

**AIR QUALITY MONITORING
PROGRAM FOR LOT 218 AND
LOT 220, SALT ASH NSW**

June 2018



AIR QUALITY MONITORING PROGRAM FOR LOT 218 AND LOT 220, SALT ASH NSW

Prepared by
Umwelt (Australia) Pty Limited
on behalf of
Mackas Sand Pty Ltd

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1.0 Introduction

Mackas Sand Pty Ltd (Mackas Sand) operations on Lot 218 and Lot 220 are located approximately 25 kilometres north east of Newcastle near Salt Ash in the Port Stephens local government area (LGA), in New South Wales (refer to **Figure 1.1**). Mackas Sand directors have operated sand extraction operations in the area since 1992. Lot 218 and Lot 220 are owned by the Worimi Local Aboriginal Lands Council.

Mackas Sand was granted Project Approval No. 08_0142 (PA 08_0142) on 20 September 2009 by the Minister for Planning under Part 3A of the *Environmental Planning and Assessment Act 1979* to operate sand extraction operations at Lot 220 and Lot 218 (referred to hereafter as the Project). It is estimated that in excess of 21 million tonnes of sand resource will be extracted from the Project, with Lot 218 having an indefinite extraction life due to the ongoing movement of sand from the adjoining mobile dunes.

The Project has been the subject of two (2) approved modifications, being:

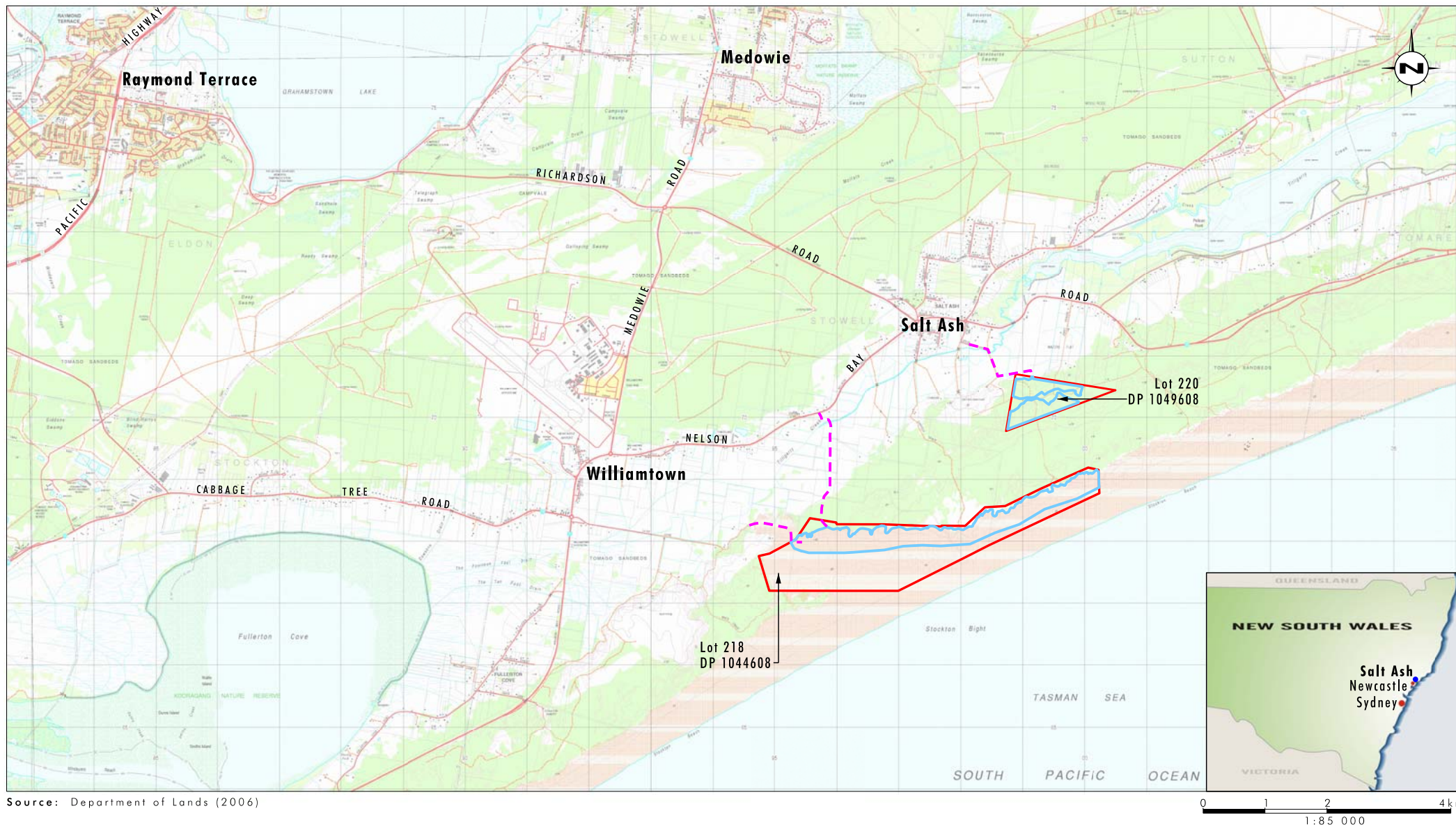
- **Modification 1:** The modification included a change to the approved extraction level from 1.0 metre to 0.7 metres above the maximum predicted groundwater level (subject to satisfying additional requirements), as well as the construction and use of an alternative haul route to access Lot 218. The alternate route connects directly from Lot 218, northward to Nelson Bay Road, as depicted within **Figure 1.1**. Modification 1 (MOD 1) was approved on 30 September 2013 by the NSW Planning Assessment Commission (PAC) under delegation of the Minister for Planning and Infrastructure (now Minister for Planning and Environment-DPE). Construction of the MOD 1 alternate route commenced on 9 December 2013. With the subsequent extraction of sand commencing at Lot 218 in February 2015.
- **Modification 2:** Altering the truck movements (in and out) of Lot 218. Modification 2 (MOD 2) was approved by the PAC on 16 March 2016

In accordance with Schedule 3 Condition 13 (a) of PA 08_0142, Mackas Sand's invited EPA to comment on this revision of the Air Quality Monitoring Program (AQMP) in May 2018.

1.1 Mackas Sand Operations

Key operational features relevant to this AQMP are:

- The approved hours of extraction being 24 hours a day 7 days a week except for operations within 250 metres of the Hufnagl Residence (R27) when operations are limited to 7.00 am to 6.00 pm with no operations within 250 metres of R27 outside these times, unless Mackas Sand has an agreement with R27 to generate higher noise levels and the Department has been advised in writing of the terms of this agreement.
- Ongoing transportation of sand from the Project in accordance with the Project Approval (Condition 9 (b) of Schedule 3) allows for transportation between 5.00 am and 10.00 pm Monday to Saturday and 8.00 am to 12.00 pm Sundays and Public Holidays subject to Mackas Sand holding agreements with the identified owners. Copies of these agreements have been provided to the DPE.



- Legend**
- Lot Boundaries
 - Approval Areas
 - Approved Site Access

FIGURE 1.1
Locality Plan

1.2 Purpose and Scope

To satisfy Condition 13 of Schedule 3 of PA 08_142 (as modified), an AQMP is required to be prepared and implemented for the project. The AQMP was prepared in consultation with the Environment Protection Authority (EPA) and submitted to the Department of Planning and Environment (DPE) for approval.

The purpose of the AQMP is to:

- provide Mackas Sand employees and contractors with a clear and concise description of their responsibilities, regarding air quality management
- address the relevant project approval conditions in PA 08_142 (as modified), Statement of Commitments and legislative commitments and guidelines relevant to this document
- describe the measures to be implemented to monitor dust emissions from the operations against relevant regulatory criteria
- provide a mechanism for assessing air quality monitoring results against the relevant air impact assessment criteria
- provide mechanisms for the establishment of best practice with respect to minimising air quality emissions/impacts.

1.3 Objectives

The objectives of this AQMP include the following:

- detail the controls to be implemented to minimise dust emissions from the site (**Section 3.0**)
- operate an air quality management system to guide the day to day planning of extraction operations and the implementation of air quality mitigation measures to ensure compliance with the relevant conditions of this approval (**Section 3.0**)
- minimise any visible off-site air pollution (**Section 4.0**)
- manage air quality related community complaints in a timely and effective manner (**Section 5.0**)
- detail the requirement for reporting air quality criteria exceedances to the relevant stakeholders (**Section 5.0**).

1.4 Regulatory Requirements

1.4.1 Project Approval Conditions

A detailed list of the PA 08_142 (as modified) conditions and the relevant Statement of Commitments outlined in the Project Approval, and where they are addressed in this document is included in **Tables 1.1** and **1.2**.

Table 1.1 Project Approval Conditions

Conditions		Addressed in Section																							
Schedule 3 – Environmental Performance Conditions																									
Impact Assessment Criteria																									
11.	<p>The Proponent shall ensure that the dust emissions generated by the Project do not cause additional exceedances of the air quality impact assessment criteria listed in Tables 5, 6 and 7 at any residence on privately owned land, or on more than 25% of any privately owned land.</p> <p><i>Table 5: Long term impact assessment criteria for particulate matter</i></p> <table><tr><th>Pollutant</th><th>Averaging period</th><th>Criterion</th></tr><tr><td>Total suspended particulate (TSP) matter</td><td>Annual</td><td>90 µg/m³</td></tr><tr><td>Particulate matter < 10 µm (PM₁₀)</td><td>Annual</td><td>30 µg/m³</td></tr></table> <p><i>Table 6: Short term impact assessment criterion for particulate matter</i></p> <table><tr><th>Pollutant</th><th>Averaging period</th><th>Criterion</th></tr><tr><td>Particulate matter < 10 µm (PM₁₀)</td><td>24 hour</td><td>50 µg/m³</td></tr></table> <p><i>Table 7: Long term impact assessment criteria for deposited dust</i></p> <table><tr><th>Pollutant</th><th>Averaging period</th><th>Maximum increase in deposited dust level</th><th>Maximum total deposited dust level</th></tr><tr><td>Deposited dust</td><td>Annual</td><td>2 g/m²/month</td><td>4 g/m²/month</td></tr></table> <p><i>Note: Deposited dust is 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.</i></p>	Pollutant	Averaging period	Criterion	Total suspended particulate (TSP) matter	Annual	90 µg/m ³	Particulate matter < 10 µm (PM ₁₀)	Annual	30 µg/m ³	Pollutant	Averaging period	Criterion	Particulate matter < 10 µm (PM ₁₀)	24 hour	50 µg/m ³	Pollutant	Averaging period	Maximum increase in deposited dust level	Maximum total deposited dust level	Deposited dust	Annual	2 g/m ² /month	4 g/m ² /month	Section 2.0
Pollutant	Averaging period	Criterion																							
Total suspended particulate (TSP) matter	Annual	90 µg/m ³																							
Particulate matter < 10 µm (PM ₁₀)	Annual	30 µg/m ³																							
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Deposited dust	Annual	2 g/m ² /month	4 g/m ² /month																						
Schedule 3 – Environmental Performance Conditions																									
Operating Conditions																									
12.	<p>The Proponent shall ensure any visible air pollution generated by the Project is assessed regularly, and that quarrying operations are relocated, modified, and/or stopped as required to minimise air quality impacts on privately-owned land, to the satisfaction of the Secretary.</p>	Section 3.3 and 4.0																							
Schedule 3 – Environmental Performance Conditions																									
Air Quality Monitoring																									
13.	<p>The Proponent shall prepare and implement an AQMP for the Project to the satisfaction of the Secretary. This program must:</p> <ul style="list-style-type: none">a) be prepared in consultation with EPA, and be submitted to the Secretary for approval within 3 months of the date of this approval; andb) include details of how the air quality performance of the Project will be monitored, and include a protocol for evaluating compliance with the relevant air quality criteria in this approval. <p><i>Note: Initially, this program should concentrate on monitoring the dust deposition impacts of the Project. However, in time, it may be expanded to include other pollutants.</i></p> <p>The Proponent shall implement the approved AQMP as approved from time to time by the Secretary.</p>	Section 4.0																							

Table 1.2 Statement of Commitments

Condition		Addressed in Section
1.7.1	Dust suppression activities, such as spraying a suitable dust suppressant, will be undertaken on all unsealed access roads used to transport product from the Project so that at least a 75% reduction in dust generation is achieved.	Section 3.1 (also see Soil & Water Management Plan)

1.4.2 Environment Protection Licence

The EPA provides set guidelines for air quality based on human comfort levels. Environment Protection Licences (EPL) set out criteria for dust deposition and dust concentration levels and conditions for air quality monitoring and reporting. Air quality monitoring at Mackas Sand will be undertaken in accordance with the conditions of EPL 13218. The EPL was issued on 30 November 2009 for sand extraction operations on the Project site at Salt Ash.

A full list of the EPL conditions relating to air quality monitoring and an indication of where they are addressed within this document are included in **Table 1.3**.

Table 1.3 Environment Protection Licence Conditions

Conditions		Addressed in Section
O3.1	The premises must be maintained in a condition which minimises or prevents the emission of dust from the premises.	Section 3.0
O3.2	Activities occurring in or on the premises must be carried out in a manner that will minimise the generation, or emission from the premises, of wind-blown or traffic generated dust	Section 3.0
U1.1	<p>The licensee must implement a minimum of two (2) High Volume Air Sampler (HVAS) or Tapered Element Oscillating Microbalance (TEOM) units, to monitor particulate matter emissions from site operations at the nearest or most affected residential receivers for the following allotments.</p> <ul style="list-style-type: none"> a) Lot 218 DP 1044608; and b) Lot 220 DP 1049608. <p>The need for implementation and operation of ambient air quality monitoring for Lot 218 will be considered upon the determination of the modification application 08_0142 MOD1 that is currently (February 2013) with the NSW Department of Planning and Infrastructure (DPI).</p> <p>An ambient air quality monitor must be installed at a suitable location within the vicinity of residence R27 within 6 months of the owner of R27 requesting in writing that the unit be installed. EPA must grant approval to the proposed location of the monitor. Residence R27 is shown on Figure 4.4 of the Environmental Assessment "Sand Extraction Operations from Lots 218 and 220. Salt Ash" dated April 2009. A copy of this figure is filed on EPA file LIC08/1532.</p> <p>The licensee must advise the EPA within seven days of commissioning of each of the HVAS units.</p> <p>Note: It is the intention of the EPA to require on-going particulate matter monitoring at the premises at the implementation of the HVAS units required by this licence.</p>	Section 4.3

1.4.3 Stakeholder Consultation Regarding this Document

This Plan was first submitted to the DPE in December 2009. A copy of the AQMP was submitted to the EPA concurrently with DPE.

The AQMP was updated (i.e. Version 2) and was submitted concurrently to the EPA and DPE.

1.5 Roles and Responsibilities

The Quarry Manager will be responsible for ensuring that the Project is undertaken in accordance with the requirements of PA 08_0142 (as modified) and EPL 13218. Responsibilities in relation to air quality management and monitoring are outlined in **Table 1.4**.

Table 1.4 Roles and Responsibilities

Role	Responsibilities
Quarry Manager	<ul style="list-style-type: none"> • provide that sufficient resources are allocated for the implementation of this AQMP; • ensure that air quality impacts are considered when infrastructure or extraction planning changes; • ensure strategies to reduce air quality impacts for the operation are effectively implemented; • develop and implement an air quality inspection schedule; • ensure dust controls are implemented and maintained; • authorise internal and external reporting requirements as well as subsequent revisions of this program; • ensure that the plan is relevant to current operations; • update monitoring data on the Mackas Sand website; • coordinate incident investigation processes including associated reporting requirements and the implementation of corrective actions and evaluate their effectiveness; and • ensure that all personnel are aware of noise management obligations.
All employees and contractors	<ul style="list-style-type: none"> • undertake all activities in accordance with this AQMP; and • undertake the compulsory site induction.

2.0 Air Quality Impact Assessment Criteria

The Project Approval conditions, including an indication of where the requirements are addressed in this plan, are provided in **Section 1.4.1**. This AQMP is designed to assess compliance with the criteria in **Section 2.0** using the methodology defined in **Section 4.0**.

2.1 Dust Concentration

Goals for dust concentration are referred to as long term (annual average) and short term (24 hour maximum) goals. Relevant goals for Total Suspended Particulates (TSP) and PM₁₀ are outlined in **Table 2.1** in relation to both Project specific and cumulative goals applied at a regional level. The TSP and PM₁₀ annual average goals relate to the total dust in the air and not just the dust from the Project.

Table 2.1 Impact Assessment Criteria for Deposited Dust

Pollutant	Averaging period	Criterion
Total suspended particulate (TSP) matter	Annual	90 µg/m ³
Particulate matter < 10 µm (PM ₁₀)	Annual	30 µg/m ³
	24 hour	50 µg/m ³

2.2 Dust Deposition

Dust deposition levels refer to the quantity of dust particles which settle out of the air as measured in grams per square metre per month (g/m²/month) at a particular location.

The Project Approval expresses dust deposition criteria in terms of an acceptable increase in dust deposition over the existing background deposition levels. For example, in residential areas with annual average dust deposition levels of between 0 and 2 g/m²/month, an increase of up to 2 g/m²/month would be permitted before it would be considered that a significant degradation of air quality had occurred. The criterion for dust deposition is included in **Table 2.2** below.

Table 2.2 Impact Assessment Criteria for Deposited Dust

Pollutant	Averaging period	Maximum increase in deposited dust level	Maximum total deposited dust level
Deposited dust	Annual	2 g/m ² /month	4 g/m ² /month

Note: Deposited dust is 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.

2.3 Cumulative Emissions

Cumulative air quality is a key issue for the local community. The air quality assessment component of the EA provided an indication of the cumulative dust emissions associated with the Project, determining that the Project would not increase potential air quality impacts on surrounding residential properties. The cumulative emissions associated with potential sources have been predicted in relation to TSP, annual average PM₁₀ and dust deposition.

The potential cumulative effects of dust emissions from other operations within close proximity to Mackas Sand in relation to the volume of natural windblown sand are considered to be insignificant.

3.0 Air Quality Management Controls

In order to mitigate any potential air quality impacts from the operation, a number of air quality management controls will be implemented throughout the life of the operation. These controls are detailed in **Sections 3.1** and **3.2** below.

The principal measures used to control dust are the sealing of sections of the approved alternate haul route and the use of a water cart for dust suppression on the gravel section of haul roads as required. At this time it is not intended to use Lavis Lane to transport product from Lot 218.

It is also noted that during 2017, additional unsealed sections of internal haul roads at the Project were bitumen sealed. The bitumen seal associated with Lot 218 extends from Nelson Bay Road to approximately 200 metres north of the northern boundary of Lot 218, a total distance of approximately 1650 metres). While the bitumen seal associated with Lot 220 extends from Oakvale Drive to the extraction area, a total distance of approximately 1650 metres.

In addition, dust control will be assisted by ongoing rehabilitation of the Lot 220 extraction areas.

3.1 Operational Controls

Mackas Sand has completed sealing approximately 1650 metres of the alternate haul road to Lot 218 and approximately 1650 metres of the private access road to Lot 220, to minimise dust generation in proximity to nearby residences including those along Nelson Bay Road. (NB the sealing of the first 200 metres of the alternate haul road to Lot 218, as required by PA 08_0142, Schedule 3, Condition 31A (c) is included in the 1650 metres of sealing of Lot 218 haul road completed by Mackas Sand).

Mackas Sand implements a number of ongoing air quality management procedures to control dust emissions which may be generated from trafficable areas and extraction and handling operations. As part of this system, Mackas Sand has an ongoing commitment to implement the following controls to manage dust generation:

- water carts will be used when necessary on the remaining sections of all active unsealed haul routes and unsealed working areas used for transporting sand product
- speed limits will apply and be enforced on all roads on the quarry site
- visual inspections of active haul routes and extraction operations to monitor dust impacts
- air quality monitoring utilising depositional dust gauges
- all personnel and contractors will be provided with training in dust controls during the Mackas Sand quarry induction.
- All loaded trucks leaving the site are required to have covered loads.

3.2 Screening Operations

Sand screening operations on the Project are unlikely to result in any significant increase in dust generation. This is attributed to the low dust content of the extracted sand and its moisture content which assists in suppressing the entrainment or mobilisation of dust. Lot 220 is sheltered from prevailing winds by surrounding vegetation and as a result the likelihood of dust being transported off site is low. Lot 218 is screened by vegetation to the north and sand dunes to the south. Additional dust controls for sand screening operations are not considered to be required at the Project but will be reviewed as required.

3.3 Active Management Practices

Mackas Sand will investigate any complaints regarding impacts to air quality at private residences on a case by case basis. Should the investigation indicate adverse dust impacts from extraction activities and/or transport operations, reasonable and feasible measures to mitigate dust at the affected receiver will be implemented.

All complaints will be logged and reported annually in the Mackas Sand Annual Review.

3.4 Continuous Improvement

Mackas Sand will implement all reasonable and feasible best practice air quality mitigation measures. The basis for continuous improvement of air quality mitigation measures will be through the ongoing monitoring of dust impacts and the corrective/preventative action process. Through the development of corrective/preventative actions, Mackas Sand will investigate ways to reduce the potential air quality impacts generated by the operation. Any new mitigation measures that are implemented as a result of these investigations will be reported in the Annual Review and subsequent revisions of the AQMP.

Mackas Sand notes that it has voluntarily bitumen sealed almost the entirety of the internal haul roads at the Project which are used to transport sand off site, which is considered to be a best practice ongoing air quality management measure, and a significantly greater commitment than required by relevant approval obligations.

3.5 Change Management

When change is considered to have an impact on the AQMP, the process below must be followed:

- identify the change
- assess the potential risks associated with the change and develop a risk management plan
- approve the change subject to the risk management plan
- communicate and implement the change and risk management actions.

3.6 Training

To ensure the effective implementation of this AQMP, all Mackas Sand personnel and contractors working on the site (i.e. not truck drivers) will undertake an induction which outlines environmental awareness including the importance of dust mitigation at the Mackas Sand site. However, all truck drivers will continue to have a responsibility to minimise the potential of dust generation onsite. This is effectively managed through the adherence of site specific speed limits.

4.0 Air Quality Monitoring Methodology

In accordance with the requirements of PA 08_0142 (as modified) and EPL 13218, air quality monitoring will be undertaken as set out in the AQMP.

4.1 Monitoring Standards

Air quality monitoring will be undertaken in accordance with the relevant Australian Standards and OEH approved methods for sampling including:

- EPA's 'Approved methods for the sampling and analysis of air pollutants in NSW' (EPA 2007)
- The dust deposition gauges will be operated in accordance with AS/NZS 3580.10.1:2003 Methods for Sampling and Analysis of Ambient Air – Determination of Particulate Matter – Deposited Matter – Gravimetric Method.

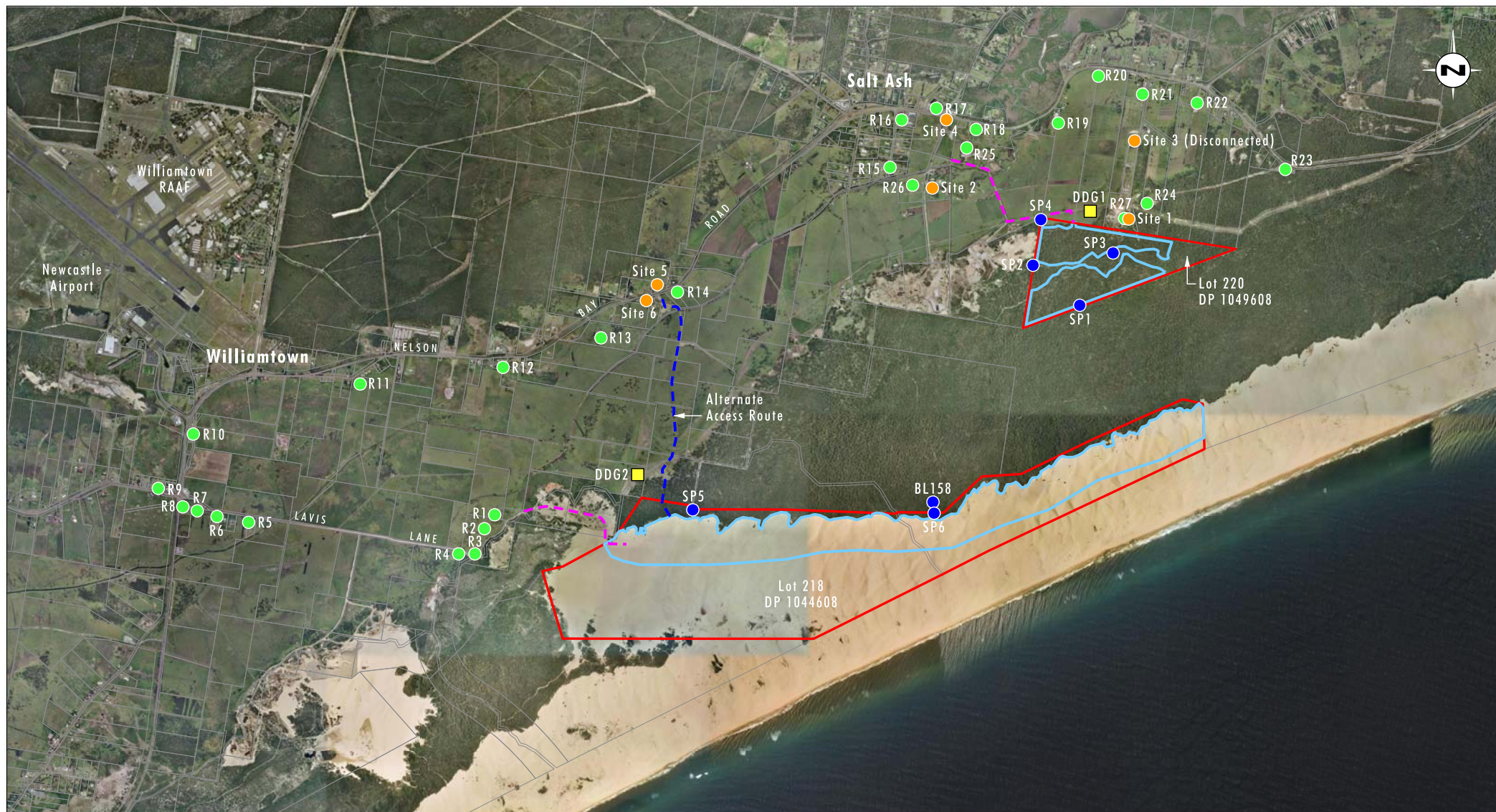
4.2 Air Quality Monitoring Program

Mackas Sand has established dust deposition gauges in two locations to assess compliance against relevant Project Approval and EPL criteria. Dust monitoring locations are shown on **Figure 4.1** and summarised in **Table 4.1**.

Table 4.1 Air Quality Monitoring Points

Monitoring Site	Type of Monitoring	Frequency
DDG1	Dust Depositional Gauge	Monthly 30 days \pm 2 days
DDG2	Dust Depositional Gauge	Monthly 30 days \pm 2 days

Dust deposition levels will be recorded monthly and analysed in a NATA registered laboratory. Air quality monitoring locations will be reviewed and where necessary, modified over the life of operations according to progressive monitoring results or physical changes in sand extraction operations.



Source: Department of Lands (2003)

0 0.5 1 2 km
1:45 000

Legend

- Lot Boundaries (218 & 220)
- Approval Area
- Approved Site Access
- Alternate Access Route
- Noise Monitoring Location
- Dust Monitoring Location
- Groundwater Monitoring Bore Location
- Residential Receivers

File Name (A4): R62_V1/1646_435.dgn

FIGURE 4.1

Mackas Sand Monitoring Locations

4.3 Ongoing Air Quality Monitoring

Investigation of the installation of High Volume Air Sampling (HVAS) units occurred during 2012/2013 in consultation with the EPA. Investigations culminated in Variation Notice 1509957 to EPL 13218. Notice 1509957 sets out a Pollution Reduction Program (Condition U1), requiring the installation of HVAS or Tapered Element Oscillating Microbalance (TEOM) units close to the Project subject to certain constraints. Installation of a unit near Lot 220 is dependent upon the acceptance of the resident at R27 to have a unit on their property. Discussions with the resident at R27 indicated that they do not want a high volume sampler at this time and as such the HVAS will not be installed at R27. This will be revised if a written request is received from the resident at R27. The opportunity to have a HVAS unit installed will be offered annually to the resident at R27 in writing, unless a written statement nullifying this requirement from the resident at R27 is received.

Extraction operations at Lot 218 are distant from residential receivers (in excess of 1.5 kilometres) and unlikely to cause unacceptable levels of dust with the main source of dust being from product transport on unsealed haul roads. With the approval of the alternate haul route to Lot 218, trucks will no longer travel past dwellings adjacent to the formerly approved haul road that accessed Lavis Lane. In addition, 1650 metres of the alternate access road, including the most northern 200 metres of the alternate access road closest to residential receivers on Nelson Bay Road is sealed and the other operational controls detailed in **Section 3.1** will be implemented. Taking these factors into account, and given that dust deposition monitoring is in place, it is considered that HVAS or other monitoring of PM10 or TSP near Lot 218 is not considered necessary at this time. Furthermore and as noted in **Section 3.0**, almost the entirety of the internal haul roads at the Project which are used to transport sand off site have been bitumen sealed. As such, dust emission from unsealed haul roads has been significantly mitigated.

5.0 Reporting and Review

5.1 Reporting

Mackas Sand will regularly assess dust emissions from quarry operations and will keep a log of any incidents that have the potential to adversely impact on the air quality of surrounding privately owned land. The Mackas Sand Quarry Manager will investigate any complaints and any exceedances of the air quality impact assessment criteria.

Air quality monitoring results will be discussed at the Mackas Sand Community Consultative Committee (CCC) meetings which are held annually or as agreed by the CCC. Performance monitoring, which includes an assessment of the effectiveness of controls and compliance with the relevant Project Approval and EPL conditions, may be discussed at CCC meetings where air quality related complaints occur.

An Annual Review will be prepared and submitted to the Secretary and relevant agencies in accordance with the requirements of Condition 4 of Schedule 5 of PA 08_0142 (as modified). The Annual Review will include an assessment of the air quality monitoring results against the air quality impact assessment criteria, any trends in monitored air quality levels over the period and any additional dust management controls that have been implemented since the previous report. In addition, any complaints relating to dust emissions from Mackas Sand, and the response actions taken, will be reported in the Annual Review. Results from the yearly monitoring will also be provided to the EPA, as relevant under EPL conditions.

The Annual Review and air quality monitoring results will be made publicly available on the Mackas Sand website (www.mackassand.com.au) in accordance with Condition 9 of Schedule 5 of the Project Approval.

5.2 Complaints Handling

In accordance with Project Approval and EPL requirements, Mackas Sand has established a 24 hour complaints line. The number is listed on the Mackas Sand website (www.mackassand.com.au).

Complaints received on the number will be directed to the Quarry Manager who will respond to the complainant within 24 hours if the complainant is contactable. A record of all complaints will be kept on-site and a summary published on the Mackas Sand website. The Annual Review will also provide a summary of community complaints during the reporting period (i.e. each calendar year).

All complaints and information in regard to responses will be provided to the CCC. One of the functions of the CCC is to review complaints or disputes between Mackas Sand and members of the community.

5.3 Incident Reporting Protocol

Condition 2 of Schedule 5 of PA 08_0142 (as modified) requires any exceedances of limits/performance criteria within the approval to be reported to DPE and other relevant agencies within 24 hours of the exceedances being recorded. This included any incidents that cause (or may cause) material harm to the environment.

Following the reporting of an exceedance or incident to the DPE and other relevant agencies, Condition 3 of Schedule 5 of PA 08_0142 (as modified) requires the proponent to prepare a written report of the exceedance within six days of the exceedance being reported. The written report must contain:

- a description of the date, time and nature of the exceedance

- identification of the cause (or likely cause) of the exceedance
- a description of actions taken to date
- a description of the proposed measures to address the exceedance.

The Quarry Manager will be responsible for ensuring these reporting requirements are complied with.

5.4 Material Harm Incidents

Mackas Sand is committed to minimising any potential for material harm to the environment and surrounding community. A Pollution Incident Response Management Plan (PIRMP) has been developed for Mackas Sand operations which outlines the response and notification procedures in the event of a potential material harm incident. In addition to reporting required by Condition 2 of Schedule 5 of Project Approval 08_0142 (as modified) incidents resulting or having the potential to result in material harm to the environment, (as defined by Section 147 of the *Protection of the Environment Operations Act 1997*) shall be reported to the following authorities (as relevant) as soon as it is safe to do so:

- the Appropriate Regulatory Authority (ARA)
- the EPA – Environment Line (if not the ARA)
- the Ministry of Health
- WorkCover
- the Local Authority (Council) if not the ARA
- Fire and Rescue NSW.

The information about a pollution incident that must be notified includes:

- the time, date, nature, duration and location of the incident
- the location of the place where pollution is occurring or is likely to occur
- the nature, the estimated quantity or volume and the concentration of any pollutants involved, if known
- the circumstances in which the incident occurred, including the cause of the incident, if known
- the action taken or proposed to be taken to deal with the incident and any resulting pollution or threatened pollution, if known.

5.5 Corrective Action

Table 5.1 summarises the potential air quality related issues that may arise and the appropriate corrective action to be taken.

Table 5.1 Corrective/Preventative Actions

Issue	Corrective Action
Exceedance of EPL or Project Approval Air Quality Conditions	Investigation of exceedance, undertaking air quality mitigation measures for future operations where applicable. Report exceedance to EPA, DPE and other stakeholders, as required.
Community complaints	Investigation of complaint, review dust monitoring results undertaken in accordance with Section 4.2 , and if required, undertake mitigating measures where applicable (see Section 3.0) and provide feedback to the complainant. Report complaint to relevant stakeholders and CCC as required. Provide feedback to site personnel, where relevant.

5.6 Records

In accordance with EPL condition M1.2, monitoring records will be maintained on site for at least 4 years.

In addition, the following records must be kept in respect to any samples required to be collected as per EPL condition M1.3:

- date(s) on which the sample was taken
- time(s) at which the sample was collected
- the point at which the sample was taken
- the name of the person who collected the sample.

5.7 Review

The AQMP is to be reviewed in accordance with Condition 4A and Condition 7 of Schedule 5 in PA 08_0142, or as directed by the Secretary of DPE. The review will reflect changes in environmental requirements, technology and operational procedures.

6.0 References

Australian Standard AS 3580.14:2011 Methods for Sampling and Analysis of Ambient Air – Meteorological Monitoring for Ambient Air Quality Monitoring Applications.

Australian Standard AS/NZS 3580.10.1:2003 Methods for Sampling and Analysis of Ambient Air – Determination of Particulate Matter – Deposited Matter – Gravimetric Method.

EPA, 2007. Approved Methods for the Sampling and Analysis of Air Pollutants in NSW.

Umwelt (Australia) Pty Limited, 2009. Environmental Assessment for Sand Extraction Operations from Lot 218 DP 1044608 and Lot 220 DP 1049608, Salt Ash.

Umwelt (Australia) Pty Limited, 2009. Environmental Assessment for Modifications to Mackas Sand Extraction Operations from Lot 218 and Lot 220, Salt Ash.

Umwelt (Australia) Pty Limited, 2011. Mackas Sand Annual Environmental Management Strategy.

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