WOLLOGORANG FRIABLE GRANITE QUARRY EXTENSION

Air Quality Impact Assessment

Prepared for:

Laterals Planning
1st Floor, 35 Montague Street
Goulburn NSW 2580

SLR Ref: 610.30252-R01
Version No: -v1.0
March 2021

PREPARED BY

SLR Consulting Australia Pty Ltd
ABN 29 001 584 612
Tenancy 202 Submarine School, Sub Base Platypus, 120 High Street
North Sydney NSW 2060 Australia

T: +61 2 9427 8100
E: sydney@slrconsulting.com www.slrconsulting.com

BASIS OF REPORT

This report has been prepared by SLR Consulting Australia Pty Ltd (SLR) with all reasonable skill, care and diligence, and taking account of the timescale and resources allocated to it by agreement with Laterals Planning (the Client). Information reported herein is based on the interpretation of data collected, which has been accepted in good faith as being accurate and valid.

This report is for the exclusive use of the Client. No warranties or guarantees are expressed or should be inferred by any third parties. This report may not be relied upon by other parties without written consent from SLR.

SLR disclaims any responsibility to the Client and others in respect of any matters outside the agreed scope of the work.

DOCUMENT CONTROL

Reference	Date	Prepared	Checked	Authorised
610.30252-R01-v1.0	23 March 2021	Varun Marwaha	Kirsten Lawrence	K Lawrence

CONTENTS

DOCUMENT REFERENCES

TABLES

FIGURES

1 Introduction

SLR Consulting Australia Pty Ltd (SLR) has been commissioned by Laterals Planning to provide an air quality assessment for a proposed extension of the existing Wollogorang Friable Granite Quarry (the Project Site), approximately 7.5 kilometres (km) northeast of the township of Collector.

The Project Site has is proposing to extend the existing extraction area to enable it to continue to extract and process 16,000 tonnes of friable granite per annum over a 20 year period. The Department of Planning, Industry and Environment (DPIE) issued the Secretary's Environmental Assessment Requirements (SEARs) for the Project on 27 May 2020 (EAR 1439). Specifically, the SEARs require the following matters to be addressed in relation to air quality:

> *"Air – including an assessment of the likely air quality impacts of the development in accordance with the Approved Methods for the Modelling and Assessment of Air Pollutants in NSW. The assessment is to give particular attention to potential dust impacts on any nearby private receivers due to construction activities, the operation of the quarry and/or road haulage."*

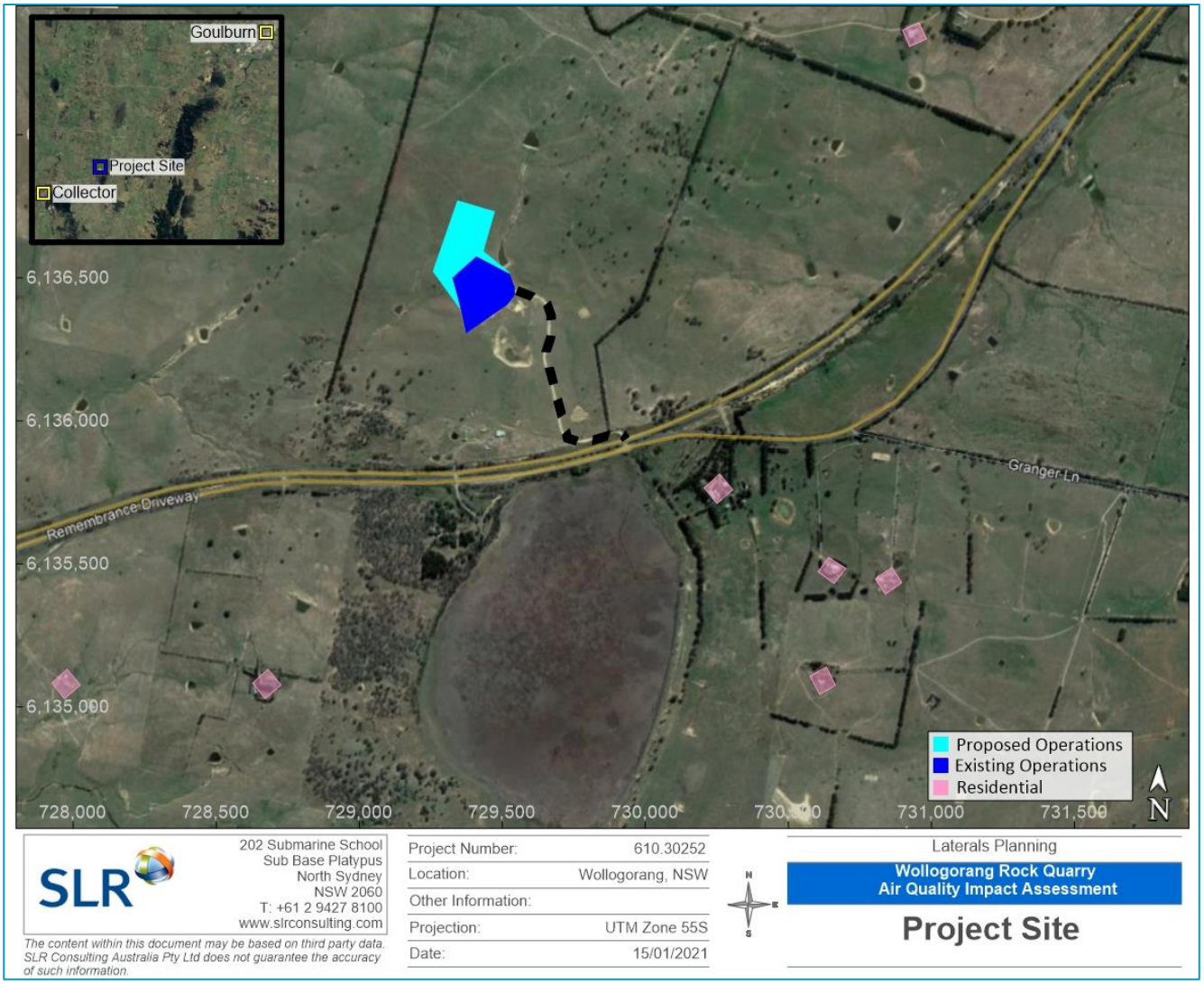
The aim of this report is to assess the risk of dust impacts from the Project operations at the nearby sensitive receptors. A qualitative desktop assessment is presented, with a broad discussion around potential air quality impacts and recommended mitigation measures to reduce any impacts.

2 Project Overview

2.1 Project Setting

The Project Site is located on Federal Highway, approximately 7.5 km to the northeast of Collector, NSW within a 'Rural Landscape' (RU2) zone in the Upper Lachlan Local Environmental Plan (LEP) 2010 and is surrounded by vacant rural land. The majority of residential receptors are located to the southeast, with the nearest residential receptor located approximately 1 km southeast of the existing operational area, as shown in **Figure 1**.

Figure 1 Regional Setting of the Project Site



2.2 The Proposed Development

The Project Site is an open cut granite quarry with an existing annual production of approximately 16,000 tonnes per annum (tpa). The operational area is largely clear of any vegetation. The existing operations at the Project Site generally involve:

- Removal of topsoil using a bulldozer and stockpiling of topsoil;
- Excavation of raw material using mining equipment such as front end loaders and bulldozers;
- Screening of excavated material in mobile processing plants and stockpiling product; and
- Off-site transport of product via road.
- Hours of operation - five days a week (Monday to Friday) between 7.00am to 5.30pm.

It is noted that there is no blasting conducted as part of the material excavation operations. Also, the material is only screened into various size fractions without any material crushing.

The existing excavation area is expected to run out of resource soon, which necessitates the requirement for the Project Site to expand into a new excavation area to the north, as shown in **Figure 1**. The proposed operations will continue to use the same processes at the same intensity of 16,000 tpa.

Construction of the new quarry area will be progressive in nature, and there will be no distinct construction phase.

2.3 Potential Air Pollutant Sources and Types

The main emissions to air associated with the proposed activities with potential for off-site air quality impacts is fugitive dust emissions. The potential for dust to be emitted during the operations will be directly influenced by the nature of the activities being performed at any given time. Generally, the activities that are most likely to lead to short-term emissions of dust, include:

- Vegetation removal (minimal clearing required);
- Excavation and stockpiling of topsoil;
- Grading of haul routes;
- Loading and unloading of raw material and product;
- Screening of granite;
- Wheel-generated dust from construction equipment and trucks travelling on unpaved surfaces; and
- Wind erosion associated with material stockpiles, open pit, processing area and overburden emplacement areas.

Temporary elevations in local dust levels are most likely to occur when activities are undertaken during periods of low rainfall and/or windy conditions. The impact of elevated dust emissions is dependent upon the potential for these particulates to become and remain airborne prior to being deposited as dust or experienced as an ambient particulate concentration.

A number of environmental factors may affect the generation and dispersion of dust emissions, including:

- Wind direction – predominant winds in the area will determine whether dust and suspended particles are likely to be transported in the direction of the nearest sensitive receptors;
- Wind speed - determines the potential suspension and drift resistance of particles;
- Surface type - more erodible surface material types have an increased soil or dust erosion potential;
- Surface material moisture - increased surface material moisture reduces soil or dust erosion potential; and
- Rainfall or dew - rainfall or heavy dew that wets the surface of the ground reduces the risk of dust generation.

Where diesel-powered mobile machinery and vehicles are being used, localised elevations in ambient concentrations of combustion-related pollutants may also occur, however any potential for the relevant impact assessment criteria for these pollutants to be exceeded at surrounding sensitive areas is negligible. Fugitive dust emissions are generally considered to have the greatest potential to give rise to downwind air quality impacts at quarry and mining operations and combustion emissions from the Project Site have not been considered further.

Potential air quality impacts associated with fugitive dust emissions from the Project Site have been addressed in **Section 5**.

2.4 Pollutants of Interest

Airborne contaminants that can be inhaled directly into the lungs can be classified on the basis of their physical properties as gases, vapours or particulate matter. In common usage, the terms “dust” and “particulates” are often used interchangeably. The term “particulate matter” refers to a category of airborne particles, typically less than 30 microns (µm) in diameter and ranging down to 0.1 µm and is termed total suspended particulate (TSP).

Emissions of particulate matter less than 10 µm and 2.5 µm in diameter (referred to as PM_{10} and $PM_{2.5}$ respectively) are considered important pollutants due to their ability to penetrate into the respiratory system Particulate emissions from the combustion of natural gas are predominantly in the $PM_{2.5}$ size fraction. In the case of the $PM_{2.5}$ category, recent health research has shown that this penetration can occur deep into the lungs. Potential adverse health impacts associated with exposure to $PM_{2.5}$ include increased mortality from cardiovascular and respiratory diseases, chronic obstructive pulmonary disease and heart disease, and reduced lung capacity in asthmatic children.

Nuisance impacts need also to be considered, mainly in relation to deposited dust. Dust can cause nuisance by settling on surfaces and possessions, affecting visibility and contaminating tank water supplies. High rates of dust deposition can also adversely affect vegetation by blanketing leaf surfaces. The rate of dust deposition is measured by means of a collection gauge, which catches the dust settling over a fixed surface area and over a period of about 30 days.

3 Regulatory Requirements

3.1 Relevant Legislation, Policy and Guidance

The following air quality policy and guidance documents have been referenced within this assessment and have been used to identify the relevant air quality criteria (see **Section 3.2**).

3.1.1 Protection of the Environment Operations Act 1997 & Amendment Act 2011

The Protection of the Environment Operations (POEO) Act 1997 and Amendment Act 2011 are a key piece of environment protection legislation administered by the NSW Environment Protection Authority (EPA) which enables the Government to establish instruments for setting environmental standards, goals, protocols and guidelines.

The following sections of the POEO Act are of general relevance to the Project:

- Sections 124 and 125 of the POEO Act state that any plant located at a premise should be maintained in an efficient condition and operated in a proper and efficient manner to reduce the potential for air pollution.
- Section 126 of the POEO Act requires that materials are managed in a proper and efficient manner to prevent air pollution.
- Section 128 of the POEO Act states:
  - The occupier of a premises must not carry on any activity or operate any plant in or on the premises in such a manner to cause or permit the emission at any point specified in or determined in accordance with the regulation of air impurities in excess of [the standard of concentration and/or the rate] prescribed by the regulations in respect of any such activity or any such plant.
  - Where neither such a standard nor rate has been so prescribed, the occupier of any premises must carry on activity, or operate any plant, in or on the premises by such practicable means as may be necessary to prevent or minimise air pollution.
- Section 133 of the POEO Act states that the EPA may prohibit the burning of fires in the open or burning of waste in an incinerator. These activities are illegal in most local Council areas.

Changes under the POEO Amendment Act 2011 include that the owner of a premises, the employer or any person carrying on the activity which causes a pollution incident is to *immediately* notify the relevant authorities when material harm to the environment is caused or threatened.

3.1.2 Protection of the Environment Operations (Clean Air) Regulation 2010

The POEO (Clean Air) Regulation 2010 (the Regulation) is the core regulatory instrument for air quality issues in NSW. In relation to industry, the Regulation:

- sets maximum limits on emissions from activities and plant for a number of substances.
- deals with the transport and storage of volatile organic liquids.
- restricts the use of high sulphur liquid fuel.
- imposes operational requirements for certain afterburners, flares, vapour recovery units and other treatment plant.

Part 5 (Division 3) of the Regulation deals with the emissions of air impurities from activities and plant, and sets maximum limits on emissions for a number of substances (including solid particles and visible smoke). The standards of concentrations prescribed by Part 5, Division 3 do not apply to or in relation to any plant during start-up and shutdown periods, however are still subject to requirements of Section 128 (2) of the POEO Act in relation to the prevention and minimisation of air pollution. Part 6 of the Regulation outlines the control of VOCs and the requirement for any fuel burning equipment or industrial plant to be fitted with control equipment. Exemptions exist where approved by the EPA. As the proposed operations at the Project Site do not include the operation of any stationary combustion units or other plant, these requirements are not applicable.

3.2 Relevant Air Quality Criteria

The Approved Methods for the Modelling and Assessment of Air Pollutants in NSW (hereafter 'the Approved Methods') [EPA 2017] lists the statutory methods that are to be used to model and assess emissions of air pollutants from stationary sources in NSW. The criteria specified in the Approved Methods are the defining ambient air quality criteria for NSW and are considered to be appropriate for this Project.

The impact assessment criteria listed in the Approved Methods for particulate matter and nuisance dust are shown in **Table 1**.

Table 1 NSW EPA Impact Assessment Criteria for Particulate Matter and Nuisance Dust

Pollutant	Averaging Period	Assessment Criteria	
		($\mu g/m^3$)	(mg/m^3)
Total suspended particulate (TSP)	Annual	90	0.09
Particulate matter (PM_{10})	24-hours	50	0.050
	Annual	25	0.025
Particulate matter ($PM_{2.5}$)	24-hours	25	0.025
	Annual	8	0.008
Pollutant	**Averaging Period**	**Assessment Criteria (g/m^2/month)**	
Deposited dust[1]	Annual	2 (maximum increase in deposited dust level) 4 (maximum total deposited dust level)	

Source: EPA 2017

3.3 Recommended Separation Distances

The application of minimum recommended separation distances (or 'buffer' distances) provides a valuable screening tool to judge whether a detailed assessment is required to evaluate the potential risk of conflicting land uses. Separation distances provide guidance on the appropriate level of separation between a source of emissions and sensitive land uses in order to mitigate the impacts of intended and unintended emissions on people. This approach relies on the knowledge that impacts on the environment generally decrease with increasing distance from the source of emissions. Separation distances are based on an understanding of the types of emissions associated with various industries and their potential impacts on people. These distances can vary based on the scale and size of the industry, location topography, prevailing winds and other factors.

There are no separation guidelines issued by NSW EPA, hence this assessment refers to guidelines set by other regulatory agencies in Australia. These recommended separation distances have been developed to be applied to sensitive uses, such as residential dwellings, schools, hospitals and childcare centres, and are considered appropriate for the Project Site. The recommended separation distances for extractive industries recommended by various jurisdictions are shown in in **Table 2**.

Table 2 Recommended Separation Distances

Activity	Industry Type	Activity Description as per Reference Document	Separation Distance (metres)
ACT EPA[1]	Extractive Industries	Operations involving extraction, or extraction and processing (by crushing, grinding, milling or separating into different sizes by sieving, air elutriation or in any other manner), of sand, gravel, stone, shell, shale, clay or soil without blasting	300
VIC EPA[2]	Quarry	Quarrying, crushing, screening, stockpiling and conveying of rock without blasting	250
WA EPA[3]	Extractive Industries	Other rock quarrying, blasting, grinding and milling works – material processed by grinding, milling or separated by sieving, aeration etc	1,000

Source:

[1] ACT EPA 2018

[2] VIC EPA 2013

[3] Appendix 1, WA EPA 2015

The WA EPA recommended separation distance relates to extractive industries conducting onsite blasting. As operations at the Project Site do not include blasting, the separation distance recommended by WA EPA is not considered to be applicable. Thus, the separation distance of 300 m recommended by ACT EPA has been adopted for the purpose of this assessment. It is noted that a separation distance of 300 m should be considered as conservative, as crushing is also not proposed as part of the Project Site operations.

4 Existing Environment

4.1 Local Wind Conditions

Local wind speed and direction influence the dispersion of air pollutants. Wind speed determines both the distance of downwind transport and the rate of dilution as a result of 'plume' stretching. Wind direction, and the variability in wind direction, determines the general path pollutants will follow and the extent of crosswind spreading. Surface roughness (characterised by features such as the topography of the land and the presence of buildings, structures and trees) affects the degree of mechanical turbulence, which also influences the rate of dispersion of air pollutants.

The Bureau of Meteorology (BoM) maintains and publishes data from weather stations across Australia. The closest such station with available long term wind speed and wind direction data is the Goulburn Airport Automatic Weather Station (AWS), which is located approximately 20 km northeast of the Project Site.

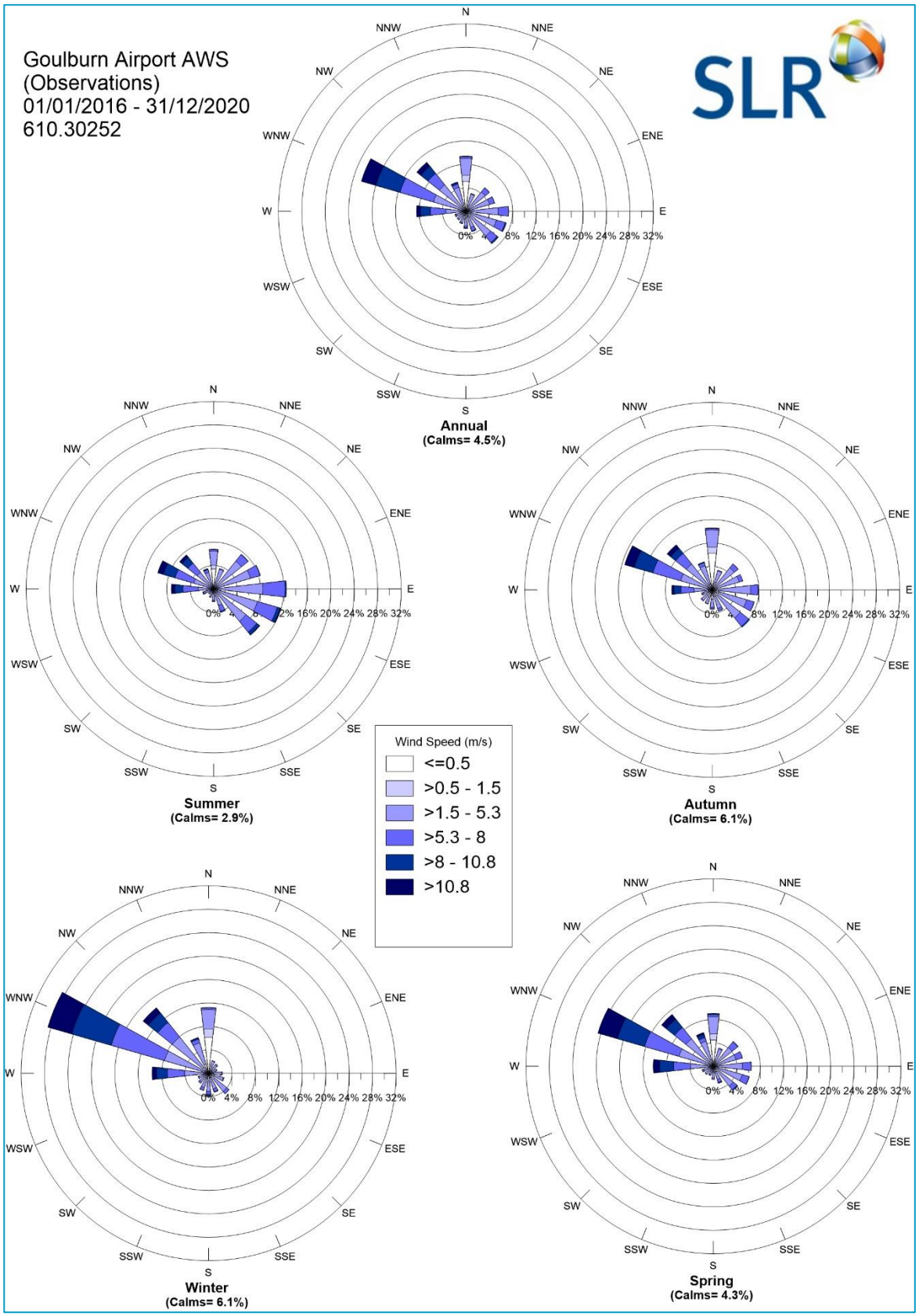
Annual wind roses for the years 2016 to 2020 are presented in **Figure 2**. Wind roses show the frequency of occurrence of winds by direction and strength. The bars correspond to the 16 compass points (degrees from north). The bar at the top of each wind rose diagram represents winds blowing from the north (i.e. northerly winds), and so on. The length of the bar represents the frequency of occurrence of winds from that direction, and the widths of the bar sections correspond to wind speed categories, the narrowest representing the lightest winds. Thus it is possible to visualise how often winds of a certain direction and strength occur over a long period, either for all hours of the day, or for particular periods during the day. The 'Beaufort Wind Scale' (consistent with terminology used by the BoM) was used to describe the wind speeds experienced at the Project Site, outlined in **Table 3**.

Table 3 Beaufort Wind Scale

Beaufort Scale #	Description	m/s	Description on land
0	Calm	0-0.5	Smoke rises vertically
1	Light air	0.5-1.5	Smoke drift indicates wind direction
2-3	Light/gentle breeze	1.5-5.3	Wind felt on face, leaves rustle, light flags extended, ordinary vanes moved by wind
4	Moderate winds	5.3-8.0	Raises dust and loose paper, small branches are moved
5	Fresh winds	8.0-10.8	Small trees in leaf begin to sway, crested wavelets form on inland waters
6	Strong winds	>10.8	Large branches in motion, whistling heard in telephone wires; umbrellas used with difficulty

Source: http://www.bom.gov.au/lam/glossary/beaufort.shtml

Figure 2 Annual and Seasonal Wind Roses for Goulburn Airport (2016 to 2020)



The annual wind rose for the years 2016 to 2020 indicates that winds at Goulburn Airport predominantly blow from the west-northwest direction. Relatively low frequencies of winds from the south and southwest directions were recorded over the period reviewed. The average annual frequency of calm wind conditions was recorded to be approximately 5% for the years analysed.

Winds from the northwesterly direction, which would blow air emissions from the Project Site towards the nearest sensitive receptor (see **Figure 1**), occurred approximately 30% of the time over the period reviewed.

The seasonal wind roses for the years 2016-2020 indicate that:

- In summer, winds blew almost evenly from all directions, except for winds from the south and southwest directions. Calm wind conditions were observed to occur on average 3% of the time during summer. Winds from the northwest, ie winds that would blow emissions from the Project Site towards the nearest sensitive receptor were recorded to occur 20% of the time during summer.
- In autumn, winds again blew almost evenly from all directions, except for winds from the south and southwest directions. Calm wind conditions were observed to occur approximately 6% of the time during autumn. Winds from the northwest, ie winds that would blow emissions from the Project Site towards the nearest sensitive receptors were recorded to occur 26% of the time during autumn.
- In winter, the majority of winds blew from between the west and north directions, with very few winds from the other directions. Calm wind conditions were observed to occur approximately 6% of the time during winter. Winds from the northwest, ie winds that would blow emissions from the Project Site towards the nearest sensitive receptors were recorded to occur 40% of the time during winter.
- In spring, winds blew almost evenly from all directions, with a relatively lower frequency of winds from the south, and relatively high frequency of winds west-northwest. Calm wind conditions were recorded approximately 4% of the time during spring. Winds from the northwest, ie winds that would blow emissions from the Project Site towards the nearest sensitive receptors were recorded to occur 30% of the time during spring.

Overall, the seasonal wind roses indicate that frequency of winds that would blow emissions from the Project Site towards the nearest sensitive (residential) receptors ranges between 20% to 40%, and these winds are less likely to occur during the summer months.

4.2 Background Air Quality

The main focus of this report is the assessment of the potential impacts of dust emissions from the Project Site on nearby sensitive receptors, the closest of which is located approximately 1 km to the southeast (see **Section 2.1**). The purpose of assessing background air quality is to estimate the concentrations of air pollutants currently experienced at these residences (excluding the current quarrying operations).

No air quality monitoring is performed by the site for the current operations. The NSW Biodiversity and Conservation Division (BCD) of the Department of Planning, Industry and Environment (DPIE) maintains and publishes data from air quality monitoring stations (AQMSs) in NSW. However, there is no such AQMS located within 100 km of the Project Site. To estimate the background pollutant concentrations at the Project Site, reference has therefore been made to a rural AQMS located in Wagga Wagga North (hereafter 'Wagga AQMS'). The Wagga AQMS forms part of the air quality monitoring network for the rural NSW region, and is located near the tennis courts in the Wagga Wagga racecourse adjacent to Beckwith Street.

The Wagga AQMS is located within 5 km of the Wagga Industrial Estate and Bomen Industrial Estate (located to the southwest and northeast respectively), in addition to being located in a relatively heavily populated area.

During dry periods, Wagga Wagga racecourse also has potential to give rise to dust emissions on race days and from wind-blown dust. Particulate concentrations recorded by the Wagga AQMS are likely to be heavily influenced by these local sources.

The Project Site is not surrounded by any industry, and is located in a significantly less industrial landscape compared to the surroundings of the Wagga AQMS. Therefore, for the purpose of this assessment, data recorded by the Wagga AQMS is considered to be a highly conservative representation of background particulate concentrations at the Project Site.

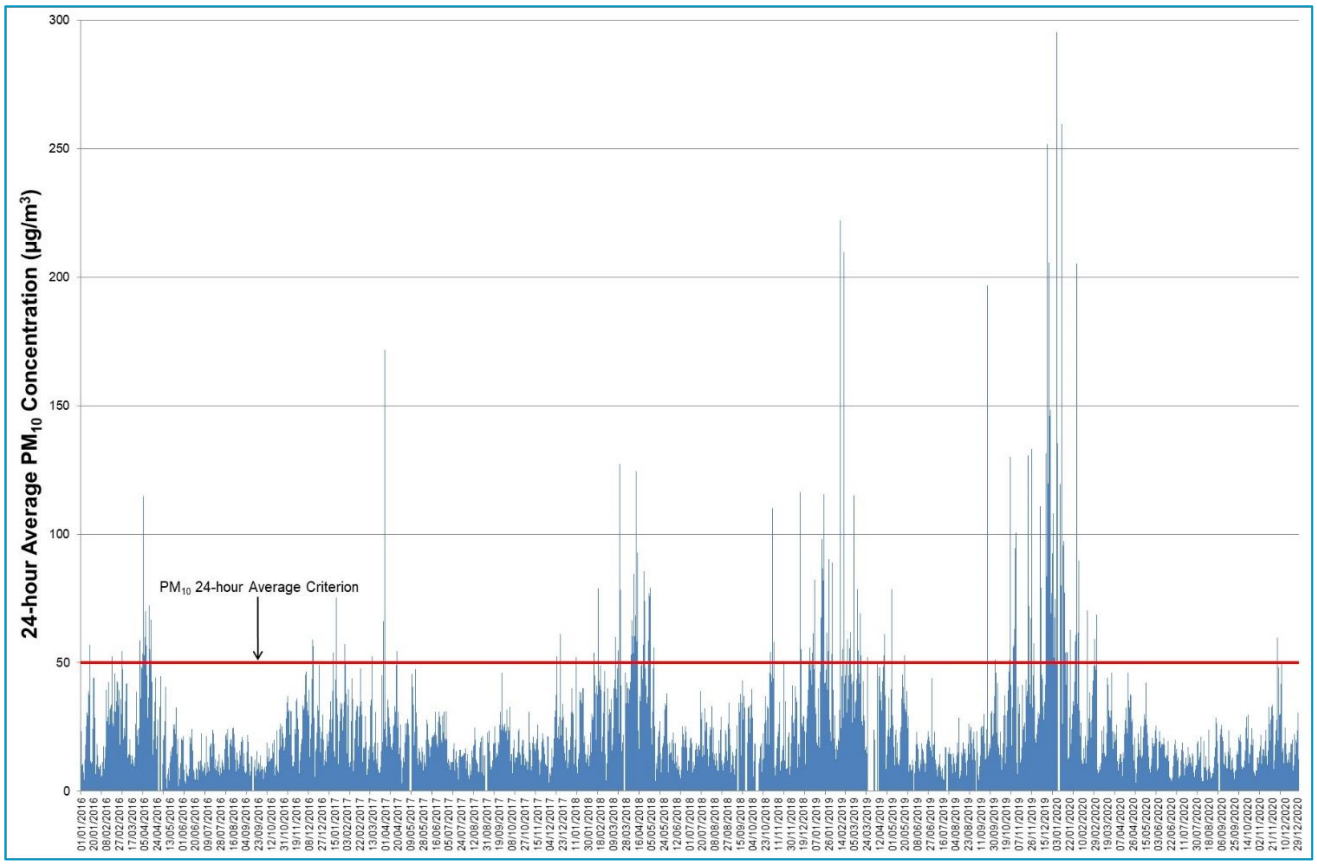
PM_{10}

Summaries of the 24-hour average PM_{10} concentrations measured by the Wagga AQMS during the last five years (ie 2016 to 2020) are presented in **Table 4** and **Figure 3**.

Table 4 Summary of PM_{10} Monitoring Data - Wagga Wagga North AQMS (2016 – 2020)

Year	Maximum 24-Hour PM_{10} Concentration ($\mu g/m^3$)	Number of Exceedances of 24-Hour Criterion (days/year)	Annual PM_{10} Concentration ($\mu g/m^3$)
2016	114.7	16	20.6
2017	171.6	10	20.6
2018	127.2	34	27.4
2019	251.7	63	35.3
2020	295.3	25	23.3
Criterion	50		25

Figure 3 24-Hour Average PM_{10} Data - Wagga Wagga North AQMS (2016 - 2020)



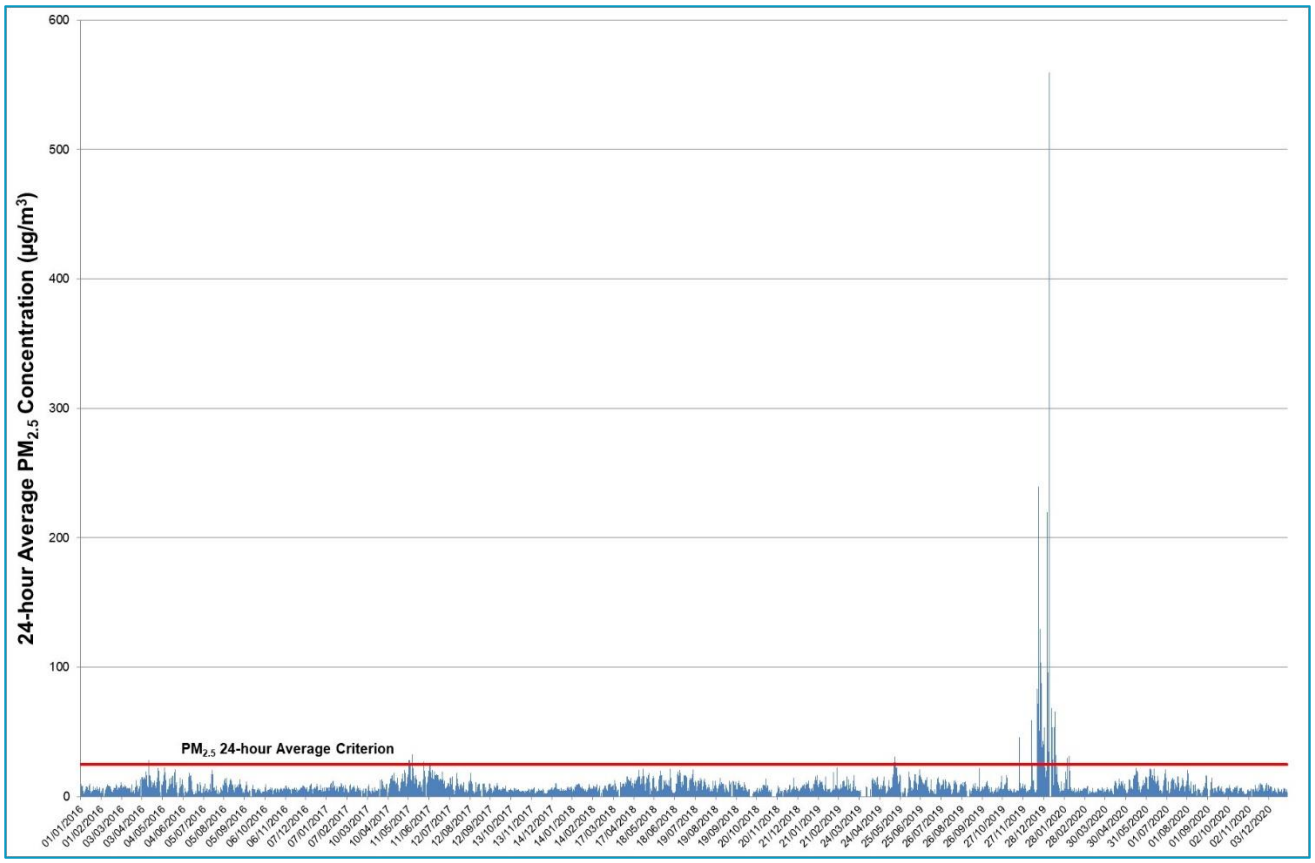
$PM_{2.5}$

A summary of the 24-hour average $PM_{2.5}$ concentrations measured by the Wagga AQMS during the last five years (ie 2016 to 2020) is presented in **Table 5** and **Figure 4**.

Table 5 Summary of $PM_{2.5}$ Monitoring Data - Wagga Wagga North AQMS (2016 – 2020)

Year	Maximum 24-Hour $PM_{2.5}$ Concentration	Number of Exceedances of 24-hour Criterion	Annual $PM_{2.5}$ Concentration
	(µg/m³)	(days/year)	(µg/m³)
2016	28.1	2	7.4
2017	32.5	5	8.1
2018	21.6	0	8.4
2019	239.6	18	11.3
2020	559.5	13	10.7
Criterion	**25**		**8**

Figure 4 24-Hour Average $PM_{2.5}$ Data - Wagga Wagga Wagga North AQMS (2016 - 2020)



Summary

As shown in the above tables and charts, the 24-hour average PM_{10} concentrations recorded by the Wagga Wagga AQMS exceed the relevant ambient air quality criterion at times each year, particularly during the summer months. In 2019 and 2020 the annual average PM_{10} criterion was also exceeded. Concentrations of $PM_{2.5}$ above the 24-hour and annual average criteria are also recorded at this location most years.

A review of the recorded exceedances of the 24-hour average PM_{10} and $PM_{2.5}$ criteria showed that most of these exceedances were caused by exceptional events (ie dust storms, bush fires etc). The highest number of exceedances of the 24-hour average PM_{10} and $PM_{2.5}$ criteria were recorded during 2019 and were associated with the major bushfire disaster that occurred over the 2019/2020 summer period. Due to this event, the annual average PM_{10} and $PM_{2.5}$ recorded in 2019 was also the highest recorded in the last five years.

Despite 2019 being the worst year (of last five years) in terms of PM_{10} and $PM_{2.5}$ concentrations, based on the review of ambient monitoring data from air quality monitoring stations in the southwest slopes, NSW EPA (in their publication NSW Annual Air Quality Statement 2019 [OEH 2020]) concluded that the air quality index was in the 'very good', 'good' or 'fair' category for 81% of days during 2019.

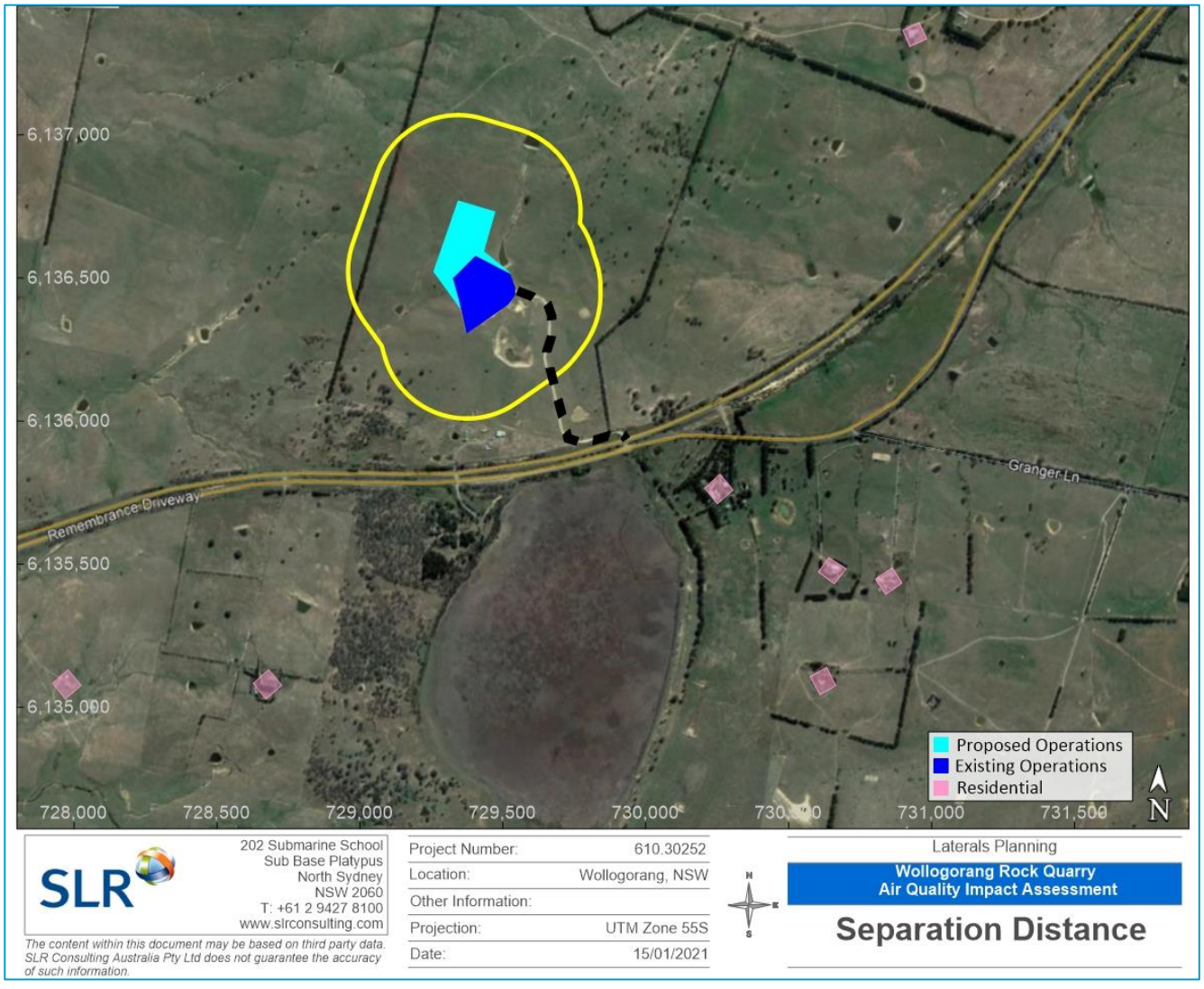
In summary, even though the air quality is generally good in the NSW rural region, there is potential for elevated background particulate concentrations to occur at times, and there is potential for fugitive dust emissions from the proposed activities to further increase local ambient particulate concentrations and contribute to exceedances of air quality criteria.

5 Impact Assessment

Air quality around the Project Site will be affected by regional background air quality, as well as the localised impacts of air emission sources within the surrounding area. The regional background air quality (see **Section 4.2**) indicates that the air quality is generally good with regional events (eg dust storms, bushfires etc) contributing to measured exceedances of ambient air quality criteria for particulate matter (PM_{10} and $PM_{2.5}$).

The impact assessment presented below is based on the recommended separation distances for the quarry/extractive industries (see **Section 3.3**). The identified separation distances for the Project Site (ie 300 m), showing areas of possible impact is shown in **Figure 5**.

Figure 5 Estimated Separation Distances – Wollogorang Friable Granite Quarry Extension



It can be seen that the recommended minimum separation distance of 300 m identified as appropriate for the Project Site operations does not encroach upon any of the identified residential receptors. No other similar existing or proposed dust emission sources were identified by this assessment that would present a risk of cumulative dust impacts on the identified residential receptors.

As discussed earlier, the recommended minimum separation distances provide guidance on the appropriate level of separation between a source of emissions and sensitive land uses in order to mitigate the impacts of intended and unintended emissions on people. These distances can vary based on the scale and size of the industry, location topography, prevailing winds and other factors, but are generally considered to be conservative (ie, overestimate the actual area of impact).

It is also noted that the proposed new extraction area is located further from the nearest sensitive receptor than the area that has previously been used for extraction. Given that there is no proposed increase in the intensity of the resource extraction rate, the proposed operations would have a reduced risk of off-site air quality impacts compared to previous operations. Based on this, the potential air quality risk presented by the Project Site on the identified sensitive receptors is considered to be *low*.

Nevertheless, given the relatively high frequency (30%) of winds that would blow emissions of dust from the quarry and access road towards the nearest sensitive receptor (see **Section 4.1**), in order to ensure that impacts on off-site air quality are minimised and within the respective air quality criteria, the mitigation measures listed in **Table 6** and recommended to be implemented. These mitigation measures could be documented in a site-specific Dust Management Plan (DMP).

Table 6 Recommended Dust Mitigation Measures for the Project Site

Potential Pollution Source	Control Measures
Wind generated dust from exposed areas and stockpiles	Use wet suppression via a spray system or water cart if visible dust being observed leaving site
	Stabilise topsoil stockpiles by seeding or covering
Wheel generated dust from road trucks, haul trucks and mobile equipment	Cover all loads leaving the site
	Limit the speed on unpaved surfaces to 15km/hr
	Perform high level watering (greater than 2 L/m^2/hr) on unpaved haul road surfaces using a water cart, when required
	Minimise trackout of dust onto the public road by regular sweeping/washing of the sealed section leading to the site access point. Rumble grids or a wheel wash could also be installed at the end of the unpaved section of the haul road (after the weighbridge)
Materials handling activities: - Screening - Loading of product to the screen - Loading/unloading stockpiles by front end loaders - Loading product to trucks	Wet suppression (water sprays) on screen
	Locate dust-generating plant and activities as far as possible from sensitive receptors
	Minimise drop heights when loading materials
	Wet materials prior to and during loading if visible dust being observed leaving site
	Cease dust-generating activities during times of high wind speeds blowing towards sensitive receptors
	Reduce of the intensity/rate of activities in response to excessive dust generation
Extraction operations: - Stripping of overburden/vegetation - Extraction of rock by front end loader and bulldozer	Cease dust-generating activities during times of high wind speeds blowing towards sensitive receptors
	Reduce of the intensity/rate of activities in response to excessive dust generation

6 Conclusions

SLR was commissioned by Laterals Planning to provide an air quality assessment for a proposed extension of the existing Wollogorang Friable Granite Quarry (the Project Site), located approximately 7.5 km northeast of the township of Collector.

The Project Site is proposing to extend the existing extraction area to enable it to continue to extract and process 16,000 tonnes of friable granite per annum over a 20 year period. The aim of this report was to assess the risk of dust impacts from the proposed Project Site operations at the nearby sensitive receptors.

The results of this assessment indicate that the proposed Project Site operations present a low risk of dust impacts on the surrounding residential receptors. Nevertheless, a number of dust mitigation measures are presented that may be adopted onsite, to further reduce the potential for generation of dust emissions at the Project Site.

Based on this assessment, it is concluded that air quality should not be considered a constraint to this development. In addition, no ongoing air quality monitoring program is considered to be warranted.

7 References

- ACT EPA 2018, Separation Guidelines for Air Emissions, Australian Capital Territory - Environment Protection Authority, November 2018.
- EPA 2017, Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales, Environment Protection Authority NSW, January 2017.
- OEH 2020, NSW Air Quality Statement 2019 – available online at: https://www.environment.nsw.gov.au/topics/air/nsw-air-quality-statements/annual-air-quality-statement-2019, accessed on 8 March 2021.
- VIC EPA 2013, *Recommended separation distances for industrial residual air emissions*, Publication number 1518, March 2013, authorised and published by EPA Victoria, 200 Victoria Street, Carlton.
- WA EPA 2015, Draft Environmental Assessment Guidelines for Separation distances between Industrial and Sensitive Land Uses, Western Australian Environmental Protection Authority, September 2015.

ASIA PACIFIC OFFICES

BRISBANE
Level 2, 15 Astor Terrace
Spring Hill QLD 4000
Australia
T: +61 7 3858 4800
F: +61 7 3858 4801

CANBERRA
GPO 410
Canberra ACT 2600
Australia
T: +61 2 6287 0800
F: +61 2 9427 8200

DARWIN
Unit 5, 21 Parap Road
Parap NT 0820
Australia
T: +61 8 8998 0100
F: +61 8 9370 0101

GOLD COAST
Level 2, 194 Varsity Parade
Varsity Lakes QLD 4227
Australia
M: +61 438 763 516

MACKAY
21 River Street
Mackay QLD 4740
Australia
T: +61 7 3181 3300

MELBOURNE
Level 11, 176 Wellington Parade
East Melbourne VIC 3002
Australia
T: +61 3 9249 9400
F: +61 3 9249 9499

NEWCASTLE
10 Kings Road
New Lambton NSW 2305
Australia
T: +61 2 4037 3200
F: +61 2 4037 3201

NEWCASTLE CBD
Suite 2B, 125 Bull Street
Newcastle West NSW 2302
Australia
T: +61 2 4940 0442

PERTH
Ground Floor, 503 Murray Street
Perth WA 6000
Australia
T: +61 8 9422 5900
F: +61 8 9422 5901

SYDNEY
Tenancy 202 Submarine School
Sub Base Platypus
120 High Street
North Sydney NSW 2060
Australia
T: +61 2 9427 8100
F: +61 2 9427 8200

TOWNSVILLE
12 Cannan Street
South Townsville QLD 4810
Australia
T: +61 7 4722 8000
F: +61 7 4722 8001

WOLLONGONG
Level 1, The Central Building
UoW Innovation Campus
North Wollongong NSW 2500
Australia
T: +61 2 4249 1000

AUCKLAND
Level 4, 12 O'Connell Street
Auckland 1010
New Zealand
T: 0800 757 695

NELSON
6/A Cambridge Street
Richmond, Nelson 7020
New Zealand
T: +64 274 898 628