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DIXON SAND

OLD NORTHERN ROAD QUARRY AIR QUALITY MANAGEMENT PLAN

Dixon Sand Pty Ltd

FINAL

November 2020

DIXON SAND

OLD NORTHERN ROAD QUARRY AIR QUALITY MANAGEMENT PLAN

Dixon Sand Pty Ltd

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

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	Name	**Date**	**Name**	**Date**
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1.0 Introduction

1.1 Background

Dixon Sand Pty Ltd (Dixon Sand) operates the Old Northern Road Quarry (the quarry), a sand extraction and processing operation, located on Old Northern Road, Maroota in New South Wales (NSW).
The quarry has been in operation since the early 1980s with Dixon Sand operating the quarry since 1992. The site covers approximately 58.4 hectares (ha) and includes Lot 29 DP752025, Lot 196 DP752025, Lot 1 DP547255 and Lot 2 DP547255 (refer to **Figure 1.1**). The quarry is located in the small rural community of Maroota which supports a number of other sand extraction operations. The quarry is a major supplier of mortar sands to the Sydney metropolitan market.

The quarry operates in accordance with Development Consent (DA) 250-09-01 issued by the Land and Environment Court in 2004. DA 250-09-01 has been subsequently modified on five occasions, most recently in 2017 under Section 75W of the *Environmental Planning and Assessment Act 1979* (EP&A Act).

DA 250-09-01 permits the extraction and processing of up to 495,000 tonnes of quarry products per annum, including the processing of extractive material sourced from the Haerses Road Sand Quarry. The consent permits quarrying operations to be carried out on site until 24 May 2042, with continued receipt and processing of material from Haerses Road Sand Quarry permitted until 14 February 2046. The approved extraction areas are shown on **Figure 1.2**.

1.2 Purpose and Scope

The purpose of this Air Quality Management Plan (AQMP) is to describe the air quality management strategies, procedures, controls and monitoring programs to be implemented for the management of potential air quality impacts arising from the operation of the quarry. This AQMP applies to Lot 29 DP752025, Lot 196 DP752025 and Lots 1 and 2 DP547255 as shown on **Figure 1.1.**

This AQMP addresses the relevant requirements of the Development Consent and Environment Protection Licence (EPL) 3916. The DA conditions and related Environmental Impact Statement (EIS) management commitments relevant to this plan are provided in **Section 2.1**. EPL 3916 licence conditions relevant to this plan are provided in **Section 2.2**. This plan also outlines the control and contingency measures to be implemented as part of the continued operations at the quarry to minimise the potential impacts on local air quality.

This AQMP has also been developed in accordance with the requirements of the Department of Planning and Environment's (DPE) *Environment Management Plan Guidelines* (the guidelines). A checklist of where each condition has been addressed within this document is shown in **Appendix 1**.

1.3 Objectives

The objectives of this plan in relation to air quality management are to:

- detail the controls to be implemented to minimise dust generation from the quarry.
- establish an air quality monitoring system to assess air quality performance against the specific air quality impact assessment criteria.
- provide a mechanism to assess monitoring results against air quality impact assessment criteria.

- provide a protocol for determining exceedances of the relevant criteria.
- detail the requirements for reporting air quality criteria exceedances to the relevant stakeholders.
- provide a process for managing air quality related community complaints in a timely and effective manner.

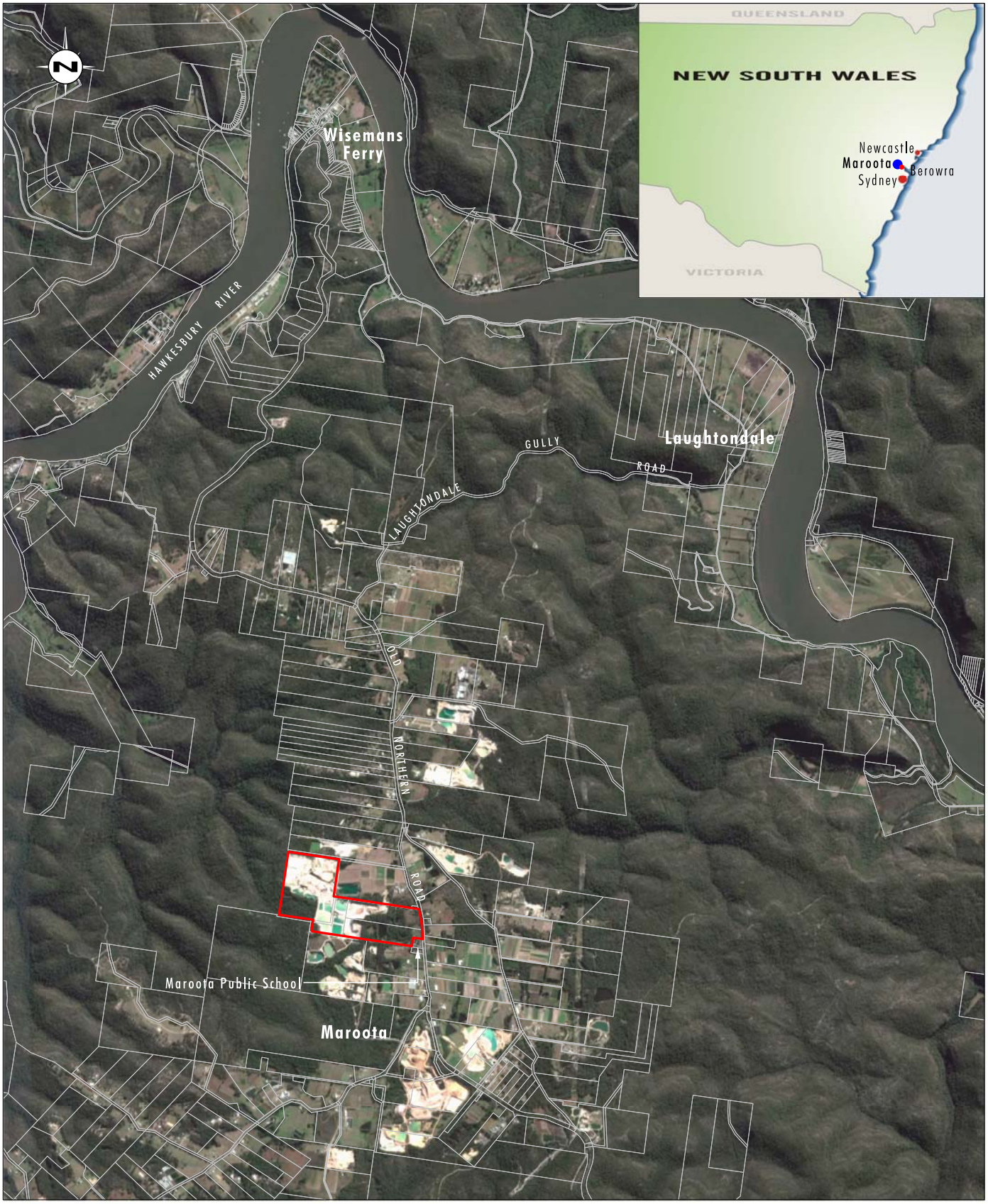


Image Source: Google Earth/DigitalGlobe (May/2016)
Data Source: LPI (2009)

0 1.0 2.0 2.5km
1:50 000

Legend

Old Northern Road Quarry

FIGURE 1.1

Locality Plan

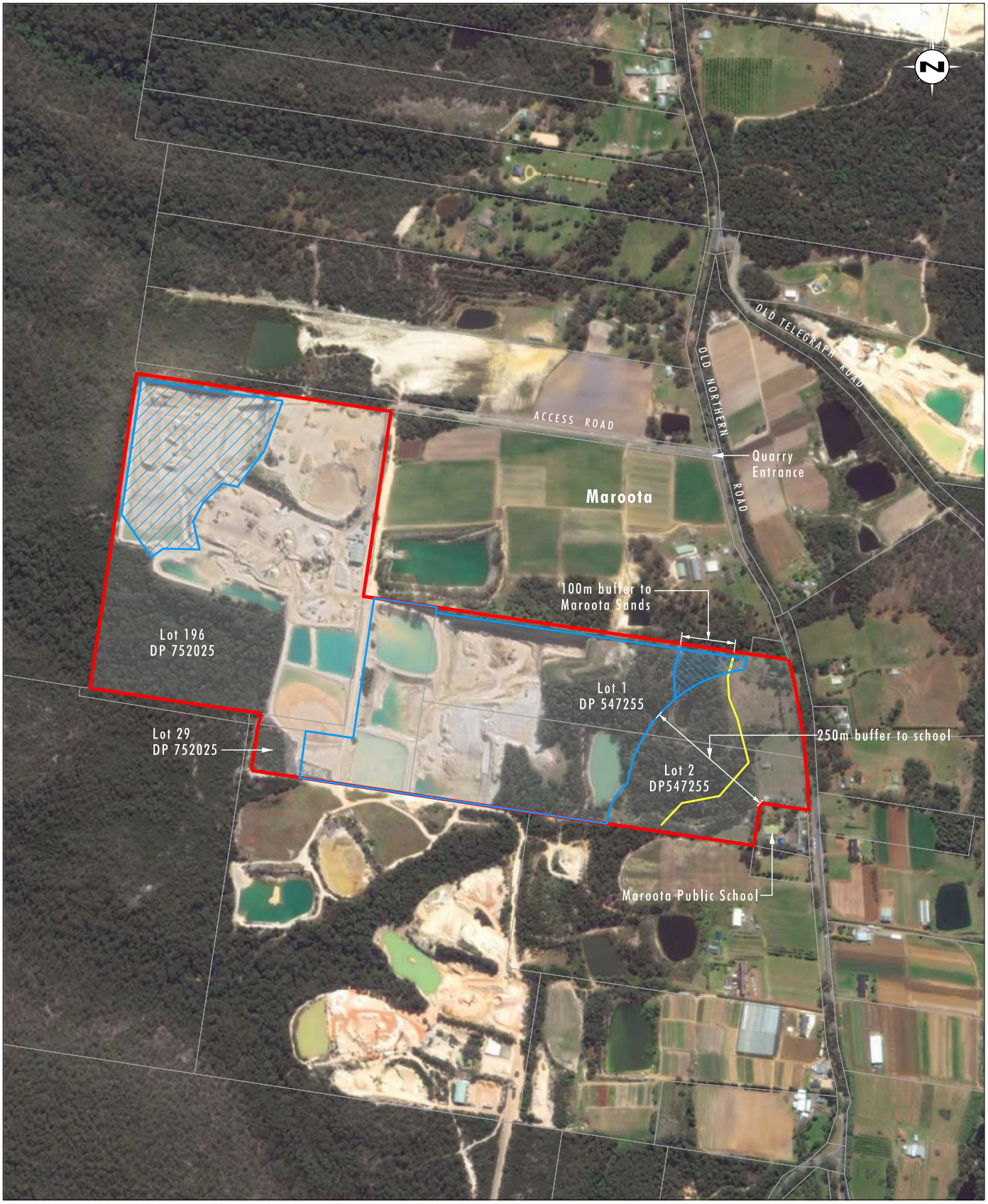


Image Source: Google Earth (2016 - 2017)
Data Source: LPI (2016)

0 100 250 500m
1:10 000

Legend

- Old Northern Road Quarry
- Approved Extraction Limits
- Extraction Area with Maximum Extraction Depth of 127.5m AHD
- Extraction Area Limited to 2m Above Wet Weather Groundwater Level
- Limit of Maroota Tertiary Sands Groundwater Source

FIGURE 1.2

Old Northern Road Quarry

2.0 Regulatory Requirements

2.1 Development Consent Conditions

Table 2.1 identifies the air quality related Development Consent conditions under DA 250-09-01 and where within this AQMP these requirements have been addressed.

Table 0.1 Development Consent Conditions

<table>
<tr><th colspan="2">Conditions</th><th>Section/s Addressed</th></tr>
<tr><td colspan="3">Schedule 3 – Specific Environmental Conditions</td></tr>
<tr><td>7</td><td>
Air Quality Impact Assessment Criteria

The Applicant must ensure that particulate matter emissions generated by the development do not cause exceedances of the criteria in Table 3 at any residence on privately-owned land or at the Maroota Public School.

Table 3: Air quality criteria
<table>
<tr><th>Pollutant</th><th>Averaging Period</th><th colspan="2">Criterion</th></tr>
<tr><td>Particulate matter < 10 µm (PM_{10})</td><td>Annual</td><td colspan="2">[a,d] 30 µg/m³</td></tr>
<tr><td>Particulate matter < 10 µm (PM_{10})</td><td>24 hour</td><td colspan="2">[b] 50 µg/m³</td></tr>
<tr><td>Total suspended particulates (TSP)</td><td>Annual</td><td colspan="2">[a,d] 90 µg/m³</td></tr>
<tr><td>[c] Deposited dust</td><td>Annual</td><td>[b] 2 g/m²/month</td><td>[a,d] 4 g/m²/month</td></tr>
</table>

Notes to Table 3:

a Cumulative impact (ie increase in concentrations due to the development plus background concentrations due to all other sources).

b Incremental impact (ie increase in concentrations due to the development alone, with zero allowable exceedances of the criteria over the life of the development.

c Deposited dust is to be assessed as insoluble solids as defined by Standards Australia, AS/NZS 3580.10.1:2003: Methods for Sampling and Analysis of Ambient Air - Determination of Particulate Matter - Deposited Matter - Gravimetric Method.

d Excludes extraordinary events such as bushfires, prescribed burning, dust storms, sea fog, fire incidents or any other activity agreed by the Secretary.
</td><td>Sections 4.0, 5.0 and 6.0</td></tr>
</table>

Conditions		Section/s Addressed
8	**Operating Conditions** The Applicant must: a) implement best practice management to minimise the dust emissions of the development; b) operate a continuous monitoring system to minimise air quality impacts at sensitive sites such as the Maroota Public School, including: • a monitoring device that is connected to an alarm system at the site; • trigger level(s) as agreed with the EPA; and • procedures to cease or modify operations in the event that the trigger level(s) are reached, to ensure compliance with the criteria in condition 7 of Schedule 3, to the satisfaction of the EPA; c) assess meteorological and air quality monitoring data on an ongoing basis and relocate, modify and/or stop operations on site to ensure compliance with the air quality criteria in this consent; d) minimise the air quality impacts of the development during adverse meteorological conditions and extraordinary events (see note d under **Table 3**); e) monitor and report on compliance with the relevant air quality conditions in this consent; and f) minimise the area of surface disturbance and undertake progressive rehabilitation of the site, to the satisfaction of the Secretary.	**Section 5.0 and 6.0**
9	**Air Quality Management Plan** The Applicant must prepare an AQMP for the development to the satisfaction of the Secretary. This plan must: a) be prepared in consultation with the EPA; b) be submitted to the Secretary for approval within 3 months of the approval of Modification 5, unless otherwise agreed by the Secretary; c) describe the measures to be implemented to ensure: • compliance with the air quality criteria and operating conditions of this consent; • best practice management is being employed; and • the air quality impacts of the development are minimised during adverse meteorological conditions and extraordinary events; d) describe the proposed air quality management system; and e) include an air quality monitoring program that: • is capable of evaluating the performance of the development and informing day to day operational decisions; • includes a protocol for determining any exceedances of the relevant conditions of this consent; and • effectively supports the air quality management system. The Applicant must implement the AQMP as approved by the Secretary.	**This Document**

Conditions		Section/s Addressed
10	**Meteorological Monitoring** For the life of the development, the Applicant must ensure that there is a suitable meteorological station operating in the vicinity of the site that complies with the requirements in the *Approved Methods for Sampling and Analysis of Air Pollutants in New South Wales* guideline.	**Section 6.4**
11	**Greenhouse Gas Emissions** The Applicant must implement all reasonable and feasible measures to minimise the release of greenhouse gas emissions from the site.	**Section 5.0**

2.1.1 EIS Environmental Management Commitments

In accordance with Condition 2 Schedule 2 of the Development Consent, the quarry must be developed and operated generally in accordance with the environmental impact assessment reports prepared for the development and subsequent modifications. **Table 2.2** summarises the safeguards and management controls relating to air quality and greenhouse gas management that have been identified in the environmental impact assessment reports prepared for DA 250-09-01.

Table 0.2 Relevant EIS Air Quality Management Commitments

Reference	Description	Section/s Addressed
EIS Section 5.1.2 (ERM 2001)	Air Quality Mitigation measures include: • The use of a water truck on all active extraction areas and the haul road to suppress dust. • Implementation of ongoing air quality monitoring. • Minimisation of active extraction area through progressive clearing and rehabilitation in the strips before and after the active extraction area.	**Section 5.0** and **6.0**
EIS Section 4.8.6 (ERM 2001)	To minimise the quarry's greenhouse gas emissions, Dixon Sand will undertake a review of the equipment and machinery to assess in relation to energy efficiency. This review will include regular maintenance and tuning of vehicles which is anticipated to be a practical approach to minimising emissions.	**Section 5.0**
SEE MOD1 Section 3.3 (ERM 2005)	Current measures employed at the quarry to minimise dust and windblown sand will continue during the extension period. These measures include: • water spraying of haul roads, stockpiles and disturbed areas; • minimal exposure of active extraction areas; • vehicle speed reduction and covering of all loads; and • progressive rehabilitation of the site. Vehicles operating at the quarry will continue to be regularly serviced and maintained to minimise emissions.	**Section 5.0**

2.2 Environmental Protection Licence

Air quality monitoring will be undertaken in accordance with the conditions of EPL 3916. The EPL was issued by the Environment Protection Authority (EPA) under the *Protection of the Environment Operations (POEO) Act 1997* on 15 March 2001 for sand extraction operations at 4610 Old Northern Road, Maroota.

A 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 2.3**.

Table 0.3 Relevant Environment Protection Licence Conditions

Conditions		Section/s Addressed
O3.1	The premises must be maintained in a condition which minimises or prevents the emission of dust from the premises.	**Section 5.0**
O3.2	All dust deposition gauges installed at the site must be operated and maintained in accordance with Australian Standard 2724.1 (1984) for deposition gauges.	**Section 6.0**
03.3	The licensee must install and operate a continuous dust monitoring device, of the type mentioned in the letter of ERM Consultant sent to the EPA on 11 August 2004, at Point 2 identified in condition P1.1 of this licence, before commencing any activity permitted by this licence on Lot 1 & 2 of the premises. The continuous dust monitoring device must be fitted with an automatic alarm system alerting the quarry staff once the trigger value for PM10 (37 µg/m3) is reached.	**Section 6.0**
O3.4	The licensee must install and operate a continuous automatic meteorological station at monitoring Point 3, identified in condition P1.1 of this licence, as per requirements of AS 2923 - 1987. This wind monitoring components of the meteorological station must be interfaced with the continuous dust monitoring device, identified in the above condition O.3.3.	**Section 6.4**

2.3 Stakeholder Consultation

In accordance with Condition 9 of Schedule 3 of the Development Consent, this AQMP has been prepared in consultation with the EPA. A draft copy of this plan was provided to the EPA for comment. A copy of correspondence provided by the EPA is included in **Appendix 2**, and a summary of the issues raised and how these were addressed is provided in **Table 2.4**.

Table 0.4 Summary of Issues Raised During Agency Consultation

Issue	Response
EPA	
Section 3.1 paragraph 5 stated that historic average PM10 24-hour air quality monitoring results recorded exceedances during the 2013-2014, 2015-2016 and 2016-2017 reporting periods which were found not to be attributable to quarry operations but due to bushfires, dust storms, hazard reduction burns and dry westerly winds blowing over the region. Please specify these exceedance days in a table identifying the date of exceedance, meteorological conditions on the day, the average PM10 24-hour concentration and the reason for each exceedance.	Details of each exceedance have been reported in the quarry's Annual Reviews and Annual Returns, along with analysis of metrological conditions and details of likely causes of each exceedance. This will continue to occur and is considered the appropriate forum for this reporting. A summary of exceedances has been included in **Table 3.1**.
Table 5.1 column 1 item 7 stated that one of the proactive management measures is to maintain the dust suppression equipment to all processing plant. Please provide a description of the dust suppression equipment currently in use for the facility. This can be done in a separate section.	Further detail regarding processing plant dust suppression added to **Table 5.1**.
Please change Table 5.2, column 1 item 4 "Extraordinary Event or Conditions" to "exceptional event" to be consistent with the NEPM definition.	The reference to "Extraordinary Event or Condition" in **Table 5.2** is consistent with the terminology utilised in the Development Consent Schedule 3 Condition 7 Table 3 Note (d), and has therefore not been changed.
With the map proposed in Figure 6.1, please specify the site boundary, locations of the air quality monitoring points specified in Table 6.1 including the location of the weather station and the location of sensitive receivers.	Noted, items shown on **Figure 6.1**.
Section 6.3 states the monitoring standards used at the facility. Please revise these standards to the latest version. An example of this is the AS/NZS 3580.10.1:2003 Methods for Sampling and Analysis of Ambient Air – Determination of Particulate Matter – Deposited Matter – Gravimetric Method; the latest version of this standard is done in 2016.	Date of standards updated.
As the facility is using the TEOM instrument for the measurement of PM10 particulates, please add the AS3580.9.8 to the list of standards in Section 6.3.	Standard added.
In Section 7.1 it was stated that PM10 monitoring results will be publish in the Dixon Sands website. Please specify the web address.	Website address added.

2.4 Guidelines, Policies and Standards

Air quality monitoring will be undertaken in accordance with various guidelines, policies and standards applicable to air quality management at the quarry. These documents will be used to assist the implementation of environmental control measures to reduce any potential impacts from dust emissions from the quarry.

A full list of the guidelines, policies and standards relating to air quality monitoring and an indication of where they are addressed within this document are included in **Table 2.5**.

Table 0.5 Relevant Guidelines, Policies and Standards

Guidelines, Policy or Standard	Relevance to Quarry Operations	Section/s Addressed
DPE guidelines for Environmental Management Plans.	Developed by the DPE, this document directs operations when preparing Environmental Management Plans for state significant developments.	**Section 1.0 and Appendix 1**
EPA Approved Methods for the Sampling and Analysis of Air Pollutants in NSW.	This document lists the methods to be used for the sampling and analysis of air pollutants in NSW for statutory purposes. The document provides guidance for sites in relation to: • pollutant emissions from stationary sources; • pollutant emissions from motor vehicles; • components in and properties of petroleum products; and • pollutants in ambient air.	**Section 6.0**
Standard AS 3580.14:2014: Methods for Sampling and Analysis of Ambient Air – Meteorological Monitoring for Ambient Air Quality Monitoring Applications.	This Standard sets out methods for the collection of meteorological data for use in ambient air quality monitoring and modelling applications. Requirements and guidance are provided for the in situ monitoring of primary meteorological variables being: wind speed, wind direction, temperature, humidity, atmospheric pressure, precipitation and solar radiation.	
Standard AS/NZS 3580.10.1:2016: Methods for Sampling and Analysis of Ambient Air - Determination of Particulate Matter - Deposited Matter - Gravimetric Method.	This Standard sets out methods for the sampling of particulate matter that is deposited from the atmosphere, and procedures for the gravimetric determination of the mass deposition rate of insoluble solids, ash, combustible matter, soluble solids and total solids from ambient air.	
Standard AS 2923-1987: Ambient air - Guide for measurement of horizontal wind for air quality applications	This standard sets guidance for measurement of horizontal wind speed and direction using rotating cup or propeller type anemometers and wind vanes. Includes performance requirements, performance monitoring procedures and an instrument calibration and maintenance program for wind instruments.	

Guidelines, Policy or Standard	Relevance to Quarry Operations	Section/s Addressed
Standard AS 2724.1-1984 - Ambient air - Particulate matter Determination of deposited matter expressed as insoluble solids, ash, combustible matter, soluble solids and total solids.	This Standard sets out a procedure for the sampling of particulate material which deposits from the atmosphere, the determination of the mass deposition rate, the analysis of the deposited material for insoluble solids and where required, for ash, combustible matter, dissolved solids and total solids. This method also provides a means of sample collection for other determination such as chemical tests and microscopic analysis.	
Standard AS 3580.9.8:2008: Methods for Sampling and Analysis of Ambient Air – Determination of Suspended Particulate Matter – PM_{10} Continuous Direct Mass Method Using A Tapered Element oscillating Microbalance Analyser.	This Standard sets out the operational requirements for the continuous determination of suspended particulate matter in ambient air using a tapered element oscillating microbalance (TEOM) analyser.	

2.5 Further Studies

No further studies are specified under the Development Consent for the quarry. Baseline studies undertaken as part of the Environmental Impact Statement (EIS) (ERM, 2001) are described in **Section 3.0**.

2.6 Hold Points

Condition O3.3 of EPL requires Dixon Sand to install and operate a continuous dust monitoring device before commencing any activity permitted by the licence on Lots 1 and 2. This condition has been complied with, with a TEOM monitoring station installed near Maroota Public School in 2004. No other air quality related hold points are applicable to the operation of the quarry.

3.0 Baseline Data

3.1 Air Quality

An air quality impact assessment was undertaken as part of the EIS (ERM, 2001) to assess the existing air quality at the site. Sources of dust in the locality include other sand extraction operations, agricultural activity, traffic on unsealed roads, local construction activities and to a lesser extent traffic from the Old Northern Road.

As part of the air quality assessment completed for the EIS (ERM, 2001), a review of air quality monitoring data was undertaken to establish the existing air quality environment surrounding the quarry. The following background concentrations have been calculated for the quarry operations:

- Annual average PM_{10} concentration of 5 to 21 µg/m^3
- Annual average TSP concentration of 12 to 35 µg/m^3
- Annual average dust deposition of 2.2 to 2.9 g/m^2/month.

An air quality monitoring program is undertaken by Dixon Sand to determine compliance with the consent conditions and EPL licence conditions identified in **Section 2.1** and **2.2** (refer to **Section 6.0**). Dixon Sand operates a weather station and TEOM monitoring station at Maroota Public School and a network of five dust deposition gauges in the vicinity of the quarry.

Dust deposition monitoring has shown results within the predicted limits with the exception of elevated results for depositional dust gauges D1 and D5 during 2016 – 2017. These elevated results correlated with increased agricultural activities within the vicinity of the quarry and the proximity of active extraction. Following the relocation of these monitoring sites, depositional dust levels returned results within the predicted range.

The Tapered Element Oscillating Microbalance (TEOM) is the instrument measuring continuous real-time particulate matter of 10 microns (PM_{10}) concentration and is located at Maroota Public School. The 24-hour rolling average PM_{10} concentration is calculated and reported. The TEOM is fitted with an automatic alarm system which sends a mobile text to the Quarry Managers and Environmental Officer once the 24-hour rolling average PM_{10} has exceeded the EPL trigger value of 37 µg/m^3. The alerted 24-hour rolling average PM_{10} may exceed the EPL trigger value significantly such as in the event of dust storms or poor air quality as a result from bushfires. Once the 24-hour rolling average PM_{10} has fallen below the EPL trigger value of 37 µg/m^3, a separate mobile message is sent.

PM_{10} monitoring undertaken at Maroota Public School has identified historic exceedances of the PM_{10} 24-hour Development Consent air quality assessment criteria since 2013. These exceedances were reported in the quarry's Annual Reviews (formerly referred to as an Annual Environmental Management Report) and found not to be attributable to quarry operations. The sources of exceedances were typically identified as bushfire events or hazard reduction burns occurring in the surrounding regions or dust storms.

A summary of the recorded exceedances reported in the Annual Reviews is provided in **Table 3.1**.

Table 0.1 Summary of Recorded Exceedances of 24 hour PM10 Development Consent Air Quality Assessment Criteria

Date	PM_{10} 24 hour Criterion ($\mu g/m^3$)	Maximum Monitored 24 hour PM_{10} concentration ($\mu g/m^3$)	Meteorological Conditions	Comment
10/09/2013	50	122.5	Predominant wind direction: westerly Ave. Wind Speed: 10.1 km/h Max. Wind Speed: 36.6 km/h Rainfall: 0 mm Max. Temp.: 31°C	Springwood bushfires
1/10/2013		60.78	Predominant wind direction: northerly Ave. Wind Speed: 9.7 km/h Max. Wind Speed: 37.9 km/h Rainfall: 0 mm Max. Temp.: 30°C	Local bushfires
17/10/2013		83.4	Predominant wind direction: northerly Ave. Wind Speed: 12.1 km/h Max. Wind Speed: 36.8 km/h Rainfall: 0 mm Max. Temp.: 32°C	Local bushfires
25/10/2013		50.6	Predominant wind direction: easterly Ave. Wind Speed: 4.2 km/h Max. Wind Speed: 15.6 km/h Rainfall: 0 mm Max. Temp.: 23°C	Local bushfires
29/10/2013		70.1	Predominant wind direction: south-south westerly Ave. Wind Speed: 3.5 km/h Max. Wind Speed: 18.2 km/h Rainfall: 6.8 mm Max. Temp.: 29°C	Local bushfires

Date	PM_{10} 24 hour Criterion ($\mu g/m^3$)	Maximum Monitored 24 hour PM_{10} concentration ($\mu g/m^3$)	Meteorological Conditions	Comment
23/12/2013		54.5	Predominant wind direction: northerly Ave. Wind Speed: 6.4 km/h Max. Wind Speed: 18.9 km/h Rainfall: 0 mm Max. Temp.: 33°C	Unknown cause of exceedance as Quarry was shut down over the holiday period
6/05/2015		55.4	Predominant wind direction: westerly Ave. Wind Speed: 4.5 km/h Max. Wind Speed: 18.7 km/h Rainfall: 0 mm Max. Temp.: 19.0°C	Attributed to dust storm event and overnight fires at nearby residences
29/04/2016		68.2	Predominant wind direction: north-easterly Ave. Wind Speed: 3.1 km/h Max. Wind Speed: 10.3 km/h Rainfall: 0 mm Max. Temp.: 24.0°C	Scheduled hazard reduction burns in the Hawkesbury and Singleton areas
13/09/2017		51.1	Meteorological data not recorded due to technical error associated with the weather station requiring equipment reset.	Scheduled hazard reduction burns in the Greater Sydney Region area
19/03/2018		59.7	Predominant wind direction: easterly Ave. Wind Speed: 4.4 km/h Max. Wind Speed: 17.7 km/h Rainfall: 0 mm Max. Temp.: 34.1°C	Hazy condition observed across the Western Sydney region.

3.2 Climatic Data

A meteorological station is installed adjacent to the quarry at the Maroota Public School. Wind direction reports predominantly from an easterly direction with temperatures fluctuating due to seasonal variations. Recent rainfall records show an average of 1026.4 mm (2015-2016) and 942 mm (2014-2015) with historical rainfall between 251.4 mm (2013-2014), 716 mm (2012-2013) and 850 mm (2011-2012).

4.0 Air Quality Assessment Criteria

In accordance with Condition 7 Schedule 3 of the Development Consent, the air quality impact assessment criteria at any residence on privately-owned land or Maroota Public School for operation of the quarry are outlined in **Table 4.1**.

Table 0.1 Air Quality Criteria

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

Notes to Table 4.1:

a Cumulative impact (ie increase in concentrations due to the development plus background concentrations due to all other sources).

b Incremental impact (ie increase in concentrations due to the development alone, with zero allowable exceedances of the criteria over the life of the development.

c Deposited dust is to be assessed as insoluble solids as defined by Standards Australia, AS/NZS 3580.10.1:2003: Methods for Sampling and Analysis of Ambient Air - Determination of Particulate Matter - Deposited Matter - Gravimetric Method.

d Excludes extraordinary events such as bushfires, prescribed burning, dust storms, sea fog, fire incidents or any other activity agreed by the Secretary.

For the purpose of demonstrating compliance with the air quality criteria for TSP, analysis of PM_{10} monitoring records and compliance with annual average PM_{10} criteria will be used to infer compliance with the annual average TSP criteria. The PM_{10} fraction of dust near extractive operations in the Hunter Valley has been previously recognised to constitute approximately 40% of TSP, therefore TSP can be reasonably calculated to be 2.5 times the measured PM_{10} level. Demonstrating compliance with TSP criteria using this method is a common and accepted practice.

5.0 Air Quality and Greenhouse Gas Management and Mitigation Measures

5.1 Proactive Management Measures

Dixon Sand is committed to implementing all reasonable and feasible measures to minimise the potential air quality impacts of the operation on nearby sensitive receivers.

A range of air quality management and mitigation measures are utilised at the quarry to limit the generation of dust. A summary of these measures is provided in **Table 5.1**.

Table 0.1 Dust Management and Mitigation Measures

Management or Mitigation Measure	Timing	Responsibility	Performance Indicator
Operation of a continuous air quality monitoring system and automatic meteorological station to minimise air quality impacts at sensitive sites such as the Maroota Public School	Continuous	Quarry Manager/ Environmental Representative	Air quality and meteorological monitoring data
Configuration of the continuous air quality monitoring station with an automated alarm set at a PM_{10} trigger value of 37µg/m^3	Continuous	Quarry Manager/ Environmental Representative	Alarm set at trigger level of 37µg/m^3
Minimising the active extraction areas within the quarry project area through progressive clearing and rehabilitation in the strips before and after the active extraction area to reduce the potential for dust generation.	Ongoing	Quarry Manager/ Environmental Representative	Visual inspection
The use of a water cart on unsealed haul roads and all active extraction areas within the quarry as required to reduce the potential for dust generation.	As required during unfavourable weather conditions	Quarry Manager/ Environmental Representative	Visual inspection
Regular inspections for visible dust and implementation of appropriate controls if excessive dust is observed	Daily during unfavourable weather conditions, otherwise weekly	Quarry Manager/ Environmental Representative	Visual inspection
Ceasing or restricting as necessary dust generating activities during periods of high winds	As required during unfavourable weather conditions	Quarry Manager/ Environmental Representative	Visual inspection
Maintaining dust suppression equipment to all processing plant, including: High speed crusher is fitted with water injectors Discharge conveyors on the dry processing plant are fitted with a series of jet sprays	Ongoing as part of routine maintenance program	Quarry Manager/ Environmental Representative	Maintenance logs

Management or Mitigation Measure	Timing	Responsibility	Performance Indicator
Maintaining a manual sprinkler system including fine sprays on the conveyors of dry processing plant.	Ongoing	Quarry Manager/ Environmental Representative	Visual inspection
Stabilising topsoil stockpiles by planting with a cover crop of non-invasive cereal or legumes, Alternatively, allow topsoil stockpiles containing native seed bank to self-germinate to provide surface cover. Where required, stabilise and minimise dust generation from topsoil stockpiles containing native seed banks by covering with jute mesh or similar material. This would minimise weed growth and not cause the stockpile to decompose. Stockpile topsoil containing native seed bank to be constructed no higher than 3 metres. Where jute mesh or similar material is utilised, allow native seeds in stockpiles to self- germinate through the just mesh and allow the jute mesh to naturally decompose over time. Refer to: • Section 3.2.3.3 of Soil and Water Management Plan, and • Section 6.5.6 of Biodiversity and Rehabilitation Management Plan	Ongoing	Quarry Manager/ Environmental Representative	Visual inspection
Sealing of the quarry access road	Ongoing	Quarry Manager/ Environmental Representative	Road sealed
Limiting vehicle speed to 20 km/hr on internal unsealed access tracks	Ongoing	Quarry Manager/ Environmental Representative	Speed signage installed
Ensuring all loads leaving the site are covered	Ongoing	Quarry Manager/ weighbridge operator	Visual inspection
Regularly maintaining mobile and fixed equipment to minimise exhaust emissions	Ongoing as part of routine maintenance program	Quarry Manager/ maintenance personnel	Maintenance logs
Review of equipment and machinery energy efficiency and consideration of energy efficiency in the procurement of new equipment and machinery.	Ongoing as part of routine maintenance activities and at procurement of new equipment.	Quarry Manager/ Environmental Representative	Maintenance inspection/ ongoing service orders

5.1.1 Training and Awareness

All site personnel working at the quarry will undergo an induction. This induction includes information on the management of dust while working on site.

After completing the induction, workers will sign a statement of attendance and records of this are kept in the administration office.

Tool-box meetings are held to discuss whole-of-site production, management, safety and environmental issues. Matters relating to air quality and potential adverse meteorological conditions are raised during these meetings, when necessary.

5.2 Reactive Management Measures

In addition to the operational controls outlined in **Section 5.1**, specific reactive management measures will be implemented in response to identified triggers. Air quality triggers and responses are outlined in **Table 5.2** below.

Table 0.2 Air Quality Triggers and Responses

Trigger	Response / Corrective Action
Receipt of air quality complaint	Following 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: • The date and time of the complaint • Method by which the complaint was made • Personal details of the complainant which were provided by the complainant • Nature of the complaint • Action taken in relation to the complaint, including follow up with the complainant; and • If no action taken, the reasons why no action was taken. All complaints will be investigated and an appropriate response provided to the complainant. The investigation may include the following: • A review of continuous monitoring data relevant to the time of the complaint • A review of the activities and/or equipment being carried out or operated at the time of the complaint • A review of whether activities outside the normal 'day-to-day' operations were being carried out on site at the time of the complaint • A review of whether any activities or extraordinary events/conditions in the locality may have contributed to the complaint • Recommendation of any actions that may be carried out to resolve the complaint and/or minimise the likelihood of further complaints.

Trigger	Response / Corrective Action
PM_{10} trigger level exceedance	If PM_{10} monitoring indicates that dust levels have exceeded 37 $\mu g/m^3$ at the Maroota Public School TEOM and a trigger alarm is received from the monitoring equipment, an internal investigation will be commenced in accordance with the following response and action plan: • After being alerted to a trigger exceedance, the Quarry Manager or Environmental Representative (or delegated representative) will review meteorological and environmental conditions to assess whether these are a contributing factor • The Environmental Representative will advise the Quarry Manager of the trigger exceedance and the Quarry Manager will investigate the source of the emissions, review the activities undertaken at the time and if necessary amend operations to reduce emissions.
Air quality criteria exceedance	If air quality monitoring indicates that the air quality assessment criteria (refer to **Section 4.0**) has been exceeded, the following response and action plan will be implemented: • After identifying an exceedance, the Quarry Manager or Environmental Representative (or delegated representative) will review meteorological conditions at the time of the exceedance to assess whether these are a contributing factors • The Environmental Representative in consultation with the Quarry Manager will investigate the source of the emissions, review the activities undertaken at the time and take all reasonable and feasible measures to ensure the exceedance ceases and does not recur • Following confirmation of an exceedance of air quality criteria, the Quarry Manager (or delegated representative) will immediately notify DPE and the EPA of the exceedance and actions being taken to remediate or reduce emissions from the dust source. Notification to the EPA is made via the Environment Line on 131 555 • Within 7 days of becoming aware of the exceedance occurring, the Quarry Manager will submit written details of the incident to DPE and EPA (if required). • Implement remediation measures as directed by the Secretary • Report any exceedance of the approved air quality criteria in the Annual Review
Extraordinary Event or Conditions	The air quality criteria listed in **Section 4.0** do not apply during extraordinary events. Extraordinary events include bushfires, prescribed burning, dust storms, sea fog, fire incidents or any other activity agreed by the Secretary. During times when these conditions are forecast or observed, it is at the Quarry Managers discretion to limit or modify operations to ensure that air quality impacts are limited as much as practically possible. Air quality criteria do apply during adverse local weather conditions such as strong winds or excessive dry periods. The Quarry Manager will implement all reasonable and feasible measures, including limiting or modifying operations, to minimise dust emissions from the quarry and seek to achieve compliance with air quality criteria during these periods.

6.0 Air Quality Monitoring

6.1 Particulate Monitoring

To assess compliance against the air quality impact assessment criteria for the quarry, depositional dust and PM_{10} will be monitored at the locations shown on **Figure 6.1**. Baseline data has been collected as part of the EIS (ERM, 2001) and will been used to determine any trends in air quality monitoring results as operations progress. Baseline data is discussed in **Section 2.0**. Air quality monitoring at the quarry consists of:

- 5 depositional dust gauges located at locations within the quarry and representative of the nearest residential receivers;
- 1 TEOM unit located near Maroota Public School which continuously monitors PM_{10}. The TEOM is fitted with an automatic alarm system alerting the quarry staff once the trigger value for PM_{10} (37 μ/m^3) is reached.

The air quality monitoring undertaken at the quarry is detailed in **Table 6.1** below.

Table 0.1 Air Quality Monitoring Program

Site No.	Parameters Monitored	Units of Measure	Averaging Period	Frequency	Sampling Method[1]
D1	Deposited dust	g/m^2/month	Month, annual	Monthly	AM-19
D4	Deposited dust	g/m^2/month	Month, annual	Monthly	AM-19
D5	Deposited dust	g/m^2/month	Month, annual	Monthly	AM-19
D6	Deposited dust	g/m^2/month	Month, annual	Monthly	AM-19
D7	Deposited dust	g/m^2/month	Month, annual	Monthly	AM-19
TEOM	PM_{10}	μ/m^3	24 hour, annual	Continuous	AM-22

Note: DD = Depositional Dust monitoring location, TEOM = Tapered Element Oscillating Microbalance
[1]NSW EPA, 2007, Approved Methods for the Sampling and Analysis of Air Pollutants in NSW.

6.2 Meteorological Monitoring

Meteorological monitoring is required to be undertaken in accordance with Schedule 3 Condition 10 of the Development Consent and in accordance with the *Approved Methods for the Sampling and Analysis of Air Pollutants in NSW* guideline.

Meteorological data is sourced from the Dixon Sands weather station located adjacent to Maroota Public School. The location of the meteorological station is shown on **Figure 6.1**.

6.3 Monitoring Standards

Air quality monitoring will be undertaken in accordance with the relevant Australian Standards, legislation and EPA approved methods for sampling, in particular:

- all sampling and analysis will be undertaken in accordance with the *Protection of the Environment Operations (Clean Air) Regulation 2010* and the guidelines specified in the EPA's publication '*Approved methods for the sampling and analysis of air pollutants in NSW' (EPA 2016).*
- All dust depositional gauges will be installed and maintained as per AS 2724.1-1984 - Ambient Air - Particulate Matter Determination of Deposited Matter Expressed as Insoluble Solids, Ash, Combustible Matter, Soluble Solids and Total Solids.
- Sampling and analysis of PM_{10} utilising the TEOM will be undertaken in accordance with AS 3580.9.8-2008 Methods for Sampling and Analysis of Ambient Air – Determination of Suspended Particulate Matter – PM_{10} Continuous Direct Mass Method Using A Tapered Element oscillating Microbalance Analyser.
- Other monitoring standards applied to operations include:
    - AS/NZS 3580.10.1:2016 Methods for Sampling and Analysis of Ambient Air – Determination of Particulate Matter – Deposited Matter – Gravimetric Method.
    - AS 3580.14:2014: Methods for Sampling and Analysis of Ambient Air – Meteorological Monitoring for Ambient Air Quality Monitoring Applications.
    - AS 2923-1987: Ambient air - Guide for measurement of horizontal wind for air quality applications.

6.4 Record Keeping

The following records will be kept in respect of air quality monitoring undertaken:

- the dates on which the monitoring was undertaken
- the times at which the monitoring was undertaken
- the point at which the monitoring was undertaken
- the name of the person who undertook the monitoring.

The following records for monitoring Point 2 identified in licence condition P1.1, must be kept electronically:

- each 15 minute PM_{10} result
- each rolling 24-hour average PM_{10} results (each 15 minutes)
- each daily 24-hour average PM_{10} result (midnight to midnight).

The following records for Point 3 identified in licence condition P1.1, must be kept electronically:

- each 15 minute, 1 hour and 24 hour result as indicated in the table at condition M4.1.

All monitoring records will be:

- kept in a legible form, or in a form that can readily be reduced to a legible form
- kept for at least four years
- produced in a legible form to any authorised officer of EPA who asks to see them.

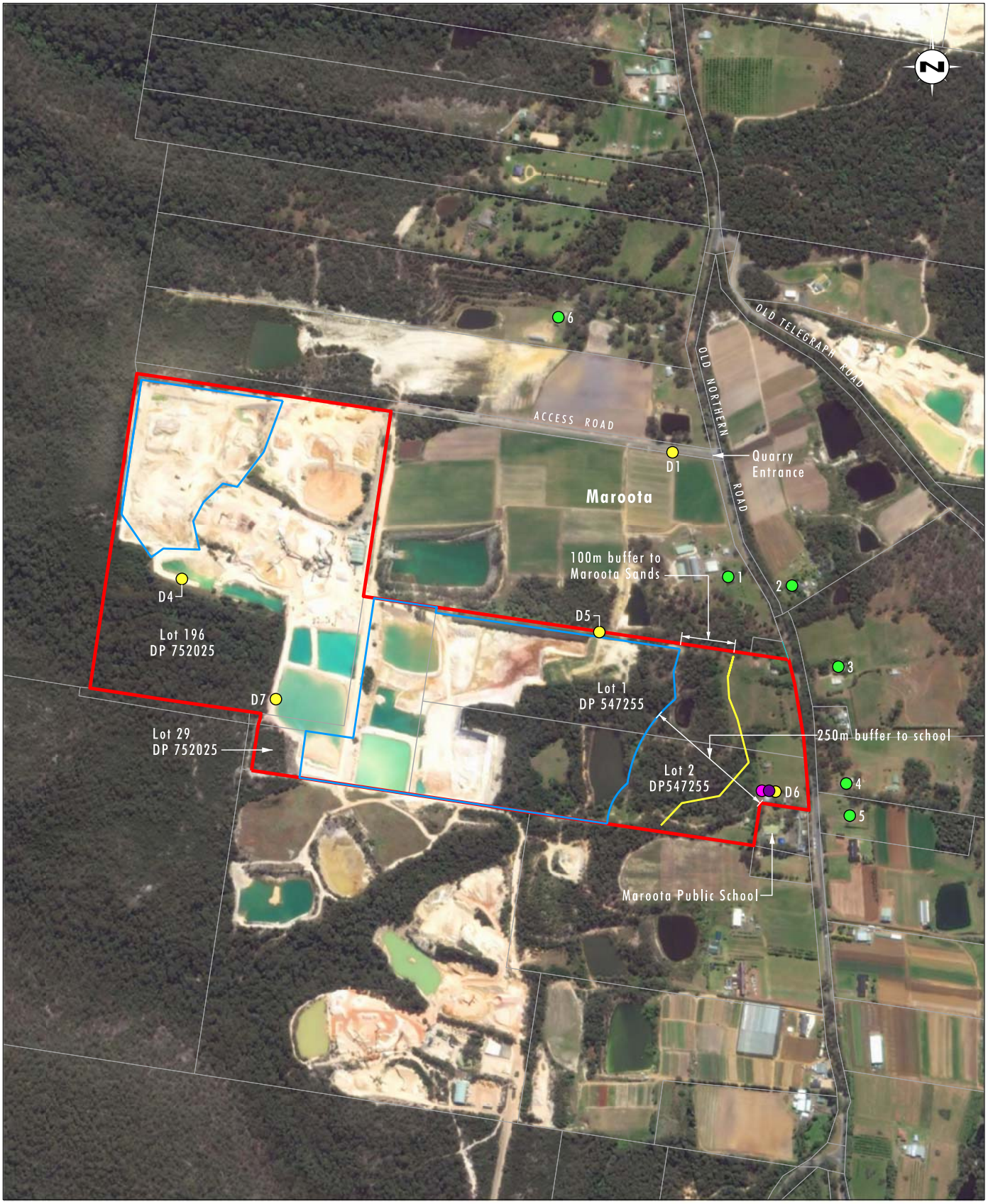


Image Source: Google Earth (Oct 2016)
Data Source: LPI (2016)

0 100 250 500m
1:10 000

Legend

- Old Northern Road Quarry
- Approved Extraction Limits
- Limit of Maroota Tertiary Sands Groundwater Source
- Residence
- Dust Deposition Monitoring Location
- TEOM
- Weather Station

FIGURE 6.1

Air Quality Monitoring Locations

File Name (A4): R02/4209_003.dgn
20180207 10.06

7.0 Reporting

7.1 External Reporting

A summary of air quality monitoring results will be provided in the quarry Annual Review. The Annual Review will be prepared and submitted to the Secretary, in accordance with Condition 12, Schedule 5 of the Development Consent. The Annual Review will be made available to the public through the Community Consultative Committee (CCC) and the Dixon Sand web site (http://www.dixonsand.com.au).

In addition, in accordance with Condition 15 Schedule 5 of the Development Consent, Dixon Sand will publish PM_{10} air quality monitoring results on the Dixon Sand website (http://www.dixonsand.com.au).

A discussion of the effectiveness of the dust management controls utilised at the quarry will be reported to DPE in the Annual Review. The Annual Review will also identify whether any additional dust management controls are required to be implemented at the quarry or whether there are any technological advancements in dust control which are suitable for implementation at the quarry.

Any investigations related to exceedances will be detailed in the Annual Review.

7.2 Incident or Air Quality Criteria Exceedance Reporting

7.2.1 Development Approval Requirement

Condition 9 Schedule 5 of the Development Consent requires any exceedances of limits/performance criteria within the approval to be reported to DPE immediately should the site record any exceedances of the criteria specified in **Section 4.0**.

Following the reporting of an exceedance or incident to the DPE and other relevant agencies, Condition 10 Schedule 5 of the Development Consent requires the proponent to prepare a written report of the exceedance within 7 days of the exceedance being reported. The written report must contain:

- a description of the date, time of the exceedance
- details of the nature (or likely cause) of the exceedance
- a description of actions taken to prevent re-occurrence
- identification of any non-compliance with the Development Consent.

In accordance with Condition 1 Schedule 4 of the Development Consent, in the event an exceedance of the air quality impact assessment criteria is identified and attributed to quarry activities, the quarry will notify DPE and any affected landowner(s) and provide regular monitoring results to each of these parties until results show the operation is complying with the relevant criteria. Dixon Sand will also provide a copy of the NSW Health fact sheet entitled 'Mine Dust and You' to affected landowners and/or existing tenants of the land, in accordance with the requirements of the Development Consent.

Additionally, the quarry will report any environmental harm arising from their operations in accordance with EPL Condition R2 – Notification of Environmental Harm, using the Environmental Line service on 131 555.

7.2.2 Environment Protection Licence Requirement

Condition M2.4 of EPL 3916 requires that if any rolling 24 hour average PM10 result measured at the TEOM exceeds 42 µg/m^3 and the prevailing wind at the site is north-westerly (i.e. between 270^o and 315^o), the quarry must:

- Take immediate action to reduce the PM10 emissions,
- Immediately notify the EPA Manager Sydney Industry,
- Cease all dust generating activity on Lots 1 and 2, except for activity solely for the purpose of reducing dust impact, such as watering roads, exposed areas and stockpiles or dust monitoring,
- Cease all dust generating activity on Lot 29 if the dust level does not return to below 42 µg/m^3 within 1 hour of ceasing all operations on Lots 1 and 2. Quarry operations must stay restricted to precincts 1, 2, 3, 4, 5, 6, 8 and 9 on Lot 29, and
- Dust generating activity may only recommence when the rolling 24 hour average PM10 result is less than 42 µg/m^3 for 4 consecutive 15 minute periods.

The quarry will provide notification of environmental harm to the EPA in accordance with Condition R2 of EPL 3916, and if applicable, in accordance with Section 7.2.1 above.

7.3 Adaptive Management

In accordance with Condition 7 Schedule 5 of the Development Consent, the quarry will assess and manage air quality related risks to ensure compliance with the criteria outlined in **Section 4.0**.

Where a non-compliance relating to air quality criteria has occurred, Dixon Sand will, to the satisfaction of the secretary of the DPE:

- take all reasonable and feasible measures to ensure the exceedance ceases and does not recur
- consider all reasonable and feasible options for remediation (where relevant)
- submit a report to the DPE within 14 days of the exceedance describing those options and any preferred remediation measures or other course of action (noting that this report may be combined with the incident report required under Condition 10 Schedule 5 to be submitted within 7 days following the reporting of an exceedance or incident to the DPE, as described in **Section 7.2**) and
- implement remediation measures as directed by the Secretary of DPE.

7.4 Community Complaints

Complaints relating to air quality from the quarry are to be managed in accordance with the requirements of the quarry Environmental Management System (EMS) and the reactive management procedures outlined in **Section 5.2**. A register of complaints will be published on the Dixon Sand website and will be updated monthly. A summary of complaints will be provided in the Annual Review.

7.5 Independent Review

In the event a landowner considers the quarry is exceeding air quality criteria at his or her property, the landowner may request an independent review of the air quality impacts at the property. The independent review will be conducted in accordance with the procedure described in Condition 2 Schedule 4 of the Development Consent.

8.0 Review and Improvement

This AQMP will be reviewed, and revised as necessary, in accordance with the Old Northern Road Quarry EMS and the requirements of Condition 5 Schedule 5 of the Development Consent, which states that review of the plan will occur within 3 months of the submission of:

- incident report under Condition 10
- annual review under Condition 12
- Independent Environmental Audit report under Condition 14 and
- Any modifications to this consent.

The quarry will notify DPE in writing of any review of this AQMP. Should this review lead to any revisions to this AQMP, the revised document will be submitted to DPE within six weeks of the review. Updated versions of this AQMP will be made publicly available on the Dixon Sand website in accordance with Condition 15 Schedule 5 of the Development Consent.

9.0 Responsibilities

Environmental management at the quarry is the responsibility of all employees and contractors, with the Quarry Manager having overall responsibility for environmental management of the operations. Environmental responsibilities are included in the position description of all employees.

General environmental responsibilities for key personnel at the quarry are outlined in **Table 9.1**.

Table 0.1 Roles and Responsibilities

Role	Accountabilities for this document
Dixon Sands Managing Director	• Provide that sufficient resources are allocated for the implementation of this plan • Coordinate the review of this plan in accordance with the requirements of the Development Consent
Old Northern Road Quarry Manager	• Oversee the implementation of this plan • Have working knowledge of this plan • Ensure reviews of meteorological forecasts are undertaken on a daily basis prior to the commencement of operations • Coordinate the implementation of air quality management measures and strategies in accordance with this plan (see **Section 5.0**) • When adverse weather conditions are forecast or observed, limit or modify operations to minimise air quality impacts as much as practical • Be aware of the environmental legislative requirements associated with the quarry and take measure to ensure compliance • Ensure employees are competent through training and awareness programs
Environmental Officer	• Coordinate the air quality and metrological monitoring requirements of this plan • Evaluate and report monitoring results as required • Coordinate air quality related incidents investigations and reporting as required by legislation and internal standards and guidelines • 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 incident (see **Section 7.0**) • Inform the Quarry Manager of identified causes of elevated dust and any alterations to site operations that may or has influenced dust emissions • Undertaken regular review of this Plan in accordance with the requirements of the Development Consent.
All employees and contractors	• Comply with all requirements in this plan; • Report all potential environmental incidents to the Quarry Manager immediately • Operate in a manner that minimises risks of incidents to themselves, fellow workers or the surrounding environment • Seek approval from the Quarry Manager prior to making changes to infrastructure/processes which may result in increased dust emission risk. • Follow any instructions provided by the Quarry Manager

10.0 Definitions

The terminology utilised within this AQMP is defined in **Table 10.1** below.

Table 0.1 Terminology used within this AQMP

Term	Definition
Dust Deposition	Dust particles that settle out from the air - measured in grams per square metre per unit time (g/m^2/month).
Development Consent	DA 250-09-01
EIS	Environmental Impact Statement
EMS	Environmental Management System
EPA	Environment Protection Authority
EPL	Environment Protection Licence
Exceedance	Occurs when environmental monitoring results do not comply with Development Consent criteria.
Incident	An occurrence or set of circumstances that: • Causes, or threatens to cause material harm to the environment; or • results in non- compliance with the consent
PM_{10}	Particulate matter less than 10 micrometres (µm) in size.
Secretary	The Secretary of the NSW Department of Planning and Environment, including any authorised delegate or nominee.
TEOM	Tapered Element Oscillating Microbalance.
TSP	Total Suspended Particulates. The nominal size of this fraction has particles with a diameter of up to 50 micrometres (µm).
$\mu g/m^3$	Micrograms per cubic metre.

11.0 References

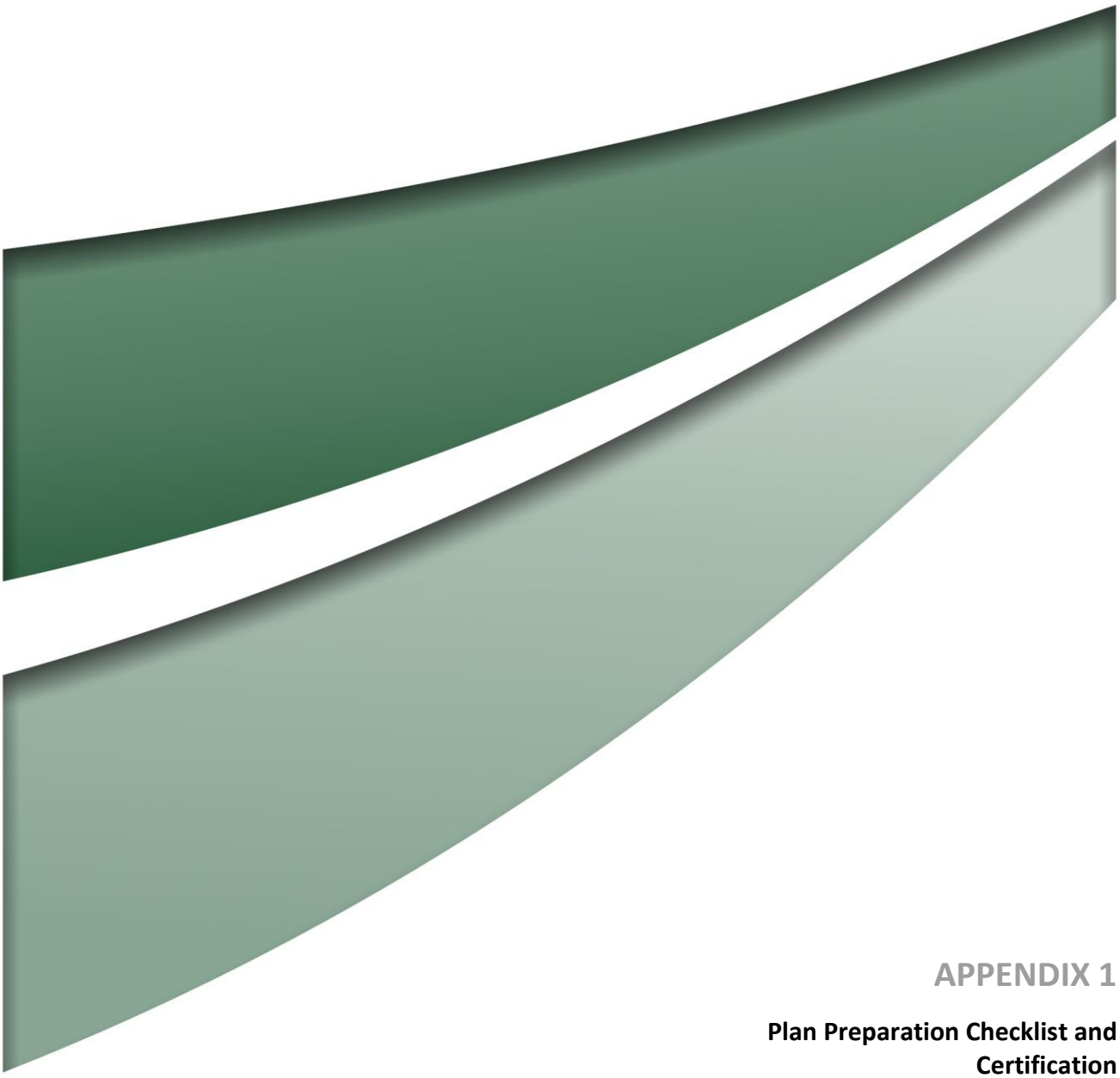
Australian Standard AS 3580.14:2011 Methods for Sampling and Analysis of Ambient Air – Meteorological Monitoring for Ambient Air Quality Monitoring Applications.

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

Australian Standard AS 2923-1987: Ambient air - Guide for measurement of horizontal wind for air quality applications.

Australian Standard AS 2724.1-1984 - Ambient air - Particulate matter Determination of deposited matter expressed as insoluble solids, ash, combustible matter, soluble solids and total solids.

EPA, 2016. Approved Methods for the Sampling and Analysis of Air Pollutants in NSW.



APPENDIX 1

Plan Preparation Checklist and Certification

Appendix 1 – Plan Preparation Checklist & Certification

The Environmental Management Plan Requirements guidelines state that the following checklist must be completed and supplied to the Department with an Environmental Management Plan (EMP) and Sub-plans.

Requirement	Plan Reference	Yes/No/NA
Document preparation and endorsement		
Has the Plan been prepared in consultation with all relevant stakeholders? (Section 3.1)	Section 2.3 and Appendix 2	Yes
Have the views of the relevant stakeholders been taken into consideration, have appropriate amendments been made to the Plan and does the Plan clearly identify the location of any changes? (Section 3.1)	Section 2.3 and Appendix 2	Yes
Has the Plan been certified on behalf of the proponent? (Section 3.2)	Appendix 1	Yes
Version content		
Does the Plan include the required version control information? (Section 2.3)	Doc Status	Yes
Does the Plan reference the project description as required in Section 2.4?	Section 1.0	Yes
Does the Plan identify the components of the project to which it applies (i.e. scope)? (Section 2.5).	Section 1.0	Yes
Does the Plan describe the proponent's Environmental Management System (EMS), and identify how the Plan relates to other documents required by the conditions of consent? (Section 2.6)		NA
Does the Plan identify continuous improvements processes from the EMS that will be adopted? (Section 2.6)	Section 8.0	Yes
Does the Plan include (unaltered) all the conditions of consent to the addressed by the Plan and identify where in the Plan each requirement has been addressed? (Section 2.7.1)	Section 2.1.1	Yes
Have all other additional approvals been identified? Has appropriate information been provided regarding how each additional approval is relevant? (Section 2.7.2)	Section 2.2	Yes
Have all relevant guidelines, policies and standards been identified, including details of how they are relevant? (Section 2.7.3)	Section 2.4	Yes
Has the project's organisational structure been included? (Section 2.8)		NA
Are the roles and responsibilities of key positions or personnel (including any specialists required by the conditions of consent) outlined? (Section 2.8)	Section 9.0	Yes
Is the process that will be adopted to identify and analyses the environmental risks included? (Section 2.9)		NA
Does the Sub-plan identify the relevant sections of the EIA documents that contain the assessment of the matter/s addressed by the Plan? (Section 2.10)	Section 2.1.1	Yes
Have all further studies required to support mitigating measures been identified and included? (Section 2.11)	Section 2.5	Yes

Requirement	Plan Reference	Yes/No/NA
Have project hold points been identified and included? (Sections 2.7.2 and 2.12)	Section 2.6	Yes
Have all mitigation measures from conditions of consent been included unaltered? (Section 2.13)	Section 2.0 and 5.0	Yes
Have any new mitigation measures been written in committed language and all relevant information included? (Section 2.13)	Section 5.0	Yes
Have the tools that will be used to communicate Plan requirements to project personnel been included? (Section 2.14)		NA
Is an environmental inspection program described as required? (Section 2.15.1)		NA
Are relevant details of environmental monitoring that will be carried out included? (Section 2.15.2)	Section 6.0	Yes
Is a compliance monitoring and reporting program (or similar) referenced? (Section 2.15.3)		NA
Is an independent auditing program referenced? (Section 2.16)		NA
Are project status notification protocols that comply with conditions included? (Section 2.17.1)		NA
Does the Plan reference a Community and Stakeholder Engagement Plan (or similar) or include community and stakeholder engagement actions (if required)? (Section 2.17.2)		NA
Does the document include the incident notification and reporting protocols that comply with the relevant conditions of consent? (Section 2.17.3)		NA
Does the document identify the project person or position that is responsible for deciding whether an occurrence is an incident? (Section 2.17.3)		NA
Does the document describe corrective and preventative action protocols that address the requirements? (Section 2.18)		NA
Does the document identify training and awareness programs as required? (Section 2.19)		NA
Does the document include details of a document review and revision process that complies with the requirements? (Section 2.20)		NA
Does the document include details of public availability requirements? (Section 2.21)		NA

Plan Preparation Certification

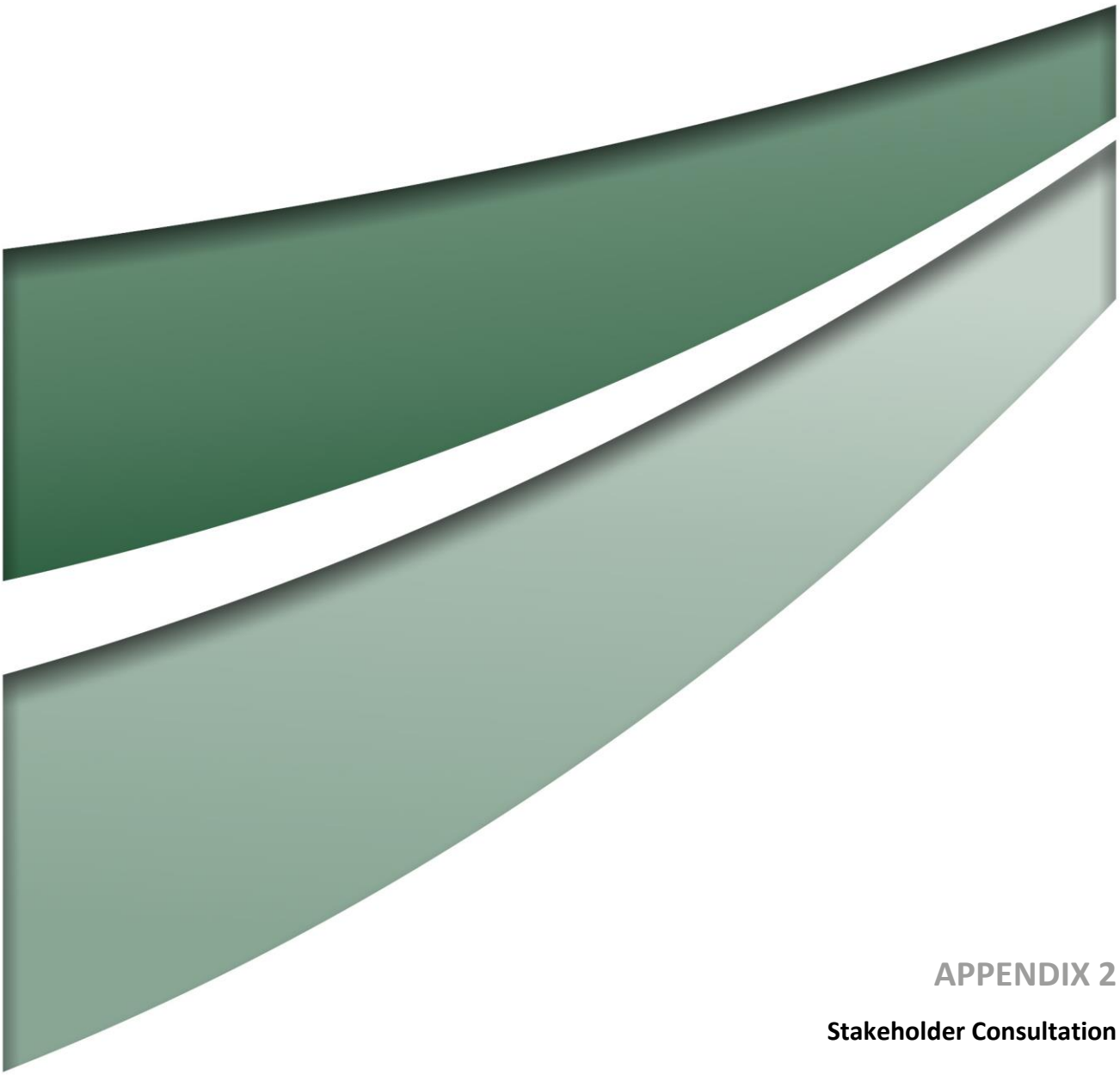
Document Certification Form	
Project Name	Old Northern Road Quarry
Project Application Number	DA 250-09-01
Proponent	Dixon Sand Pty Ltd
Document Title	Old Northern Road Quarry Air Quality Management Plan
Document Version	V4
Date of Issue	**5 November 2020**

Old Northern Road Quarry Air Quality Management Plan has been prepared by Umwelt (Australia) Pty Ltd in response to conditions of consent Schedule 3 Condition 9 DA 250-09-01 for the Old Northern Road Quarry. I am authorised to and have reviewed the document on behalf of Dixon Sand (Penrith) Pty Ltd.

I certify that the Old Northern Road Quarry Air Quality Management Plan:

- has been prepared in accordance with the relevant condition/s and the Department's Environmental Management Plan
- adequately identifies and addresses all relevant conditions of consent
- has been prepared in accordance with relevant requirements of the conditions of consent regarding
- stakeholder consultation.

Name of Certifier	**Hunny Churcher**
Position	**Environmental Officer**
Company	**Dixon Sand Pty Ltd**
Date	**5 November 2020**



APPENDIX 2

Stakeholder Consultation

DOC18/140884-01
Your Ref.

Ms Gabrielle Allan
Principal Environmental Consultant
Umwelt Australia Pty Ltd
75 York Street
Teralba NSW 2284

Dear Ms Allan

Consultation of Air Quality & Noise Draft Management Plans for Old Northern Road Quarry for Dixon Sand Pty Ltd

I refer to your request for consultation on the draft Air Quality Management Plan (AQMP) and Noise Management Plan (NMP) for Old Northern Road Quarry located at Old Northern Road, Maroota, NSW, which was received via email by the Environment Protection Authority (EPA) on 22 February 2018.

Based on the information provided in the draft AQMP, the EPA identifies the following information:

- Section 3.1 paragraph 5 stated that historic average PM_{10} 24-hour air quality monitoring results recorded exceedances during the 2013-2014, 2015-2016 and 2016-2017 reporting periods which were found not to be attributable to quarry operations but due to bushfires, dust storms, hazard reduction burns and dry westerly winds blowing over the region. Please specify these exceedance days in a table identifying the date of exceedance, meteorological conditions on the day, the average PM_{10} 24-hour concentration and the reason for each exceedance. Please note that in the National Environment Protection (Ambient Air Quality) Measure (NEPM) Standard defines "*exceptional event"* as:

  "a fire or dust occurrence that adversely affects air quality at a particular location, and causes an exceedance of 1 day average standards in excess of normal historical fluctuations and background levels, and is directly related to: bushfire; jurisdiction authorised hazard reduction burning; or continental scale windblown dust."

  Any event that are not related to the above definition is not considered an exceptional event.

- Table 5.1 column 1 item 7 stated that one of the proactive management measures is to maintain the dust suppression equipment to all processing plant. Please provide a description of the dust suppression equipment currently in use for the facility. This can be done in a separate section.

- Please change Table 5.2, column 1 item 4 "Extraordinary Event or Conditions" to "exceptional event" to be consistent with the NEPM definition.

Phone 131 555
Phone +61 2 9995 5555 (from outside NSW)
Fax +61 2 9995 5999
TTY 133 677
ABN 43 692 285 758
PO Box 668 Parramatta NSW 2124 Australia
L13, 10 Valentine Ave Parramatta NSW 2150 Australia
info@epa.nsw.gov.au
www.epa.nsw.gov.au

- With the map proposed in Figure 6.1, please specify the site boundary, locations of the air quality monitoring points specified in Table 6.1 including the location of the weather station and the location of sensitive receivers.

- Section 6.3 states the monitoring standards used at the facility. Please revise these standards to the latest version. An example of this is the AS/NZS 3580.10.1:2003 Methods for Sampling and Analysis of Ambient Air – Determination of Particulate Matter – Deposited Matter – Gravimetric Method; the latest version of this standard is done in 2016.

- As the facility is using the TEOM instrument for the measurement of PM_{10} particulates, please add the AS3580.9.8 to the list of standards in Section 6.3.

- In Section 7.1 it was stated that PM_{10} monitoring results will be publish in the Dixon Sands website. Please specify the web address.

As the draft Noise Management Plan notes, there are noise conditions set under DA250-09-01 and environment protection licence (EPL) 3916. As substantial noise conditions have been put in place under the DA and EPL, the EPA has not reviewed the Noise Management Plan, but encourages the proponent to implement the plan. At any time in the future, the EPA may call on the proponent to provide relevant documentation demonstrating that all management plans in place are being applied to the premises.

If you have any questions relating to this matter, please contact Lilian De Torres on (02) 9995 5059 or Lilian.DeTorres@environment.nsw.gov.au.

Yours sincerely

Mark Carey
Acting Unit Head – Sydney Industry
Environment Protection Authority

9 March 2018

Planning Services
Resource Assessments
Name: Tertius Greyling
Phone: 9274 6402
Email: tertius.greyling@planning.nsw.gov.au

Ms Hunny Churcher
Environmental Officer
Dixon Sand (Penrith) Pty Ltd
4610 Old Northern Road
Maroota NSW 2756

Dear Ms Churcher

Old Northern Road Quarry (DA 250-09-01 MOD 5)
Submission of amended EMS and management plans

I refer to your correspondence dated 11 December 2017 requesting an extension for the submission of the following amended management plans as required by modification 5 of DA 250-09-01:

- Environmental Management Strategy (EMS);
- Noise Management Plan;
- Air Quality Management Plan;
- Soil and Water Management Plan;
- Traffic Management Plan; and
- Biodiversity and Rehabilitation Management Plan

The EMS and management plans have to be submitted within three months of the date of determination of the modification, ie 17 November 2017. Therefore, the due date is currently 17 February 2018. I note that your consultant is currently undertaking the work. However, due to the number of documents and the work falling over the year end period, an extension of one month has been requested.

The Department is not able to grant your request for an extension for submission of the EMS, as there is no power in condition 1 of Schedule 5 to do so. On the other hand, the conditions that govern submission of the management plans do permit extensions. Accordingly, an extension for the submission of the management plans is granted until 17 March 2017. You are advised to finalise preparation of the EMS and submit it for the Secretary's approval as soon as possible, and in any case no later than 17 March 2018.

Should you have any questions about this letter, please contact Tertius Greyling at the details above.

Yours sincerely

JEvans 10/01/2018

Jessie Evans
A/Director
Resource Assessments
As nominee of the Secretary

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