Walker Quarries

AIR QUALITY MANAGEMENT PLAN

Wallerawang Quarry

VERSION 4.0

November 2021

umwelt
Environmental & Social Consultants

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Prepared by
Umwelt (Australia) Pty Limited
on behalf of
Walker Quarries Pty Ltd

Project Director:	Alex Irwin
Project Manager:	Alex Irwin
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Lithgow

PO Box 307
Lithgow NSW 2790
ABN 82 003 061 890

T| 02 6352 3377
E| accounts@walkerquarries.com.au

www.walkerquarries.com.au

Orange

Office 1
3 Hampden Avenue
Orange NSW 2800

T| 1300 793 267
E| info@umwelt.com.au

www.umwelt.com.au

This report was prepared using Umwelt's ISO 9001 certified Quality Management System.

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Document Status

Rev No.	Reviewer		Approved for Issue	
	Name	Date	Name	Date
V0	Alex Irwin	21 February 2019	Alex Irwin	26 February 2019
V1	Alex Irwin	1 April 2019	Paul Hensley (Walker Quarries	1 April 2019
V2.1	Alex Irwin	24 April 2020	Johann van der Merwe (Walker Quarries)	24 April 2020
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V4.0	Alex Irwin	16 November 2021	Wayne Chapman (Walker Quarries)	23 November 2021

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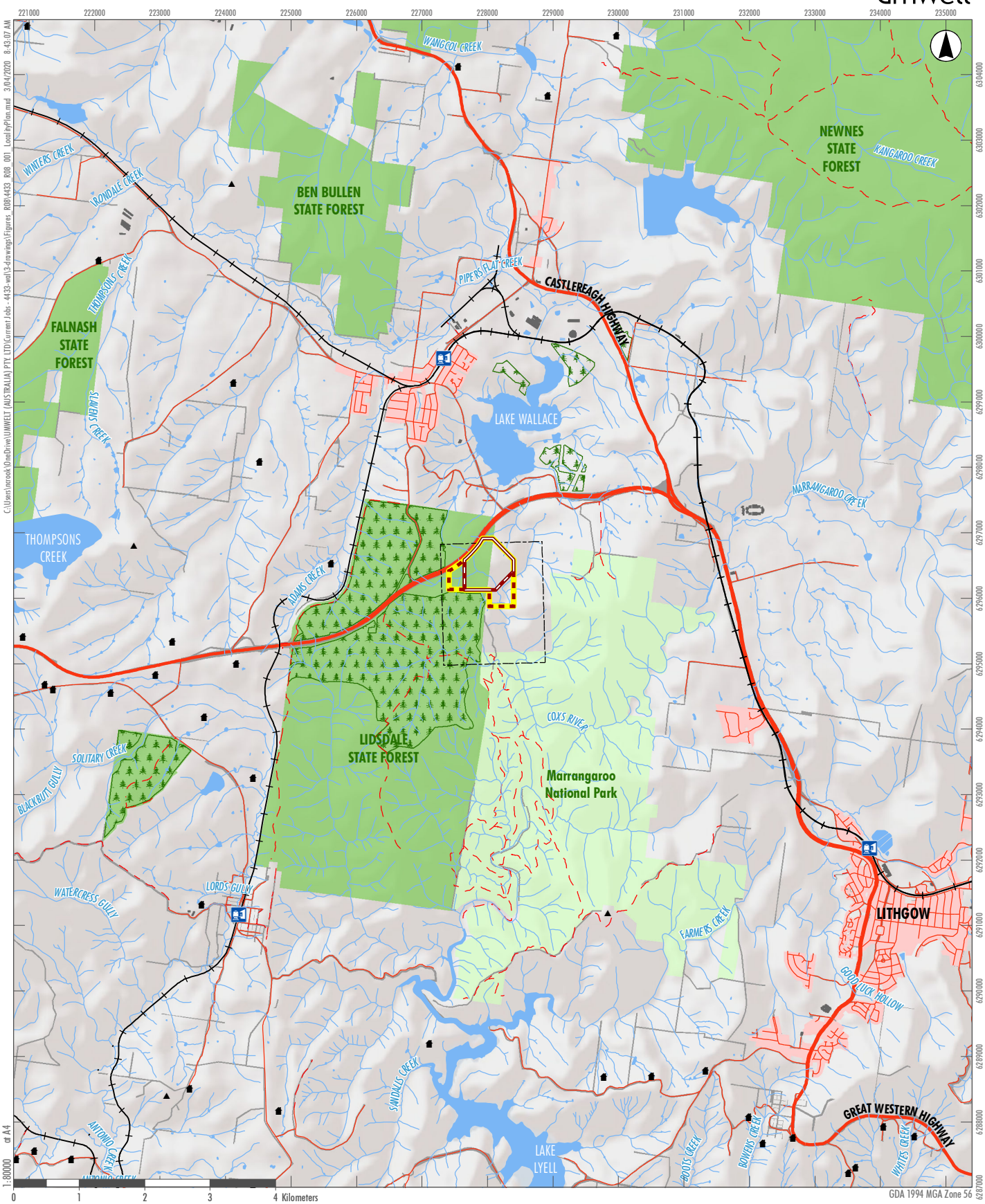
1.0 Scope

This Air Quality Management Plan (AQMP) for the Wallerawang Quarry (the Quarry) has been reviewed and updated by Umwelt (Australia) Pty Ltd (Umwelt) on behalf of Walker Quarries Pty Ltd (Walker Quarries) in satisfaction of Condition 14 of Schedule 3 of Development Consent DA 344-11-2001 (DA 344-11-2001). This version of the AQMP (V4.0) follows a review of AQMP V2.4 following completion of an Independent Environmental Audit (IEA) and IEA Response Plan (20 July 2021), 2021 Annual Review of DA 344-11-2001 (30 September 2021), and notification provided to the Department of Planning, Industry & Environment (DPIE) on 12 October 2021 of the proposed review and revision.

The Quarry is located approximately 8 kilometres (km) northwest of Lithgow (**Figure 1.1**) and is approved to produce 500 000 tonnes per annum (tpa) of hard rock aggregate material and sand. DA 344-11-2001 approves disturbance up to a maximum of 28.6 ha for the purpose of quartzite and other hard rock extraction, processing, stockpiling, management and on-site disposal of non-saleable (overburden) materials, and ancillary infrastructure (**Figure 1.2**).

Dust generating activities principally relate to the following operational activities:

- Vegetation clearing and topsoil and subsoil stripping.
- Drill and blast extraction of raw materials.
- Load and haul of materials for processing through crushing and screening or emplacement of overburden.
- Vehicle movements on unsealed roads.

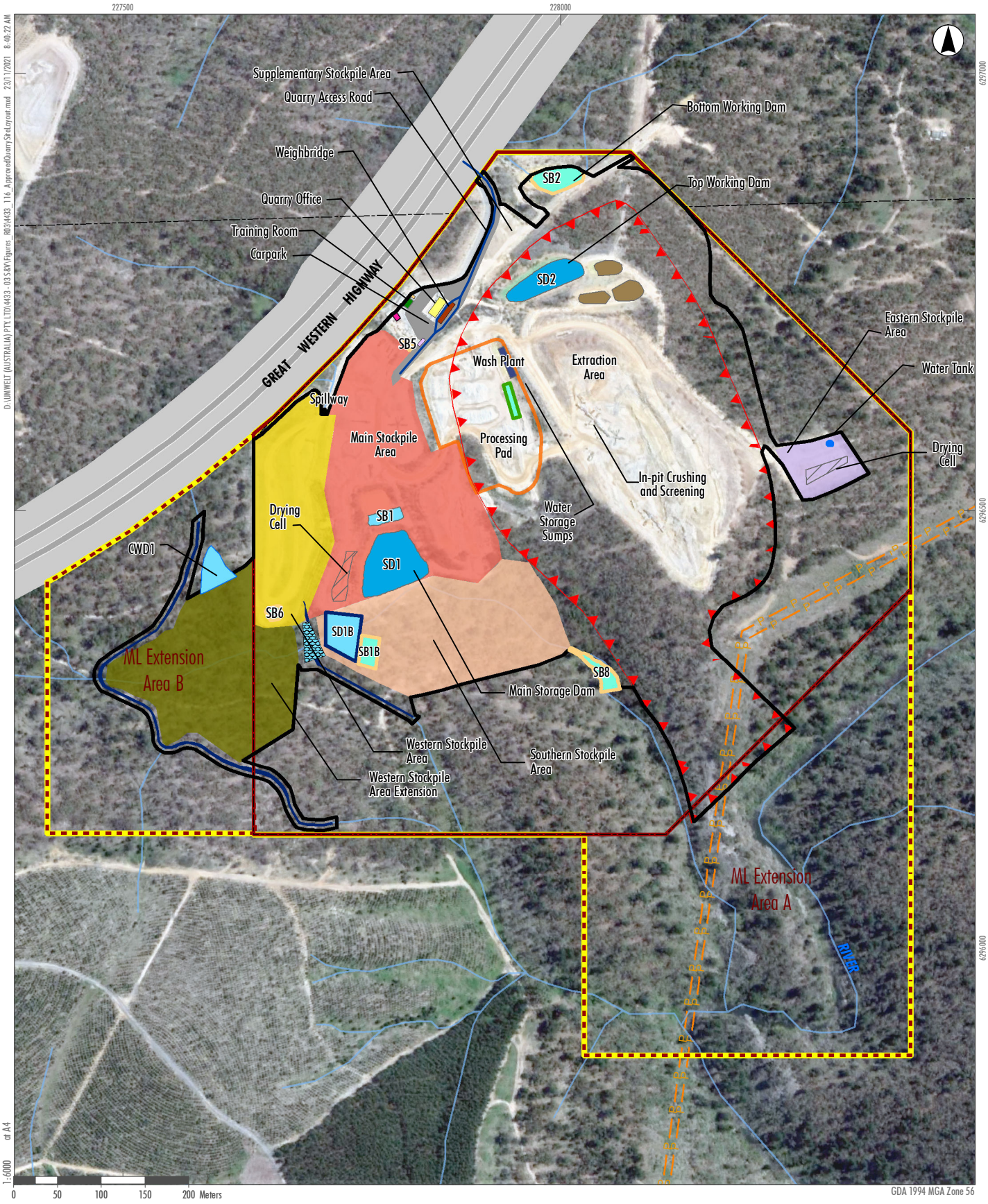


Legend

- Quarry Site Boundary
- Quarry Site ML Extension
- Quarry Site (ML1633)
- EL 4473
- State Forest
- NPWS Estate

FIGURE 1.1

Locality Plan



Legend

- Quarry Site Boundary
- Quarry Site (ML1633)
- Quarry Site ML Extension
- EL 4473
- Disturbed Areas for Modified Operations
- Approved Extraction Area
- Main Stockpile Area (935m AHD)
- Processing Pad
- Southern Stockpile Area (935m AHD)
- Western Stockpile Area
- Western Stockpile Extension (940m AHD)
- Eastern Stockpile Area
- Clean Water Diversion
- Sediment Basins
- Settlement Ponds
- Storage Dam
- Water Tank
- Rock-lined Drain
- Clean Water Dam
- Silt Cells
- P Electricity Transmission Lines

FIGURE 1.2

Approved Quarry Site Layout

Image Source: Nearmap (2020) Data source: Walker Quarries (2019); Umwelt (2019); NSW LPI DTDB (2019); CEH Survey (November 2016)

2.0 Legal and Other Regulatory Requirements

2.1 Development Consent DA 344-11-2001

Conditions 3(11), 3(12), 3(13) and 3(15) of DA 344-11-2001 (as modified on 26 February 2020) provide instructions as to the requirements of Walker Quarries in relation to air quality management. *Condition 3(14)* requires the preparation of an Air Quality Management Plan. *Conditions 5(3)* to *5(5)* provide instruction on the preparation, review and amendment to consent required management plans.

Table 2.1 identifies each of these conditional requirements relating to air quality management and identifies the section of this AQMP where each is addressed.

Table 2.1 Air Quality-Related Conditional Requirements of DA 344–11–2001

<table>
<tr><th>No</th><th>Condition</th><th>Section</th></tr>
<tr><td colspan="3">Air Quality Impact Assessment Criteria</td></tr>
<tr><td>3(11)</td><td>The Applicant must ensure 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
<table>
<tr><th>Pollutant</th><th>Averaging period</th><th colspan="2">Criterion</th></tr>
<tr><td rowspan="2">Particulate matter < 10 µm (PM_{10})</td><td>Annual</td><td colspan="2">[a, c] 25 µg/m³</td></tr>
<tr><td>24 hour</td><td colspan="2">[b] 50 µg/m³</td></tr>
<tr><td rowspan="2">Particulate matter < 2.5 µm ($PM_{2.5}$)</td><td>Annual</td><td colspan="2">[a, c] 8 µg/m³</td></tr>
<tr><td>24 hour</td><td colspan="2">[b] 25 µg/m³</td></tr>
<tr><td>Total suspended particulate (TSP) matter</td><td>Annual</td><td colspan="2">[a, c] 90 µg/m³</td></tr>
<tr><td>[d] Deposited dust</td><td>Annual</td><td>[b] 2 g/m²/month</td><td>[a] 4 g/m²/month</td></tr>
</table>
Notes:
[a] Total impact (i.e. incremental increase in concentrations due to the development plus background concentrations due to all other sources).
[b] Incremental impact (i.e. incremental increase in concentrations due to the development on its own).
[c] Excludes extraordinary events such as bushfires, prescribed burning, dust storms, fire incidents or any other activity agreed by the Planning Secretary.
[d] 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.</td><td>5.0, 6.0</td></tr>
<tr><td>3(12)</td><td>The air quality criteria in Table 4 do not apply if the Applicant has an agreement with the owner/s of the relevant residence or infrastructure to exceed the air quality criteria, and the Applicant has advised the Department in writing of the terms of this agreement.</td><td>5.0</td></tr>
<tr><td colspan="3">Operating Conditions</td></tr>
<tr><td rowspan="3">3(13)</td><td>The Applicant must:</td><td></td></tr>
<tr><td>(a) implement best practice management to minimise the dust emissions of the development;</td><td>6.1 – 6.4</td></tr>
<tr><td>(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;</td><td>7.2</td></tr>
</table>

No	Condition	Section
	(c) minimise the air quality impacts of the development during adverse meteorological conditions and extraordinary events (see note c under Table 4);	**6.3, 7.2**
	(d) monitor and report on compliance with the relevant air quality conditions in this consent; and	**7.3, 9.0**
	(e) minimise the area of surface disturbance and undertake progressive rehabilitation of the site,	**6.1**
	to the satisfaction of the Secretary.	
Air Quality Management Plan		
3(14)	The Applicant must prepare an Air Quality Management Plan for the development to the satisfaction of the Secretary. This plan must:	This document
	(a) be submitted to the Secretary for approval within three months of the determination of Modification 1, unless otherwise agree by the Secretary;	No longer applicable
	(b) describe the measures to be implemented to ensure:	
	• compliance with the air quality criteria and operating conditions of this consent;	**6.0**
	• best practice management is being employed; and	**6.4**
	• the air quality impacts of the development are minimised during adverse meteorological conditions and extraordinary events;	**6.3**
	(c) describe the proposed air quality management system;	**6.0**
	(d) include an air quality monitoring program that:	
	• is capable of evaluating the performance of the development;	**7.0**
	• includes a protocol for determining any exceedances of the relevant conditions of consent;	**8.0**
	• effectively supports the air quality management system; and	**7.0**
	• evaluates and reports on the adequacy of the air quality management system.	**9.0**
	The Applicant must implement the approved Air Quality Management Plan as approved from time to time by the Secretary.	Noted
Meteorological Monitoring		
3(15)	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: (a) complies with the requirements in the *Approved Methods for Sampling and Analysis of Air Pollutants in New South Wales* (DEC, 2007); and (b) is capable of measuring meteorological conditions in accordance with the *NSW Noise Policy for Industry* (EPA, 2017). unless a suitable alternative is approved by the Secretary following consultation with the EPA.	**7.2**
Management Plan Requirements		
5(3)	Management plans required under this consent must be prepared in accordance with relevant guidelines, and include: (a) a summary of relevant background or baseline data;	**4.0**
	(b) details of: • the relevant statutory requirements (including any relevant approval, licence or lease conditions);	**2.0**

No	Condition	Section
	• any relevant limits or performance measures/criteria; and	**5.0**
	• 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;	**3.0, 5.0**
	(c) any relevant commitments or recommendations identified in the document/s listed in condition 2(c) of Schedule 2;	**6.0**
	(d) a description of the measures that to be implemented to comply with the relevant statutory requirements, limits, or performance measures and criteria;	**6.0**
	(e) a program to monitor and report on the: • impacts and environmental performance of the development; and • effectiveness of any management measures set out pursuant to condition 2(c) of Schedule 2;	**7.0**
	(f) 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;	**7.0, 9.1**
	(g) a program to investigate and implement ways to improve the environmental performance of the development over time;	**7.0, 9.0, 10.0**
	(h) a protocol for managing and reporting any: • incident, non-compliance or exceedance of the impact assessment criteria or performance criteria; • complaint; or • failure to comply with statutory requirements; (i) public sources of information and data to assist stakeholders in understanding environmental impacts of the development; and (j) a protocol for periodic review of the plan.	**9.0**
5(3A)	The Applicant must ensure that management plans prepared for the development are consistent with the conditions of this consent and any EPL issued for the site.	**3.0**
5(4)	The Applicant must continue to apply existing approved management plans, strategies or monitoring programs that have most recently been approved under this consent, until the approval of a similar plan, strategy or program under this consent.	**10.3**
5(5)	Within 3 months of the submission of an: (a) incident report under condition 9 below; (b) Annual Review under condition 11 below; (c) audit report under condition 14 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. The applicant must notify the Department in writing of any such review being undertaken. Where this review leads to revisions in any such document, then within 6 weeks of the review the revised document must be submitted for the approval of the Secretary.	**Appendix 1**

2.2 Environment Protection Licence 13172

EPL 13172 contains a number of conditional requirements relating to air quality. **Table 2.2** identifies each of these conditional requirements and identifies the section of this AQMP where each is addressed.

Table 2.2 Air Quality-Related Conditional Requirements of EPL 13172

No	Condition	Section
O3.1	All operations and activities occurring at the premises must be carried out in a manner that will minimize the emission of dust from the premises.	**6.0**
O3.2	Trucks entering and leaving the premises that are carrying loads must be covered at all times, except during loading and unloading.	**6.1**

3.0 Objectives and Outcomes

Table 3.1 presents the objectives and key performance outcomes relating to air quality management for the AQMP and the Quarry.

Table 3.1 Air Quality Management Objectives and Key Performance Outcomes

Objectives	Key Performance Outcomes
To implement appropriate air quality management and mitigation measures during all stages of Quarry operation so as to minimise harm to the environment. **To demonstrate compliance with air quality criteria**	All identified air quality management and mitigation measures implemented. No air quality incidents identified. No air quality complaints received. No exceedances of the air quality criteria identified in **Section 5.0** attributable to Quarry operations.
To implement a monitoring program to establish compliance or otherwise with relevant criteria during all stages of Quarry operation.	All identified monitoring undertaken in accordance with the relevant procedures and at the relevant intervals. Results reported in the Quarry Annual review.
To implement an appropriate complaint handling and response protocol.	Complaints documented and responded to within target timeframe. Complaints and responses documented and reported annually.
To implement appropriate corrective and preventative actions, if required.	Corrective and preventative actions implemented, documented and reported.
To implement an appropriate incident reporting program, if required.	Incidents (if any) reported in an appropriate manner.

4.0 Local Setting and Baseline Air Quality

4.1 Local Setting

4.1.1 Local Terrain and Land Use

The Quarry Site and surrounding region is defined by undulating topography, with an elevated ridgeline immediately to the southeast and the broader elevated terrain of the Great Dividing Range further to the east.

The land use of the area is a mixture of cleared agricultural land, residential development, active forestry and industrial development. With respect to the primary sources of air emissions, the Quarry Site adjoins the plantation forest of Lidsdale State Forest and is bounded to the north by the Great Western Highway. Rural residential properties are located to the north of the Great Western Highway with the town of Wallerawang is located approximately 2 km to the north.

The existing air quality environment in the vicinity of the Quarry Site is expected to be influenced by industrial development of the surrounding area.

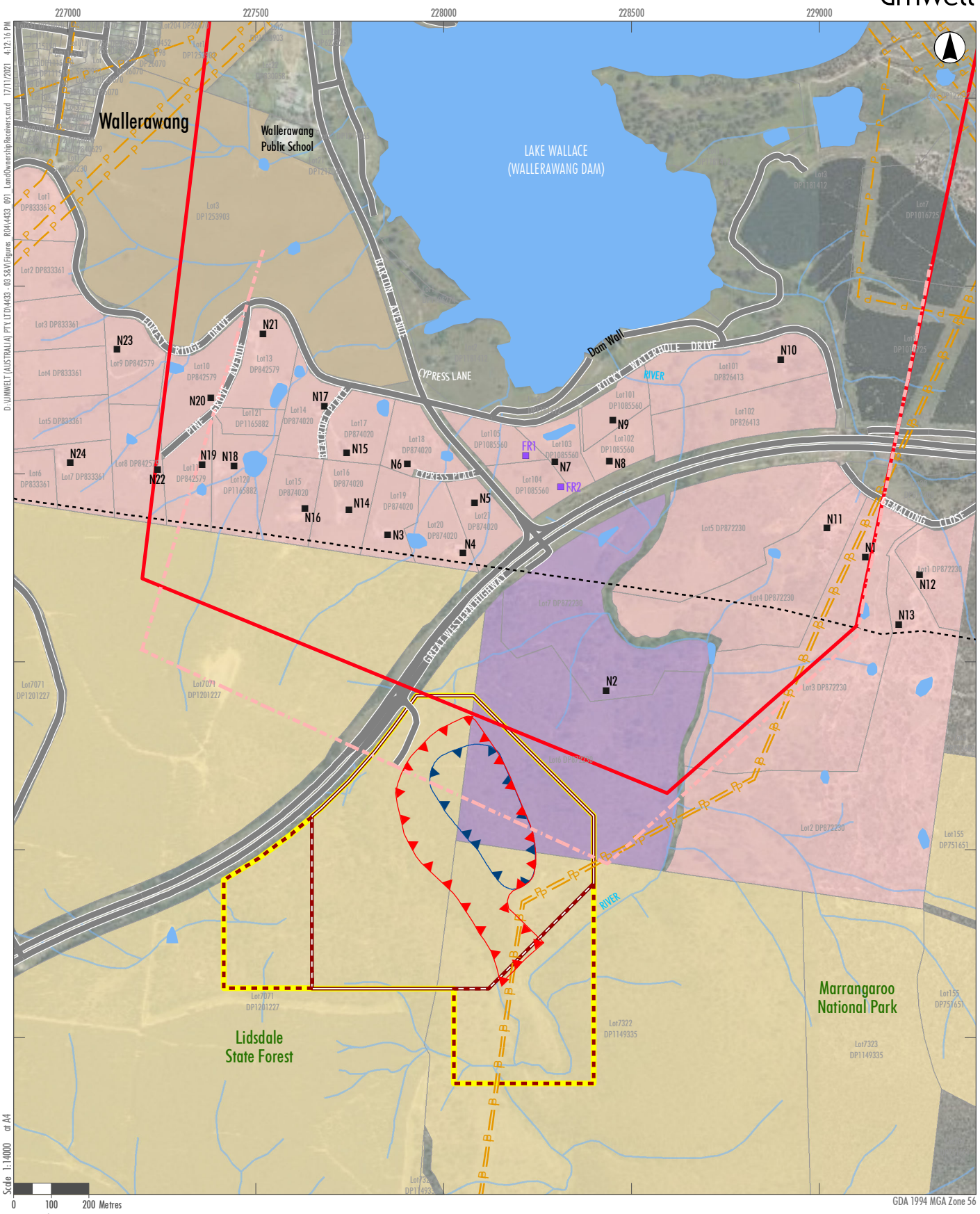
- The Mount Piper Power station located approximately 8 km to the north.
- The Lidsdale coal siding located approximately 4 km to the north.
- The Springdale Colliery located approximately 4.5 km to the north-east.
- The Metromix Marrangaroo Quarry located approximately 3.5 km to the south-east.

Considering the local land uses, the local airshed will also be influenced by the following.

- Wind generated dust from exposed areas.
- Fugitive dust emissions from agricultural activities during dry conditions.
- Dust entrainment due to vehicle movements along unsealed and sealed roads.
- Seasonal emissions from household wood heaters.
- Vehicle emissions from populated areas such as Lithgow.
- Episodic emissions from vegetation fires.
- Long-range transport of fine particles into the region.

4.1.2 Sensitive Receivers

There are 26 residential sensitive receptor receivers within 1 km of the Quarry (refer to **Figure 4.1**). A further two properties on Rocky Waterhole Drive have also been identified as likely to have residences built on these in the coming years and these are identified as Future Residences (FR) on **Figure 4.1**. The locations of these have been assumed to be in the most exposed location on the property. There are no sensitive locations such as schools, churches or major urban development are located near the Quarry.



Legend

- Project Site
- Modified Notification Area
- Quarry Site Extension
- Quarry Site (ML1633)
- Proposed Extraction Area
- Approved Extraction Area
- Wallerawang Dam Notification Area
- Residential Receiver Locations
- Future Residential Receiver Locations

Land Ownership

- Crown Land
- Lithgow City Council
- Private landholdings
- Quarry-related

FIGURE 4.1

Land Ownership and Sensitive Receivers

Image Source: NSW LPI Data source: Walker Quarries 2019

4.1.3 Ambient (Background) Air Quality Levels

To establish background air quality levels against which to compare emissions from the Quarry, the following monitoring data from the region was reviewed (Ramboll, 2019).

- The dust deposition monitoring program of the Quarry.
- Dust deposition, particulate matter of less than 10 microns in size (PM_{10}) and 2.5 microns in size ($PM_{2.5}$) monitoring data collected for the Mt Piper Ash Placement Project and reported in the Mt Piper 2018 Annual Environmental Management Report (AEMR).
- The Office of Environment and Heritage (OEH) (a division of the Department of Primary Industry and Environment (DPIE)) particulate matter monitoring station at Bathurst.

Based on the data collected from this monitoring, the following baseline concentrations of particulate matter have been established.

- Annual average PM_{10} concentration – 18.8 micrograms per cubic metre (µg/m³)
- Annual average $PM_{2.5}$ concentration – 7.0 µg/m³
- Annual average total suspended particulate (TSP) concentration – 47.1 µg/m³
- Annual average dust deposition – 1.5 grams per square metre per month (g/m²/month).

4.1.4 Predicted Air Quality Impacts of the Quarry

Airborne Particulate Matter

The annual average PM_{10}, $PM_{2.5}$ and TSP concentrations at the identified sensitive receivers (refer to **Figure 4.1**), are predicted to increase marginally as a result of Quarry operations. Considering two representative scenarios, dispersion modelling completed by Ramboll (2019) predicts a minor increase in annual average PM_{10}, $PM_{2.5}$, and TSP concentrations as follows.

- PM_{10} is predicted to increase by between 0.1 and 0.9 µg/m^3
- $PM_{2.5}$ is predicted to increase by between 0.04 and 0.2 µg/m^3
- TSP is predicted to increase by between 0.4 and 2.9 µg/m^3.

The highest predicted contribution to 24-hour average PM_{10} and $PM_{2.5}$ is 10.3 µg/m³ and 2.8 µg/m³ respectively.

Dust Deposition

The predicted annual average dust deposition concentration at the identified sensitive receivers (refer to **Figure 4.1**), are predicted to increase by no more than 0.4 g/m^2/month, with most increases predicted to be 0.2 g/m^2/month.

5.0 Air Quality Criteria

In accordance with *Condition 3(11)* of DA 344-11-2001, the air quality criteria for all operations undertaken on the Quarry site are provided by **Table 5.1**.

Table 5.1 Quarry Air Quality Criteria

Pollutant	Averaging Period	Criterion
Total suspended particulates (TSP)	Annual [a,c]	90 µg/m^3
Particulate matter < 10 µm (PM_{10})	24 hour [b]	50 µg/m^3
	Annual [a,c]	25 µg/m^3
Particulate matter < 2.5 µm ($PM_{2.5}$)	24 hour [b]	25 µg/m^3
	Annual [a,c]	8 µg/m^3
Deposited dust [d]	Annual Incremental Increase	2 g/m^2/month [b]
	Annual Average Total Deposited Dust	4 g/m^2/month [a]

Notes:

[a] Total impact (i.e. incremental increase in concentrations due to the development plus background concentrations due to all other sources).

[b] Incremental impact (i.e. incremental increase in concentrations due to the development on its own).

[c] Excludes extraordinary events such as bushfires, prescribed burning, dust storms, fire incidents or any other activity agreed by the Planning Secretary.

[d] 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.

Walker Quarries does not hold any agreements with any landowner to exceed the air quality criteria.

6.0 Air Quality Management System

6.1 Risk of Impact

The results of air quality monitoring undertaken in accordance with previous versions of the AQMP have confirmed compliance with annual average dust deposition criteria. Occasional elevated monthly values recorded have been investigated and generally attributed to local environmental conditions or land uses, i.e. factors independent of the Quarry operations.

There have been no complaints associated with respect to dust from the Quarry or air quality more generally, nor has the EPA, Lithgow City Council or other government or public authority raised concerns over performance.

6.2 Standard Management Measures

The Quarry has been designed with an objective to minimise the air quality generated by extraction, processing and transport activities. **Table 6.1** outlines the various proactive controls to be implemented to minimise the potential for dust emissions.

Table 6.1 Proactive controls to minimise dust emissions

Task/Activity	Pre-Emptive Control Measures and Actions
Induction	• All employees and contractors are to be informed of the need to minimise dust generation on site though inductions and site based training. • Operational personnel will be provided instruction on operating practices to minimise dust generation • All employees and contractors will be encouraged to report dust issues to their supervisor immediately so as to avoid the problem developing into a non-compliance issue.

Quarry Design and General Earthworks	• Quarry design will be optimised to minimise:
	  ○ travel distances for equipment; and
	  ○ rehandling of overburden, products and by-products.
	• Banks and bunds will be stabilised with groundcover to limit the potential for dust lift-off.
	• Mobile equipment will be regularly maintained and serviced to maximise efficiency.
	• Overburden and soil will be directly transferred to rehabilitation areas where possible to reduce the double handling of material, potential for wind erosion and haulage distances.
	• Blasted rock will be transferred directly from ROM to the crushing plant (no intermediate stockpiles) to minimise double handling.
	• Long-term soil and overburden stockpiles will be rehabilitated through the establishment of groundcover.

Task/Activity	Pre-Emptive Control Measures and Actions
Vegetation clearing and soil stripping	• Disturbance activities will be limited to that required to maintain production over the ensuing 12 months. • Soil stockpiles will be stabilised through establishment of a cover crop or application of a soil stabiliser, hydro-mulch, straw or rolled erosion control product until a cover of grass can be established. • Clearing and soil stripping will be undertaken preferentially between April and September when conditions are cooler and wetter. • Clearing and stripping activities will not be scheduled when temperatures exceeding 35°C are forecast as well as in high wind conditions.
Drill and Blast Activities	• Blasts will be scheduled to avoid higher wind conditions, especially when southerly or easterly winds prevail (which may result in a plume of particulate matter towards the most affected receiver to the north and west). • Weather forecast monitoring for excessive wind conditions and adverse wind direction (towards the Great Western Highway and Wallerawang) will be undertaken in the days leading up to and on the day of each blast as described in the Blast Management Plan. • Blasts will be restricted in size (generally <60,000t). • Regular watering of active extraction areas will be undertaken
Load and Haul of Quarry Materials	• Care will be taken to avoid spillage during loading. • Drop heights will be minimised. • Load sizes of internal haul trucks will be limited to ensure material does not extend above truck sidewalls. • Activities will be modified, or will not be scheduled during high wind periods.
Crushing and Processing Operations	• The mobile crushing units will be operated within the extraction area below ground level where actively shielded from wind. • Conveyor transfer points will be partially enclosed and be fitted with water sprays. • Drop heights from trucks to stockpiles, front-end loaders to hoppers and trucks, and conveyors will be minimised.
Truck loading and Vehicle Movements	• Vehicles travelling within the Quarry Site will be limited 40km/hr. • Trucks entering and leaving the Quarry Site that are carrying loads will be covered at all times, except during loading and unloading. • All trucks leaving the Quarry will make use of the wheel wash facility to limit dust tracking onto the Great Western Highway. • Truck queuing and unnecessary idling of trucks and unnecessary trips will be reduced through logistical planning, where possible.
Road Maintenance	• The seal on the Quarry Access Road between the Great Western Highway and the wheel wash will be maintained to reduce dust tracking, degradation and surface dust lift-off. • As soon as practicable after clearing, all internal roads and hardstand surfaces subject to regular traffic will be surfaced with well graded materials to limit dust lift-off. • Compacted gravel surface will be regularly watered and compacted to reduce the mobilisation of wheel generated dust.

Task/Activity	Pre-Emptive Control Measures and Actions

Water Application	• A water cart will be operated and apply water during hot (temperature > 25°C) and/or windy (>3 m/s) conditions.
	• When applying water, this will be at a minimum rate of 2L/m^2/application.
	• The number of applications will be at the direction of the Quarry Manager and consider factors including:
	  ○ the task to be carried out, noting activities such as soil stripping will generate greater dust emissions
	  ○ location of the works, noting the applications to be concentrated on active or highly trafficked areas,
	  ○ visible dust emissions.
	• The Quarry will retain a record of water application with the application rate reviewed regularly by the Quarry Manager. Water usage for the purpose of dust suppression will be reported in the Annual Review.
	• Water application to is to be carried out so as not to cause unsafe / slippery conditions.

Water Cart Availability	• In the circumstance where no water cart is available due to unplanned maintenance, water supply issues or the like, a review of activities and emissions will be completed and may be suspended (refer also to Table 6.2). • Where works are suspended, these will not re-commence until dust control measures are reinstated.
Pre-watering prior to works commencing during dry conditions	• When it is evident that the road surface or work area may generate dust, the area that is to be utilised during the shift is to be watered prior to works commencing. This includes access roads, haul roads and work areas.

6.3 Supplementary Management Measures

The following triggers, responses and corrective actions outlined in **Table 6.2** for reactive management will be applied.

Table 6.2 Response and corrective actions for reactive air quality management

<table>
<tr><th>Trigger</th><th colspan="2">Response and Corrective Actions</th></tr>
<tr><td rowspan="11">Visual Inspections</td><td colspan="2">• Visual inspections of Quarry operations will be undertaken regularly (at least daily) by the Quarry Manager (or delegate). Where the routine visual inspections identify visible dust plumes dispersing from the Quarry Site, further preventative or corrective actions will be implemented.
• The ‘Visual Indicator System’ outlined below has been developed to assist in assessing the level of response required to address dust emissions.</td></tr>
<tr><td>Observation</td><td>Response</td></tr>
<tr><td colspan="2">Normal operations</td></tr>
<tr><td>• No visible dust observed</td><td rowspan="2">• Normal activities to proceed subject to standard measures being carried out.</td></tr>
<tr><td>• Climate –
○ Temperature forecast to remain below 35 degrees Celsius (°C) or
○ Wind speed below 20km/h (5.5 m/s) or
○ Ground conditions are moist following rain</td></tr>
<tr><td colspan="2">Minor operational changes</td></tr>
<tr><td>• Dust observed coming from active areas of the Quarry, e.g. crushers and screens, extraction area, active stockpiles but not static areas, e.g. cleared surfaces, inactive stockpiles
• Dust remains within the limits of the Quarry Site, i.e. is not blown on to neighbouring land</td><td rowspan="3">• Quarry Manager to complete inspections of operating equipment and review emissions.
• Implement supplementary and targeted dust mitigation measures including:
○ Water application to active zones,
○ Increased rate of water application to crushing and screening operations,
○ Relocation of activities (to utilise natural wind breaks) where possible</td></tr>
<tr><td>• Adverse Climatic conditions -
○ Maximum temperature forecast to exceed 35°C or
○ Wind speed exceeds 20km/h (5.5 m/s)</td></tr>
<tr><td>Water Cart not available</td></tr>
<tr><td colspan="2">Major operational changes</td></tr>
<tr><td>• Dust observed from active and static zones of the Quarry Site
• Dust observed to be leaving the Quarry Site, i.e. travelling onto neighbouring land</td><td>• Inspect all active and static areas of the Quarry Site and identify locations of excessive dust generation.
• Suspend operations creating the greatest dust generation.
• Increase rate of water application to areas of excessive dust generation static areas of the Quarry Site.</td></tr>
</table>

Trigger	Response and Corrective Actions	
		• Relocate operations to wind protected zones where practicable. • Suspend operations where supplementary controls unable to prevent Quarry generated dust leaving the site.
Air Quality Complaint	• Any complaint received, either directly or from Lithgow City Council, Environmental Protection Authority (EPA) or other regulatory agency, will trigger the implementation of the response and corrective action measures described in **Section 8.3.**	
Elevated Deposited Dust Result	• Any monthly deposited dust result that exceeds 4.0 g/m^2/month (criteria described in **Section 5.0**) will be investigated as per the measures outlined in **Section 8.0.** • Should the 12 monthly rolling average of monthly deposited dust monitoring results exceed 3.5 g/m^2/month, Walker Quarries would implement a program of particulate matter monitoring as outlined in **Section 7.3.2.**	
Exceedance of air quality criteria (monitoring)	• Any record exceeding the criteria nominated in **Section 5.0** will trigger the response and corrective action measures described in **Section 8.0.**	
Extraordinary events or conditions	• Extraordinary events include any of the following, relevant to operations at the Quarry: ○ Bushfires. ○ Prescribed burning. ○ Dust storms. ○ Fire incidents. ○ Any other activity agreed by the Secretary. • The Quarry will record such events for future reporting. If uncertain as to whether an event can be considered 'extraordinary', the Quarry will seek clarification from the DPIE (refer also to **Section 8.1.2**). • An exceedance of the air quality criteria during a period that is coincident with extraordinary events or conditions, will not be considered a non-compliance against the criteria where it can be determined that the exceedance relates to emissions recorded during the extraordinary events or conditions. The recorded emissions will be considered anomalous in these cases.	

6.4 Best Practice

Conditions 3(13)(a), 3(14)(b) and *5(3)(c)* of DA 3444-11-2001-MOD3 require the application of best practice air quality management at the Quarry. The air quality management measures described in **Sections 6.2** and **6.3** demonstrate consideration of both design and operational controls to reduce dust levels. Air quality modelling undertaken for the Quarry identified compliance with air quality criteria could be achieved even in scenarios where all emission sources were operating concurrently in exposed surface locations.

Walker Quarries are committed to implementing the controls in **Sections 6.2** to **6.4** and will include an assessment in the Wallerawang Quarry Annual Review of whether there are any revised best practice management controls which have become available during the previous 12 months which could be utilised at Wallerawang Quarry and will update this AQMP accordingly.

7.0 Air Quality Monitoring Program

7.1 Introduction

This section describes the air quality monitoring program that will be implemented to meet the conditions of consent and assist Walker Quarries to protect the local environment and amenity of the surrounding rural setting and to minimise the likelihood of air quality-related complaints.

7.2 Meteorological Monitoring

Figure 7.1 identifies the location of a meteorological station installed in accordance with *Condition 3(15)* of DA 344-11-2001 and *Condition M4.1* of EPL 13172. The meteorological station is located away from natural or artificial obstructions and areas with the potential to influence local thermodynamics, e.g. concrete or bitumen surfaces, generally in accordance with the Approved Methods for Sampling of Air Pollutants in NSW.

The parameters, units of measure, averaging period and frequency recorded by the meteorological station are specified in **Table 7.1** (and are in compliance with *Condition M4.1* of EPL 13172).

Table 7.1 Meteorological Monitoring

Parameter	Units of Measure	Frequency	Averaging Period
Rainfall	mm	Continuous	15 minute
Air Temperature (2m and 10m)	°C	Continuous	1 hour
Relative Humidity	%	Continuous	15 minute
Wind Direction at 10m	°	Continuous	15 minute
Wind Speed at 10m	m/s	Continuous	15 minute
Sigma Theta	°	Continuous	15 minute

Wind measurements comply with *AS 3580.14-2011: Methods for sampling and analysis of ambient air, Meteorological monitoring for ambient air quality monitoring applications* (Standards Australia, 2011) as referenced in the Noise Policy for Industry.

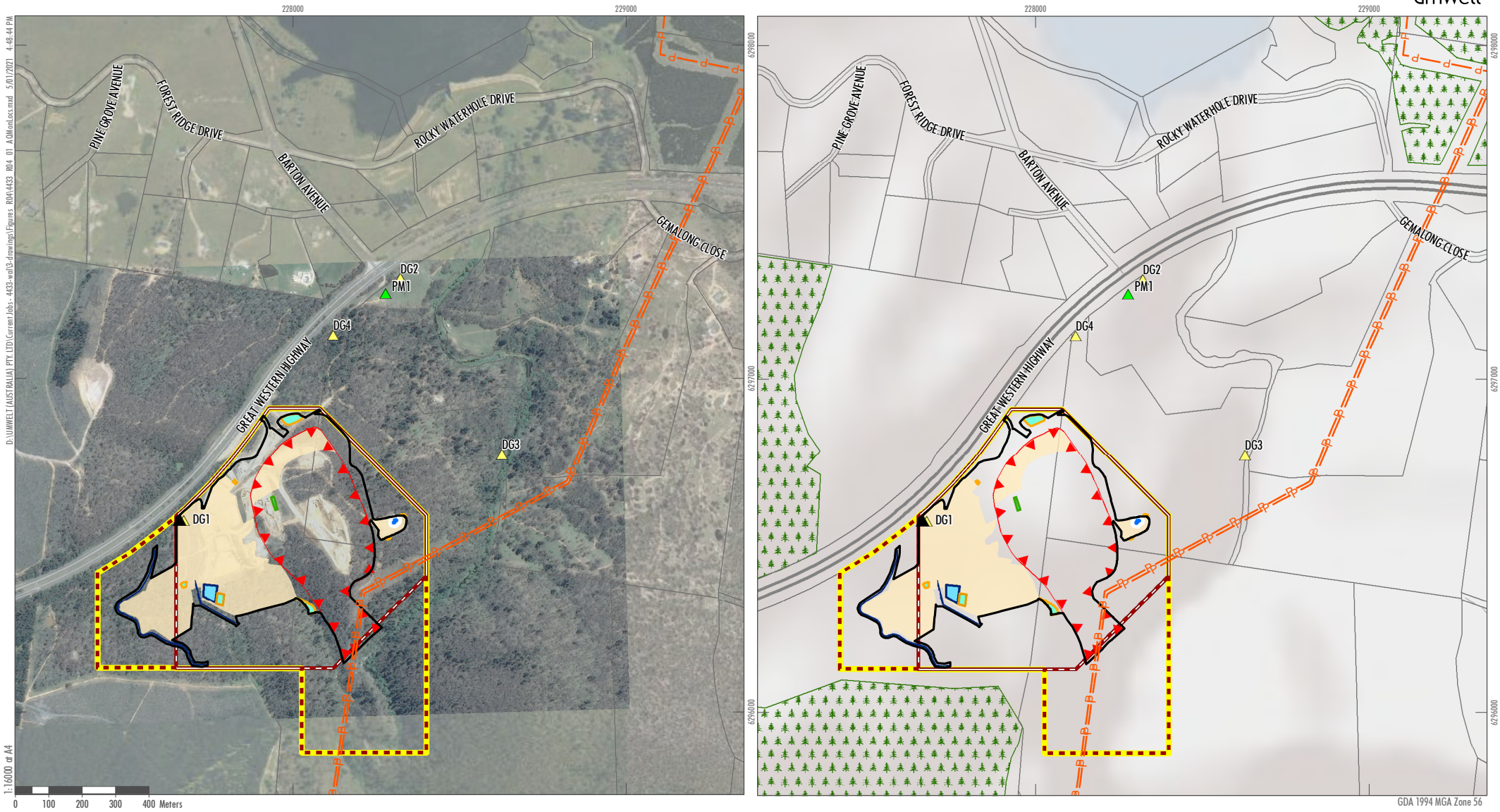
7.3 Emissions Monitoring

In order to demonstrate compliance with the air quality criteria described in **Section 5.0**, Walker Quarries will implement an air emissions monitoring program as described in **Table 7.2**. The following subsections describe the methodology, frequency, analysis and evaluation of monitoring results.

Table 7.2 Ambient Air Quality Monitoring Program

Pollutant	Units of Measure	Averaging period	Frequency	Sampling Method[1]	Australian Standard
Deposited Dust	g/m^2/month	Annual	Monthly	AM-19	3580.10.1-2016
Particulate matter < 10µm (PM_{10}) / Particulate matter < 2.5µm ($PM_{2.5}$)	µg/m^3	24 Hour, Annual	Continuous	AM-18	3580.9.9-2017
Total Suspended Particulate (TSP) Matter	µg/m^3	Annual			

[1] For more information refer to DEC (now EPA) 2007, Approved Methods for the Sampling and Analysis of Air Pollutants in NSW



Legend

- Quarry Site Boundary
- Quarry Site (ML1633)
- Quarry Site ML Extension
- Distrubed Areas for Modified Operations
- Approved Extraction Area
- Stockpile Areas
- Clean Water Diversion
- Sediment Basins
- Settlement Ponds
- Storage Dam
- Water Tank
- Rubbled Lined Drain
- Air Quality Monitoring Locations
- Particulate Matter Monitoring Location
- Meteorological Station
- Power Line

FIGURE 7.1

Air Quality Monitoring Locations

Image Source: ESRI World Imagery (2019) Data source: Walker Quarries (2019); Umwelt (2019); NSW LPI DTDB (2019); CEH Survey (November 2016)

7.3.1 Deposited Dust

The Deposited dust gauges have been installed in accordance with Australian Standard (AS) AS 3580.10.1-2016.

Four dust deposition gauges (**Table 7.3**) have been established to monitor ambient air quality (**Figure 7.1**). The locations have been chosen to allow for an assessment of the levels discharging from the Quarry Site or land owned by the Company as follows.

Table 7.3 Deposited Dust Gauge Locations

Gauge Name	Location	Purpose
D1	North western perimeter of the Quarry Site	To assess dust leaving the Quarry in this direction (which could potentially affect traffic on the Great Western Highway).
D2	North of the Quarry Site	To provide an indication of dust levels which could be received at residential receivers of Rocky Waterhole Drive to the north of the Great Western Highway.
D3	Northeast of the Quarry Site	The most safe and practical location for the dust gauge between the quarrying operations and residential receivers to the northeast
D4	Within a cleared easement on the Company owned property to the direct north of the quarry operations	This will allow for dust levels which could affect property owners of Cypress Place to the north to be monitored and also improves access and safety for personnel collecting and replacing the gauge each month.

Deposited dust monitoring is undertaken in accordance with the following documents:

- NSW DEC Approved methods for the sampling and analysis of air pollutants in NSW (DEC, 2007) and the relevant Ambient Air Monitoring Methods.
    - AM-1: Ambient Air – Guide for the Siting of Sampling Units (AS 2922:1987).
    - AM-19: Methods for Sampling and Analysis of Ambient Air – Determination of Particulate Matter – Deposited Matter – Gravimetric Method (AS/NZS 3580.10.1:2016).

Deposited dust levels will be analysed by a NATA registered laboratory in accordance with AS 3580.10.1 – 2016 and yield data:

- insoluble solids comprising,
    - combustible material,
    - ash (g/m^2/month),
- soluble material, and
- total solids (being the accumulation of insoluble and soluble material).

All measurements are presented in units of g/m^2/month.

A copy of monthly dust monitoring results will be reviewed internally, and periodically by an external environmental consultant, with a rolling 12-month average compared against dust deposition criteria.

7.3.2 Particulate Matter

Monitoring of $PM_{2.5}$, PM_{10} and TSP is undertaken using a Dust Master Pro real-time particulate monitoring unit located to the north of the Quarry on Lot 7 DP872230 (refer to **Figure 7.1**). The location has been chosen on the basis of the following.

- It is located between dust emitting operations of the Quarry Site and residential receivers most likely to be affected by the Quarry operations.
- It is located sufficient distance from remnant woodland vegetation to avoid canopy interference (in accordance with AS 2922:1987)
- electricity supply by mains power.

The Dust Master Pro conforms to AS/NZS 3580.9.6:2015 Methods for sampling and analysis of ambient air (AM-18 of DEC, 2007) and has the capacity for real-time measurement of up to 5 particulate matter fractions simultaneously. Walker Quarries will initially monitor $PM_{2.5}$, PM_{10} and PM_{total}[1].

Further detail on the Dust Master Pro Real-time monitoring unit is provided in **Appendix 2** (noting the installed unit does not include the weather sensor).

The Dust Master Pro Real-time monitoring unit will be linked by telemetry to the server of the Quarry with manufacturer supported software used by Quarry Management for real-time review and decision making and monthly / annual reporting purposes (see also **Appendix 2**).

An alert system has been established which provides the Quarry Manager with an email following any 24 hour period (midnight to midnight) when:

- 24 hr average PM_{10} exceeds 50µg/m^3
- 24 hr average $PM_{2.5}$ exceeds 25µg/m^3

The alert allows for an investigation to be undertaken immediately following an event indicating an exceedance.

[1] PM_{total} is equivalent to TSP (an outdated term for the purpose of referencing all airborne particulate matter).

8.0 Incident and Complaint Management

Condition R2 of EPL 13172 requires that Walker Quarries must notify all relevant authorities of incidents causing or threatening material harm to the environment immediately after the person becomes aware of the incident. An incident which causes or threatens to cause material harm to the environment (and an exceedance of air quality criteria) is referred to as a **Pollution Incident**.

In accordance with the definition provided by Section 147 of the *NSW Protection of the Environment Operations Act, 1997* (POEO Act), harm to the environment is deemed to be material if:

(a) it involves actual or potential harm to the health or safety of human beings or to ecosystems that is not trivial; or

(b) it results in actual or potential loss or property damage of an amount, or amounts in aggregate, exceeding $10,000 (or such other amount as is prescribed by the regulations).

An incident which is only as a result of an exceedance of air quality criterion, is referred to as a **Non-compliance**.

8.1 Incident Notification

8.1.1 Pollution Incident

Immediately after Walker Quarries becomes aware of a pollution incident, i.e. without delay the following notifications will be made.

Department of Planning, Industry & Environment

Written notification of the incident will be emailed to the DPIE at the following address:

compliance@planning.nsw.gov.au.

Written notification of a pollution incident will:

(a) identify the development and application number,

(b) provide details of the incident (date, time, location, a brief description of what occurred and why it is classified as an incident, i.e. non-compliance or pollution),

(c) identify how the incident was detected,

(d) identify when the Applicant became aware of the incident,

(e) identify any actual or potential non-compliance with the conditions of this consent,

(f) describe what immediate steps were taken in relation to the incident,

(g) identify further action(s) that will be taken in relation to the incident, and

(h) identify a project contact for further communication regarding the incident.

Where any of the above cannot be provided immediately following identification of the incident, e.g. identification of actual or potential non-compliance with the conditions of this consent, this will not be relied upon to delay written notification. If required, the notification will make commitment to provide follow-up information to satisfy any of the above requirements.

Environment Protection Authority

The EPA's Environment Line service (131 555) will be called to provide initial notification and seek guidance on management.

Within seven days of becoming aware of the incident, Walker Quarries will provide written notification of the incident. Walker Quarries will follow instructions provided by the EPA with respect to further actions and reporting.

Other Authorities and Stakeholders

Walker Quarries will also notify other regulatory authorities and local community (as relevant) in accordance with the procedures nominated in the Quarry Pollution Incident Management Response Management Plan (PIRMP).

8.1.2 Non-compliance

Within seven days of becoming aware of a non-compliance, Walker Quarries will provide written notification to the DPIE by email to compliance@planning.nsw.gov.au.

Written notification of a non-compliance will:

(a) identify the development and application number,

(b) out the condition of this consent that the development is non-compliant with,

(c) why it does not comply and the reasons for the noncompliance (if known), and

(d) what actions have been, or will be, undertaken to address the non-compliance.

If an exceedance of air quality criteria is confirmed, Walker Quarries will request the laboratory to complete a more detailed analysis of the particulate matter to better understand the source of the dust and any risks which could be associated with this.

If the result is assessed to be anomalous due to factors beyond the control of Walker Quarries, and Walker Quarries proposes to exclude from calculation of the rolling 12 month average, the DPIE will be notified of the investigation, outcome and request to exclude within 10 working days of the conclusion of the investigation. Unless advised otherwise by the relevant authorities', the anomalous result will then be excluded from the calculation of the 12 monthly rolling average of deposited dust results.

It is noted that notification for the purpose of a pollution incident (refer to **Section 8.2**), where this describes the non-compliance, satisfies the notification requirements above.

8.2 Incident Management and Reporting

Following identification of an incident, an investigation will be commenced into the source of the pollution, non-compliance or complaint in accordance with the response and corrective actions described in **Section 6.3**. Any instruction provided by the EPA with respect to investigations, additional or conditional management or preparation of written reports will be followed.

Within 30 days of the date on which the incident occurred or as otherwise agreed to by the Secretary, the Applicant must provide the Secretary and any relevant public authorities (as determined by the Secretary) with a detailed report on the incident addressing all requirements below, and such further reports as may be requested.

The Incident Report must include:

(a) a summary of the incident,

(b) outcomes of an incident investigation, including identification of the cause of the incident,

(c) details of the corrective and preventative actions that have been, or will be, implemented to address the incident and prevent recurrence, and

(d) details of any communication with other stakeholders regarding the incident.

If the incident was identified following receipt of complaint, the complainant will also be provided with a report confirming the incident, source or cause of the incident, actions taken and ongoing management to prevent subsequent incident (see also **Section 6.2**).

Within three months of the submission of an incident report, the Quarry Manager will review this AQMP and revise if required. Walker Quarries will notify the DPIE in writing that this review is being undertaken. If the review does lead to revision, the Company will submit the revised AQMP to the DPIE within 3 months of the incident for approval.

A summary of all incidents, including dates of occurrence, corrective measures taken and success of these measures will be compiled and reported in the Annual Return to the EPA and the Annual Review to the DPIE.

8.3 Air Quality Related Complaint

A Complaints Management Procedure is provided in *Section 6.2* of the Environmental Management Strategy (EMS). Following receipt of a complaint, appropriate action will be taken within two working days to determine the cause of the complaint and identify appropriate actions to remediate the complaint source. The following details will be recorded following receipt of any dust-related complaint:

1. The date and time of the complaint.
2. The method by which the complaint was made.
3. Any personal details of the complainant which were provided by the complainant or, if no such details were provided, a note to that effect.
4. The nature of the complaint.

Within 48 hours of receipt of a complaint, action to identify the cause of the complaint and identify appropriate actions to remediate this will be commenced. On completion of actions to address the complaint, the following information will be added to the complaint register:

5. The action taken in relation to the complaint, including any follow-up contact with the complainant.
6. If no action was taken, the reasons why no action was taken.

Complaints of a general nature, e.g. ‘dust from the Quarry’ will be investigated and an appropriate response provided to the complainant.

9.0 Data Management and Reporting

9.1 Review and Recording of Monitoring Data

Walker Quarries will retain records of meteorological monitoring and air quality monitoring for a minimum period of four years. Monitoring records will be made available to relevant government authorities following a written request.

9.2 Reporting and Publication of Monitoring Data

Walker Quarries will include all air quality monitoring reports as appendices to the Annual Review. That document, once approved by the relevant government agencies, will be published on the company's website.

In accordance with the requirements of Section 66(6) of the *Protection of the Environment Operations Act 1997*, each month Walker Quarries will publish a meaningful summary of all ambient pollution monitoring data on the company's website. The summary will be published within 14 days of the last sample for that period being collected. In addition, Walker Quarries will provide a copy of obtained data (the value of each individual monitoring sample) free of charge to a member of the public when requested in writing. The data will be provided in a format that includes raw data values if requested, is comprehensible by the general public and also includes all accompanying necessary information. These requirements are presented in detail in 'Requirements for Publishing Pollution Monitoring Data' (EPA, 2013).

A summary of all monitored data will be included in the Annual Return submitted to the EPA.

10.0 Plan Implementation

10.1 Roles and Responsibilities

Table 10.1 outlines the roles and responsibilities of personnel with reference to management of air quality.

Table 10.1 Roles and Responsibilities of Personnel with Respect to Management of Air Quality

Role	Responsibilities
Managing Director	Ensure adequate resources are available to implement the AQMP. Ensure suitably trained personnel are available to implement the responsibilities of the Quarry Manager during any time of the Quarry Manager's absence from site.
Quarry Manager, or his/her nominee	Ensure the implementation of the AQMP. Ensure compliance with the AQMP. Ensure quartzite monitoring requirements are adhered to (in accordance with legislation). Ensure air quality monitoring results are regularly reviewed/evaluated. Ensure reviews of meteorological forecasts are undertaken on a daily basis prior to the commencement of operations. Implementation of the Air Quality Management System (**Section 6.0**). Relocate or postpone relevant activities in the event of adverse weather conditions. Provide primary contact for complaints and supply follow-up information to any complainant. Initiate investigations of complaints as received from the public or government agency. Prepare a report to government agencies or neighbours following a notifiable pollution incident (**Section 8.0**). Inform the Managing Director of identified causes of elevated dust and any alterations to site operations that has influenced dust levels. Coordinate the review of the AQMP (**Section 10.3**).
All On-site Personnel	Operate in manner that minimises risks of incidents to themselves, fellow workers or the surrounding environment. Report any anomalous dust plumes or extraordinary events to the Quarry Manager. Follow any instructions provided by the Quarry Manager.
All Truck Drivers	Follow any instructions provided by any on-site personnel.

10.2 Competence Training and Awareness

All personnel and contractors working at the Quarry undergo an induction. This induction includes information on the management of dust while working on site.

Regular toolbox meetings are held to discuss whole-of-site production, management, safety and environmental issues. Matters relating to the mitigation and management of air quality are raised during these meetings, when necessary.

10.3 Plan Review

In accordance with the EMS, this AQMP will be reviewed within three months of any significant modifications to operations that will influence air quality management, any internal or external audits undertaken of the Quarry and following any notifiable incident.

In accordance with the Environmental Management Strategy, and *Condition 5(5)* of DA 344-11-2001, the AQMP will be reviewed within three months of the submission of an:

a) incident as defined by **Section 8.0**

b) Annual Review[2],

c) an Independent Environmental Audit completed in accordance with *Condition 5(14)* of DA 344-11-2001, and

d) any modifications to this consent.

This will ensure the adequacy of the AQMP and allow for opportunities for adaptive management and continual improvement. This will include a review of monitored dust and airborne particulate matter levels and monitoring frequency and methods, as necessary. Each review will also evaluate the effectiveness of the overall air quality monitoring program and whether it should be modified or scaled back.

Walker Quarries will notify the DPIE of a review and where this review leads to a revision to the AQMP, this will be submitted to the DPIE within 6 weeks of review for approval of the Secretary.

[2] The Annual Review is due by 30 September each year.

11.0 References

Department of Environment and Conservation (DEC) (2007). Approved Methods for Sampling of Air Pollutants in New South Wales.

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Pacrim Environmental (Pacrim) (2001). Environmental Impact Statement Proposed Wallerawang Quarry. Prepared for Sitegoal Pty. Limited, November 2001 (report 01/206.1).

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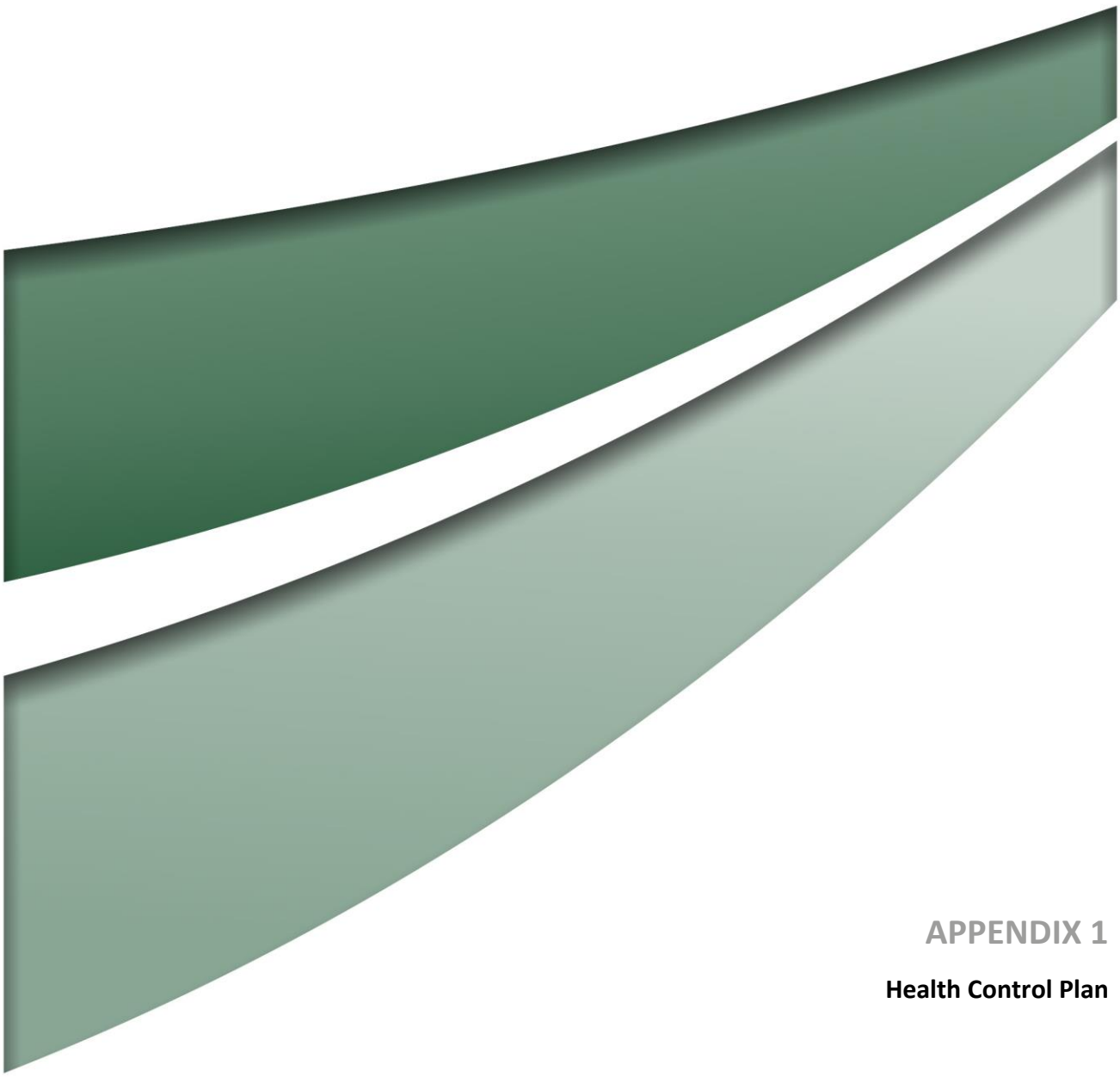


APPENDIX 1

Health Control Plan

HEALTH CONTROL PLAN & SAFETY MGMT SYSTEM

Document No:	**WQ-SMS-001**
Revision:	**Three**
Prepared by:	**Howard Domsalla**
Authorised By:	**Ray Sharwood** **Quarry Manager**
Reviewed By:	**Trevor Hoffmann** **Ross Brownlow** **Paul Hensley**
Re-Issue Date:	**November 2018**
Next Review Date:	**November 2020**

Table of Contents

1. INTRODUCTION

The former Hoskins Quarry was located adjacent to the Wallerawang Quarry and last operated in 1927, although the current owners collected a small sample from this quarry for testing purposes in 1994. Also, a surface gravel quarry was in operation to the east and across the Cox's River from the Wallerawang Quarry until recent years, when it was rehabilitated and incorporated into the Riverfront Acres Subdivision.

A resource of quartzite (and small amount of overburden material) in excess of 12.4 Mt has been proven at the site and Walker Quarries Pty Ltd is producing quartz/aggregate from this hard rock quarry with a life expectancy exceeding 20 years. It will be developed over three stages, resulting in a total disturbed area of approximately 11 hectares. Production will vary between approximately 150,000 T/pa to a maximum of 500,000 T/pa, dependent upon market demand.

2. PURPOSE

The Walker Quarries Health Control Plan & Safety Management System, states how the health and safety of people who work at the Quarry or who are directly affected by the Quarry will be protected.

This Health Control Plan & Safety Management System defines the arrangements by which Walker Quarries Pty Ltd will provide the resources and other requirements to establish an assurance that all Principal Mining Hazard Management Plan and risks arising out of site activities are effectively managed and controlled.

- The Walker Quarries Health Control Plan & Safety Management System intent is to meet, in principal, the aims and objectives with the following Clauses of the Work Health and Safety (Mines & Petroleum) Regulations 2014
    - Clause 9 Management of Risks to Health and Safety
    - Clause 13 Duty to establish Safety Management System
    - Clause 14 Content of Safety Management System
    - Clause 28 (3) Health Control Plan
- To meet, in principal, the aims and objectives of the Work Health and Safety Policy
- Provide systems, standards, procedures, processes, information and communication relevant for the control of risks.
- Ensure that personnel are sufficiently aware of their authority and responsibility under this system and all Work Health and Safety legislation.
- Provide effective measurement and monitoring of the control measures to ensure the Health Control Plan continued adequacy and effectiveness.
- Provide a means for auditing to ensure the safety of all workers.
- Provide a system for employees and contractors to assess risks.
- Provide a means of accident and incident reporting and investigation.
- To provide a consultation and communication protocol for all people working on site as required in the Work Health and Safety (Mines & Petroleum) Regulations 2014.

3. SCOPE

This Health Control Plan & Safety Mgmt System will apply to the Wallerawang Quarry and will include and not limited to:

- Principal Mining Hazard Management Plan
- Principal Control Plans

This Health Control Plan & Safety Mgmt System shall provide:

- Identification of Hazards.
- Development of Controls.
- Implementation of Controls though:
  - Procedures.
  - Standards
  - Reports

This Health Control Plan & Safety Mgmt System will apply to all persons at the Wallerawang Quarry Mining Operation and includes employees, contractors and visitors.

4. OBJECTIVES AND TARGETS

Walker Quarries Pty Ltd has set out performance standards and audits and measures its performance against these indicators as required in the Work Health and Safety (Mining & Petroleum) Regulations Part 2 clause 15.
The following table shows the planned Key Performance Indicator percentages for 2019.

Key Performance Indicators	Q1	Q2	Q3	Q4	2019 Target
Monthly Communication Meetings	Complete 1 meetings	Complete 1 meetings	Complete 1 meetings	Complete 1 meetings	100%
Principal Mining Hazard Management Plan Audits	Satisfactory evidence of consistent application each Quarter.	Satisfactory evidence of consistent application each Quarter.	Satisfactory evidence of consistent application each Quarter.	Satisfactory evidence of consistent application each Quarter.	100%
Principal Control Plans	Satisfactory evidence of consistent application each Quarter	Satisfactory evidence of consistent application each Quarter	Satisfactory evidence of consistent application each Quarter	Satisfactory evidence of consistent application each Quarter	100%
Alcohol and Other Drug Testing	Compliance	Compliance	Compliance	Compliance	100%
Safety Toolbox Meeting	Complete 2 meetings	Complete 2 meetings	Complete 2 meetings	Complete 2 meetings	100%

5. Walker Quarries Policies

Work Health and Safety Policy

Drug & Alcohol Policy

Fatigue Policy

Environmental Policy

Walker Quarries

Work Health and Safety Policy

Walker Quarries is committed to delivering industry-leading Work Health and Safety standards throughout its operation.

Walker Quarries is fully committed to providing for the health and safety of its employees, contractors, service providers and visitors.

This will be achieved through effective Health, Safety Management Industry Systems and Practices that will allow work activities to be carried out safely and efficiently.

To deliver on this commitment, Walker Quarries will:

- Comply with the requirements of relevant Work Health and Safety (Mines and Petroleum) Legislation, Codes of Practice, Standards and where applicable, recognised industry best practice;
- Through consultation with all stakeholders, develop, implement and maintain a Health, Safety Management System as required by Work Health and Safety (Mines and Petroleum) Act and Regulations, including Hazard Identification and Risk so that potential hazards are identified, risk assessed and controlled to eliminate the risk, or to minimise the risk to as low as reasonably practicable (ALARP);
- Establish measurable Work Health and Safety objectives and targets which will facilitate continuous elimination or reduction of work related injury and illness;
- Continually strive towards a target of zero injuries or illnesses;
- Confirm that the Walker Quarries Management demonstrates leadership in Work Health and Safety, through their behaviour and support of the systems that are in place at all times;
- Continuously improve on the Safety Management Systems and work practices through regular audit, review and consultation with all stakeholders;
- Confirm that this Work Health and Safety Policy is prominently displayed throughout the Workplace and is communicated to all employees, contractors, service providers and visitors;
- Investigate all incidents and near misses and take corrective action to prevent recurrence; and
- Provide an effective injury management and rehabilitation for all employees.

In accordance with the requirements of the Walker Quarries Health & Safety Management System, all employees, contractors, service providers and visitors are expected to comply with our systems when working or visiting site, follow safe work practices where applicable, observe all safety rules and report hazards, incidents and near misses to a Wallerawang Quarry Supervisor.

Dave Murray: ..... Date: .....20th October 2017

Managing Director

Walker Quarries Pty Ltd

Fatigue Management Policy

The Fatigue Management Policy provides a framework for managing and understanding fatigue and minimising and controlling the risks associated with fatigue in the workplace.

AIMS

- Individuals are fit for work
- The Company meets it obligations to employees, contractors and the community by carrying out its operations safely;
- A safe work environment by minimising hazards and managing risks associated with fatigue;
- Informed decisions are made in relation to hours of work, working arrangements and shift roster systems;
- Ongoing assessment and monitoring of fatigue risks
- Assistance through risk assessment is offered including education and training strategies to help manage fatigue and related risks;

Code Of Behaviour

- No restrictions working up to 14 hours per day;
- No individual to work more than 16 hours per day (inclusive of travel time)
- Total hours works worked not to exceed an average of 60 hours per week over a 4 week period;
- A minimum break of 10 hours between consecutive shifts worked;
- No more than one call back in any 24 hour period

David Murray
Managing Director

Clause 43 Work Health and Safety (Mines and Petroleum) Regulation 2014

Fatigue Management Policy *September 2017*

Walker Quarries Pty Ltd

DRUG AND ALCOHOL POLICY

Walker Quarries Pty Ltd insists on a drug and alcohol free workplace as an essential element of achieving Occupational Health, Safety and Welfare aims.

This policy covers all permanent and non-permanent employees, Contractors and visitors performing work at or visiting the site.

The scope of this policy covers the following:

- All illicit drugs, including marijuana, amphetamines, heroin, LSD, etc.
- All alcoholic drinks and beverages
- Prescribed drugs and medications known to cause adverse mental and / or physical effects when used in either prescribed or in excess of prescribed dosages
- Non-prescribed (over-the-counter) drugs and medications known to cause adverse mental and / or physical effects when used either in recommended or in excess of recommended doses, including some common cough and cold medicines, pain killers, etc.
- Any chemical misused illicitly as a drug, e.g. petrol, aerosols, glues, etc.

Walker Quarries Pty Ltd Limited insists on the following acceptable drug and alcohol levels for persons at work:

- **A maximum 0.02% Blood Alcohol Limit (BAL) for general work and a zero% BAL for persons operating plant and or equipment, while strongly encouraging an at-work 'zero' BAL**
- **Zero levels of any illicit drug or any substance misused illicitly as a drug**
- **Zero levels for any other substance known to or likely to cause adverse mental and / or physical effects, unless sanctioned in writing, along with any conditions, by Senior Management**

A person whose test result shows a non-acceptable level for a substance will not be allowed to resume work until a further test shows an acceptable level.

Code Of Behaviour

- Persons will not bring any alcoholic beverage or drink or illicit drug onto the site without firstly gaining the permission of the Area Manager.
- No person will take or consume any drug or alcohol at work other than medications which are prescribed or available over the counter and have been sanctioned by medical authorities for use while working, using the recommended dosages.
- It is the responsibility of all persons to inquire as to the affect of any prescribed or over the counter medication (from, doctors, pharmacists, etc.). Where the effects of any medication will or is likely to have adverse affects on the work safety, welfare or productivity of themselves and others at the workplace, it will be the responsibility of the person to notify workplace management or face Disciplinary Procedures. It will be at the discretion of workplace management as to whether suitable duties may or may not be made available.
- Any person reporting to work in an apparent intoxicated or drug affected state will be tested and if found to be intoxicated to an extent which is likely to impair safe work performance that person will be immediately suspended pending the outcome of Disciplinary Procedures.
- Any employee distributing illicit drugs at a workplace will be instantly dismissed and reported to the Police.

NOTE: It will be mandatory that persons involved in a reportable incident/accident will be tested for drugs and alcohol.

David Murray
Managing Director

Clause 44 Work Health and Safety (Mines and Petroleum) Regulation 2014

DRUG and ALCOHOL POLICY *September 2017*

Walker Quarries

Environmental Safety Policy

The environmental policy of Walker Quarries Pty Limited is to carry out the mining activities at Walker Quarry in a manner that complies with relevant environmental legislation and is environmentally responsible. The company is committed to ongoing improvements in its environmental management and aims to undertake reviews of this environmental policy to ensure that it remains relevant and appropriate for the existing and future operations.

In recognition of the corporate environmental policy, the Company will endeavour at all times to:

- ☐ comply with all applicable Commonwealth and State Government legislation to protect the environment;
- ☐ establish effective working relationships with Government agencies responsible for land management within the Walker Quarries Pty Ltd/Sitegoal Pty Ltd leases;
- ☐ develop and maintain environmental performance in line with industry standards by implementing an Environmental Management System (EMS) appropriate to the scale of the operation;
- ☐ establish a reporting process and verification procedure for any non-conformances within the EMS;
- ☐ carry out environmental training to ensure that the workforce on site are aware of their environmental responsibilities;
- ☐ undertake appropriate reviews and audits of the operation to measure progress and to ensure compliance with the environmental policy.

This Environmental Policy have been endorsed by the Company's Board of Directors and therefore commit the Company to achieving its objectives of environmental excellence.

Dave Murray: David W Murray Date: .....20th July 2017

Managing Director

6. MANAGEMENT STRUCTURE

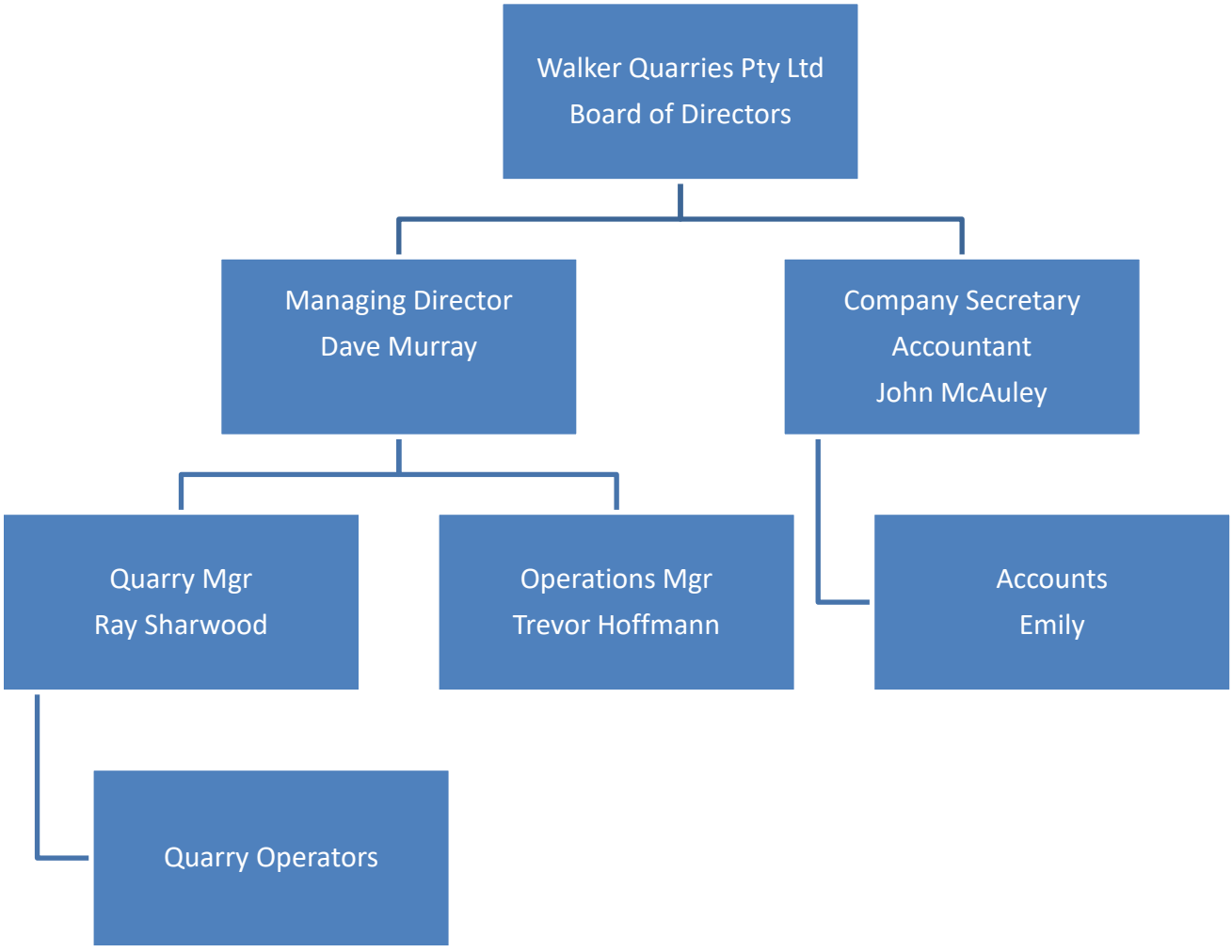
Wallerawang Quarry is required to have a Management Structure as part of the Health Control Plan & Safety Mgmt System under Work Health and Safety (Mines & Petroleum) Regulations 2014 - Clause 14 (d)

Other prescribed matters for the Health Control Plan & Safety Mgmt System are listed in the Work Health and Safety (Mines & Petroleum) Regulations 2014 – Clause 14.

The Management Structure at Wallerawang Quarry is detailed below

WALLERAWANG QUARRY

Management Structure



7. COMMUNICATION

Information, communication and supervision arrangements in place at Wallerawang Quarry ensure that any person who may be exposed to a risk to health and safety is:

- Informed of the risk
- Provided with any information, instruction and training necessary to ensure the person's health and safety.

The weekly Management meeting/arrangements control all relevant communication processes within the Health Control Plan & Safety Mgmt System.

8. INFORMATION, TRAINING AND INSTRUCTION

The participation of employees and their input to the Health Control Plan & Safety Mgmt System is fundamental to the successful implementation and sustainability of the system. All employees shall be given adequate opportunity and encouragement to express their opinion relating to the Health Control Plan & Safety Mgmt System as required in the Work Health and Safety (Mining & Petroleum) Regulations 2014 Part 4 clause 121.

Employees will be given the opportunity to acquaint themselves with weekly meeting minutes, audit results and changes to the Health Control Plan & Safety Mgmt System. All information will be readily accessible to employees on site in main office.

9. TRAINING AND COMPETENCY

Wallerawang Quarry in conjunction with employees has identified the training needs in relation to performing work activities competently.
The Quarry Manager will ensure that training records are in place to ensure competencies are developed and maintained. Persons are assessed as competent on the basis of skills achieved through education, training or experience.
The Training Records controls all relevant training processes and competencies within the Health Control Plan & Safety Mgmt System and the Emergency Management.

10. ACCIDENT/INCIDENT INVESTIGATION

To determine the root cause or source of accidents and incidents and to establish the necessary control measures to prevent a recurrence of the accidents and incidents a systematic approach for the investigation of accidents and incidents is required.

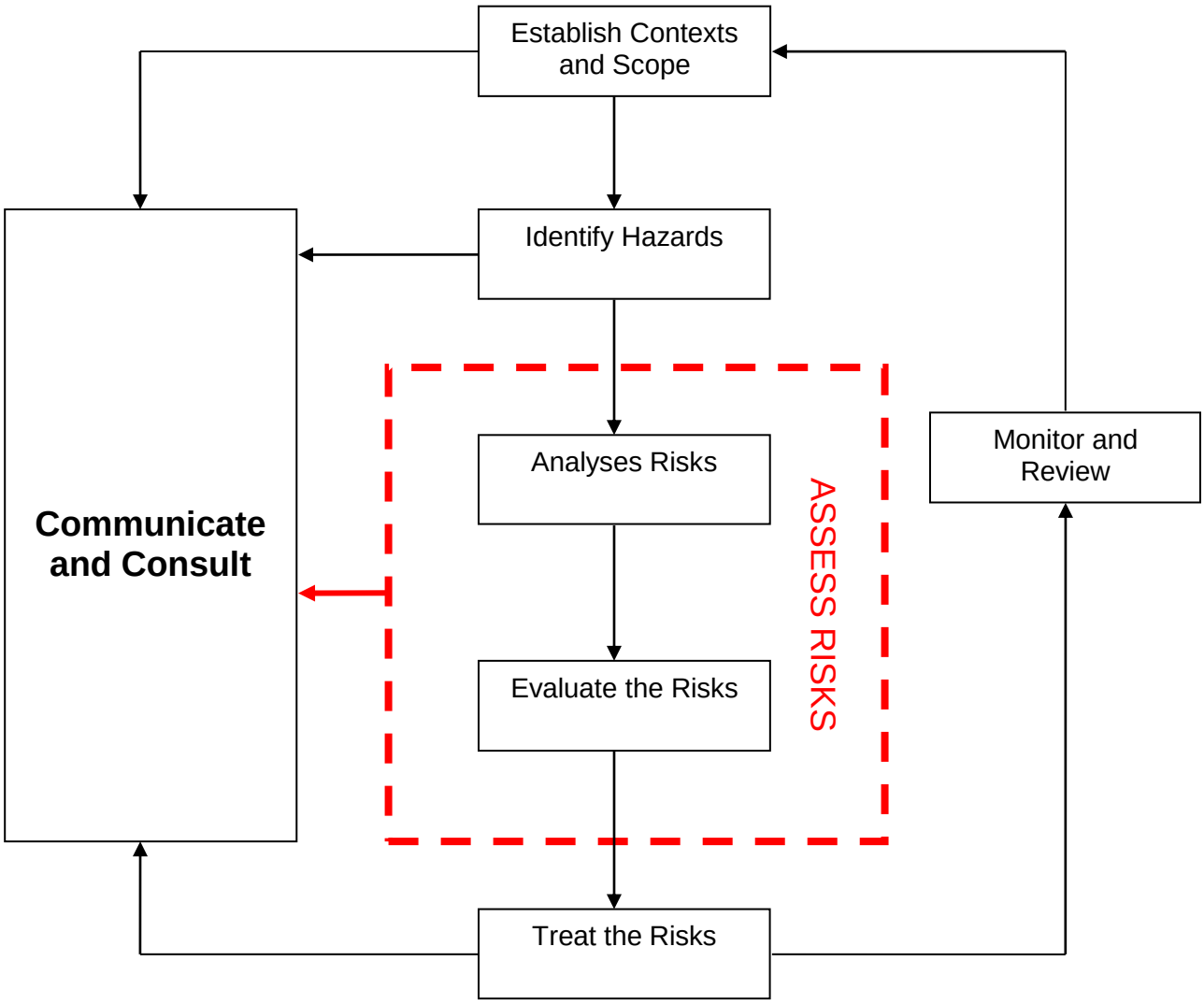
Corrective Action resulting from incident investigation will be evaluated to determine their effectiveness.

Details of how Walker Quarries accident and incidents are investigated, reported and corrective action control measures established are documented by the Quarry Manager.

11. RISK MANAGEMENT

The purpose of applying a risk management process attempts to proactively and systematically reduce losses.

11.1 Risk Management Process (AS4360)



11.2 Risk Management Standard

Risk Management Standard - 1010 has been developed to apply Risk Management Methodology into Walker Quarries decision making processes.
The intent of this Standard is to integrate risk management into all aspects of the Wallerawang Quarry and comply with this standard.

12. LEGAL AND OTHER REQUIREMENTS

Access to legal and other requirements that are directly attributable to Work Health and Safety issues related to Wallerawang Quarry activities are up dated and current on the Internet under the titles of:

- Government and Regulatory
- Work Health and Safety Links

13. PURCHASING GOODS AND SERVICES

To ensure work Health and Safety requirements are met by the suppliers of goods and services, Walker Quarries shall dictate the terms and condition of supply.
The Purchase or use of hazardous substances shall be controlled by the Hazardous Substances Management. The Hazardous Substances Management provides practical guidance for the Purchase, Storage, Use, Handling and Disposal of hazardous substances at Wallerawang Quarry. It will assist in complying with relevant Legislation and help ensure the health and safety of all persons on site, the public, the community, and the protection of the environment.
Wallerawang Quarry shall comply with the above requirements.

14. AMENITIES

Appropriate amenities shall be made available for all employees and contractors while they are at work. Amenities means facility provided for the welfare or personal hygiene needs of persons, and includes toilets, bathrooms, dining rooms, change rooms, provision of drinking water, lockers and washing facilities. Amenities shall be maintained in a safe and healthy condition.
Amenities Standards will be used for the maintenance of appropriate facilities for the welfare or personal hygiene needs of persons at Wallerawang Quarry.

15. REPORTING

Statutory reporting required under WHS Mines (Mines & Petroleum) Regulations 2014:

- Work Health and Safety (Mines & Petroleum) Regulations Part 6 clause 128 (Notification of certain incidents)
- Work Health and Safety (Mines & Petroleum) Regulations Part 6 clause 130 (quarterly reports of injuries)

16. INSPECTION & SUPERVISION ARRANGEMENTS

No employee or contractor shall have their health and safety put at risk through inadequate supervision. The Supervision Arrangements set out the requirements and detail for Wallerawang Quarry supervision in accordance with Work Health and Safety (Mines & Regulations) Regulation 2014 Part 2 Clause 14 (k), together with Clause 37 Quarry Inspection.

This Management System shall make provisions so that all employees and contractors at Wallerawang Quarry have adequate supervision.

Walker Quarries

Wallerawang Quarry

Record of Inspection as per **Work Health and Safety (Mines and Petroleum Sites) Regulation 2014 Part 2 Managing risks - Division 1 General requirements Subdivision 1 Control of risk - Clause 37 Quarry Inspection**

I ..... here by record that I have inspected all areas of the Wallerawang Quarry as per Clause 37 (3) and sign that Quarry Operations are safe to proceed. Additionally, arrangements in place for the supervision needed to protect workers and other persons at the mine or petroleum site from risks to their health and safety from work carried out at the mine or petroleum site (Clause 14(k))

SIGNED .....

Date: .....

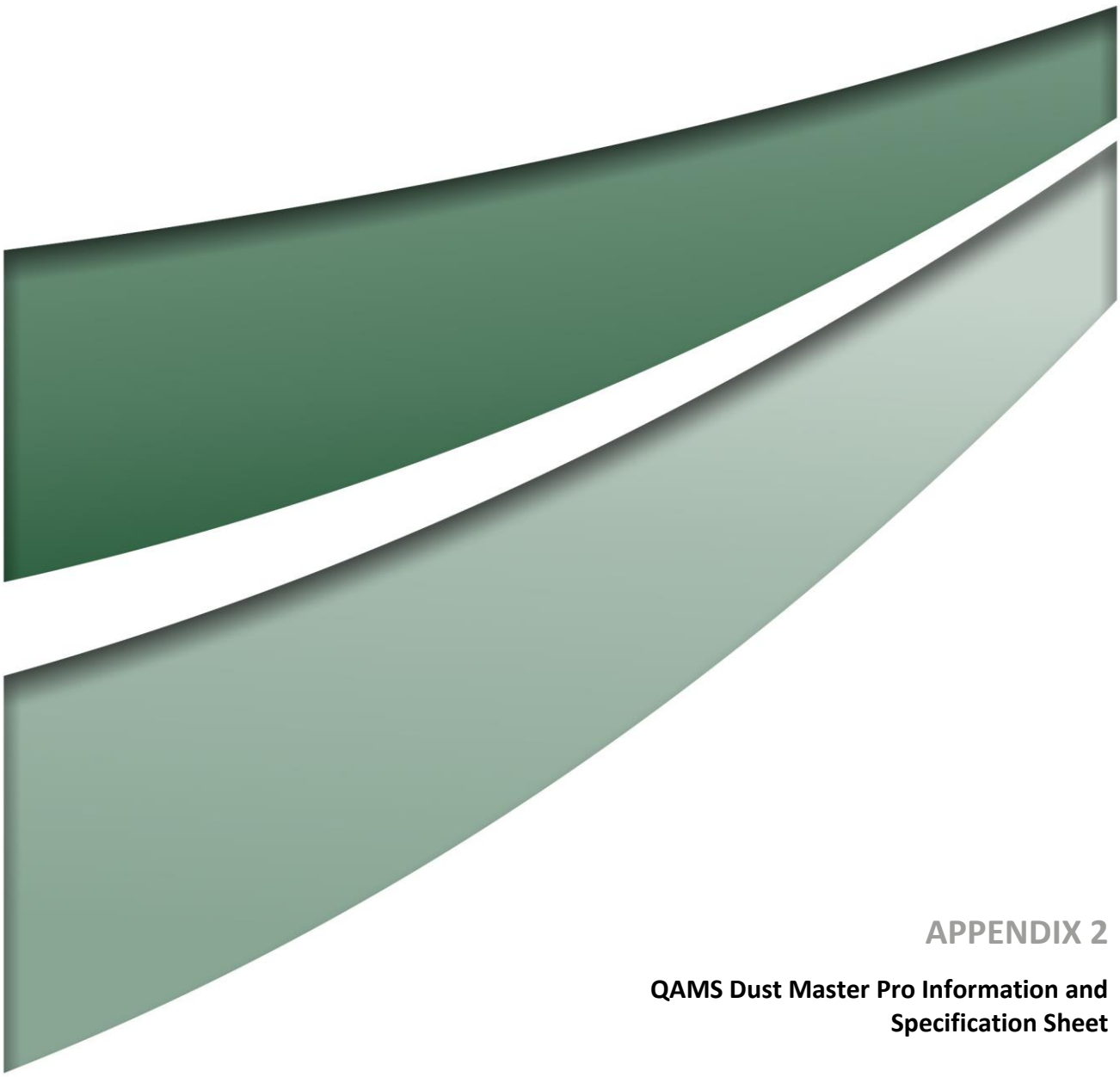
37 Inspections

(1) The mine operator of a mine must ensure that arrangements are in place for the regular inspection of the working environment of the mine for the purposes of the WHS laws.
(2) The mine operator must ensure that, in the making of the arrangements, the following are taken into account:
(a) the procedures for conducting inspections,
(b) when inspections are to be carried out,
(c) the persons competent to conduct inspections,
(d) the number of competent persons required to conduct each inspection.
(3) The mine operator of a mine is to ensure that a risk assessment is conducted on all areas of the mine when taking account of the matters set out in subclause (2) (a)–(d).

Quarry Manager Inspection Record.docx

17. AUDIT AND REVIEW PROCESS

An audit is a systematic examination against defined criteria to determine whether activities and related results conform to planned arrangements and whether these arrangements are implemented effectively and are suitable to achieve Walker Quarries policies and objectives.
Audits required within this Health Control Plan & Safety Mgmt System and its associated sub-systems are to be completed audits are then relocated s as a controlled current document.
For the purpose of the Health Control Plan & Safety Mgmt System and its associated sub-systems the audit frequency shall be every 3 years unless otherwise defined as a more frequent audit.
Wallerawang Quarry shall comply with the above audit policy.



APPENDIX 2

QAMS Dust Master Pro Information and Specification Sheet

DUST MASTER PRO

REAL-TIME PARTICULATE MONITOR

QAMS
QUALITY AIR MONITORING SYSTEMS

- Made in Australia
- Near reference measurement
- PM10, PM2.5, PM Total and more
- Easy to use
- Remote connectivity & telemetry
- Local and genuine support

HOW IT WORKS

The QAMS Dust Master Pro particle counter uses laser technology for simultaneous real-time PM monitoring of up to 5 PM fractions: PM_{10}, PM_4, $PM_{2.5}$, PM_1 and Total PM.

The advanced pump system provides accurate data with quiet operation due to consistent 5LPM flow rate and pulsation dampening technology.

The quick deploy design, graphical display, and dedicated keypad with intuitive menu simplifies on-site operation, while the new Visual Master Pro Software gives remote users unprecedented capabilities.

PERFECT FOR:

- Governments & Authorities
- Consultants & Engineering
- Civil & Construction
- Mining & Quarries
- Logistics, Ports & Terminals

THOMSON
ENVIRONMENTAL SYSTEMS

AUSTRALIAN MADE AND OWNED

SUSTAINABLE
ISO 9001
AS/NZS 4801
ISO 14001

Outstanding Solutions. Exceptional Service.

www.thomsongroup.com.au

KEY FEATURES AND HIGHLIGHTS:

- **Real-time** measurement of up to 5 PM fractions **simultaneously**
- Capable of measuring **PM10** and **PM2.5** (the most common fractions for measuring dust that is harmful to health) as well as **PM4, PM1** and **Total PM**
- **Manufactured in Australia** with premium quality and service you can trust
- Meets Australian Standard **3580.9.9** (2017)
- Advanced pump system with high **5LPM flow rate** and quiet operation
- Easy field calibration available via **Automatic Field Calibration Mode**
- RH controlled heated inlet along with a unique in-line water trap **eliminates moisture interference**
- **K-factor** site correlation available
- Annual factory service recommended. **No other maintenance required**
- Mains, battery or solar power options
- **In-built** data logging capability
- **Remote data access** via 3G modem
- Easy to set alarm capabilities through 3G/4G **SMS messaging to mobile** phone, external siren or visual beacon

Weather & Meteorological Sensors

The Dust Master Pro has Plug n Play integration with up to 3 Lufft Meteorological Sensors, which means no additional costly data loggers for your weather monitoring requirements. The DMP has the capability to record up to 48 distinct paramaters, including:

- Wind Speed and Direction
- Air Temperature
- Relative Humidity
- Barometric Pressure
- Precipitation Type, Intensity and Quantity
- Solar Radiation
- Lightning Strikes
- and more

Visual Master Pro Data Logging Software

VMP Software (valued at $1,799) comes **included** with your Dust Master Pro purchase. The remote interface software requires no coding and makes it simple for both non-technical and expert users to access data and adjust instrument setting at an advanced level.

- Live data display allows you to access first-hand information
- Real-time data display, real-time decision making
- Remote access for data downloading and configuration
- Synchronised data set for ease of download
- Unique EPA mode allows user to simply set up the system to meet EPA requirements
- Operating on Windows 7 through to Windows 10
- Compatible with QAMS Dust Master Pro and Met Master Pro
- Format available in CSV, HTML and ASCII.

Outstanding Solutions. Exceptional Service. **www.thomsongroup.com.au**

QAMS

Proudly Manufactured in Australia by Thomson Environmental Systems

We developed the QAMS range specifically for outdoor monitoring in Australia's harsh conditions. We built QAMS for ease-of-use, robustness and suitability for a diverse number of applications.

Since the first QAMS monitor launched in 2008, we have continually strived to improve the product and make it the highest quality instrument on the market. With years of field operation and a strong positive response from our users, we are proud that the QAMS range has become a leader in monitoring, construction, mining and industrial monitoring applications.

THOMSON ENVIRONMENTAL SYSTEMS

DUST MASTER PRO DATASHEET

Particle Size Range	0.2um to 18um	Communications	1x RS232 digital port Analogue Modbus TCP (optional)
Dust Measurement Range	0.001 to 10mg/m³ (Internal dilution available)	Outputs	3 x Analogue Outputs (0 to 2.5 volt or 4-20mA [Jumper selectable]), 1 x RS232 or RS485 Output, Ethernet Module Optional, 3 x Solid State Relays for Audio and Visual Alarms
Simultaneous PM Fraction Measurements	Simultaneously measures all 3 popular PM fractions; PM2.5, PM10 and Total PM with option to add PM_1 and PM_4. Other PM fractions available upon request.	Enclosure Type	NEMA 4 / IP66 rated, excluding heated inlet and exhaust Display Type 128 x 64 bit low energy graphical LCD display
Measurement Resolution	0.001mg/m³ (1ug/m³)	Keypad / User Interface	12 button function with keys
Flow Rate Flow Accuracy Single Pump System	5.0 litre per minute (default), user adjustable from 3 to 8 lpm Precision automatic flow control to within +/- 1% With internal solenoid valve to control internal purge cycle every 30 minutes as standard	Tripod or Post Mounting	May be easily mounted on a 50mm diameter post or on a TES transportable heavy duty tripod
Barometric Pressure	Built in barometer for ambient static pressure measurements for precise flow control	Optional Inlet Jets	PM_{10}, PM_{TS} Total PM - supplied with unit PM_4, $PM_{2.5}$ - available on request
Data Download	Data is polled or, upon special request, automatically and continually pushed to your server. Ability to fully synchronise data with the use of Visual Master Pro Software	Heated Inlet	Precision heated inlet controls inlet temperature to ensure sampling at 45% Relative Humidity max.
Gravimetric Filter Sampling	Integrated filter holder, 37mm filter cartridge	Calibration Method	Fully calibrated to ISO12103-1 international standards by TES
Data Logging Interval and Internal Memory	Fully user adjustable from 5 to 999s Ability to store over 2 years of time and date stamped 10 minute data captures from a single PM channel. Note, actual storage depends on the application as it will vary depending on additional parameters	Power Options	**Mains Power** - Operates from 80 to 260 VAC and is fully weatherproof. **Battery Power** – Standard or Portable. Includes rechargeable battery, regulator and battery box. 'Standard Battery System' provides approx 210 hours of operation with the inlet heater OFF or 70 hours with the inlet heater ON. **Solar Power System** provides continuous operation based on average of >4.5 hours of sunlight per day, and will continue for up to 3 days no sun. System includes Solar Panel & Stand, Battery & Battery box, Regulator
NIOSH 5040 Capable Sampling	Yes, using 37mm filter cassette	Weight	System 7Kg Heated Inlet 1.5Kg
Web Based Data Collection	Optional	Dimensions - System	Width 300mm Depth 200mm Height 350mm
Meteorological Inputs	Up to 3 Lufft instruments can be integrated - each with multiple channels including wind speed, wind direction, humidity, temperature, precipitation, barometric pressure, solar radiation, evaporation, sigma theta, lightning & more.	Dimensions - Heated Inlet	Length 500mm Width 48mm
Digital Inputs/Inputs	3 optically isolated inputs, voltage free 1 x RS232 or RS485, 2 x Analogue Inputs (0 to 2.5 volt or 4-20mA [Jumper selectable]), 2 x Counter Channels, 2 x PT100 & SHT75X Inputs included.	Operating Conditions	-10 to 50°C temperature range 0 to 95% humidity range
Relay Contacts	3 relay contacts (NC/COM/NO), Alarm 1 set point, Alarm 2 set point, Instrument fault alert, Max. contact switching 5A for Alarm Capabilities	Annual Calibration	TES's unique design gives you a low-cost for calibration. Instead of returning the entire monitor, you can choose to return only the optical engine for annual calibration. The calibrated optical engine will be returned to you with a new pump and a replacement internal filter. You can then perform temperature, pressure and flow calibrations to complete the process. Alternatively, TES can perform the entire calibration.
Alarm Capabilities	30 / 40 / NEXTO SMS messaging to mobile phone, external siren, visual strobe light and email alerts. Carrier charges may apply.		

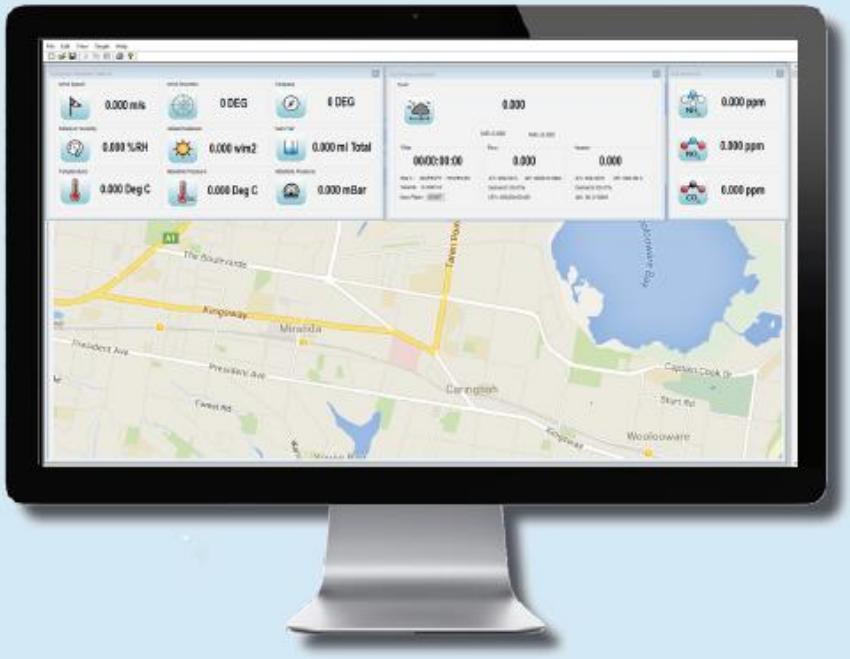
SYDNEY | BRISBANE | PERTH | MELBOURNE | CANBERRA

Phone: +61 2 9526 8199 Email: tes@thomsongroup.com.au www.thomsongroup.com.au

QAMS
QUALITY AIR MONITORING SYSTEMS

Visual Master Pro Software

Thomson Environmental Systems is pleased to introduce Visual Master Pro Software; a revolutionary remote interface for the QAMS Master Pro Series



- Live Data Display
- System Configuration
- Data Download
- Setting Adjustment

The new standard for industry interfaces...

Visual Master Pro Software

Peace of mind

Real-time data display, Real-time decision making

The QAMS All-in-one

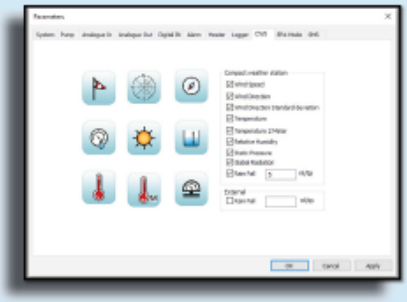
- QAMS Dust Master Pro Monitor
- Lufft All-in-one Weather Sensor

QAMS
QUALITY AIR MONITORING SYSTEMS

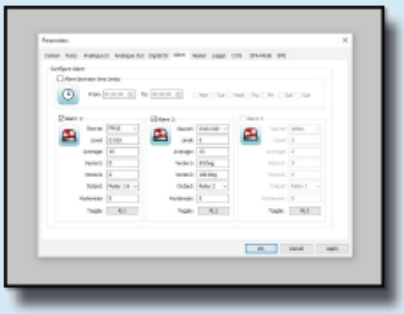
Visual Master Pro Software

Increase efficiency, save costs

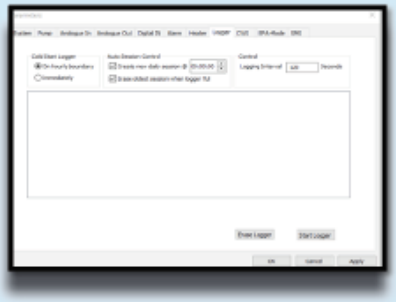
Remote System Set Up and Configuration



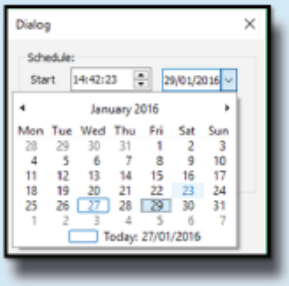
Configure Dust, Gas and Weather Monitors



Configure Alarm Thresholds and Times



Configure Logger Interval



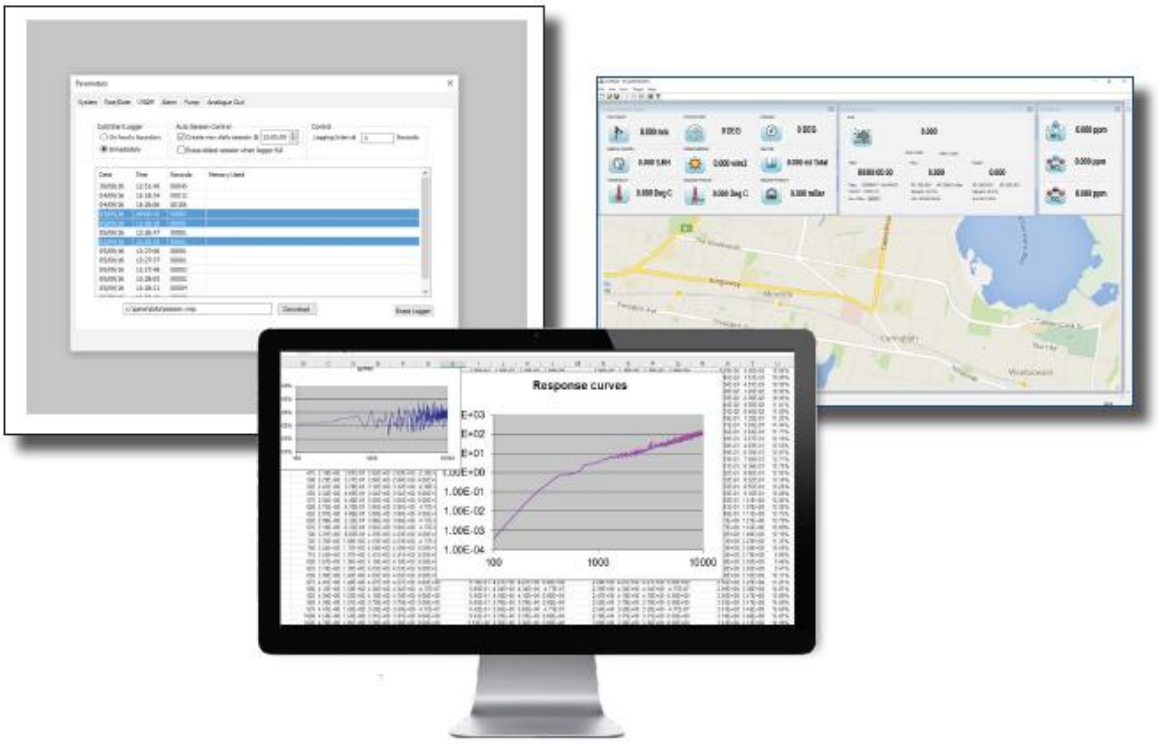
Configure EPA Mode (pre-program sample runs)

YouTube Watch TES's step by step instructional videos for set up and configuration

QAMS QUALITY AIR MONITORING SYSTEMS

Visual Master Pro Software

Downloading Data



Visual Master Pro operates on Windows 7 through to Windows 10, and allows the user to view and download data from their Dust, Gas or Met Master Pro at the click of a button. Data can be downloaded in **CSV, HTML and ASCII formats**, ready for the user to manipulate as they wish and create customised reports.

Thomson Environmental Systems

QAMS by
Thomson Environmental Systems
www.thomsongroup.com.au
sales@thomsongroup.com.au
H.O: 02 9526 8199

QAMS QUALITY AIR MONITORING SYSTEMS

umwelt
Environmental & Social Consultants

Newcastle | Perth | Canberra | Brisbane | Sydney | Orange | Melbourne

T| 1300 793 267 E| info@umwelt.com.au www.umwelt.com.au