report were limited to those specifically detailed in the report and are subject to the scope limitations set out in the report.

The opinions, conclusions and any recommendations in this report are based on conditions encountered and information reviewed at the date of preparation of the report. GHD has no responsibility or obligation to update this report to account for events or changes occurring subsequent to the date that the report was prepared.

The opinions, conclusions and any recommendations in this report are based on assumptions made by GHD described in this report (refer section 1.4 of this report). GHD disclaims liability arising from any of the assumptions being incorrect.

GHD has prepared this report on the basis of information provided by Newman Quarrying Pty Ltd and others who provided information to GHD (including Government authorities)], which GHD has not independently verified or checked beyond the agreed scope of work. GHD does not accept liability in connection with such unverified information, including errors and omissions in the report which were caused by errors or omissions in that information.

The opinions, conclusions and any recommendations in this report are based on information obtained from, and testing undertaken at or in connection with, specific sample points installed by third party stakeholders. Site conditions at other parts of the site may be different from the site conditions found at the specific sample points.

Investigations undertaken in respect of this report are constrained by the particular site conditions, such as the location of buildings, services and vegetation. As a result, not all relevant site features and conditions may have been identified in this report.

Site conditions (including the presence of hazardous substances and/or site contamination) may change after the date of this Report. GHD does not accept responsibility arising from, or in connection with, any change to the site conditions. GHD is also not responsible for updating this report if the site conditions change.

The assessment in this report was based on onsite inspections and measurements obtained by GHD between August 2017 and April 2018. Note that it is the nature of environmental assessment that all variation in environmental conditions as well as the existing Sly's Quarry's operating conditions cannot be assessed and all uncertainty concerning the conditions of the ambient air quality environment cannot be eliminated. Also, it is not the intention of the assessment to cover every element of the air environment, but rather to conduct the assessment with consideration to the prescribed scope of work. Professional judgement must be expected in the investigation and interpretation of observations.

1.4 Assumptions

- Weather data from the Bureau of Meteorology operated Yamba Pilot Station is representative of the weather at Sly's Quarry.
- Dust Master Pro and Dust Deposition Gauges were in calibration at the time of monitoring.
- Dust Master Pro and Dust Deposition Gauges provided accurate PM_{10}, TSP and dust deposition measurements unless otherwise stated.
- This report has been written based on the information on hand as of May 2018.
- Installation of air quality equipment has been undertaken in line with the Australian Standard for the siting of air quality equipment.
- Monitoring locations selected are representative of the area potentially affected by the operations at Sly's Quarry.

2. Air quality assessment criteria

The Development Consent (SSD 6624) for the Sly's Quarry expansion project specifies specific air quality criteria for PM_{10}, TSP and deposited dust. The applicable criteria have been reproduced in Table 1 below:

Table 1 Derived air quality criteria for pollutants

Pollutant	NEPM	
	Averaging Period	Maximum concentration standard
PM_{10}	1 year [1,2] 1 day [3]	30 µg/m^3 50 µg/m^3
Total suspended particulates (TSP)	1 year [1, 2]	90 µg/m^3
Deposited dust	1 year [1, 2, 3, 4]	2 g/m^2/month 4 g/m^2/month

Notes:

1. Cumulative impact (ie increase in concentrations due to the development plus background concentrations due to all other sources).
2. Excludes extraordinary events such as bushfires, prescribed burning, dust storms, sea fog, fire incidents or any other activity agreed by the Secretary.
3. Incremental impact (ie increase in concentrations due to the development alone, with zero allowable exceedances of the criteria over the life of the development.
4. Deposited dust is to be assessed as insoluble solids as defined by Standards Australia, AS/NZS 3580.10.1:2003:Methods for Sampling and Analysis of Ambient Air - Determination of Particulate Matter - Deposited Matter - Gravimetric Method.

3. Air quality monitoring methodology

Dust monitoring was undertaken within Sly's Quarry between the period August 2017 to April 2018. The monitoring occurred at two locations within the site as shown in Figure 1, whereby Dust Monitoring Location 1 (DML1) measured PM_{10}, total suspended particulates (TSP) and deposited dust (as insoluble solids) and Dust Monitoring Location 2 (DML2) measured deposited dust (as insoluble solids), as shown in Table 2. The monitoring locations are considered representative of the existing ambient air quality environment and were chosen by GHD and Newman Quarrying in order to measure any dust impacts from the site and are consistent with those nominated in the Air Quality Management Plan (AQMP) (GHD, 2017) approved by NSW Department of Planning and Environment on 9 May 2017.

Table 2 Monitoring stations

Site	Parameter Measured
DML1	Particulate Matter (PM_{10})
	Total Suspended Particulate (TSP)
	Dust Deposition (DDG)
DML2	Dust Deposition (DDG)

LEGEND

DML# DUST MONITORING LOCATION

N

GHD

NEWMAN QUARRYING
SLYS QUARRY

DUST MONITORING LOCATIONS

Job Number 22-17528
Revision A
Date OCT 2016

Figure 1

Plot Date: 17 October 2016 - 4:50 PM Plotted by: Steve Young Cad File No: N:\AU\Coffs Harbour\Projects\22\17528\CADD\Drawings\22-17528-FIG5-2.dwg

3.1 Meteorological conditions during measurement

Weather metrics (temperature, rainfall, humidity, etc.) were retrieved from the Bureau of Meteorology's (BoM) Yamba Pilot automatic weather station (AWS).

3.2 Instrumentation

PM_{10} and TSP were measured using a Dust Master Pro 7200 and deposited dust (as insoluble solids) was measured using a dust deposition gauge (DDG). All air quality instrumentation was in current NATA calibration at the time of use.

All instruments used conform to the respective requirements of the following standards:

- AS/NZS 3580.10.1:2016: Methods for sampling and analysis of ambient air - Determination of particulate matter - Deposited matter - Gravimetric method
- AS/NZS 3580.12.1:2015: Methods for sampling and analysis of ambient air - Determination of light scattering - Integrating nephelometer method

Where possible all sampling inlet positions complied with the following criteria, as per Australian Standards AS 3580.1.1 – 2016: Methods of sampling and analysis of ambient air: Guide to siting air monitoring equipment (Standards Australia, 2016):

- Clear sky angle 120º
- Unrestricted airflow of 270º around sample inlet or 180º if inlet is on side of building
- 10 m from any object with a height exceeding 2 m below the height of the sample inlet
- 10 m from road
- No extraneous sources nearby

Details of air quality monitoring instrumentation used is summarised Table 3.

Table 3 Instrumentation details

Site	Pollutants	Equipment Type	Start Date	End Date
DML1	PM_{10}, TSP,	Dust Master Pro 7200	10/08/2017	1/04/2018
	Deposited dust	Dust Deposition Gauge	9/08/2017	8/04/2018
DML2	Deposited dust	Dust Deposition Gauge	9/08/2017	8/04/2018

3.3 Air quality monitoring dates

Air quality measurements for PM_{10} and TSP were taken in a non-contiguous manner throughout the data collection period due to a number of equipment failures, replacement parts and firmware updates. The periods as described below:

- 11 August 2017 – 15 August 2017
- 18 August 2017 – 23 August 2017
- 2 September 2017 – 11 October 2017
- 28 October 2017
- 2 November 2017 – 6 November 2017
- 14 November 2017 – 17 November 2017
- 30 November 2017
- 2 January 2018 – 12 January 2018
- 15 January 2018 – 1 February 2018 (TSP only)
- 12 February 2018 – 1 April 2018

Dust deposition measurements were taken continuously from 9 August 2017 to 8 April 2018. However, it is noted that in the period from 9 September 2017 to 8 October 2017 the Dust Deposition Gauge at DML1 was tampered with resulting in the funnel being stolen and leaves and rubbish being left in the bottle.

4. PM_{10} results

The results of the PM_{10} measurements at site DML1 are presented in Figure 2. A discussion of any exceedances and the detailed time trace monitoring charts for PM_{10} for days where an exceedance has occurred are presented below.

As less than a year's worth of PM_{10} data has been collected this has been assessed against the 24 hour criteria. Due to the intermittency of data in the collection period, 24 hour averages were calculated only for days with 100% data availability.

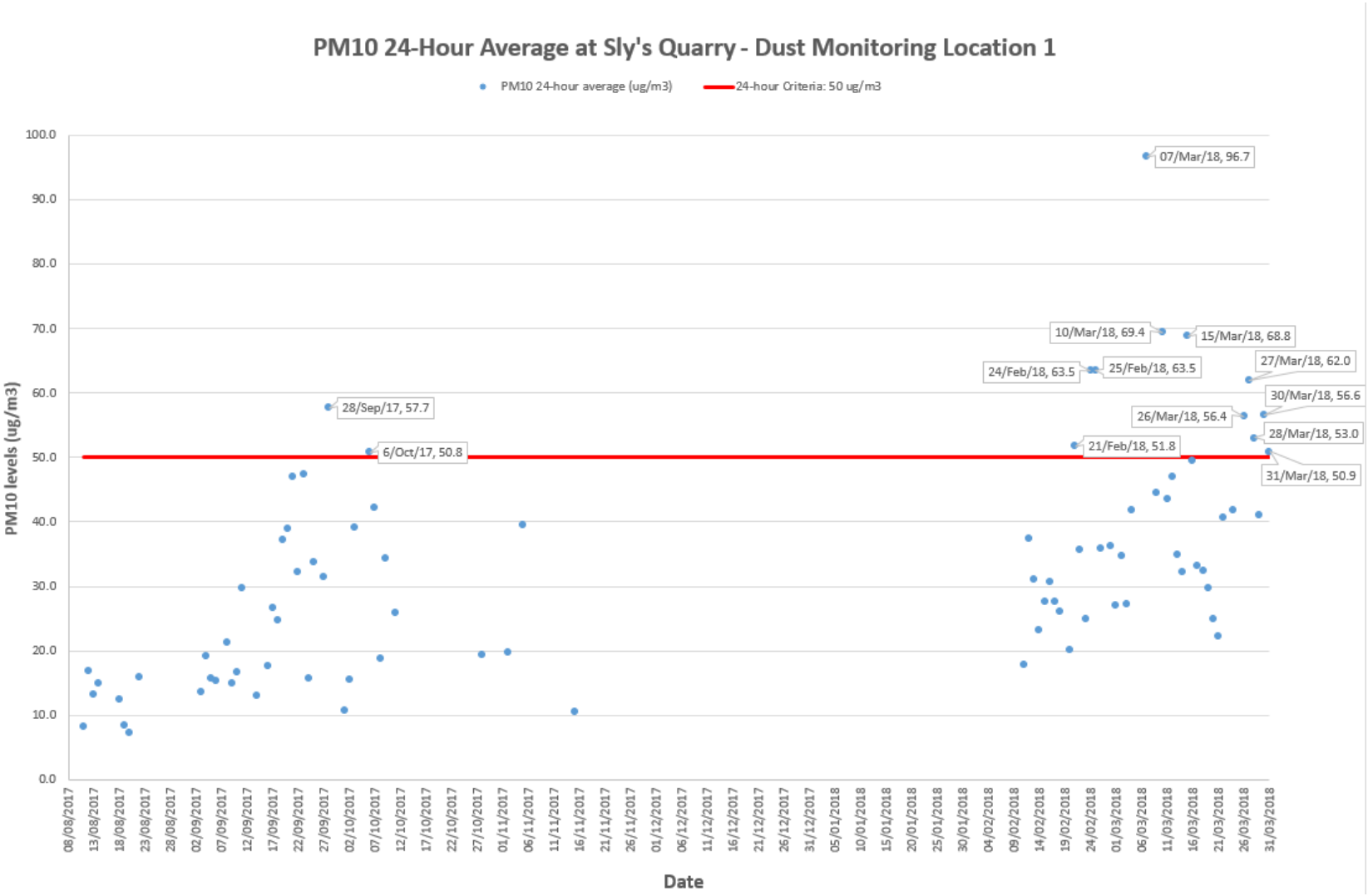


Figure 2 PM_{10} 24-Hour Average at Sly's Quarry - Dust Monitoring Location 1

4.1 Causes of PM_{10} exceedances

Detailed time trace monitoring charts are presented in Figure 3 to Figure 15 for PM_{10} concentration, relative humidity and times in which the quarry is not in operation (shaded out sections in charts)[1] for days in which the PM_{10} 24-hour criteria has been exceeded.

A discussion of the individual exceedance days is provided in Section 4.1.1 to 4.1.13 and summarised in Table 4. The cause of the above-described PM_{10} exceedances is likely to be a result of one or more of the following, discussed below:

- Instrument artefact due to humidity and rainfall signal interference
- Sly's Quarry's operations
- Other

Instrument artifact

Increased or decreased recorded PM_{10} concentrations as a result of instrument reading artifacts. It is noted that in Appendix A of AS/NZS 3580.12.1:2015: Methods for sampling and analysis of ambient air - Determination of light scattering - Integrating nephelometer method, there are a number of factors that could influence the reading. It is stated that:

"One significant source of uncertainty for measurement of aerosol scattering coefficient is the effect of the humidity of the sample air (inside the nephelometer)".

Therefore, if a strong correlation between PM_{10} and relative humidity exists then the exceedance may be due to high humidity and is therefore not likely to be related to operations at Sly's Quarry.

Sly's Quarry's operations

Increased PM_{10} concentrations as a result of quarrying operations, wind erosion and blasting.

Sly's Quarry's operational details are as follows:

- Employee arrival:
  - Monday to Saturday: from 6:30 am
  - Sunday, public holidays or if engaged in maintenance, site security or other similar activities: from 7:30 am
- Quarry operations including loading and dispatch of laden trucks:
  - Monday to Friday: 7:00 am to 6:00 pm
  - Saturday: 7:00 am to 1:00 pm (or 7:00 am to 4:00 pm if fulfilling a contract for the supply of quarry products to the Pacific Highway update project)
  - At no time on Sundays or public holidays
- Blasting
  - Monday to Friday: 9:00 am to 3:00 pm (except public holidays)
- Maintenance:
  - May be conducted at any time, provided that these activities are not audible at any privately-owned residence

If a PM_{10} peak occurs whilst the quarry is in operation, then the exceedance could potentially be related to operations at Sly's Quarry if meteorological conditions demonstrate a correlation.

[1] Note: worst case operational conditions have been applied (7:00 am to 6:00 pm Monday to Friday, 7:00 am to 4:00 pm Saturday, non-operational on Sundays and public holidays)

Other

Other sources of PM_{10} resulting in exceedances of PM_{10} concentrations.

If a PM_{10} peak occurs whilst the quarry is in not in operation, then the exceedance is not likely to be related to operations at Sly's Quarry if meteorological conditions demonstrate no correlation from source to receiver.

4.1.1 Thursday 28 September 2017

Figure 3 shows numerous PM_{10} peaks both during and outside of Sly's Quarry's operational period. The PM_{10} concentration does not appear to correlate well with the relative humidity trend and no rain occurred during this 24-hour period. The wind direction was largely from the North (NNW, N, NNE) until 10:30 am at which time the wind direction began to swing east and by 1:50 pm the prevailing wind was originating from the SE placing the Quarry downwind of the monitoring site during these exceedances, indicating the exceedances were coming from another source, see Appendix A for weather charts for the 24 hour period.

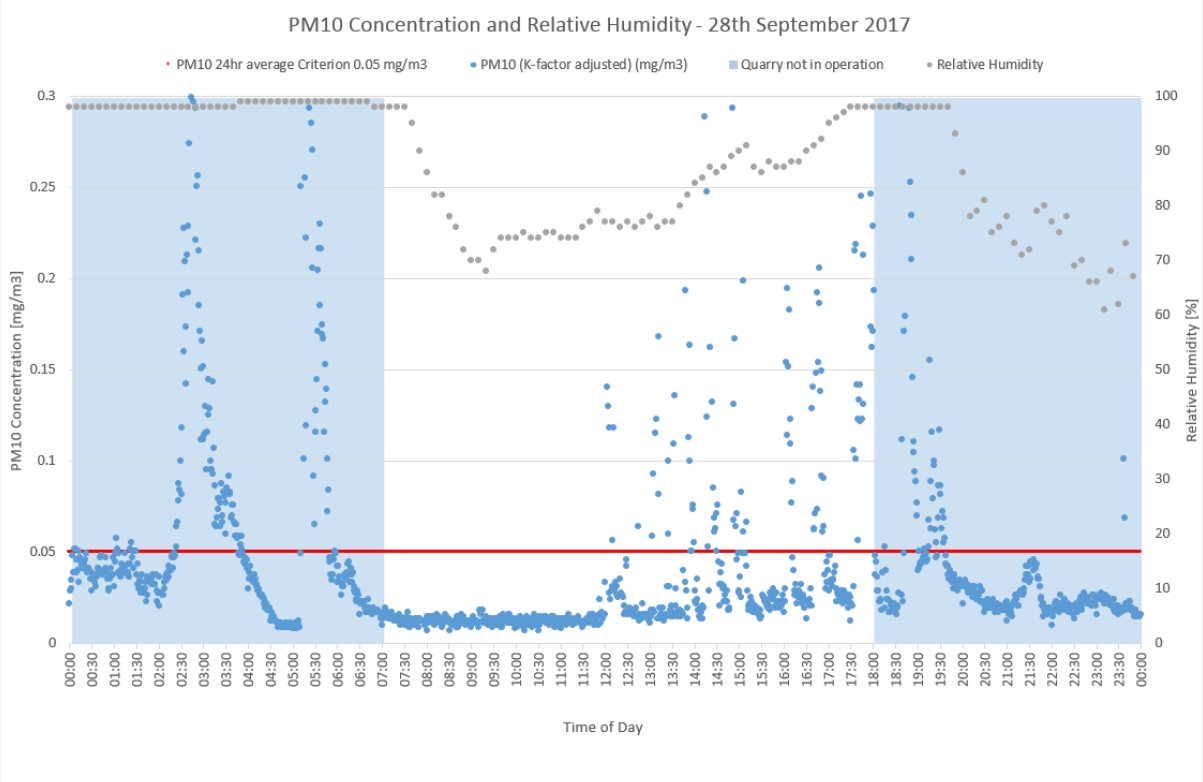


Figure 3 PM_{10} concentration and relative humidity as a 1-minute time trace – 28 September 2017

4.1.2 Friday 6 October 2017

Figure 4 shows that the largest PM_{10} concentrations occur after 6:00 pm, after Sly's Quarry is not in operation and during a high humidity period. One small PM_{10} peak (53 µg/m^3) occurs whilst the quarry is operational at 3:15 pm at the point of greatest air pressure drop due to a change in the weather pattern.

The exceedance was triggered due to the large amount of higher concentration peaks in the evening e.g. 323 µg/m^3 at 9:00 pm, and is therefore likely related to the pressure drop and weather change bringing rain from 5:00 pm onward, reaching 15.4 mm by 7:30 pm and continuing to rain into the following day.

Further the weather change brought with it a sweeping change in wind direction from northerly to SSE and SE placing the monitoring station upwind of the quarry and therefore outside of its influence during the times of exceedance. The wind speed also increased up to 39 km/hr or 10.8 m/s during this SE front, see Appendix A for weather charts for the 24 hour period.

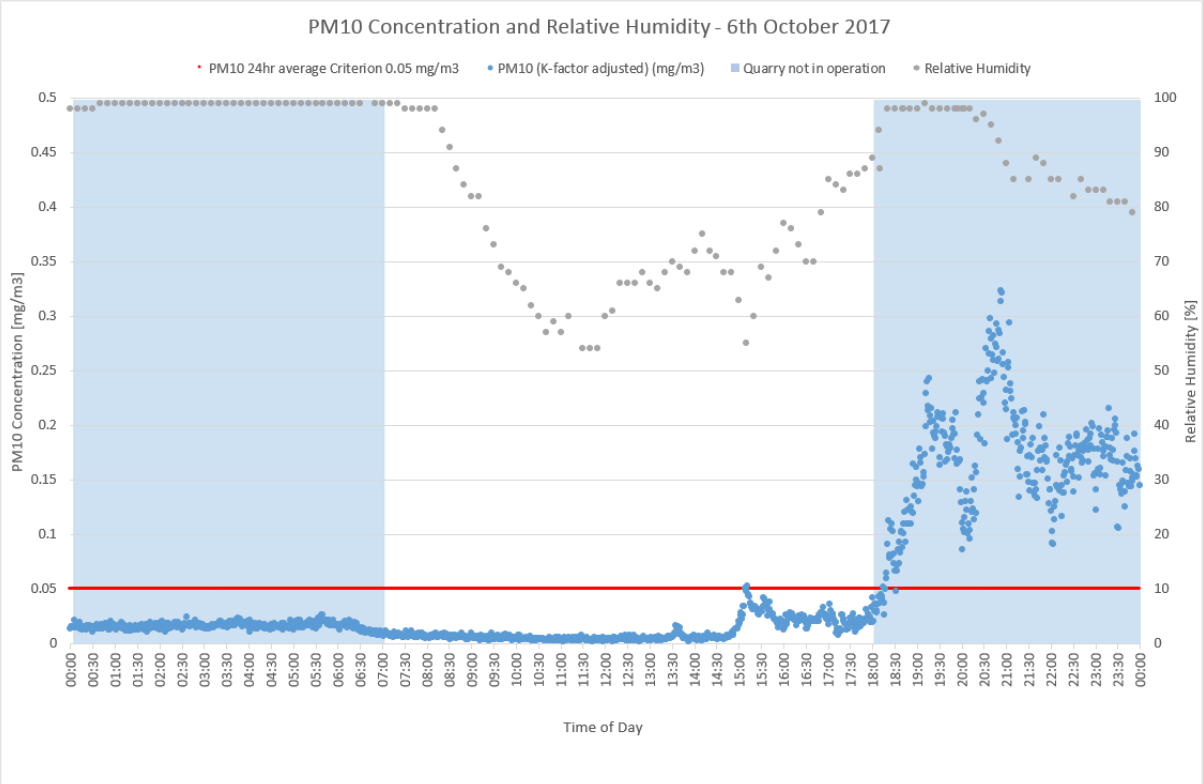


Figure 4 PM_{10} concentration and relative humidity as a 1-minute time trace – 6 October 2018

4.1.3 Wednesday 21 February 2018

Figure 5 shows a clear correlation between PM_{10} concentration and relative humidity and therefore this exceedance is likely not valid as it occurred as a result of an instrument artifact. Moreover, it is also noted that the largest values of PM_{10} concentration occur whilst the quarry is not in operation (before 7:00 am) and during the period from midnight until 9:00 am when heavy rain fell (20.4 mm). The wind direction on the day also placed the monitoring site DML1 upwind and away from the influence of the quarry with SE and ESE winds all day. Early morning winds were significant during this period also with winds up to 50 km/hr or 13.9 m/s (strong breeze on the Beaufort scale), see Appendix A for weather charts for the 24 hour period.

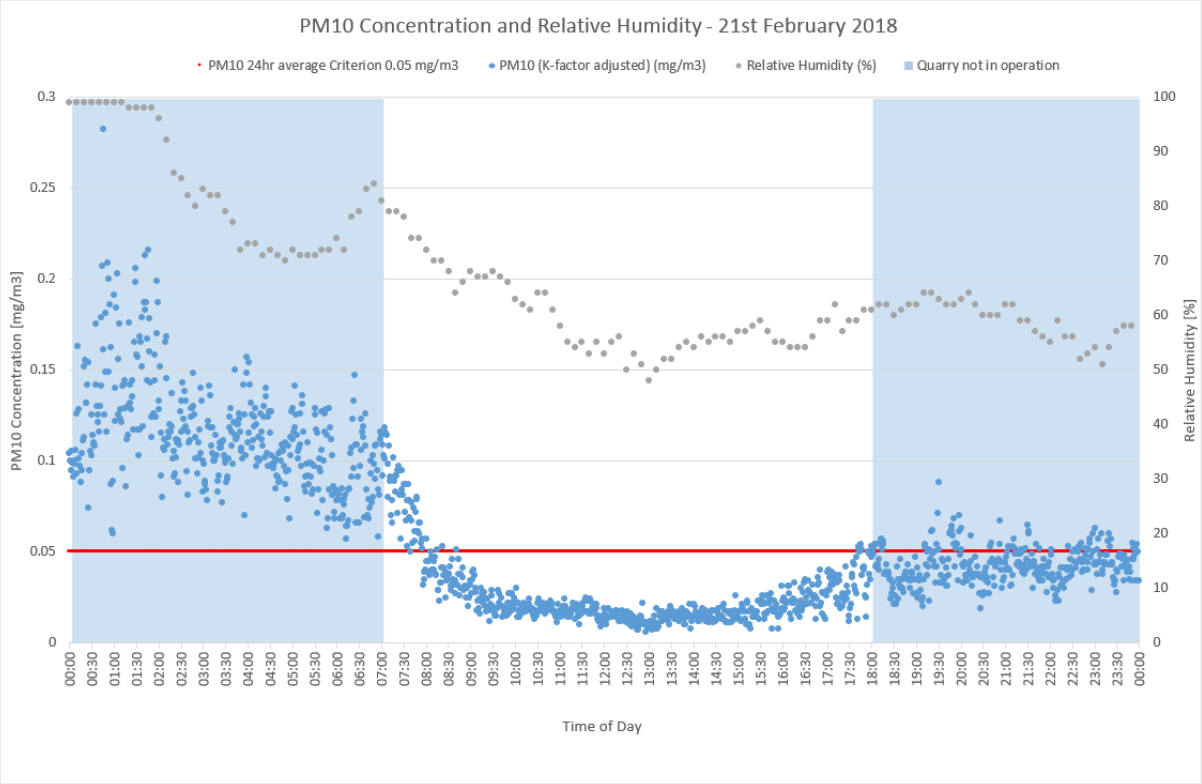


Figure 5 PM_{10} concentration and relative humidity as a 1-minute time trace - 21 February 2018

4.1.4 Saturday 24 February 2018

Figure 6 shows that two significant peaks occur above the criterion prior to 8:30 am (228 µg/m^3 at 12:30 am) and after 5:00 pm (208 µg/m^3 at 9:45 pm). Although the concentrations above the criterion are recorded whilst the quarry is in operation (7:00 am to 8:30 am), these exceedances are relatively small compared to the peaks recorded prior to, and after this time period. Further it is noted the peak during quarry operations occurs during 100% humidity and during heavy rainfall (12 mm) with rainfall stopping briefly for a 30 minute period from approximately 9:30 am through to 10 am and then continuing to rain all day and into Sunday the following day with a further 11 mm. Therefore, it is likely that this exceedance is related aberrations in the measurements due to the high rainfall and humidity during the period and is not related to the Slys Quarry operation, see Appendix A for weather charts for the 24 hour period.

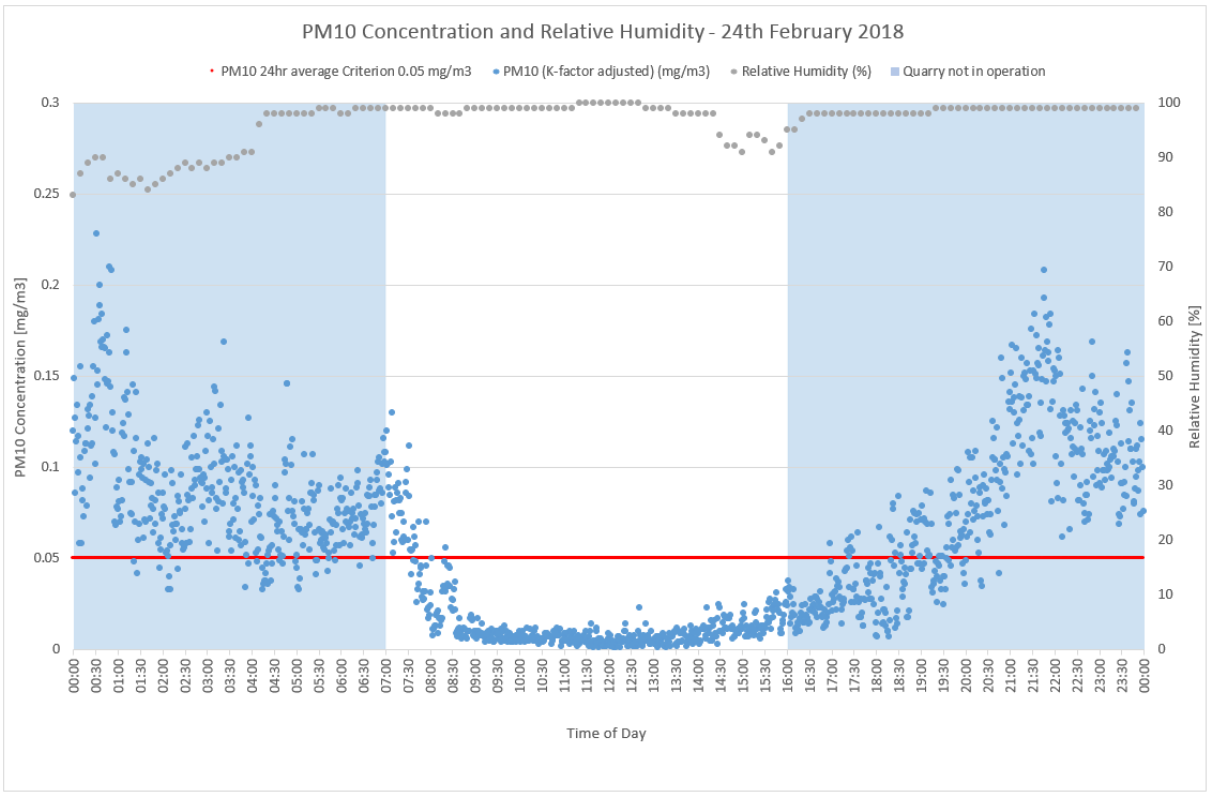


Figure 6 PM_{10} concentration and relative humidity as a 1-minute time trace – 24 February 2018

4.1.5 Sunday 25 February 2018

Figure 7 shows a strong correlation between PM_{10} concentration and relative humidity and therefore this exceedance is likely a result of instrument artefact due to weather conditions during the measurement period. For example, from midnight on Sunday morning through to 9:00 am that morning constant rainfall was recorded at 11 mm. This is the same period where the greatest readings above the 50 µg/m^3 (0.05 mg/m^3) criterion was recorded. The evening peak occurred during a low pressure trough following the sun setting and solar radiation falling off, see Appendix A for weather charts for the 24 hour period.

Moreover, as the 25 February 2018 was a Sunday, Sly's Quarry was not in operation and therefore highly unlikely this exceedance occurred as a result of quarry operations.

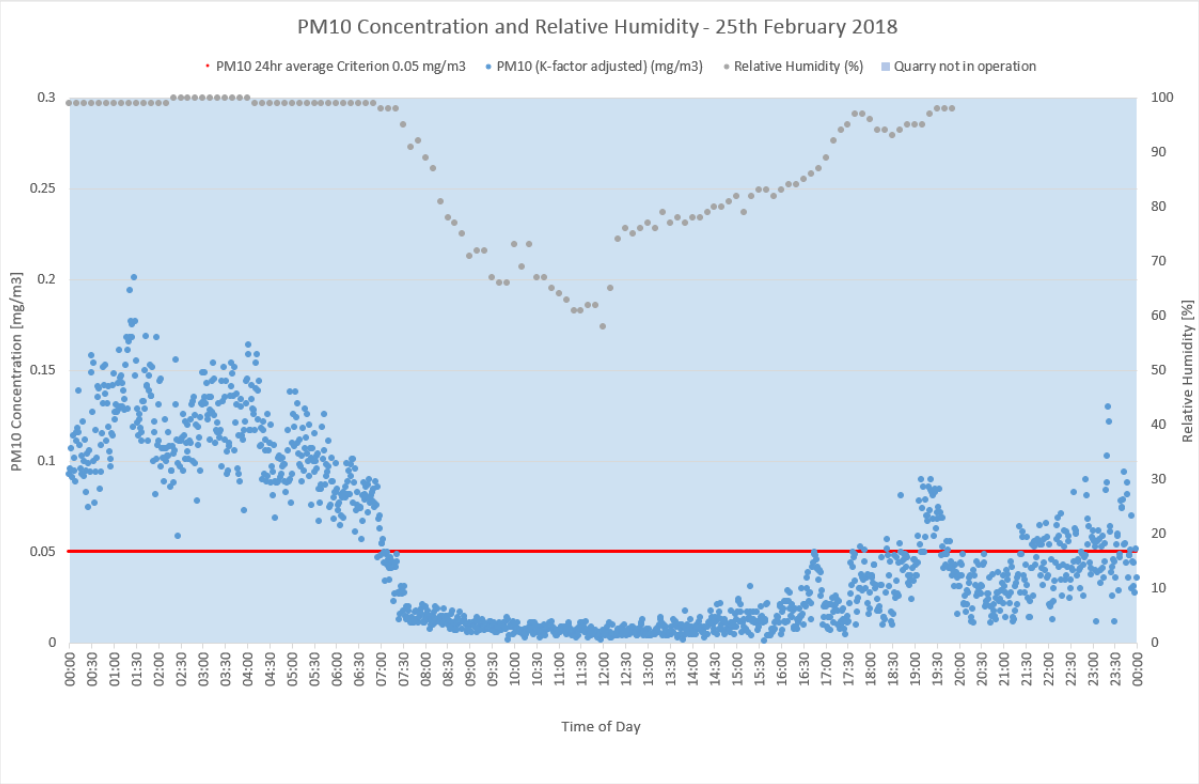


Figure 7 PM_{10} concentration and relative humidity as a 1-minute time trace – 25 February 2018

4.1.6 Wednesday March 7 2018

As described above and as shown in Figure 8, a strong correlation exists between PM_{10} concentration and relative humidity. Therefore, this exceedance is likely a result of instrument artifact. Evidence of this is sought from the local Yamba weather station which shows 33.6 mm of rain fell in a constant manner from midnight on the Wednesday morning through to 9:00 am that morning, which was the time the highest levels where recorded. Winds were significant during this period with wind speeds up to 50 km/hr or 13.9 m/s.

Further, the wind direction for the entire day originated predominately from the SE putting the quarry in a downwind location relative to DML1 and hence any exceedance would have to have originated from a source from the SE rather than Slys Quarry, see Appendix A for weather charts for the 24 hour period.

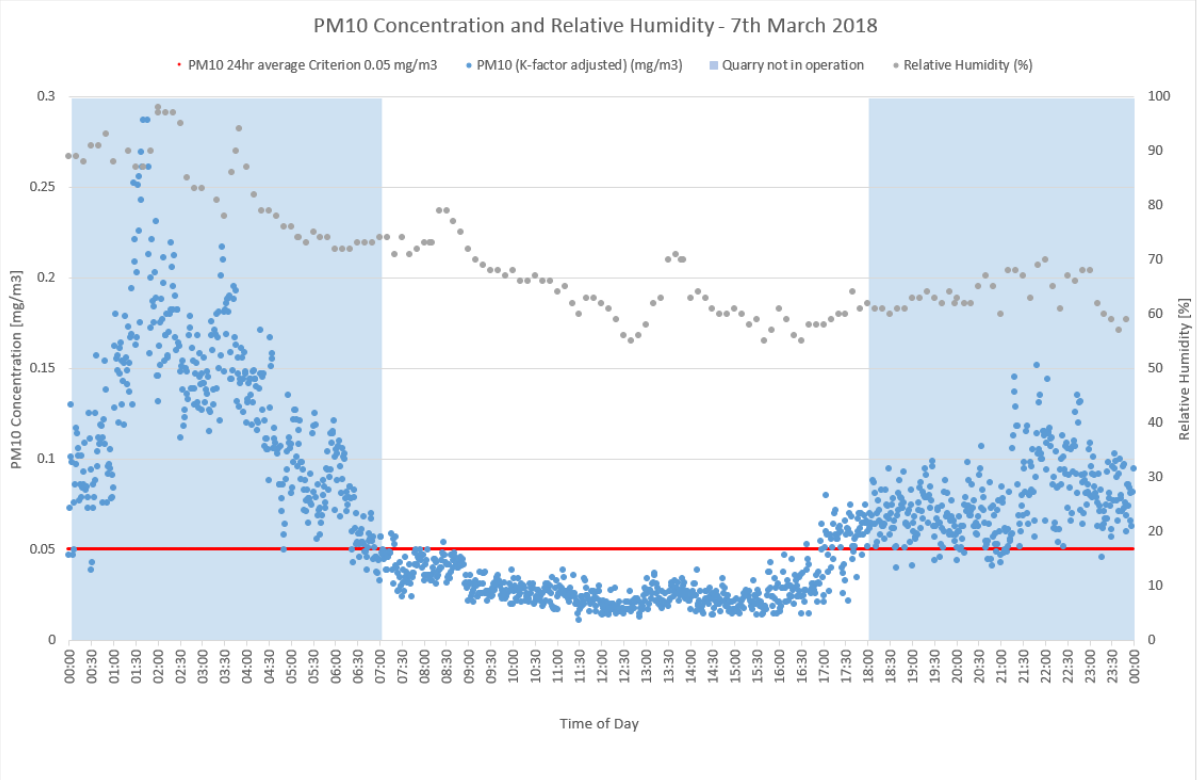


Figure 8 PM_{10} concentration and relative humidity as a 1-minute time trace – 7 March 2018

4.1.7 Saturday 10 March 2018

Figure 9 show that values recorded above the PM_{10} 24-hour criterion are clustered between 12:00 am to 8:00 am (peak of 209 µg/m^3 at 3:00 am) and 4:00 pm to 11:59 pm (peak of 140 µg/m^3 at 7:15 pm). Majority of these values above the criterion occur whilst the quarry is not in operation, with the exception of values recorded around 7:30 am (100 µg/m^3). However, the rain record shows rain fell constantly (3.2-4 mm) from midnight on Saturday morning though to 9:00 am, at which time the rain intensity dropped off to a light or misty rain for the remainder of the day and subsequent night time period. Further, during this 24-hour period the wind direction originated from the SE and SSE placing monitoring location DML1 upwind of the quarry for the entire day and hence any exceedance would have had to originate from another source, see Appendix A for weather charts for the 24 hour period.

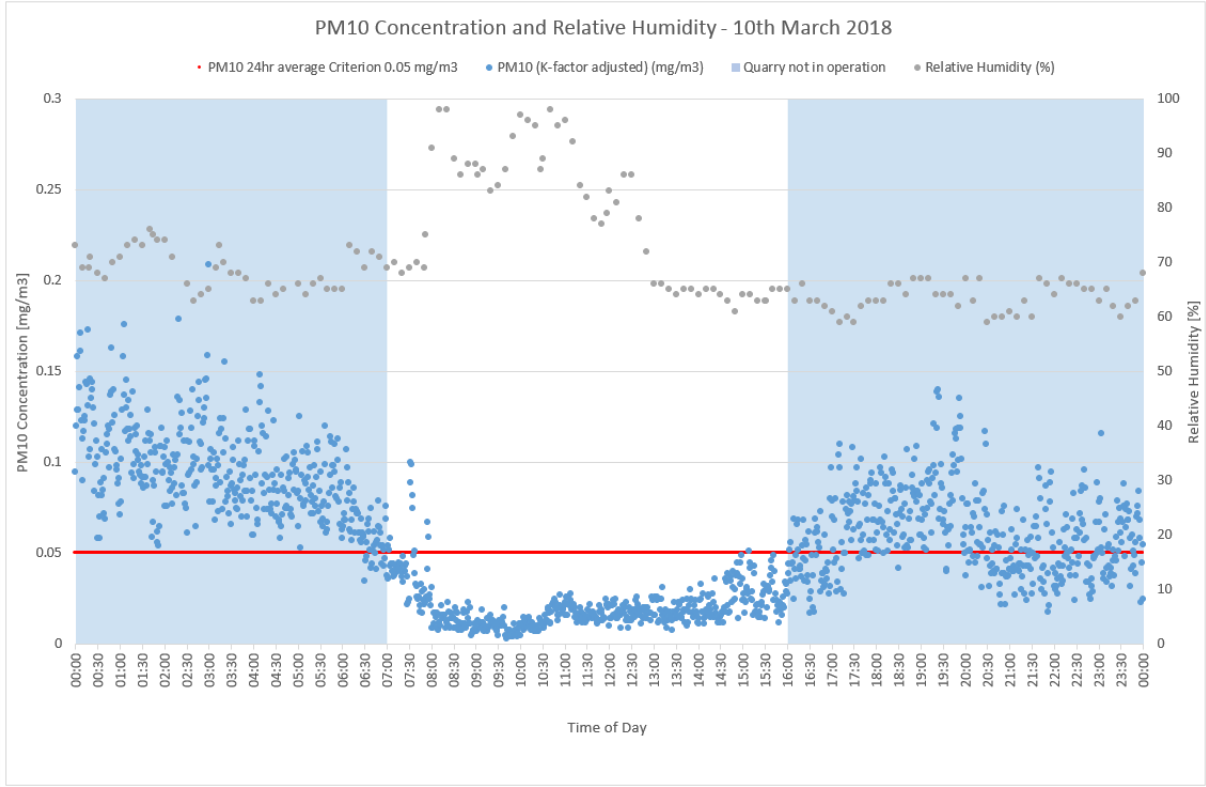


Figure 9 PM_{10} concentration and relative humidity as a 1-minute time trace – 10 March 2018

4.1.8 Thursday 15 March 2018

Figure 10 shows a strong correlation between PM_{10} concentration and relative humidity. Therefore, this exceedance is likely a result of instrument artifact.

The rain record shows rain fell constantly (4.6 mm) from midnight on Thursday morning through to 9:00 am, at which time the rain intensity dropped off to a light or misty rain for the remainder of the day and subsequent night-time period. This would explain the high early morning peak where humidity was close to 100% saturation during the higher rainfall period.

The wind direction changed to a SE following the reduction in rainfall after 9:00 am and the humidity dropped and wind speeds increased causing an increase in particulates during the afternoon, however the origin of the material during this uplift would have had to come from the SE direction and therefore cannot be attributed to the quarry operation, see Appendix A for weather charts for the 24 hour period.

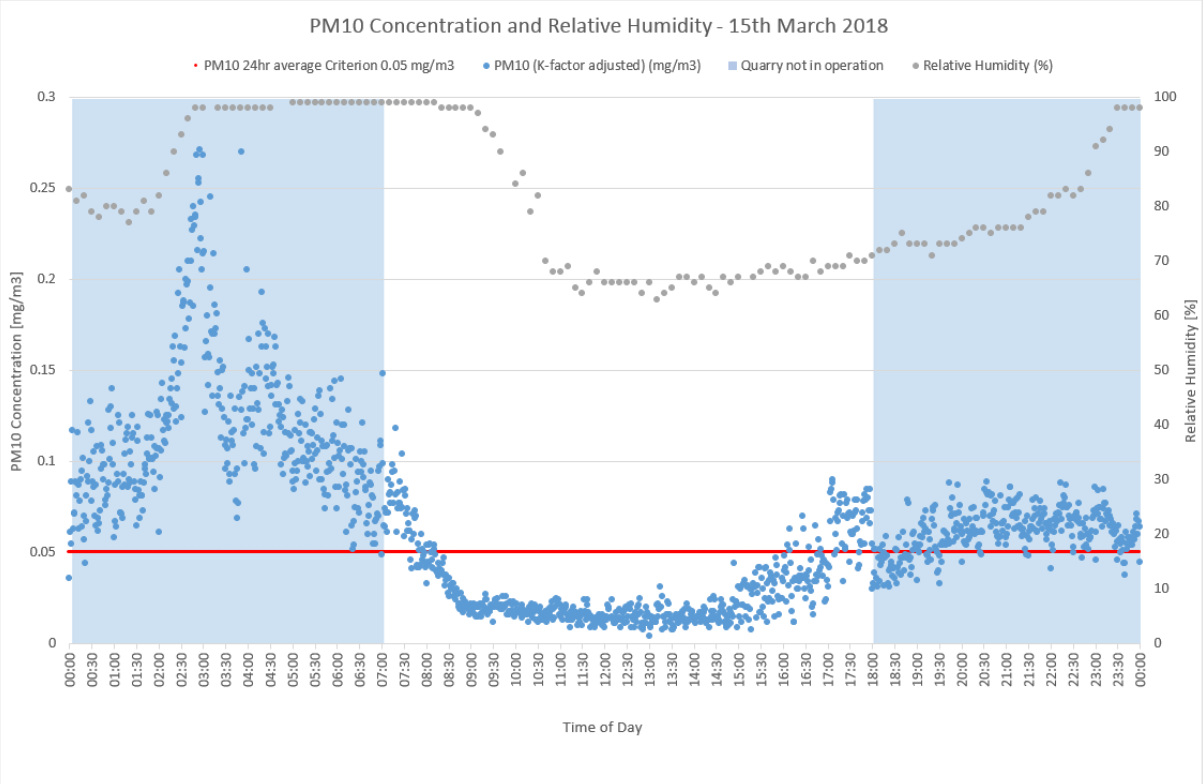


Figure 10 PM_{10} concentration and relative humidity as a 1-minute time trace – 15 March 2018

4.1.9 Monday 26 March 2018

Figure 11 shows a strong correlation between PM_{10} concentration and relative humidity during the 24-hour period. No rain fell during this period and the wind direction placed the quarry operation upwind of DML1 suggesting any exceedance would originate from the quarry.

However, during the operational period, levels of PM_{10} were predominately below the 50 µg/m^3 (0.05 mg/m^3) criterion and it is only due to the high humidity during the night-time period that levels significantly exceed the criterion, see Appendix A for weather charts for the 24 hour period. Therefore, this exceedance is likely a result of instrument artifact.

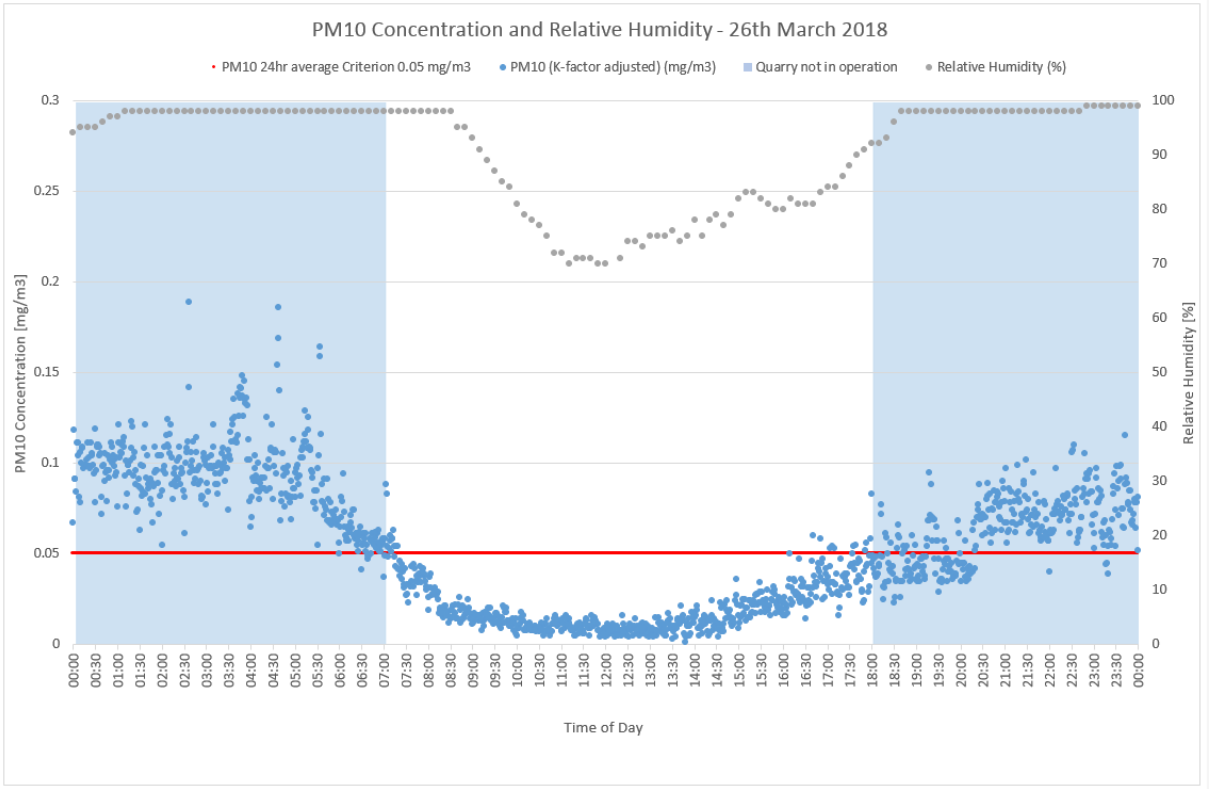


Figure 11 PM_{10} concentration and relative humidity as a 1-minute time trace – 26 March 2018

4.1.10 Tuesday 27 March 2018

Figure 12 shows a correlation between relative humidity and temperature and is likely a continuation of measurement artifact from the previous day (Monday 26 March 2018) (see Section 4.1.9). Moreover, it can be seen that a large PM_{10} concentration peak occurred at 3:45 am (182 µg/m^3) with other high values occurring at around 1:00 am (255 µg/m^3). Values above the criterion were also recorded after 4:30 pm. The exceedance in the 24-hour average criterion however, is likely caused by the large peak at 3:45 am, and is therefore unlikely related to Sly's Quarry operations and more likely due to the high humidity during this period.

Further, the entire day from 3:30 am in the morning until midnight showed the wind direction as originating from the SE and SSE placing the monitoring station DML1 upwind of the quarry. Therefore, any exceedances measured at the monitoring station that were unrelated to the high humidity would have had to originate from a SE direction rather than from the quarry operation, see Appendix A for weather charts for the 24 hour period.

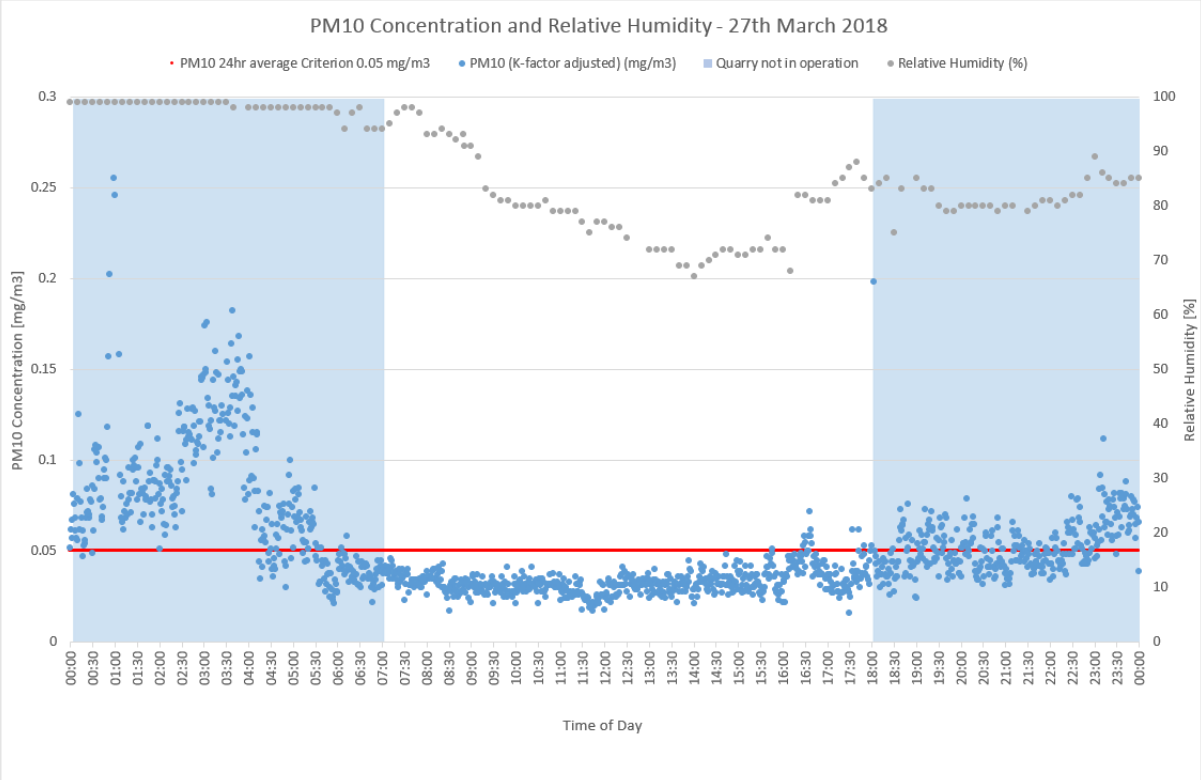


Figure 12 PM_{10} concentration and relative humidity as a 1-minute time trace – 27 March 2018

4.1.11 Wednesday 28 March 2018

Figure 13 shows a trend between PM_{10} concentration and relative humidity as described in prior days Monday 26 March 2018 (see Section 4.1.9) and Tuesday 27 March 2018 (see Section 4.1.10) and is likely a continuation of measurement artefact and the southerly wind direction. Moreover, it is noted that minimal PM_{10} measurements were recorded above the 24-hour criterion during periods when the Sly's Quarry is operational, see Appendix A for weather charts for the 24 hour period.

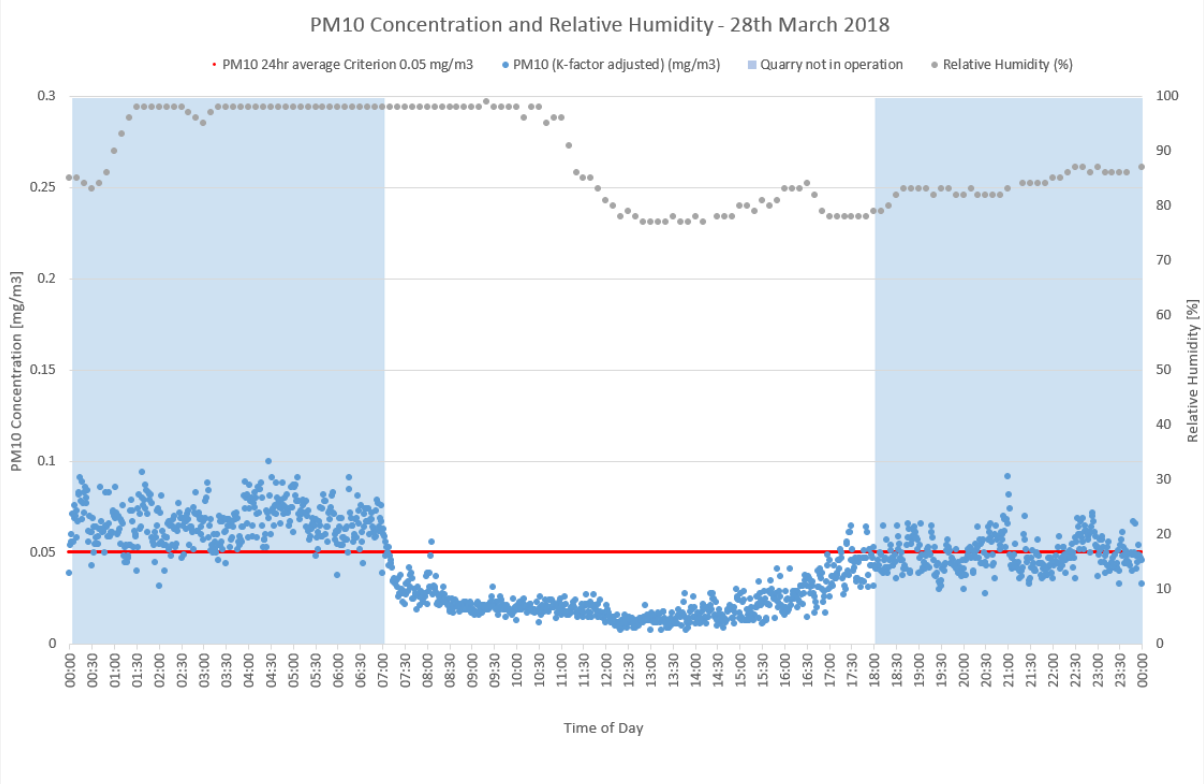


Figure 13 PM_{10} concentration and relative humidity as a 1-minute time trace – 28 March 2018

4.1.12 Friday 30 March 2018

Figure 14 shows a strong correlation between PM_{10} concentration and relative humidity, therefore this exceedance is likely a result of instrument artifact. Moreover, as 30 March 2018 was a public holiday (Good Friday), Sly's Quarry was not in operation and therefore highly unlikely this exceedance occurred as a result of quarry operations.

Weather data confirms this assumption further with early morning rain (7 mm) occurring from midnight the day before through to 9:00 am in the morning. Rainfall drops off from this time to a continuous light rain or mist.

The wind direction was predominantly SW until 10 am in the morning becoming easterly for the remainder of the day, see Appendix A for weather charts for the 24 hour period.

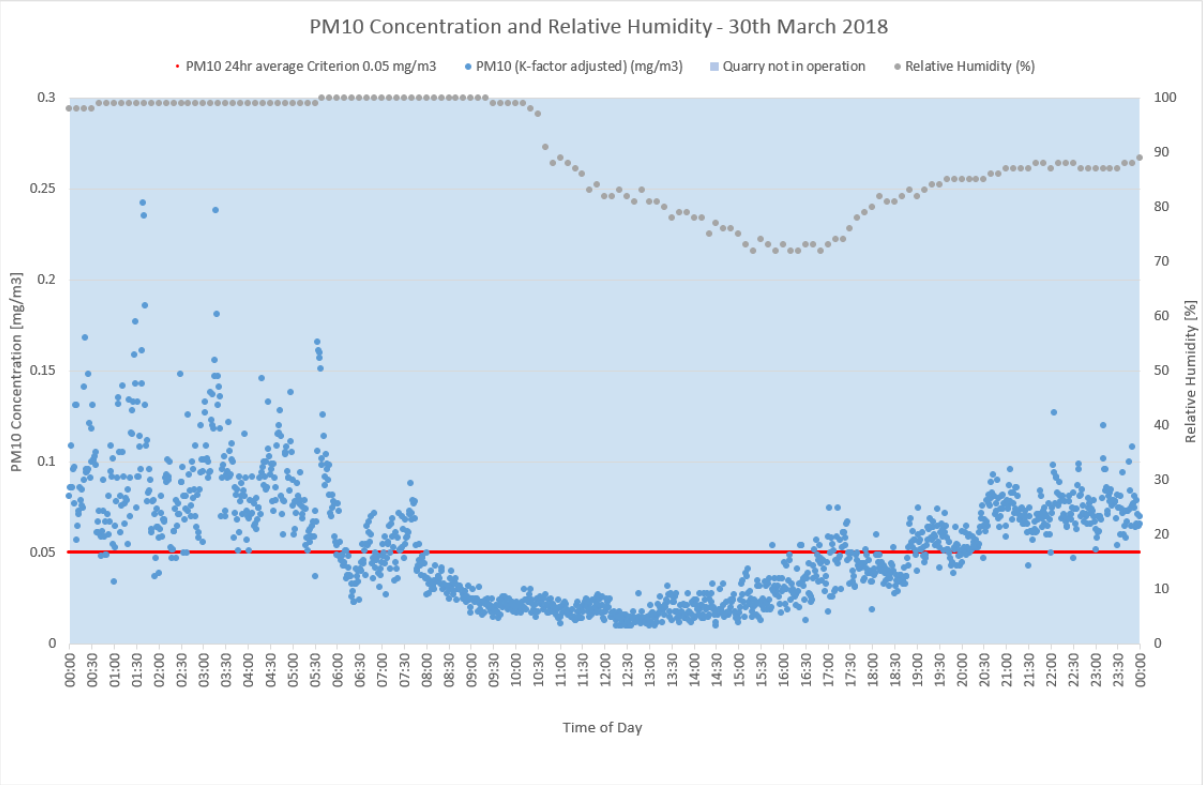


Figure 14 PM_{10} concentration and relative humidity as a 1-minute time trace – 30 March 2018

4.1.13 Saturday 31 March 2018

Figure 15 shows a strong correlation between PM_{10} concentration and relative humidity, as described earlier for Friday 30 March 2018 (see Section 4.1.12) therefore this exceedance is likely also a result of instrument artifact. Moreover, as 31 March 2018 was a public holiday (Easter Saturday), Sly's Quarry was not in operation and therefore highly unlikely this exceedance occurred as a result of quarry operations.

The wind direction was predominantly SW until 7:00 am in the morning shifting south then ESE and SE by 8:40 am where it remained until approximately 9:00 pm, placing the monitoring station DML1 in an upwind location relative to the quarry, see Appendix A for weather charts for the 24-hour period.

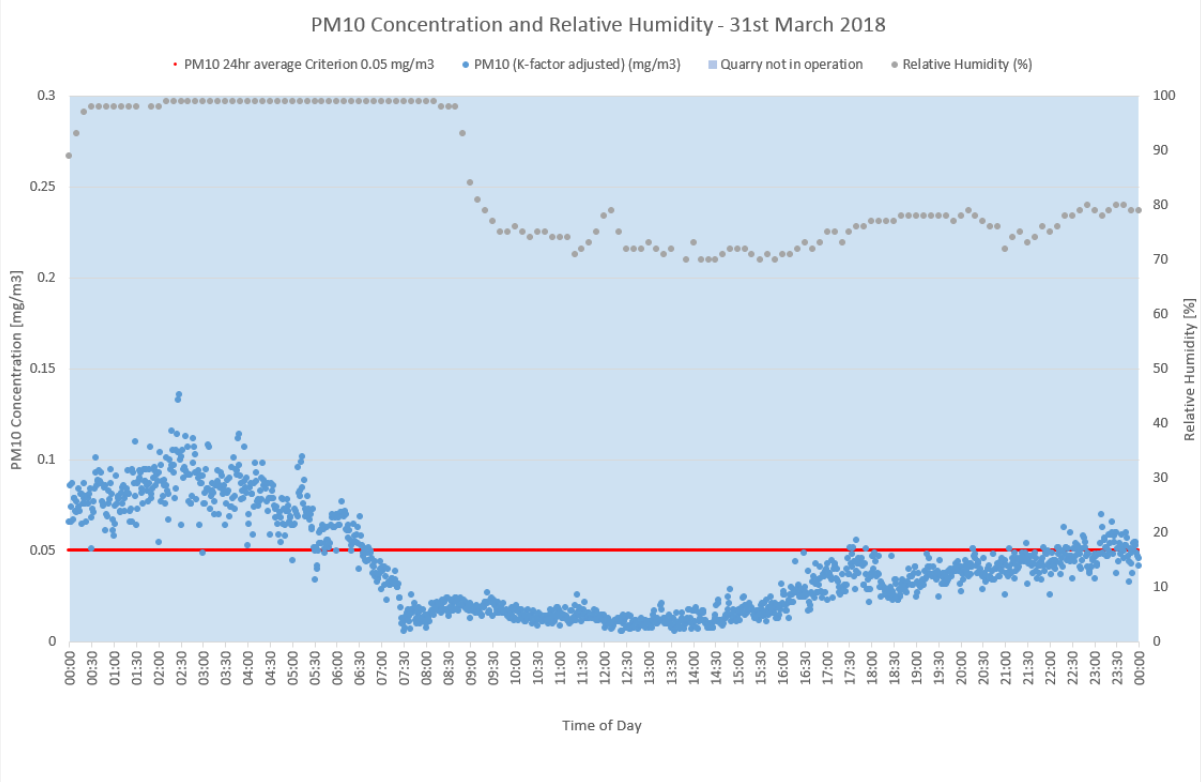


Figure 15 PM_{10} concentration and relative humidity as a 1-minute time trace – 31 March 2018

4.2 Summary of PM_{10} exceedances

A summary of the days where the PM_{10} 24-hour criterion was exceeded and the likely cause of the exceedance is described in Table 4. Of the exceedances noted in Figure 2 and from the detailed analysis of the cause of the PM_{10} exceedances in Sections 4.1.1 through 4.1.13, it is not believed any of the exceedances can be attributed to the quarry operation.

Table 4 Summary of PM_{10} exceedances

Date	PM_{10} concentration (mg/m^3)	PM_{10} criteria (mg/m^3) (24 hour)	Figure reference	Likely cause of exceedance
28/09/2017	57.7	50	Figure 3	Other
6/10/2017	50.8		Figure 4	Other
21/02/2018	51.8		Figure 5	Other
24/02/2018	63.3		Figure 6	Instrument artifact
25/02/2018	63.5		Figure 7	Instrument artifact
7/03/2018	96.7		Figure 8	Other
10/03/2018	69.4		Figure 9	Other
15/03/2018	68.8		Figure 10	Other
26/03/2018	56.4		Figure 11	Instrument artifact
27/03/2018	62.0		Figure 12	Other
28/03/2018	53.0		Figure 13	Instrument artifact
30/03/2018	56.6		Figure 14	Instrument artifact
31/03/2018	50.9		Figure 15	Other

5. TSP results

The TSP criterion of 90 µg/m^3 applicable to the Slys Quarry operation is measured using a yearly average. However, as the sampling period is less than a 12 month period, a graph of current results and 24 hourly averages have been presented instead. The number of days where data containing a full 24-hour period was available has been presented in Table 5 and Figure 16 below. Days where data does not achieve a full 24-hour period are due to instrument failure due to power failure or downtime in the instrumentation. As can be seen from the table and figure below, the 24-hour TSP values all lie below the annual criterion level and as such provide a good indication that the annual criterion is currently being achieved.

Table 5 Daily TSP results

ID	Date	24-hour TSP concentration (µg/m^3)	ID	Date	24-hour TSP concentration (µg/m^3)
1	11/08/2017	10.2	51	25/01/2018	75.8
2	12/08/2017	20.5	52	26/01/2018	44.8
3	13/08/2017	15.9	53	27/01/2018	43.4
4	14/08/2017	17.5	54	28/01/2018	53.4
5	18/08/2017	16.0	55	29/01/2018	77.4
6	19/08/2017	10.9	56	30/01/2018	85.4
7	20/08/2017	9.1	57	31/01/2018	70.7
8	22/08/2017	19.5	58	11/02/2018	26.0
9	3/09/2017	16.2	59	12/02/2018	49.0
10	4/09/2017	24.4	60	13/02/2018	25.5
11	5/09/2017	20.1	61	14/02/2018	31.9
12	6/09/2017	19.5	62	15/02/2018	39.1
13	8/09/2017	27.4	63	16/02/2018	28.7
14	9/09/2017	19.1	64	17/02/2018	32.0
15	10/09/2017	20.6	65	18/02/2018	23.5
16	11/09/2017	37.6	66	20/02/2018	32.1
17	14/09/2017	16.6	67	21/02/2018	65.4
18	16/09/2017	22.5	68	22/02/2018	29.7
19	17/09/2017	31.8	69	23/02/2018	58.3
20	18/09/2017	30.2	70	24/02/2018	66.2
21	19/09/2017	47.7	71	25/02/2018	57.9
22	20/09/2017	48.2	72	26/02/2018	48.6
23	21/09/2017	59.6	73	28/02/2018	37.6
24	22/09/2017	40.5	74	1/03/2018	39.9

ID	Date	24-hour TSP concentration (µg/m^3)	ID	Date	24-hour TSP concentration (µg/m^3)
25	23/09/2017	62.6	75	2/03/2018	31.6
26	24/09/2017	19.7	76	3/03/2018	38.7
27	25/09/2017	43.2	77	4/03/2018	43.8
28	26/09/2017	37.9	78	7/03/2018	81.8
29	28/09/2017	73.9	79	8/03/2018	46.3
30	1/10/2017	12.7	80	9/03/2018	77.2
31	2/10/2017	18.1	81	10/03/2018	65.1
32	3/10/2017	47.7	82	11/03/2018	49.5
33	6/10/2017	60.7	83	12/03/2018	45.7
34	7/10/2017	49.2	84	13/03/2018	37.0
35	8/10/2017	21.4	85	14/03/2018	61.5
36	9/10/2017	40.1	86	15/03/2018	75.2
37	11/10/2017	30.1	87	16/03/2018	45.2
38	28/10/2017	22.2	88	17/03/2018	39.0
39	2/11/2017	23.7	89	18/03/2018	33.9
40	5/11/2017	48.6	90	19/03/2018	31.1
41	15/11/2017	12.3	91	20/03/2018	26.5
42	15/01/2018	50.0	92	21/03/2018	37.0
43	16/01/2018	66.4	93	22/03/2018	52.7
44	17/01/2018	56.0	94	24/03/2018	65.2
45	18/01/2018	66.0	95	26/03/2018	60.4
46	19/01/2018	88.1	96	27/03/2018	78.4
47	20/01/2018	67.6	97	28/03/2018	49.2
48	21/01/2018	64.4	98	29/03/2018	56.9
49	22/01/2018	46.3	99	30/03/2018	62.3
50	24/01/2018	49.5	100	31/03/2018	50.2

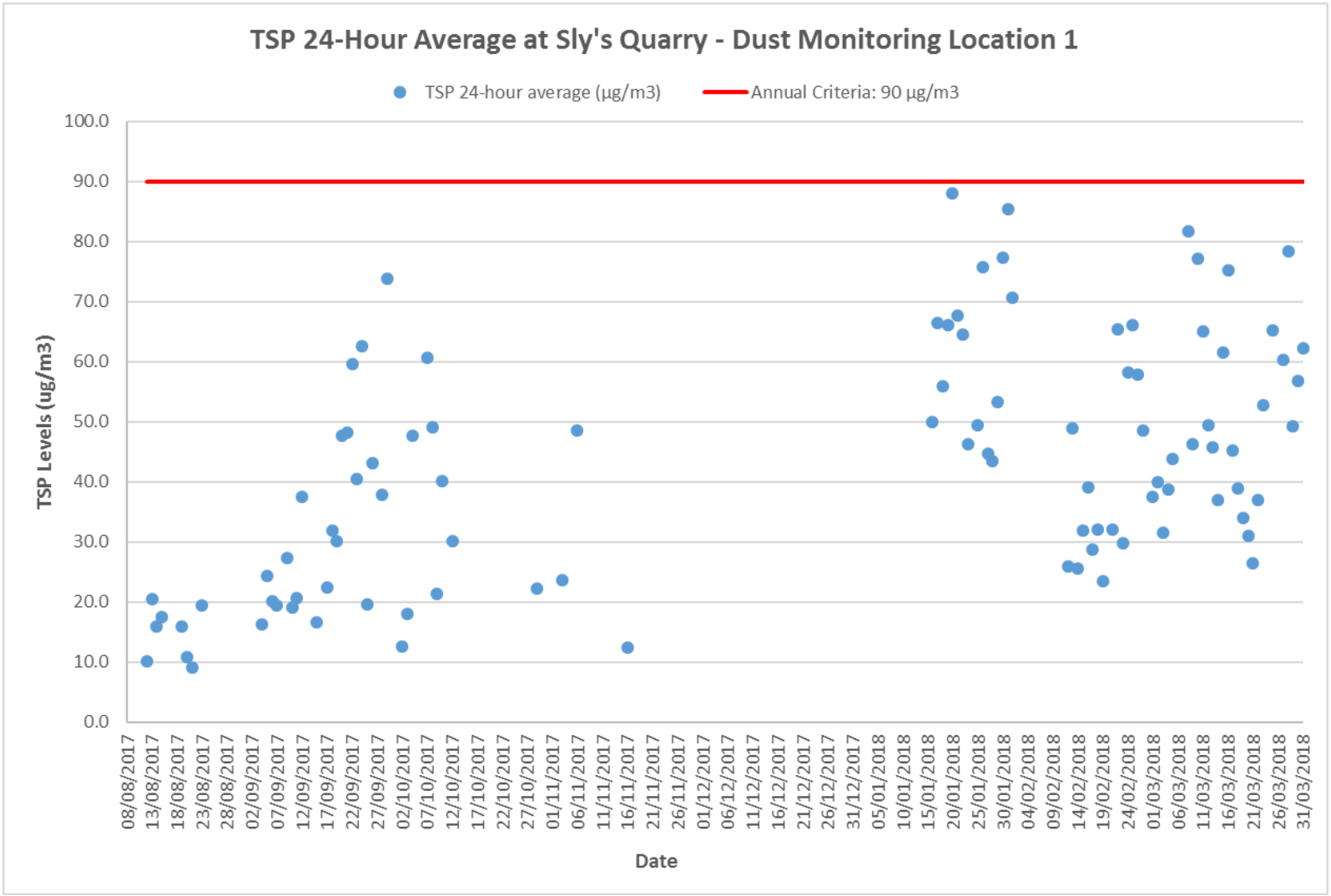


Figure 16 TSP 24-Hour Average at Sly's Quarry - Dust Monitoring Location 1

6. Deposition results

Dust deposition measurements were taken continuously from 9 August 2017 to 8 April 2018. However, as mentioned in Section 3.3 the Dust Deposition Gauge at DML1 was tampered with resulting in the funnel being stolen and leaves and rubbish being left in the bottle for the period from 9 September 2017 to 8 October 2017. The results of the deposition measurements recorded at DML1 and DML2 are presented in Table 6 and show compliance with the dust criterion of 4 g/m^2/month.

Table 6 Deposited dust results

Sampling Period	Days	DML 1 (g/m^2/month)	DML2 (g/m^2/month)	Criteria (g/m^2/month)
9/08/2017 – 8/09/2017	31	<0.1	<0.1	4
9/09/2017 – 8/10/2017	30	3.9[2] (tampered with)	0.3	
9/10/2017 – 8/11/2017	31	<0.1	<0.1	
9/11/2017 – 8/12/2017	30	0.4	<0.1	
9/12/2017 – 8/01/2018	31	2.6	2.6	
9/01/18 – 8/02/2018	31	<0.1	2.4	
9/02/2018 – 8/03/2018	28	<0.1	<0.1	
9/03/2018 – 8/04/2018	31	0.9	0.6	

[2] Dust deposition gauge tampered with (lots of leaves and rubbish and leaves in bottle)

7. Conclusion

Air quality monitoring has been undertaken at two locations within Sly's Quarry labelled as DML1 and DML2. Air quality measurements for PM_{10}, TSP and deposited dust were conducted during the periods 9 August 2017 through 8 April 2018 (deposited dust) and 10 August 2017 through 1 April 2018 (PM_{10} and TSP).

The results above indicate that the concentration levels of PM_{10}, TSP and deposited dust were below the air quality criteria specified in the Development Consent for the Sly's Quarry Expansion Project.

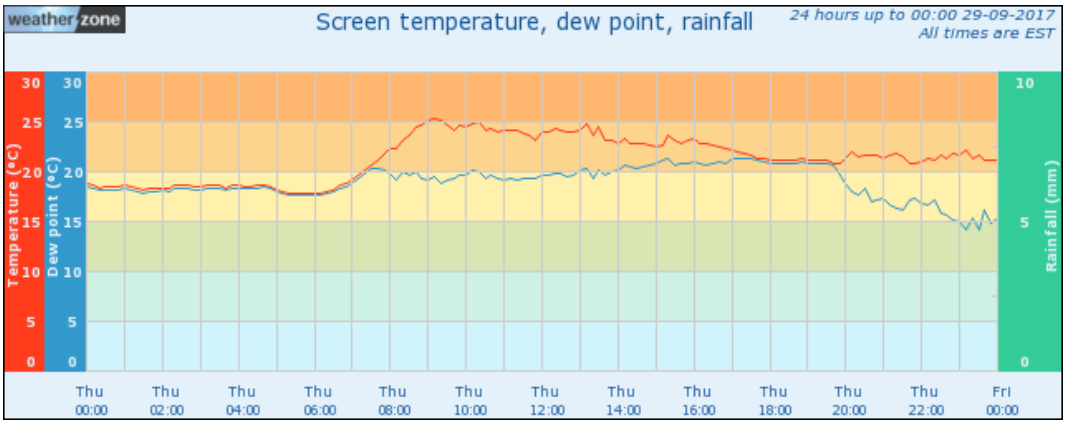
Appendices

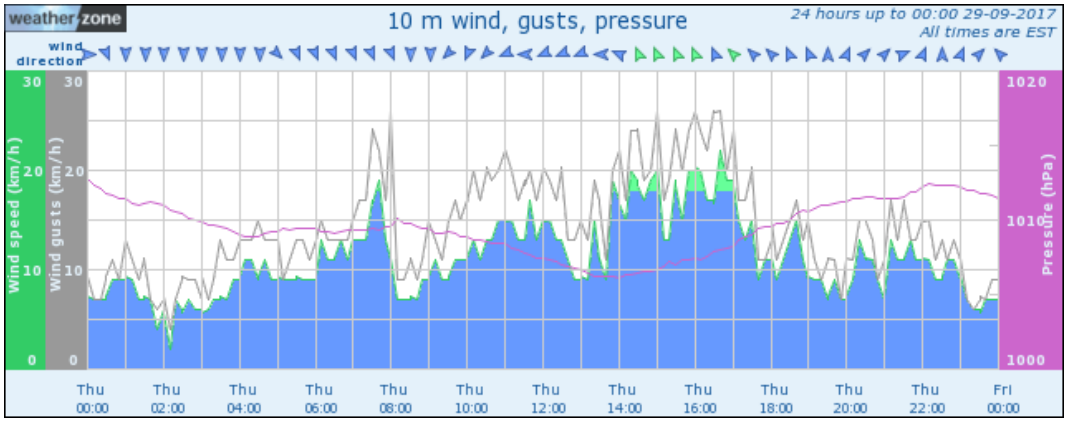
Appendix A – Weather data

http://www.weatherzone.com.au weather data for the days where exceedances on PM_{10} have occurred.

- Thursday 28 September 2017
- Friday 6 October 2017
- Wednesday 21 February 2018
- Saturday 24 February 2018
- Sunday 25 February 2018
- Wednesday 7 March 2018
- Saturday 10 March 2018
- Thursday 15 March 2018
- Monday 26 March 2018
- Tuesday 27 March 2018
- Wednesday 28 March 2018
- Friday 30 March 2018
- Saturday 31 March 2018

Thursday 28 September 2017





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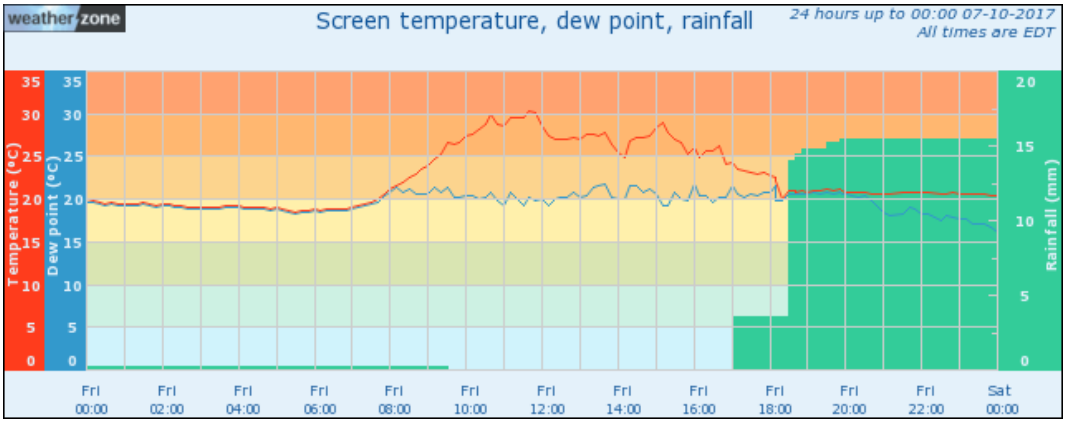
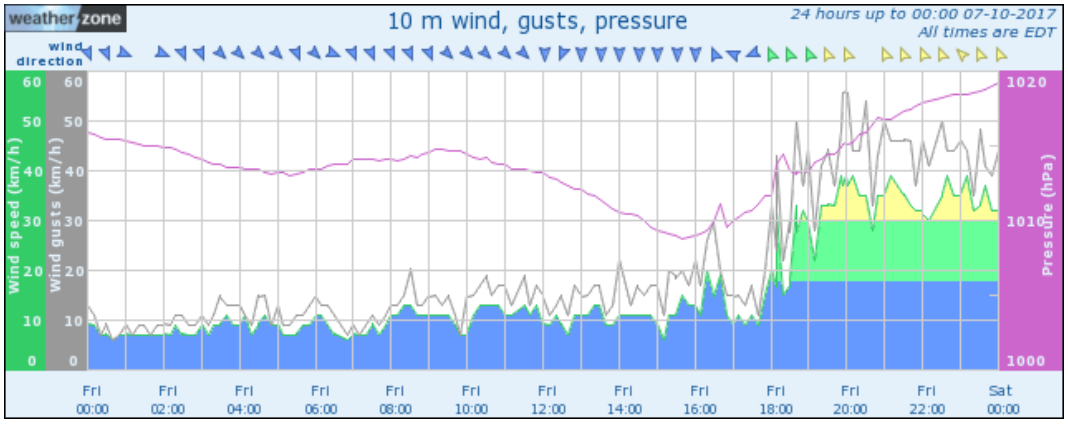
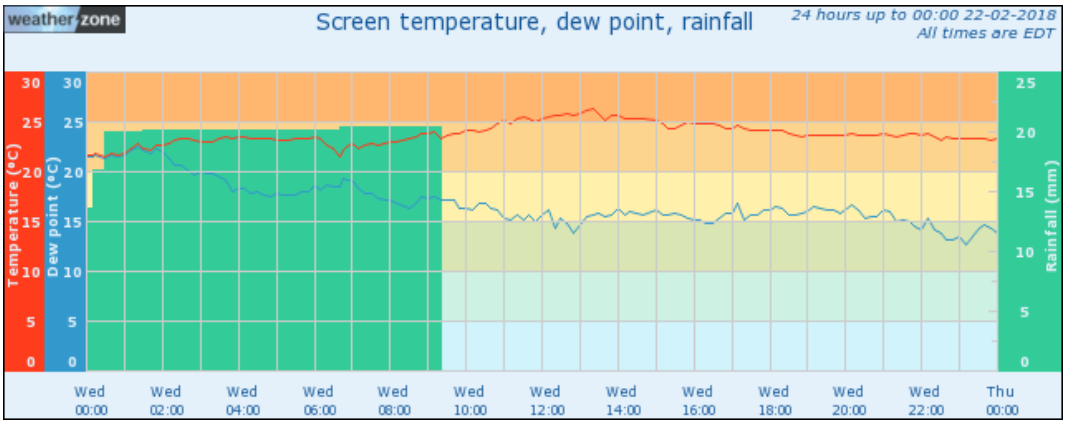
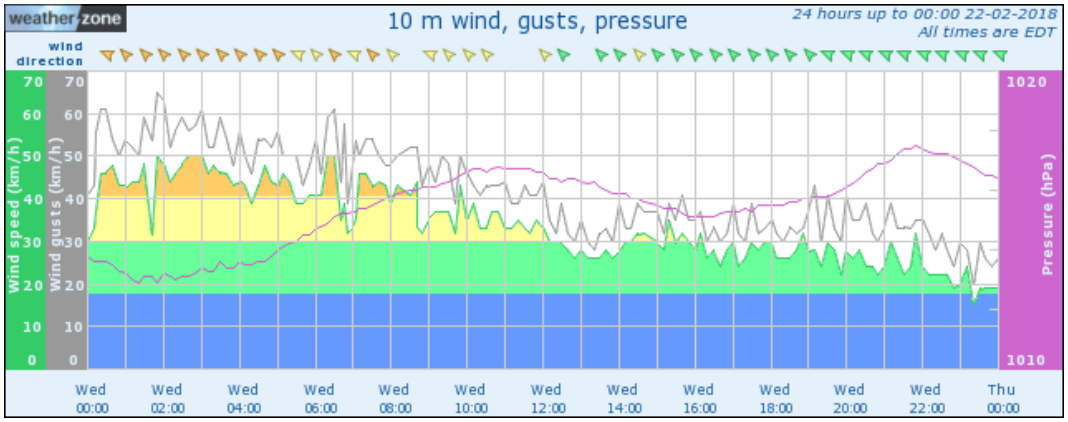




Wednesday 21 February 2018





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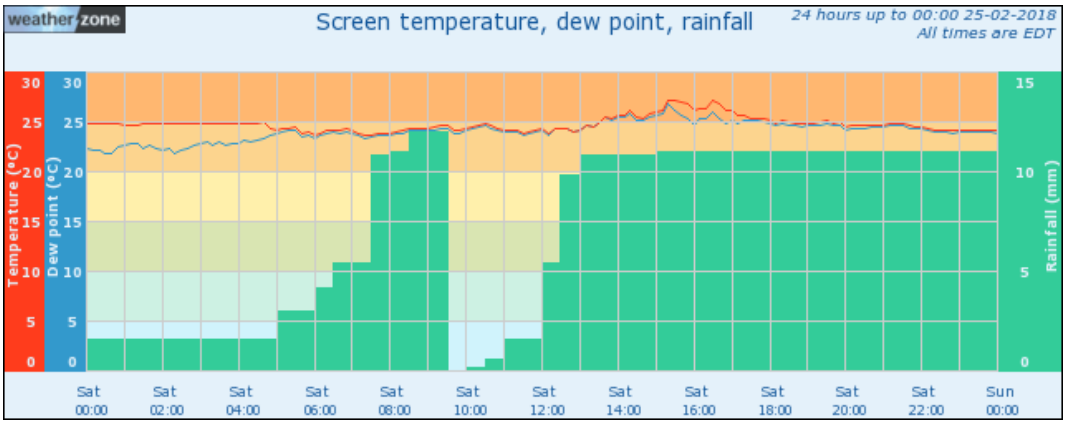

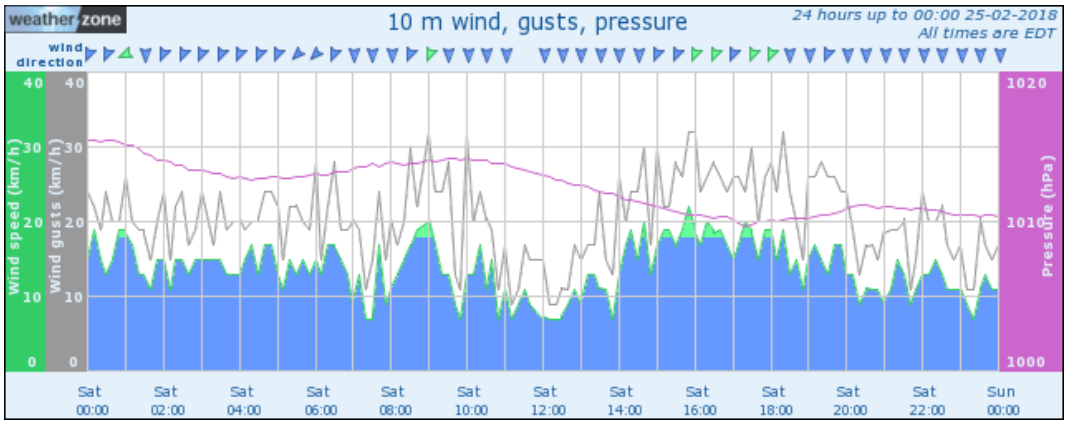

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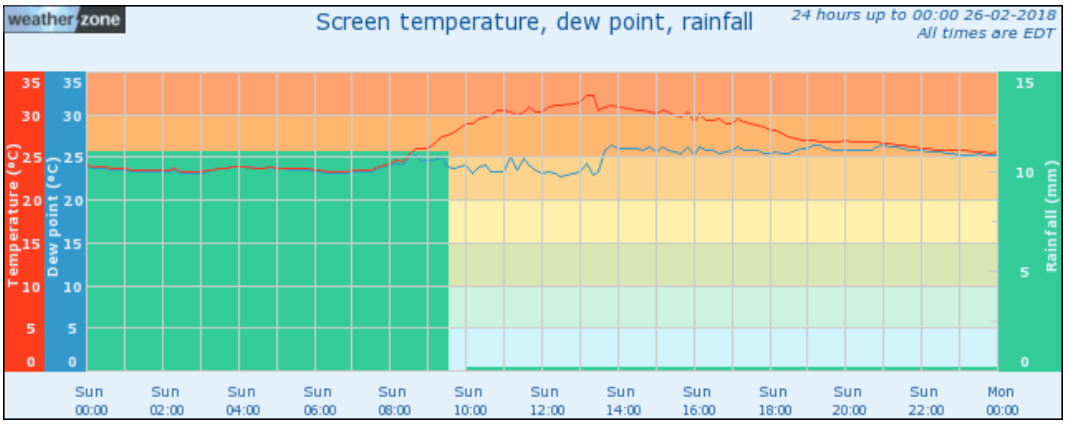
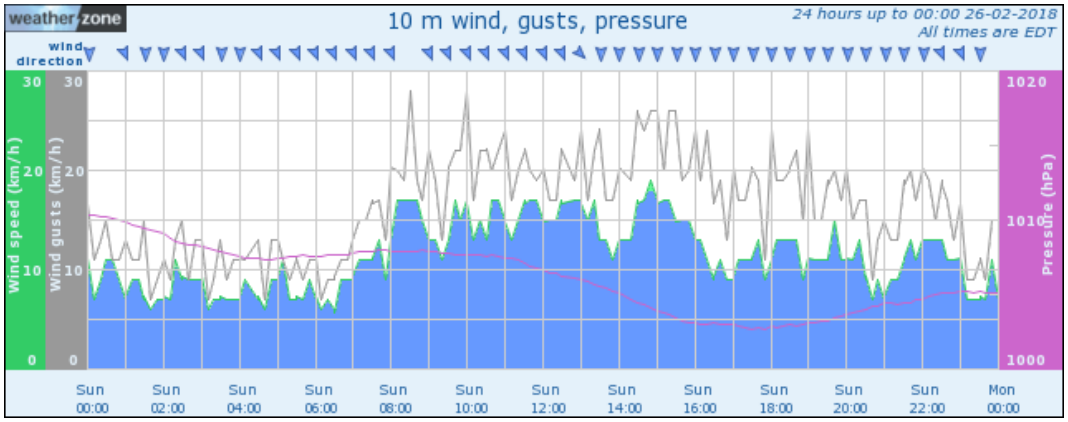
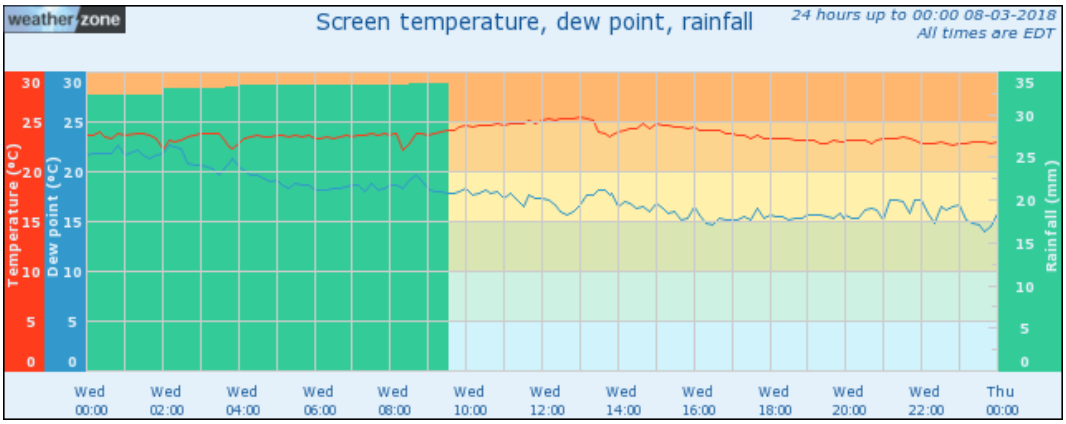
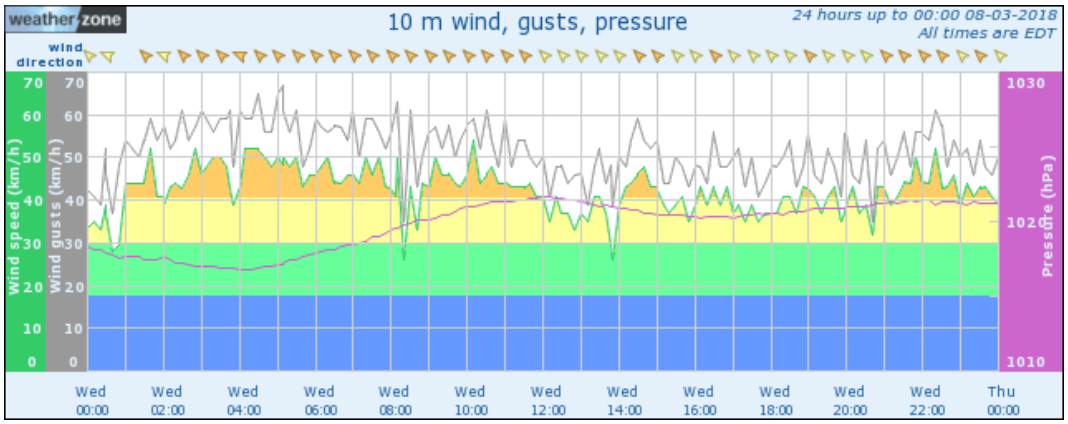




Wednesday 7 March 2018





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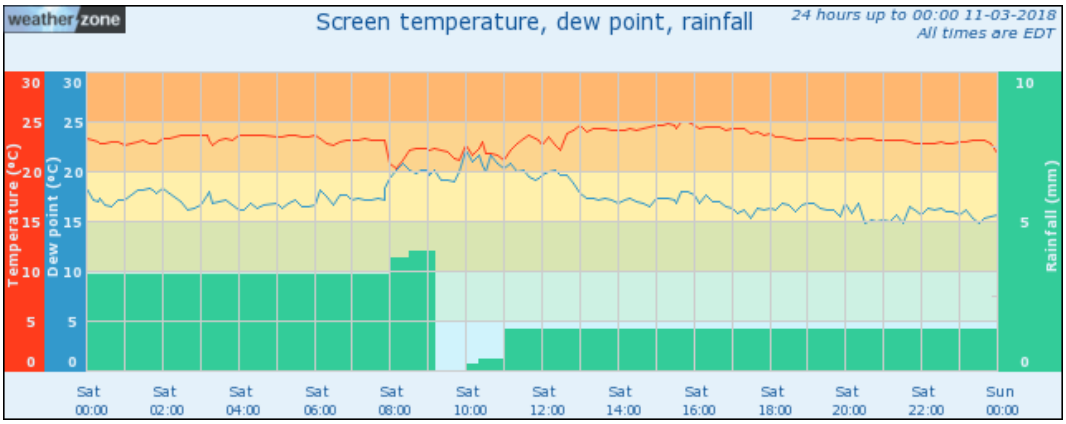

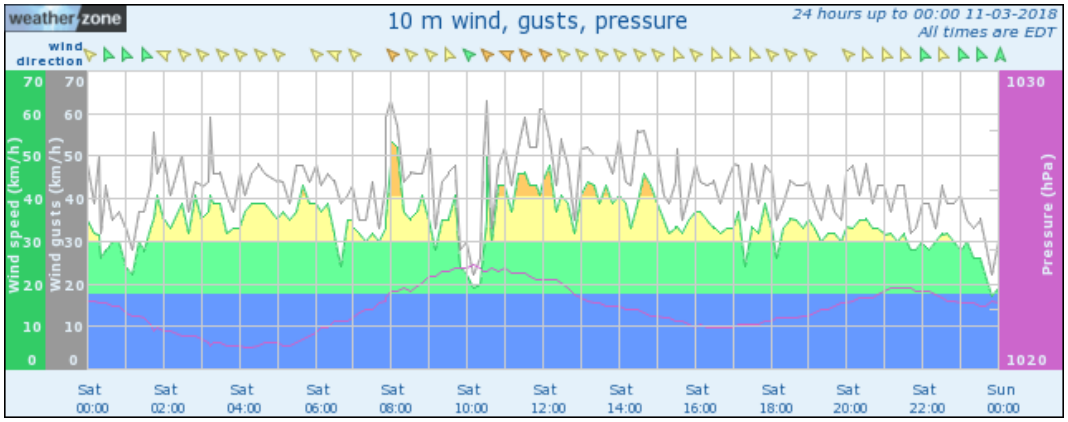

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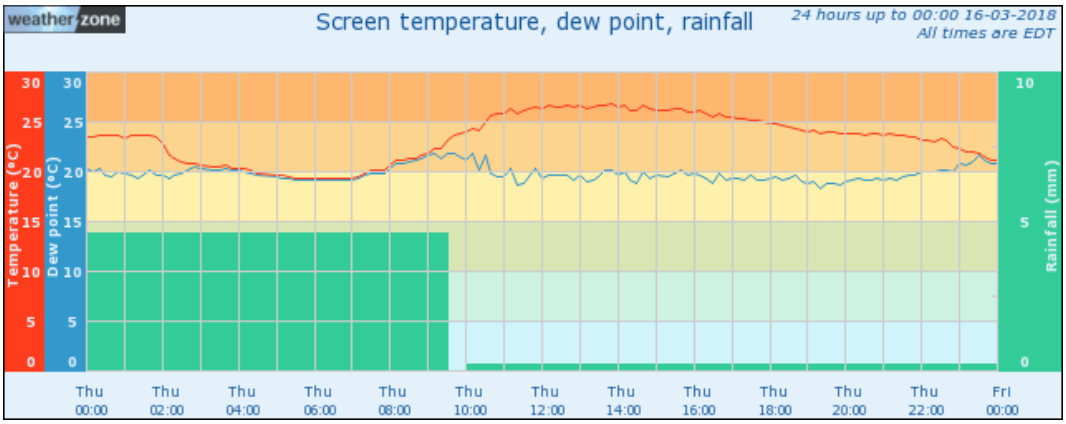

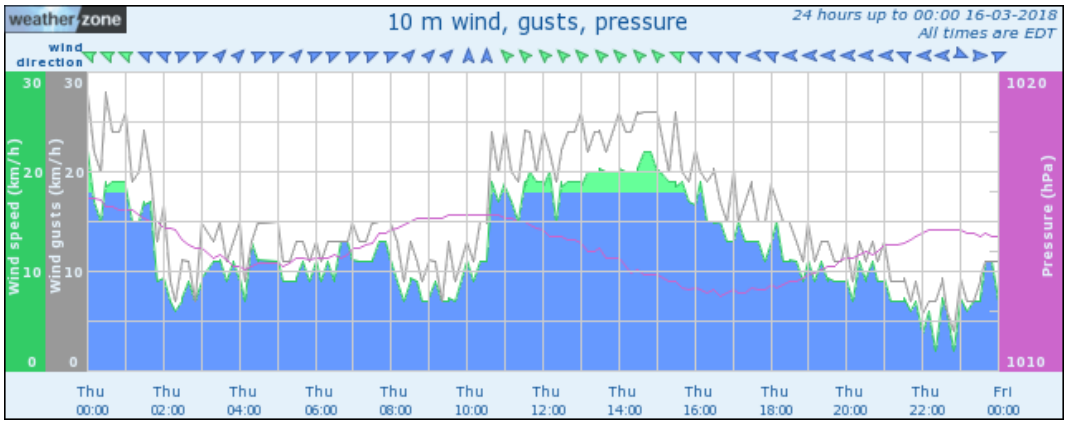

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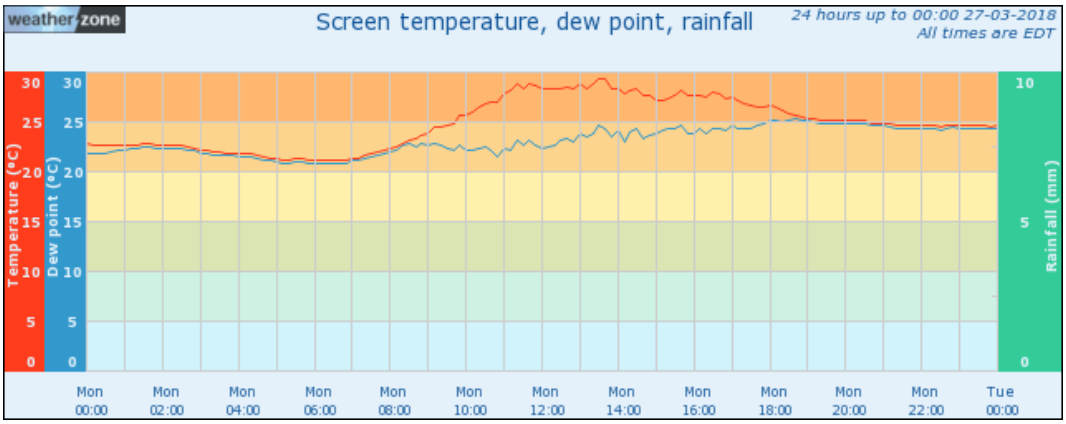
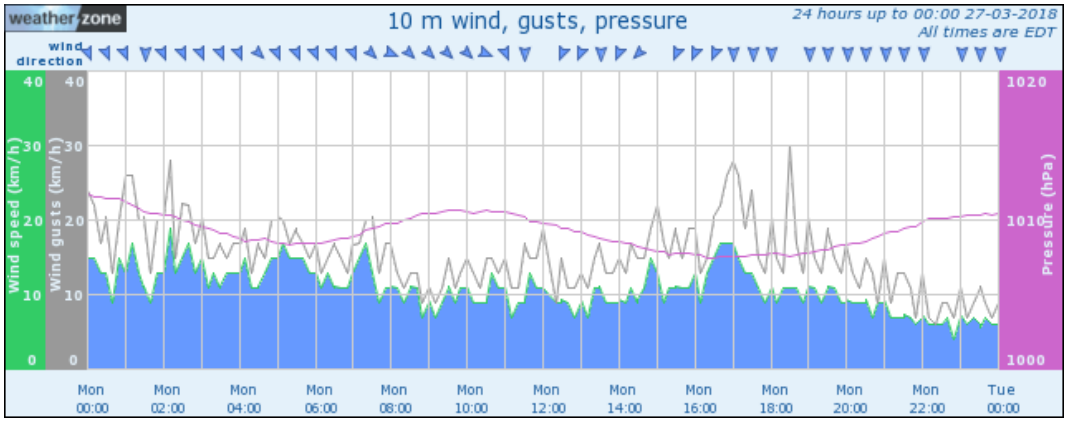
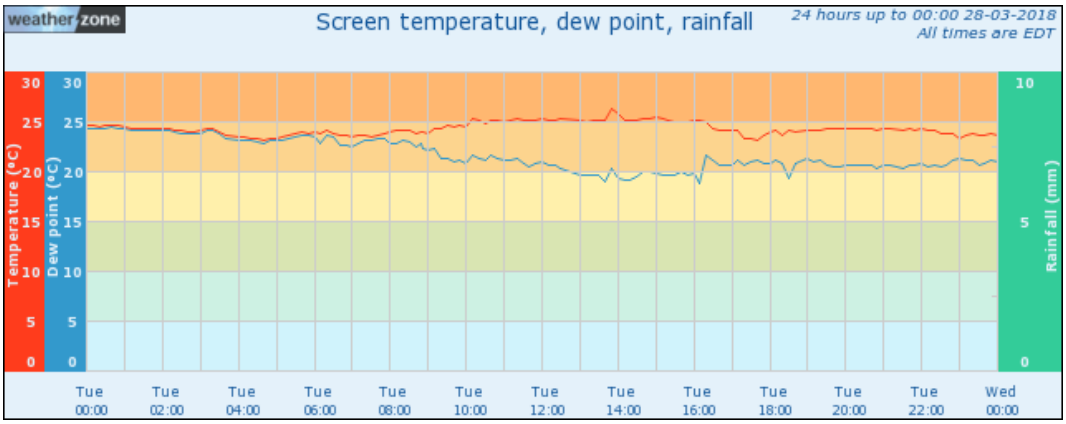
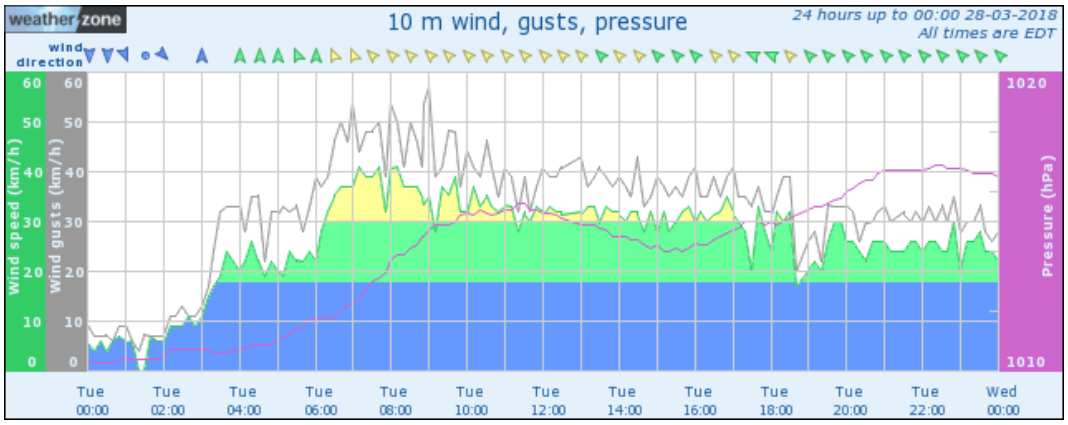




Tuesday 27 March 2018





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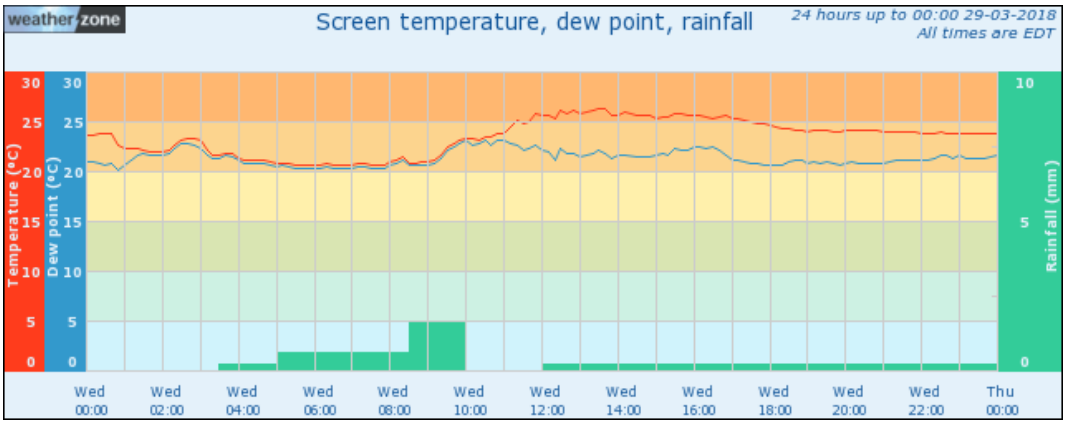

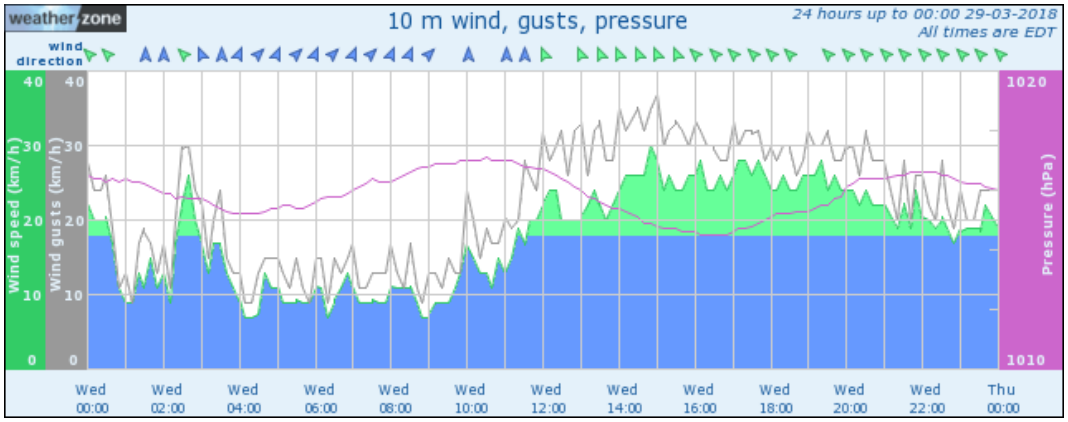

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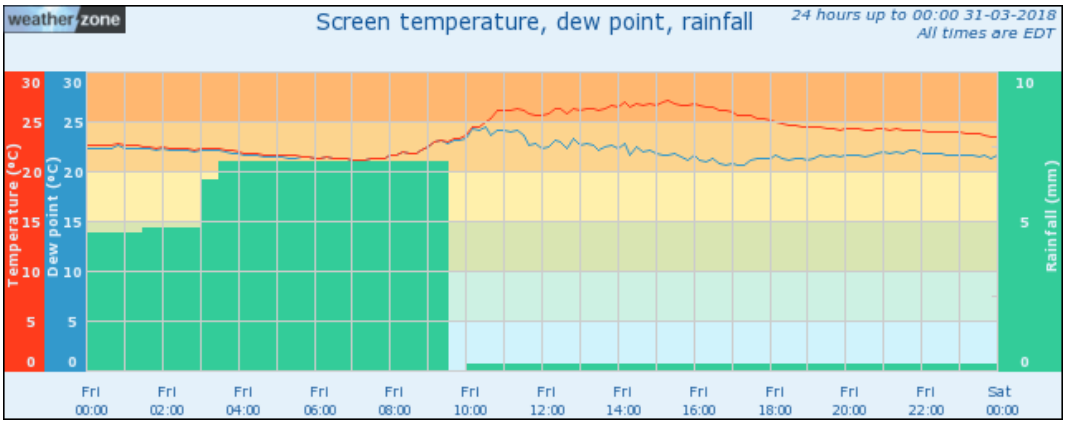

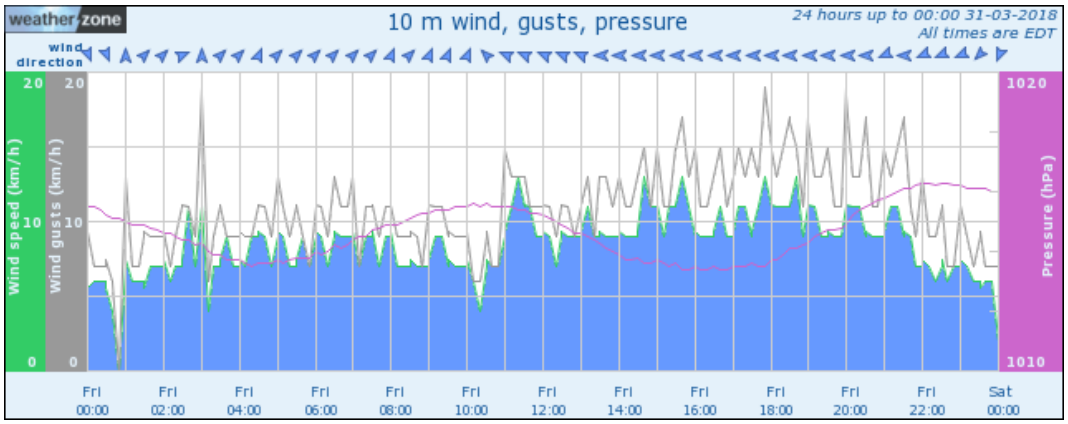

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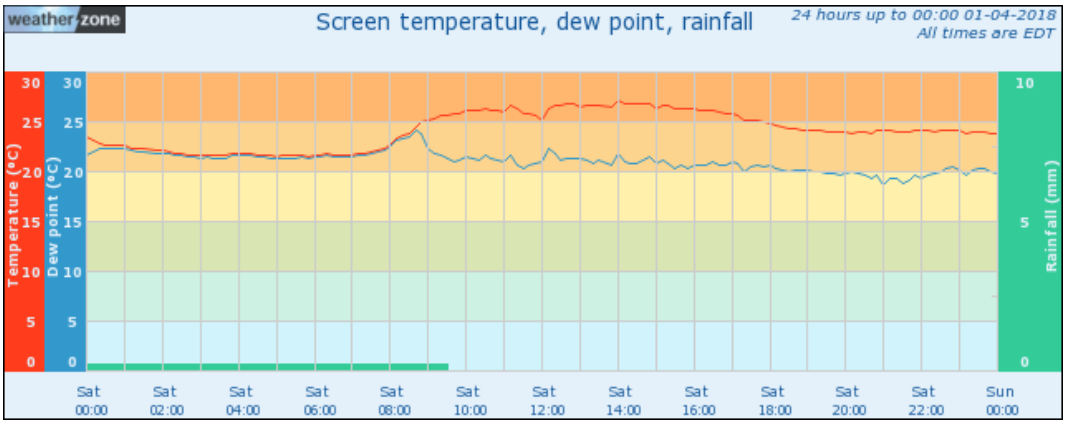

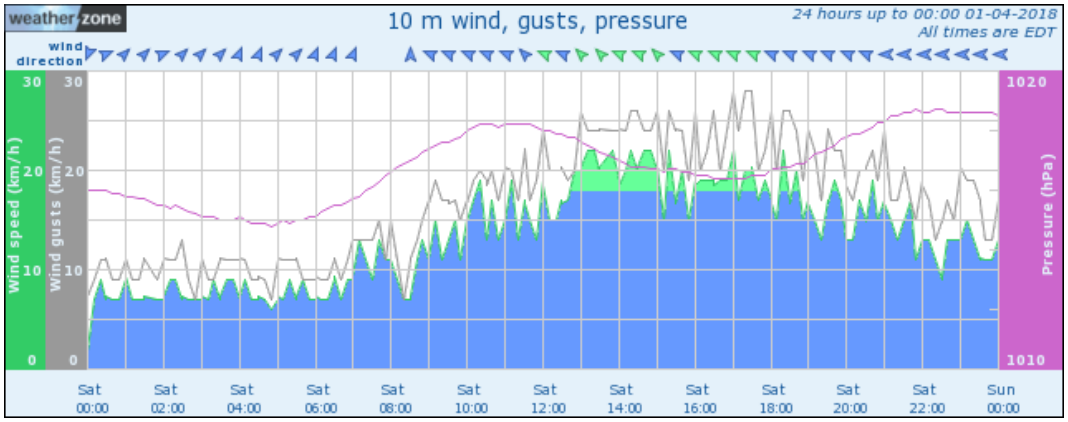

Appendix B – Development Consent

Development Consent

Section 89E of the *Environmental Planning and Assessment Act 1979*

As delegate of the Minister for Planning, I approve the development application referred to in Schedule 1, subject to the conditions in Schedules 2 to 5.

These conditions are required to:

- prevent, minimise, and/or offset adverse environmental impacts;
- set standards and performance measures for acceptable environmental performance;
- require regular monitoring and reporting; and
- provide for the on-going environmental management of the development.

Oliver Holm
Executive Director
Resource Assessments and Compliance

Sydney 5/5/ 2016

SCHEDULE 1

Application Number	SSD 6624
Applicant	Newman Quarrying Pty Ltd
Consent Authority:	Minister for Planning
Land:	Lot 2 DP 1055044
Development	Sly's Quarry Expansion Project

TABLE OF CONTENTS

DEFINITIONS

Aboriginal item or object	Any item or object that provides evidence of the use of an area by Aboriginal people, as defined under the *National Parks and Wildlife Act 1974*
AHD	Australian Height Datum
Annual Review	The review required by condition 9 of Schedule 5
Applicant	Newman Quarrying Pty Ltd, or any other person/s who rely on this consent to carry out the development that is subject to this consent
BCA	Building Code of Australia
Biodiversity offset strategy	The conservation and enhancement strategy described in the EIS and depicted conceptually in Appendix 6
CCC	Community Consultative Committee
Conditions of consent	Conditions contained in Schedules 2 to 5 inclusive
Construction	The demolition of buildings or works, carrying out of works and erection of buildings covered by this consent
Council	Clarence Valley Council
Day	The period from 7am to 6pm on Monday to Saturday, and 8am to 6pm on Sundays and Public Holidays
Department	Department of Planning and Environment
Development	The development as described in the documents listed in condition 2(a) of Schedule 2
DPI Water	Department of Primary Industries - Water
DRE	Division of Resources and Energy (within the Department of Industry
EIS	Environmental Impact Statement titled *Proposed Quarry Expansion at Lot 2 DP1055044 Tullymorgan-Jackybulbin Road, Mororo* dated May 2015 and the Applicant's response to submissions documentation dated 13 October 2015, 16 October 2015, 20 November 2015, 14 December 2015, 22 December 2015 and 22 January 2016 and revised Biodiversity Assessment Report dated April 2016
EPA	NSW Environment Protection Authority
EP&A Act	*Environmental Planning and Assessment Act 1979*
EP&A Regulation	*Environmental Planning and Assessment Regulation 2000*
EPL	Environment Protection Licence under the POEO Act
Evening	The period from 6pm to 10pm
Feasible	Feasible relates to engineering considerations and what is practical to build
GPS	Global Positioning System
Incident	A set of circumstances that: • causes or threatens to cause material harm to the environment; and/or • breaches or exceeds the limits or performance measures/criteria in this consent
INP	*NSW Industrial Noise Policy* (NSW EPA, 2000)
Laden trucks	Trucks transporting quarry products from the site and/or trucks transporting topsoil or mulch to the site
Land	As defined in the EP&A Act, except where the term is used in the noise and air quality conditions in Schedules 3 and 4 of this consent, where it is defined as the whole of a lot, or contiguous lots owned by the same landowner, in a current plan registered at the Land Titles Office at the date of this consent
Material harm to the environment	Actual or potential harm to the health or safety of human beings or to ecosystems that is not trivial
Minister	Minister for Planning, or delegate
Mitigation	Activities associated with reducing the impacts of the development
Negligible	Small and unimportant, such as to be not worth considering
Night	The period from 10pm to 7am on Monday to Saturday, and 10pm to 8am on Sundays and Public Holidays
POEO Act	*Protection of the Environment Operations Act 1997*
Privately-owned land	Land that is not owned by a public agency or the Applicant (or its subsidiary)
Public infrastructure	Linear and other infrastructure that provides services to the general public, such as roads, railways, water supply, drainage, sewerage, gas supply, electricity, telephone, telecommunications, etc.
Quarrying operations	The extraction, processing, stockpiling and transportation of extractive materials carried out on the site and the associated removal of vegetation, topsoil and overburden
Quarry products	Includes all saleable quarry products, but excludes tailings and other wastes
Reasonable	Reasonable relates to the application of judgement in arriving at a decision, taking into account: mitigation benefits, cost of mitigation versus benefits provided, community views and the nature and extent of potential improvements
Rehabilitation	The restoration of land disturbed by the development to a good condition and for the purpose of establishing a safe, stable and non-polluting environment
RMS	Roads and Maritime Services
Secretary	Secretary of the Department, or nominee
Site	The land described in Schedule 1

SCHEDULE 2
ADMINISTRATIVE CONDITIONS

OBLIGATION TO MINIMISE HARM TO THE ENVIRONMENT

1. In addition to meeting the specific performance measures and criteria established under this consent, the Applicant must implement all reasonable and feasible measures to prevent and/or minimise any material harm to the environment that may result from the construction, operation, or rehabilitation of the development.

TERMS OF CONSENT

2. The Applicant must carry out the development:
   (a) generally in accordance with the EIS; and
   (b) in accordance with the conditions of this consent and the Development Layout Plans.

   Note: The Development Layout Plans are shown in Appendix 2.

3. If there is any inconsistency between the documents in condition 2(a), the most recent document shall prevail to the extent of the inconsistency. However, the conditions of this consent shall prevail to the extent of any inconsistency.

4. The Applicant must comply with any requirement/s of the Secretary arising from the Department's assessment of:
   (a) any strategies, plans, programs, reviews, audits, reports or correspondence that are submitted in accordance with this consent (including any stages of these documents);
   (b) any reviews, reports or audits undertaken or commissioned by the Department regarding compliance with this consent; and
   (c) the implementation of any actions or measures contained in these documents.

LIMITS ON CONSENT

Quarrying Operations

5. The Applicant may carry out quarrying operations on the site until 31 May 2041.

   Note: Under this consent, the Applicant is required to rehabilitate the site and carry out additional undertakings to the satisfaction of the Secretary. Consequently, this consent will continue to apply in all other respects other than the right to conduct quarrying operations until the rehabilitation of the site and those undertakings have been carried out to a satisfactory standard.

6. The Applicant must not undertake quarrying operations below a level of 44 m AHD.

7. The Applicant must not extract more than 500,000 tonnes of quarry products from the site in any calendar year.

Quarry Product Transport

8. The Applicant must not:
   (a) transport more than 500,000 tonnes of quarry products from the site during any calendar year;
   (b) receive or dispatch more than 125 laden trucks from the site on any day; or
   (c) receive more than 10,000 tonnes of topsoil and 5,000 m^3 of mulch during any calendar year.

9. The delivery of topsoil and mulch permitted by condition 8 (c) above must be transported by backfilled quarry product trucks only.

SURRENDER OF EXISTING DEVELOPMENT CONSENTS

10. Within 12 months of the date of this consent, or as otherwise agreed by the Secretary, the Applicant must surrender all existing development consents for extractive industry for the site in accordance with the EP&A Regulation.

    Note: This requirement does not extend to the surrender of construction and occupation certificates for existing and proposed building works under Part 4A of the EP&A Act. Surrendering of consent should not be understood as implying that works legally constructed under a valid consent can no longer be legally maintained or used.

11. Prior to the surrender of existing development consents, the conditions of this consent shall prevail to the extent of any inconsistency with the conditions of these consents.

STRUCTURAL ADEQUACY

12. The Applicant must ensure that all new buildings and structures, and any alterations or additions to existing buildings and structures, are constructed in accordance with the relevant requirements of the BCA.

Notes:

- *Under Part 4A of the EP&A Act, the Applicant is required to obtain construction and occupation certificates for the proposed building works; and*
- *Part 8 of the EP&A Regulation sets out the requirements for the certification of the development or project.*

DEMOLITION

13. The Applicant must ensure that all demolition work is carried out in accordance with *Australian Standard AS 2601-2001: The Demolition of Structures*, or its latest version.

PROTECTION OF PUBLIC INFRASTRUCTURE

14. The Applicant must:
    (a) repair, or pay the full costs associated with repairing, any public infrastructure that is damaged by the development; and
    (b) relocate, or pay the full costs associated with relocating, any public infrastructure that needs to be relocated as a result of the development.

Note: This condition does not apply to damage to roads caused as a result of general road usage or otherwise addressed by contributions required by condition 19 of this consent.

OPERATION OF PLANT AND EQUIPMENT

15. The Applicant must ensure that all the plant and equipment used at the site is:
    (a) maintained in a proper and efficient condition; and
    (b) operated in a proper and efficient manner.

PRODUCTION DATA

16. The Applicant must:
    (a) provide annual quarry production data to DRE using the standard form for that purpose; and
    (b) include a copy of this data in the Annual Review (see condition 9 of Schedule 5).

IDENTIFICATION OF APPROVED EXTRACTION LIMITS

17. By 30 November 2016, unless otherwise agreed with the Secretary, the Applicant must:
    (a) engage a registered surveyor to mark out the boundaries of the approved limits of extraction within the development area; and
    (b) submit a survey plan of these boundaries with applicable GPS coordinates to the Secretary.

18. While quarrying operations are being carried out, the Applicant must ensure that these boundaries are clearly marked at all times in a manner that allows operating staff to clearly identify the approved limits of extraction.

CONTRIBUTIONS TO COUNCIL

19. The Applicant must pay to Council an annual financial contribution toward the maintenance of Tullymorgan-Jackybulbin Road. The contribution must be determined in accordance with the *Maclean Shire Council S.94 Contribution Plan for Maintenance of Quarry Roads*, November 1994, or any subsequent relevant contributions plan adopted by Council. The contribution must be paid to Council within one month of the date of this consent each year and reported in the Annual Review required in condition 9 of Schedule 5.

SCHEDULE 3
ENVIRONMENTAL PERFORMANCE CONDITIONS

NOISE

Hours of Operation

1. The Applicant must comply with the operating hours set out in Table 1.

Table 1: Operating Hours

Activity	***Permissible Hours***
Employee arrival	• From 6:30 am Monday to Saturday inclusive • From 7:30 am Sundays or public holidays if engaged in maintenance, site security or other similar activities
Quarrying operations including loading and dispatch of laden trucks	• 7 am to 6 pm Monday to Friday • 7 am to 1 pm Saturday • 7 am to 4 pm Saturday if fulfilling a contract for the supply of quarry products to the Pacific Highway update project (SSD 4963)* • At no time on Sundays or public holidays
Blasting	• 9 am to 3 pm Monday to Friday (except public holidays)
Maintenance	• May be conducted at any time, provided that these activities are not audible at any privately-owned residence

**Note: Evidence of contracts that cover those periods during which extended Saturday afternoon operating hours are undertaken must be reported in the Annual Review required by condition 9 of Schedule 5.*

2. The following activities may be carried out on the site outside the hours specified in condition 1:
   (a) delivery or dispatch of materials as requested by Police or other authorities; and
   (b) emergency work to avoid the loss of lives, property and/or to prevent environmental harm.

   In such circumstances, the Applicant must notify the Secretary and affected residents prior to undertaking the activities, or as soon as is practical thereafter.

Noise Impact Assessment Criteria

3. The Applicant must ensure that the noise generated by the development does not exceed the criteria in Table 2 at any residence on privately-owned land.

Table 2: Noise criteria dB(A)

Receiver	***Day*** $L_{Aeq\ (15\ minute)}$	***Evening*** $L_{Aeq\ (15\ minute)}$	***Night*** $L_{Aeq\ (15\ minute)}$
All privately-owned residences	35	35	35

Noise generated by the development is to be measured in accordance with the relevant requirements and exemptions (including certain meteorological conditions) of the *NSW Industrial Noise Policy*. Appendix 4 sets out the meteorological conditions under which these criteria apply and the requirements for evaluating compliance with these criteria.

However, the noise criteria in Table 2 do not apply if the Applicant has an agreement with the relevant landowner to exceed the noise criteria, and the Applicant has advised the Department in writing of the terms of this agreement.

Operating Conditions

4. The Applicant must:
   (a) implement best practice management to minimise the operational and road transportation noise of the development;
   (b) minimise the noise impacts of the development during meteorological conditions when the noise criteria in this consent do not apply (see Appendix 4);
   (c) carry out noise monitoring (at least every 3 months or as otherwise agreed with the Secretary) to determine whether the development is complying with the relevant conditions of this consent; and
   (d) regularly assess noise monitoring data and modify and/or stop operations on site to ensure compliance with the relevant conditions of this consent,

   to the satisfaction of the Secretary.

   Note: Required frequency of noise monitoring may be reduced if approved by the Secretary.

Noise Management Plan

5. The Applicant must prepare a Noise Management Plan for the development to the satisfaction of the Secretary. This plan must:
   (a) be prepared in consultation with the EPA;
   (b) be submitted to the Secretary within 6 months of the date of this consent, unless otherwise agreed by the Secretary;
   (c) describe the measures that would be implemented to ensure:
      - compliance with the noise criteria in this consent;
      - best practice management is being employed; and
      - the noise impacts of the development are minimised during meteorological conditions under which the noise criteria in this consent do not apply (see Appendix 4);
   (d) describe the proposed noise management system; and
   (e) include a monitoring program to be implemented to measure noise from the development against the noise criteria in Table 2 and the road noise criteria in the EIS, and which evaluates and reports on the effectiveness of the noise management system on site.

6. The Applicant must implement the approved Noise Management Plan as approved from time to time by the Secretary.

BLASTING

Blasting Impact Assessment Criteria

7. The Applicant must ensure that blasting on site does not cause any exceedance of the criteria in Table 3.

Table 3: Blasting Criteria

Receiver	***Airblast overpressure (dB(Lin Peak))***	***Ground vibration (mm/s)***	***Allowable exceedance***
Any residence on privately-owned land	120	10	0%
	115	5	5% of the total number of blasts over a period of 12 months

However, these criteria do not apply if the Applicant has a written agreement with the relevant owner to exceed the limits in Table 3, and the Applicant has advised the Department in writing of the terms of this agreement.

Blasting Frequency

8. The Applicant may carry out a maximum of 2 blasts per calendar month, unless an additional blast is required following a blast misfire. This condition does not apply to blasts required to ensure the safety of the quarry or workers on site.

   Note: For the purposes of this condition, a blast refers to a single blast event, which may involve a number of individual blasts fired in quick succession in a discrete area of the quarry.

Operating Conditions

9. During blasting operations, the Applicant must:
   (a) implement best practice management to:
      - protect the safety of people and livestock in the areas surrounding blasting operations;
      - protect public or private infrastructure/property in the surrounding area from damage from blasting operations and
      - minimise the dust and fume emissions of blasting;
   (b) operate a suitable system to enable the local community to get up-to-date information on the proposed blasting schedule on site; and
   (c) carry out regular monitoring to determine whether the development is complying with the relevant conditions of this consent,

   to the satisfaction of the Secretary.

Blast Management Plan

10. The Applicant must prepare a Blast Management Plan for the development to the satisfaction of the Secretary. This plan must:
   (a) be submitted to the Secretary for approval within 6 months of the date of this consent, unless otherwise agreed by the Secretary;

(b) describe the measures that would be implemented to ensure compliance with the blast criteria and operating conditions of this consent;
(c) include measures to manage flyrock;
(d) include a monitoring program for evaluating and reporting on compliance with the blasting criteria in this consent;
(e) include community notification procedures for the blasting schedule, in particular to nearby residences; and
(f) include a protocol for investigating and responding to complaints.

11. The Applicant must implement the approved Blast Management Plan as approved from time to time by the Secretary.

AIR QUALITY

Air Quality Impact Assessment Criteria

12. The Applicant must ensure that all reasonable and feasible avoidance and mitigation measures are employed so that particulate matter emissions generated by the development do not cause exceedances of the criteria in Table 4 at any residence on privately-owned land.

Table 4: Air quality criteria

Pollutant	***Averaging Period***	***Criterion***	
Particulate matter < 10 µm (PM_{10})	Annual	[a,d] 30 µg/m^3	
Particulate matter < 10 µm (PM_{10})	24 hour	[b] 50 µg/m^3	
Total suspended particulates (TSP)	Annual	[a,d] 90 µg/m^3	
[c] Deposited dust	Annual	[b] 2 g/m^2/month	[a,d] 4 g/m^2/month

Notes to Table 4:
a Cumulative impact (ie increase in concentrations due to the development plus background concentrations due to all other sources).
b Incremental impact (ie increase in concentrations due to the development alone, with zero allowable exceedances of the criteria over the life of the development.
c Deposited dust is to be assessed as insoluble solids as defined by Standards Australia, AS/NZS 3580.10.1:2003: Methods for Sampling and Analysis of Ambient Air - Determination of Particulate Matter - Deposited Matter - Gravimetric Method.
d Excludes extraordinary events such as bushfires, prescribed burning, dust storms, sea fog, fire incidents or any other activity agreed by the Secretary.
e "Reasonable and feasible avoidance measures" includes, but is not limited to, the operational requirements in conditions 13, 14 and 15 to develop and implement an air quality management system that ensures operational responses to the risks of exceedance of the criteria.

Operating Conditions

13. The Applicant must:
(a) implement best practice management to minimise the dust emissions of the development;
(b) regularly assess meteorological and air quality monitoring data and relocate, modify and/or stop operations on site to ensure compliance with the air quality criteria in this consent;
(c) minimise the air quality impacts of the development during adverse meteorological conditions and extraordinary events (see note d under Table 4);
(d) monitor and report on compliance with the relevant air quality conditions in this consent; and
(e) minimise the area of surface disturbance and undertake progressive rehabilitation of the site,
to the satisfaction of the Secretary.

Air Quality Management Plan

14. The Applicant must prepare an Air Quality Management Plan for the development to the satisfaction of the Secretary. This plan must:
(a) be submitted to the Secretary for approval within 6 months of the date of this consent, unless otherwise agree by the Secretary;
(b) describe the measures that would be implemented to ensure:
- compliance with the relevant conditions of this consent;
- best practice management is being employed; and
- the air quality impacts of the development are minimised during adverse meteorological conditions and extraordinary events;

(c) describe the proposed air quality management system;
(d) include an air quality monitoring program that:
- is capable of evaluating the performance of the development;
- includes a protocol for determining any exceedances of the relevant conditions of consent;
- effectively supports the air quality management system; and
- evaluates and reports on the adequacy of the air quality management system.

15. The Applicant must implement the approved Air Quality Management Plan as approved from time to time by the Secretary.

Meteorological Monitoring

16. For the life of the development, the Applicant must ensure that there is a suitable meteorological station operating in the vicinity of the site that complies with the requirements in the *Approved Methods for Sampling of Air Pollutants in New South Wales* guideline.

Greenhouse Gas Emissions

17. The Applicant must implement all reasonable and feasible measures to minimise the release of greenhouse gas emissions from the site.

SOIL AND WATER

Water Supply

18. The Applicant must ensure that it has sufficient water for all stages of the development, and if necessary, adjust the scale of operations under the consent to match its available water supply, to the satisfaction of the Secretary.

Water Discharges

19. The Applicant must comply with the discharge limits in any EPL, or with section 120 of the POEO Act.

Soil and Water Management Plan

20. The Applicant must prepare a Soil and Water Management Plan for the development to the satisfaction of the Secretary. This plan must:
(a) be prepared by suitably qualified and experienced person/s approved by the Secretary;
(b) be prepared in consultation with the EPA and DPI Water;
(c) be submitted to the Secretary for approval within 6 months of the date of this consent, unless otherwise agreed by the Secretary; and
(d) include the EPA's requirements as set out in Appendix 5;
(e) include a:
(i) Site Water Balance that includes:
- details of:
  - sources and security of water supply;
  - water use and management on site;
  - any off-site water transfers; and
  - reporting procedures; and
- measures that would be implemented to minimise clean water use on site;

(ii) Surface Water Management Plan, that includes:
- a program for obtaining detailed baseline data on surface water flows and quality in water bodies that could potentially be affected by the development;
- a detailed description of the surface water management system on site including the:
  - clean water diversion system;
  - erosion and sediment controls;
  - dirty water management system;
  - water storages; and
  - mitigation measures outlined in the EIS; and
- a program to monitor and report on:
  - any surface water discharges;
  - the effectiveness of the water management system,
  - the quality of water discharged from the site to the environment;
  - surface water flows and quality in local watercourses;

(iii) Groundwater Management Plan that includes:

- a provision that requires the Applicant to obtain appropriate water licence(s) to cover the volume of any unforeseen groundwater inflows into the quarry from the quarry face or floor; and
- a monitoring program to manage potential impacts, if any, on the alluvium and associated surface water source near the proposed extraction area that includes:
  - a minimum of three monitoring bores with automatic water level recording instrumentation or other method agreed with DPI-Water;
  - identification of a methodology for determining threshold water level criteria;
  - contingency measures in the event of a breach of thresholds; and
  - a program to regularly report on monitoring.

21. The Applicant must implement the approved Soil and Water Management Plan as approved from time to time by the Secretary.

TRANSPORT

Monitoring of Product Transport

22. The Applicant must keep accurate records of all laden truck movements to and from the site (including time of arrival and dispatch) and publish a summary of records on its website every 6 months.

Operating Conditions

23. The Applicant must:
    (a) ensure that all laden trucks entering or exiting the site have their loads covered, with the exception of loads consisting solely of boulders greater than one tonne in weight;
    (b) ensure that all laden trucks exiting the site are cleaned of material that may fall on the road, before leaving the site;
    (c) use its best endeavours to ensure that appropriate signage is displayed on all trucks used to transport product from the development so they can be easily identified by road users; and
    (d) if necessary, allow for the parking of early-arriving trucks (ie. between 6:30 am and 7 am) within the site to avoid queuing on Tullymorgan-Jackybulbin Road.

Traffic Management Plan

24. The Applicant must prepare a Traffic Management Plan for the development to the satisfaction of the Secretary. This plan must:
    (a) be prepared in consultation with the RMS and Council;
    (b) be submitted to the Secretary for approval within 6 months of the date of this consent, unless otherwise agreed by the Secretary;
    (c) describe the processes in place for the control of truck movements entering and exiting the site;
    (d) include a review of the existing intersection at the entrance to the quarry on Tullymorgan-Jackybulbin Road, which involves:
        (i) undertaking a survey of the dimensions of the existing intersection to assess whether it meets the minimum road design dimensions for a BAR/BAL treatment in accordance with the relevant road design guideline and/or standard; and
        (ii) if found to not meet these dimensions, propose a works program for the upgrade of the intersection to meet the relevant road design guideline and/or standard and a timeframe for completion of the works;
    (e) include a Drivers' Code of Conduct that details the safe and quiet driving practices that must be used by drivers transporting products to and from the quarry, with a particular focus on:
        (i) ensuring truck drivers are aware of the school bus stop and turning area adjacent to the intersection of Tullymorgan-Jackybulbin Road and the Pacific Highway, its likely hours of use and take appropriate measures to avoid interacting with school buses and school pupils; and
        (ii) minimising the potential for fauna strike on Tullymorgan-Jackybulbin Road; and
    (f) describe the measures that would be put in place to ensure compliance with the Drivers' Code of Conduct;
    (g) propose measures to minimise the transmission of dust and tracking of material onto the surface of the public road from vehicles leaving the quarry; and
    (h) propose measures to accommodate the parking of early-arriving trucks within the site, rather than on the public road network.

25. The Applicant must implement the approved Traffic Management Plan as approved from time to time by the Secretary.

ABORIGINAL HERITAGE

26. If any item or object of Aboriginal heritage significance is identified on site, the Applicant must ensure that:
    (a) all work in the immediate vicinity of the suspected Aboriginal item or object ceases immediately;
    (b) a 10 m buffer area around the suspected item or object is cordoned off; and
    (c) the OEH is contacted immediately.

    Work in the vicinity of the Aboriginal item or object may only recommence in accordance with the provisions of Part 6 of the *National Parks and Wildlife Act 1974*.

BIODIVERSITY AND REHABILITATION

Biodiversity Offset Strategy

27. The Applicant must assess in detail the biodiversity values of its proposed Biodiversity Offset Strategy (described in the EIS and shown conceptually in Appendix 6) using the *BioBanking Assessment Methodology* (OEH, 2014) and must retire ecosystem and species credits as set out in Table 5, to the satisfaction of the Secretary.

Table 5: Biodiversity credits to be retired

Credit type	***Number of Credits***
Ecosystem Credits	
NR 115 Blackbutt-bloodwood dry heathy open forest	567
NR123 Blackbutt-Turpentine dry heathy open forest	327
Species Credits	
Bordered Guinea Flower (Hibbertia marginata)	15,820
Koala (Phascolarctos cinerus)	317
Common planigale (Planigale maculata)	317
Squirrel glider (Petaurus norfolcensis)	268
Brush-tailed phascogale (Phascogale tapoatafa)	244

Security of Offsets

28. Within 18 months of this consent, unless otherwise agreed with the Secretary, the Applicant must make suitable arrangements to provide appropriate long-term security for the Biodiversity Offset Strategy, to the satisfaction of the Secretary.

    Note: Mechanisms to provide appropriate long-term security to the land within the Biodiversity Offset Strategy in accordance with the NSW Biodiversity Offset Policy for Major Projects 2014, include a Biobanking Agreement, Voluntary Conservation Agreement or an alternative mechanism that provides for a similar conservation outcome. Any mechanism must remain in force in perpetuity.

Rehabilitation Objectives

29. The Applicant must rehabilitate the site to the satisfaction of the Secretary. This rehabilitation must be generally consistent with the rehabilitation strategy in the EIS and the conceptual rehabilitation plan in Appendix 3 and must comply with the objectives in Table 6.

Table 6: Rehabilitation Objectives

Feature	***Objective***
Site (as a whole)	• Safe, stable and non-polluting • Final landform integrated with surrounding natural landforms as far as is reasonable and feasible, and minimising visual impacts when viewed from surrounding land
Surface Infrastructure	• Decommissioned and removed, unless otherwise agreed by the Secretary

Quarry benches and pit floor (Site A)	• Landscaped and vegetated using native tree and understorey species
Past sand mining sites (Sites B and C)	• Returned to the pre-development ground level • Landscaped and revegetated using native tree and understorey species
Final Void	• Minimise the size, depth and slope of the batters of the final void • Minimise the drainage catchment of the final void

Progressive Rehabilitation

30. The Applicant must rehabilitate the site progressively, that is, as soon as reasonably practicable following disturbance. All reasonable and feasible measures must be taken to minimise the total area exposed for dust generation at any time. Interim stabilisation measures must be implemented where reasonable and feasible to control dust emissions in disturbed areas that are not active and which are not ready for final rehabilitation.

Note: It is accepted that parts of the site that are progressively rehabilitated may be subject to further disturbance in future.

Biodiversity and Rehabilitation Management Plan

31. The Applicant must prepare a Biodiversity and Rehabilitation Management Plan for the development to the satisfaction of the Secretary. This plan must:
    (a) be prepared in consultation with OEH and Council;
    (b) be submitted to the Secretary for approval within 6 months of the date of this consent, unless the Secretary agrees otherwise;
    (c) be approved by the Secretary, prior to commencing quarrying operations in Stages 2 or 3 (refer Appendix 2), unless the Secretary agrees otherwise
    (d) provide details of the conceptual final landform and associated land uses for the site;
    (e) describe how the implementation of the Biodiversity Offset Strategy would be integrated with the overall rehabilitation of the site;
    (f) include detailed performance and completion criteria for evaluating the performance of the Biodiversity Offset Strategy and rehabilitation of the site, including triggers for any necessary remedial action;
    (g) describe the short, medium and long term measures that would be implemented to:
        - manage remnant vegetation and habitat on site, including within the Biodiversity Offset Strategy area; and
        - ensure compliance with the rehabilitation objectives and progressive rehabilitation obligations in this consent;
    (h) include a detailed description of the measures that would be implemented over the next 3 years (to be updated for each 3 year period following initial approval of the plan) including the procedures to be implemented for:
        - maximising the salvage of environmental resources within the approved disturbance area, including tree hollows, vegetative and soil resources, for beneficial reuse in the enhancement of the offset area or site rehabilitation;
        - restoring and enhancing the quality of native vegetation and fauna habitat in the biodiversity offset and rehabilitation areas through assisted natural regeneration, targeted vegetation establishment and the introduction of fauna habitat features;
        - protecting and conserving habitat for the Bordered Guinea Flower *(Hibbertia marginata);*
        - protecting vegetation and fauna habitat outside the approved disturbance area on-site;
        - minimising the impacts on native fauna, including undertaking pre-clearance surveys;
        - establishing vegetation screening to minimise the visual impacts of the site on surrounding receivers;
        - ensuring minimal environmental consequences for threatened species, populations and habitats;
        - avoiding and minimising the spread of Exotic Rust Fungi of the order Uredinales pathogenic on plants of the family Myrtaceae (Myrtle Rust), *Phytophthora cinnamomi* (Phytophthora) and Chytrid fungus;
        - collecting and propagating seed;
        - controlling weeds and feral pests;
        - controlling erosion;
        - ensuring no obstruction of legal public access along the Crown public road referred to as 'Slys Road' in accordance with public rights of access under the *Roads Act 1993*; and
        - controlling access to Slys Road, including managing public safety risks associated with rights of access over Slys Road by installing appropriate fencing and signage; and
        - managing bushfire risk;
    (i) include a program to monitor and report on the effectiveness of these measures, and progress against the performance and completion criteria;

(j) identify the potential risks to the successful implementation of the Biodiversity Offset Strategy, and include a description of the contingency measures that would be implemented to mitigate these risks; and
(k) include details of who would be responsible for monitoring, reviewing, and implementing the plan.

32. The Applicant must implement the approved Biodiversity and Rehabilitation Management Plan as approved from time to time by the Secretary.

Conservation and Rehabilitation Bond

33. Within 6 months of the approval of the Biodiversity and Rehabilitation Management Plan, the Applicant must lodge a Biodiversity and Rehabilitation Bond with the Department to ensure that the Biodiversity Offset Strategy and rehabilitation of the site are implemented in accordance with the performance and completion criteria set out in the plan and relevant conditions of this consent. The sum of the bond must be determined by:
(a) calculating the cost of implementing the Biodiversity Offset Strategy over the next 3 years;
(b) calculating the cost of rehabilitating the site, taking into account the likely surface disturbance over the next 3 years of quarrying operations; and
(c) employing a suitably qualified quantity surveyor or other expert to verify the calculated costs,
to the satisfaction of the Secretary.

Notes:

- *Alternative funding arrangements for long term management of the Biodiversity Offset Strategy, such as provision of capital and management funding as agreed by OEH as part of a Biobanking Agreement, or transfer to conservation reserve estate can be used to reduce the liability of the Conservation and Rehabilitation Bond.*
- *If capital and other expenditure required by the Biodiversity and Rehabilitation Management Plan is largely complete, the Secretary may waive the requirement for lodgement of a bond in respect of the remaining expenditure.*
- *If the Biodiversity Offset Strategy and/or rehabilitation of the site area are completed (or partially completed) to the satisfaction of the Secretary, then the Secretary will release the bond (or relevant part of the bond). If the Biodiversity Offset Strategy and rehabilitation of the site are not completed to the satisfaction of the Secretary, then the Secretary will call in all or part of the bond, and arrange for the completion of the relevant works.*

34. Within 3 months of each Independent Environmental Audit (see condition 10 of Schedule 5), the Applicant must review, and if necessary revise, the sum of the Conservation and Rehabilitation Bond to the satisfaction of the Secretary. This review must consider the:
(a) effects of inflation;
(b) likely cost of implementing the Biodiversity Offset Strategy and rehabilitating the site (taking into account the likely surface disturbance over the next 3 years of the development); and
(c) performance of the implementation of the Biodiversity Offset Strategy and rehabilitation of the site to date.

VISUAL

35. The Applicant must implement all reasonable and feasible measures to minimise the visual and off-site lighting impacts of the development to the satisfaction of the Secretary, including those mitigation measures listed in the EIS.

WASTE

36. The Applicant must:
(a) manage on-site sewage treatment and disposal in accordance with the requirements of its EPL, and to the satisfaction of the EPA and Council;
(b) minimise the waste generated by the development;
(c) ensure that the waste generated by the development is appropriately stored, handled, and disposed of; and
(d) report on waste management and minimisation in the Annual Review,
to the satisfaction of the Secretary.

37. Except as expressly permitted in an EPL, the Applicant must not receive waste at the site for storage, treatment, processing, reprocessing or disposal.

LIQUID STORAGE

38. The Applicant must ensure that all tanks and similar storage facilities (other than for water) are protected by appropriate bunding or other containment, in accordance with the relevant Australian Standards.

DANGEROUS GOODS

39. The Applicant must ensure that the storage, handling, and transport of dangerous goods is done in accordance with the relevant Australian Standards, particularly AS1940 and AS1596, and the *Dangerous Goods Code*.

BUSHFIRE

40. The Applicant must:
    (a) prepare a Bushfire Management Plan to the satisfaction of the RFS;
    (b) ensure that the development is suitably equipped to respond to any fires on site; and
    (c) assist the Rural Fire Service and emergency services as much as possible if there is a fire in the vicinity of the site.

41. The Applicant must implement the Bushfire Management Plan.

SCHEDULE 4
ADDITIONAL PROCEDURES

NOTIFICATION OF LANDOWNERS

1. As soon as practicable after obtaining monitoring results showing:
   (a) an exceedance of any relevant criteria in Schedule 3, the Applicant must notify the affected landowners in writing of the exceedance, and provide regular monitoring results to each affected landowner until the development is again complying with the relevant criteria; and
   (b) an exceedance of any relevant air quality criteria in Schedule 3, the Applicant must send a copy of the NSW Health fact sheet entitled "Mine Dust and You" (as may be updated from time to time) to the affected landowners and current tenants of the land (including the tenants of land which is not privately-owned).

INDEPENDENT REVIEW

2. If an owner of privately-owned land considers the development to be exceeding the relevant criteria in Schedule 3, then he/she may ask the Secretary in writing for an independent review of the impacts of the development on his/her land.

   If the Secretary is satisfied that an independent review is warranted, then within 2 months of the Secretary's decision, the Applicant must:
   (a) commission a suitably qualified, experienced and independent person, whose appointment has been approved by the Secretary, to:
      - consult with the landowner to determine his/her concerns;
      - conduct monitoring to determine whether the development is complying with the relevant criteria in Schedule 3; and
      - if the development is not complying with these criteria, then identify measures that could be implemented to ensure compliance with the relevant criteria; and
   (b) give the Secretary and landowner a copy of the independent review.

SCHEDULE 5
ENVIRONMENTAL MANAGEMENT, REPORTING AND AUDITING

ENVIRONMENTAL MANAGEMENT

Environmental Management Strategy

1. If the Secretary requires, the Applicant must prepare an Environmental Management Strategy for the development to the satisfaction of the Secretary. This strategy must:
   (a) be submitted to the Secretary for approval within 6 months of the Secretary requiring preparation of the strategy by notice to the Applicant;
   (b) be prepared in consultation with Council;
   (c) provide the strategic framework for environmental management of the development;
   (d) identify the statutory approvals that apply to the development;
   (e) describe the role, responsibility, authority and accountability of all key personnel involved in the environmental management of the development;
   (f) describe the procedures that would be implemented to:
      - keep the local community and relevant agencies informed about the operation and environmental performance of the development;
      - receive, record, handle and respond to complaints;
      - resolve any disputes that may arise during the course of the development;
      - respond to any non-compliance;
      - respond to emergencies; and
   (g) include:
      - copies of any strategies, plans and programs approved under the conditions of this consent; and
      - a clear plan depicting all the monitoring to be carried out under the conditions of this consent.

2. The Applicant must implement any Environmental Management Strategy as approved from time to time by the Secretary.

Management Plan Requirements

3. The Applicant must ensure that the management plans required under this consent are prepared in accordance with any relevant guidelines, and include:
   (a) detailed baseline data;
   (b) a description of:
      - the relevant statutory requirements (including any relevant approval, licence or lease conditions);
      - any relevant limits or performance measures/criteria; and
      - the specific performance indicators that are proposed to be used to judge the performance of, or guide the implementation of, the development or any management measures;
   (c) a description of the measures that would be implemented to comply with the relevant statutory requirements, limits, or performance measures/criteria;
   (d) a program to monitor and report on the:
      - impacts and environmental performance of the development; and
      - effectiveness of any management measures (see (c) above);
   (e) a contingency plan to manage any unpredicted impacts and their consequences and to ensure that ongoing impacts reduce to levels below relevant impact assessment criteria as quickly as possible;
   (f) a program to investigate and implement ways to improve the environmental performance of the development over time;
   (g) a protocol for managing and reporting any:
      - incidents;
      - complaints;
      - non-compliances with statutory requirements; and
      - exceedances of the impact assessment criteria and/or performance criteria; and
   (h) a protocol for periodic review of the plan.

   Note: The Secretary may waive some of these requirements if they are unnecessary or unwarranted for particular management plans.

Revision of Strategies, Plans & Programs

4. Within 3 months of the submission of an:
   (a) Annual Review under condition 9 below;
   (b) incident report under condition 7 below;
   (c) audit report under condition 10 below; and
   (d) any modifications to this consent,

the Applicant must review the strategies, plans and programs required under this consent, to the satisfaction of the Secretary. Where this review leads to revisions in any such document, then within 4 weeks of the review the revised document must be submitted for the approval of the Secretary.

Note: The purpose of this condition is to ensure that strategies, plans and programs are regularly updated to incorporate any measures recommended to improve environmental performance of the development.

Updating and Staging of Strategies, Plans or Programs

5. To ensure that strategies, plans or programs required under this consent are updated on a regular basis, and that they incorporate any appropriate additional measures to improve the environmental performance of the development, the Applicant may at any time submit revised strategies, plans or programs for the approval of the Secretary. With the agreement of the Secretary, the Applicant may also submit any strategy, plan or program required by this consent on a staged basis.

   With the agreement of the Secretary, the Applicant may prepare a revision of or a stage of a strategy, plan or program without undertaking consultation with all parties nominated under the applicable condition in this consent.

   Notes:
   - *While any strategy, plan or program may be submitted on a staged basis, the Applicant will need to ensure that the operations associated with the development are covered by suitable strategies, plans or programs at all times.*
   - *If the submission of any strategy, plan or program is to be staged; then the relevant strategy, plan or program must clearly describe the specific stage/s of the development to which the strategy, plan or program applies; the relationship of this stage/s to any future stages; and the trigger for updating the strategy, plan or program.*

Adaptive Management

6. The Applicant must assess and manage development-related risks to ensure that there are no exceedances of the criteria and/or performance measures in Schedule 3. Any exceedance of these criteria and/or performance measures constitutes a breach of this consent and may be subject to penalty or offence provisions under the EP&A Act or EP&A Regulation.

   Where any exceedance of these criteria and/or performance measures has occurred, the Applicant must, at the earliest opportunity:
   (a) take all reasonable and feasible steps to ensure that the exceedance ceases and does not reoccur;
   (b) consider all reasonable and feasible options for remediation (where relevant) and submit a report to the Department describing those options and any preferred remediation measures or other course of action; and
   (c) implement remediation measures as directed by the Secretary;

   to the satisfaction of the Secretary.

Community Consultative Committee

7. If directed by the Secretary, the Applicant must establish and operate a Community Consultative Committee (CCC) for the development to the satisfaction of the Secretary. Any such CCC must be operated in general accordance with the *Guidelines for Establishing and Operating Community Consultative Committees for Mining Developments* (Department of Planning, 2007, or its latest version).

   Notes:
   - *The CCC is an advisory committee. The Department and other relevant agencies are responsible for ensuring that the Applicant complies with this consent.*
   - *In accordance with the guidelines, the Committee should comprise an independent chair and appropriate representation from the Applicant, Council and the local community.*

REPORTING

Incident Reporting

8. The Applicant must immediately notify the Secretary and any other relevant agencies of any incident. Within 7 days of the date of the incident, the Applicant must provide the Secretary and any relevant agencies with a detailed report on the incident, and such further reports as may be requested.

Regular Reporting

9. The Applicant must provide regular reporting on the environmental performance of the development on its website, in accordance with the reporting arrangements in any plans or programs approved under the conditions of this consent.

Annual Review

10. By the end of September each year, or other timing as may be agreed by the Secretary, the Applicant must review the environmental performance of the development to the satisfaction of the Secretary. This review must:
    (a) describe the development (including any rehabilitation) that was carried out in the previous financial year, and the development that is proposed to be carried out over the current financial year;
    (b) include a comprehensive review of the monitoring results and complaints records of the development over the previous financial year, which includes a comparison of these results against the:
        - relevant statutory requirements, limits or performance measures/criteria;
        - requirements of any plan or program required under this consent;
        - monitoring results of previous years; and
        - relevant predictions in the EIS;
    (c) identify any non-compliance over the past financial year, and describe what actions were (or are being) taken to ensure compliance;
    (d) identify any trends in the monitoring data over the life of the development;
    (e) identify any discrepancies between the predicted and actual impacts of the development, and analyse the potential cause of any significant discrepancies; and
    (f) describe what measures will be implemented over the current financial year to improve the environmental performance of the development.

INDEPENDENT ENVIRONMENTAL AUDIT

11. Within a year of the date of this consent, and every 3 years thereafter, unless the Secretary directs otherwise, the Applicant must commission and pay the full cost of an Independent Environmental Audit of the development. This audit must:
    (a) be conducted by a suitably qualified, experienced and independent team of experts whose appointment has been endorsed by the Secretary;
    (b) include consultation with the relevant agencies and (if established) the CCC;
    (c) assess the environmental performance of the development and whether it is complying with the relevant requirements in this consent and any relevant EPL or necessary water licences for the development (including any assessment, strategy, plan or program required under these approvals);
    (d) review the adequacy of strategies, plans or programs required under the abovementioned approvals; and
    (e) recommend appropriate measures or actions to improve the environmental performance of the development, and/or any assessment, strategy, plan or program required under the abovementioned approvals.

    Note: This audit team must be led by a suitably qualified auditor and include experts in any fields specified by the Secretary.

12. Within 6 weeks of completion of this audit, or as otherwise agreed by the Secretary, the Applicant must submit a copy of the audit report to the Secretary, Council, the EPA and any other NSW agency that requests it, together with its response to any recommendations contained in the audit report.

ACCESS TO INFORMATION

13. Within 6 months of the date of this consent, the Applicant must:
    (a) make the following information publicly available on its website:
        - the documents listed in condition 2(a) of Schedule 2;
        - current statutory approvals for the development;
        - all approved strategies, plans and programs required under the conditions of this consent;
        - a comprehensive summary of the monitoring results of the development, reported in accordance with the specifications in any conditions of this consent, or any approved plans and programs;
        - a complaints register, updated monthly;
        - the annual reviews of the development;
        - any independent environmental audit, and the Applicant's response to the recommendations in any audit; and
        - any other matter required by the Secretary; and
    (b) keep this information up-to-date,

    to the satisfaction of the Secretary.

APPENDIX 1
DEVELOPMENT AREA

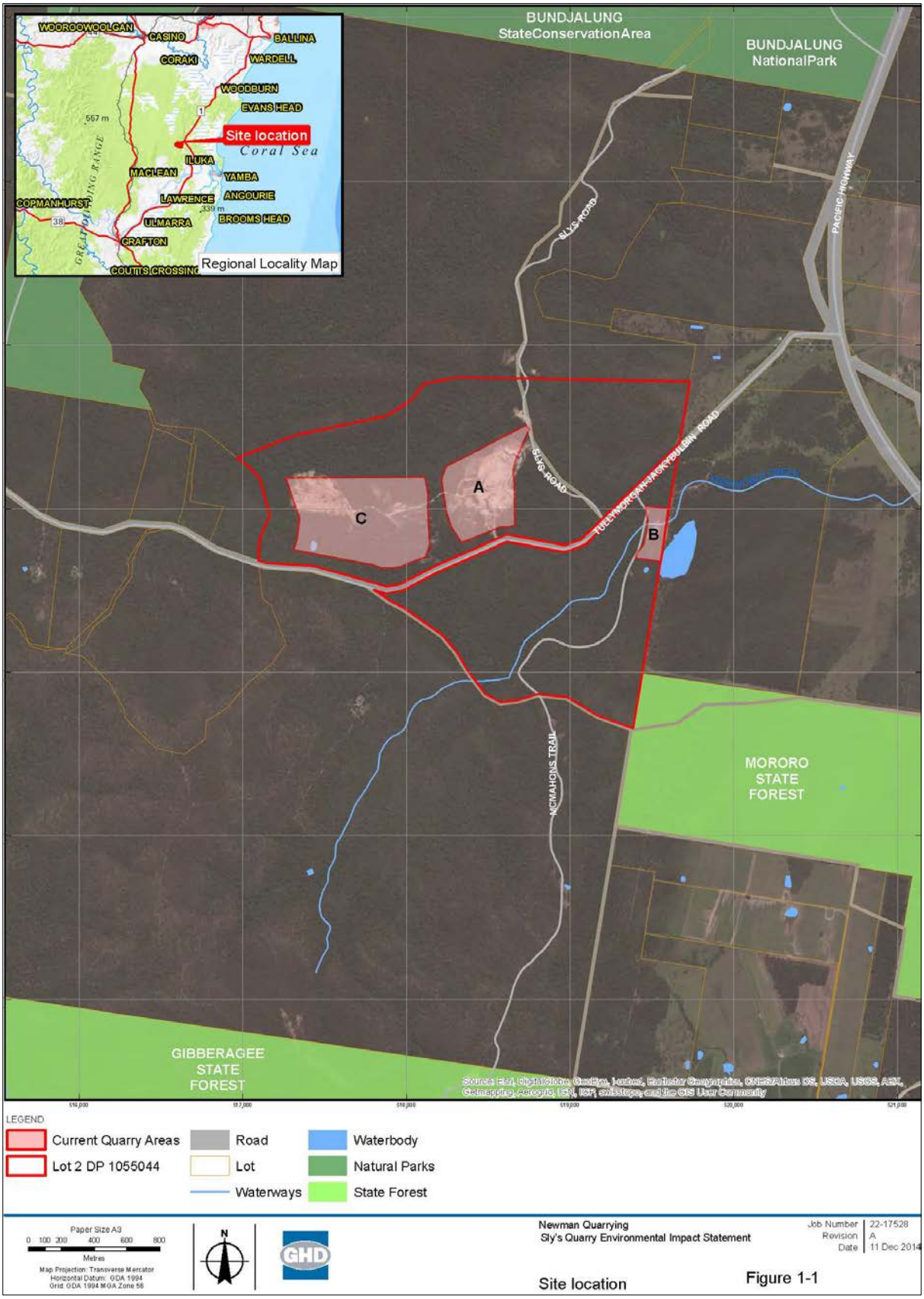

Figure 1: *Location of existing (Site A) and previous extraction areas (Sites B and C)*

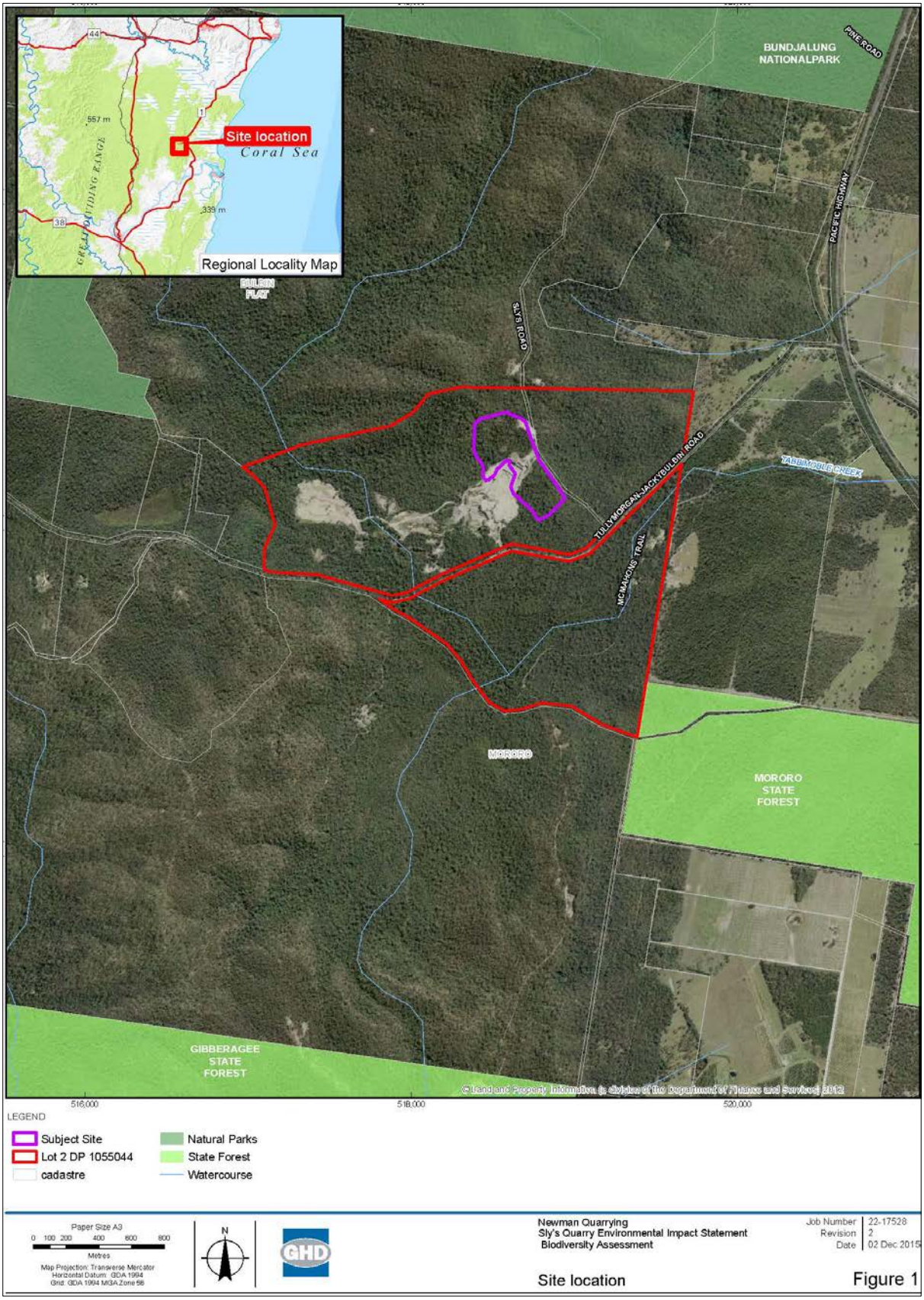

Figure 2: *Outline of expanded quarry footprint (shown in purple edge and labelled "subject site")*

APPENDIX 2
DEVELOPMENT LAYOUT

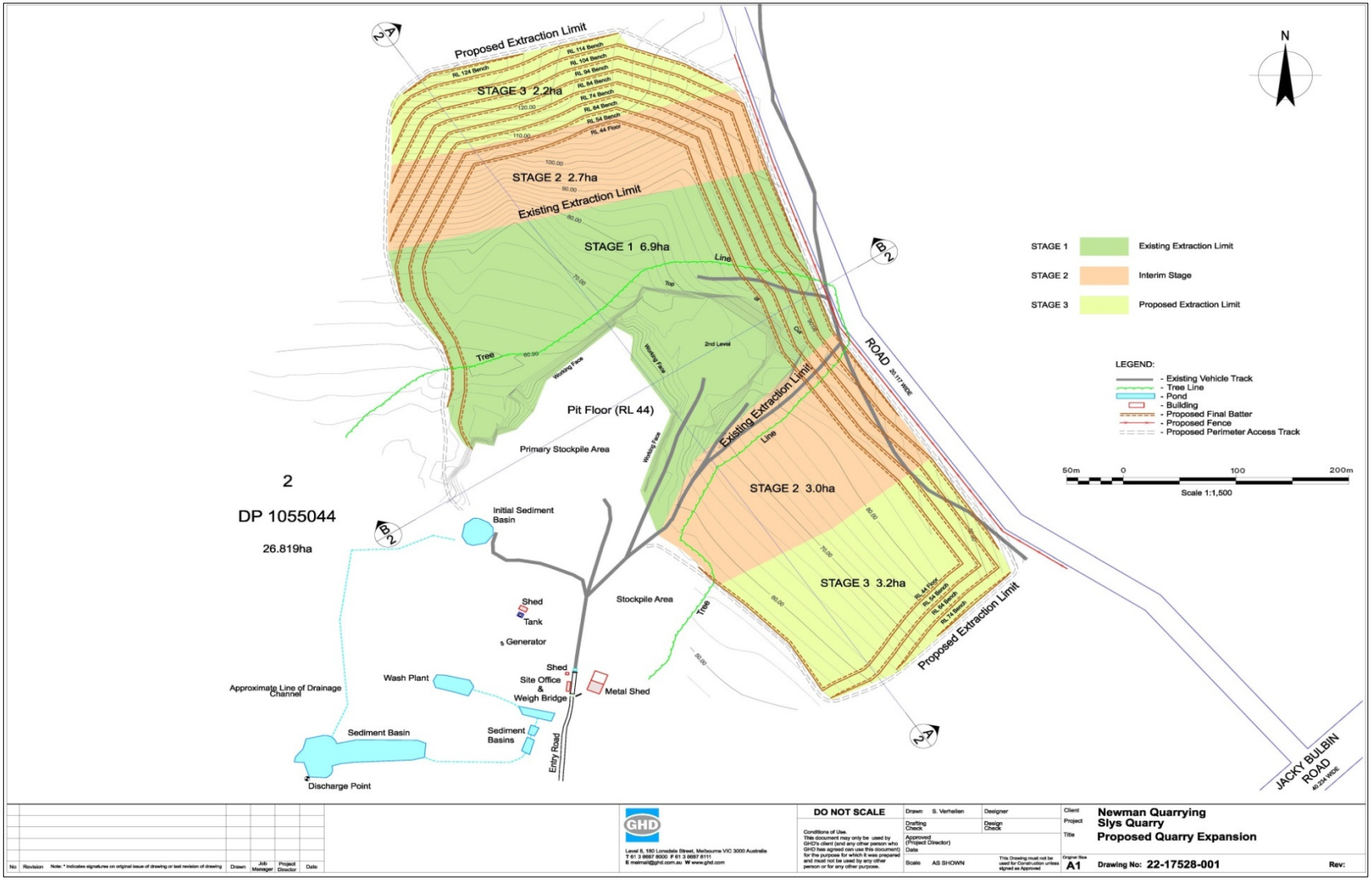

Figure 3: *Stages of extraction*

SECTION A - A

SECTION B - B

No	Revision	Note: * indicates signatures on original issue of drawing or last revision of drawing	Drawn	Job Manager	Project Director	Date

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Drafting Check		Design Check	
Approved (Project Director)			
Date			
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Client	Newman Quarrying
Project	Slys Quarry
Title	Proposed Quarry Expansion
Original Size	A1
Drawing No:	22-17528-002
Rev:	

Figure 4: *Depth of extraction*

APPENDIX 3
CONCEPTUAL REHABILITATION PLAN

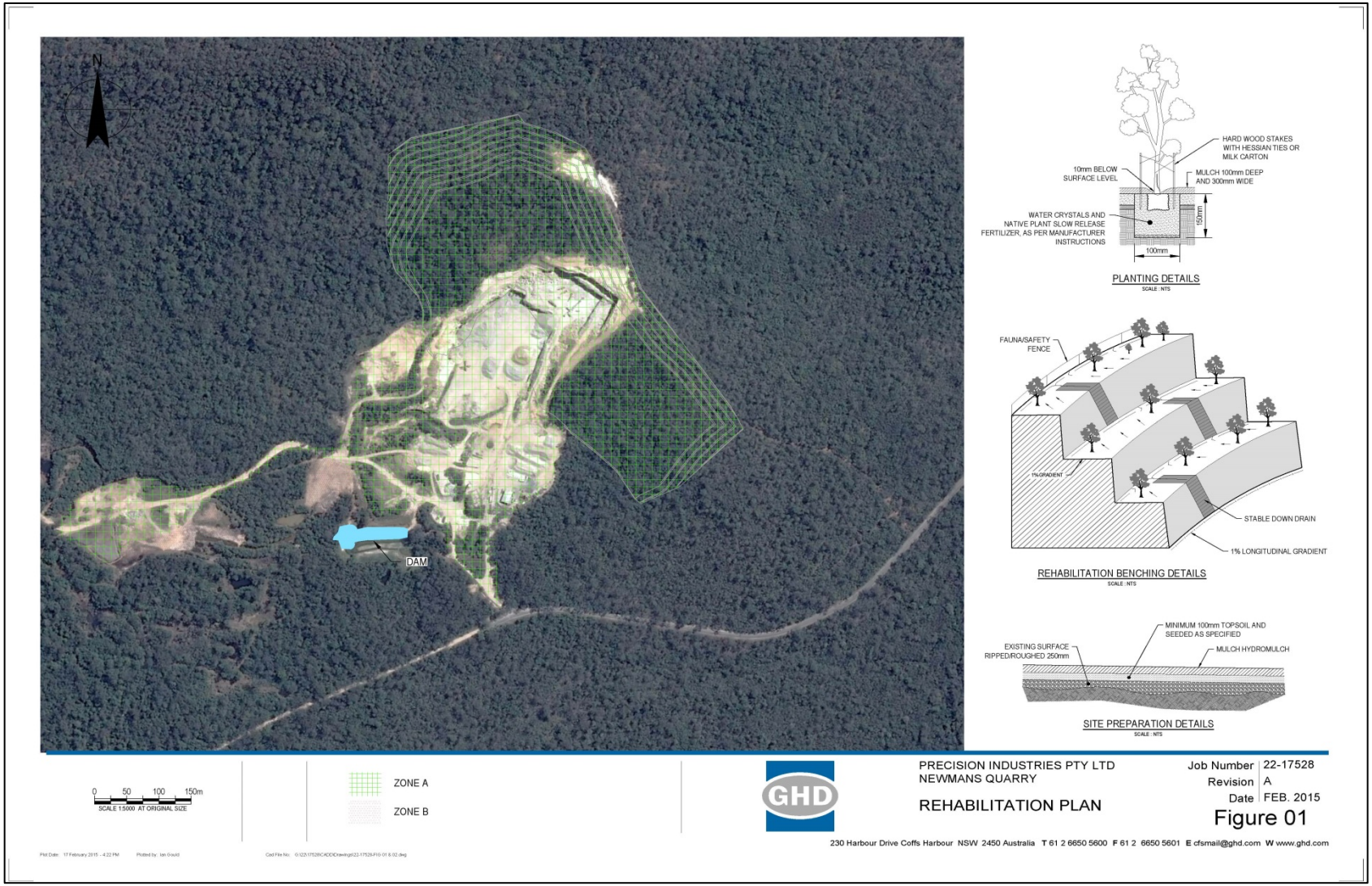

Figure 5: *Conceptual rehabilitation plan*

APPENDIX 4
NOISE COMPLIANCE ASSESSMENT

Applicable Meteorological Conditions

1. The noise criteria in Table 2 are to apply under all meteorological conditions except the following:
   a) wind speeds greater than 3 m/s at 10 m above ground level; or
   b) temperature inversion conditions between 1.5°C and 3°C/100 m and wind speed greater than 2 m/s at 10 m above ground level; or
   c) temperature inversion conditions greater than 3°C/100 m.

Determination of Meteorological Conditions

2. Except for wind speed at microphone height, the data to be used for determining meteorological conditions must be that recorded by the meteorological station required under condition 16 of Schedule 3.

Compliance Monitoring

3. A noise compliance assessment must be undertaken within two months of commencement of the proposed increased extraction rate. The assessment must be conducted by a suitably qualified and experienced acoustical practitioner and must assess compliance with noise criteria presented above. A report must be provided to the EPA within 1 month of the assessment.

4. Unless the Secretary agrees otherwise, this monitoring is to be carried out in accordance with the relevant requirements for reviewing performance set out in the *NSW Industrial Noise Policy* (as amended from time to time), in particular the requirements relating to:
   a) monitoring locations for the collection of representative noise data;
   b) equipment used to collect noise data, and conformity with Australian Standards relevant to such equipment;
   c) modifications to noise data collected, including for the exclusion of extraneous noise and/or penalties for modifying factors apart from adjustments for duration; and
   d) the use of an appropriate modifying factor for low frequency noise to be applied during compliance testing at any individual residence if low frequency noise is present (in accordance with the INP) and before comparison with the specified noise levels in the consent.

APPENDIX 5
EPA'S REQUIREMENTS FOR THE SOIL AND WATER MANAGEMENT PLAN

1. The Soil and Water Management Plan required under condition 20 of Schedule 3 must:

   a) describe stormwater management measures to control pollutants at the source and contain them within the site;
   b) describe erosion and sediment control measures to minimise disturbance of land, minimise water flow through the site and filter, trap or detain sediment;
   c) describe measures to maintain and monitor any stormwater controls;
   d) describe methods of storage of topsoil and associated erosion and sediment control measures;
   e) describe waste water treatment measures, including systems for the reuse and/or recycling of waste water and measures for treating the unavoidable discharges from the site to meet specific water quality requirements;
   f) describe the size and location of sediment basins for each stage of the quarry development in accordance with the sizing requirements of the *Managing Urban Stormwater Soils and Construction: Volume 1 and 2E* guidelines based on a minimum standard of 90th percentile five-day rainfall event (75 mm); and
   g) include a water balance to ensure the design of the volume of sediment basins required for stormwater capture and treatment is not compromised by water storage required for re-use purposes. Such dual purpose basins must be designed and managed to accommodate both stormwater management and water re-use objectives.

APPENDIX 6
BIODIVERSITY OFFSET STRATEGY

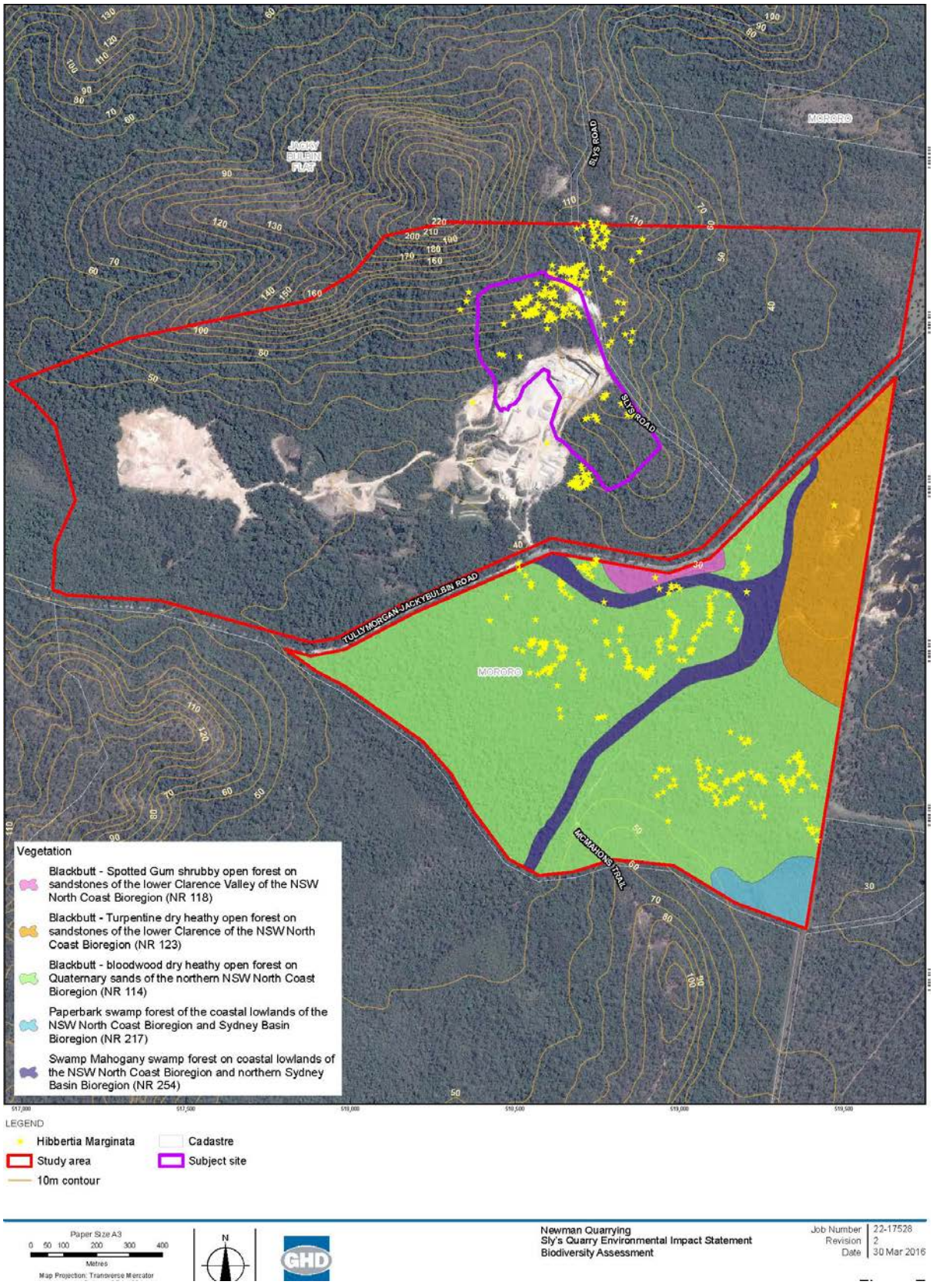

Figure 6: *Location of Biodiversity Offset area (shown in red edge and labelled as "Study area")*

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Document Status

Revision	Author	Reviewer		Approved for Issue		
		Name	Signature	Name	Signature	Date
0	S Materia	C McVie		S Lawer		18/06/18

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