

APPENDIX M

Climate & Air Quality Assessment



PGH Bricks & Pavers Ltd

**Climate and
Air Quality Assessment
for:
Andersons Clay Mine
Environmental Impact Statement
November 2018**

Prepared by:
**VGT Environmental
Compliance Solutions
Pty Ltd**



PGH Bricks & Pavers Ltd

**Climate and
Air Quality Assessment
for:
Andersons Clay Mine
Environmental Impact Statement
November 2018**

Prepared by:

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	Joe Gauci	27/11/2018
Checked by:	Rich Mason	27/11/2018

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Section 1. Introduction

1.1. Background

The subject land is described as Lot 2, DP 856969, 253 Shaw Road, Springdale Heights, located in the suburb of Springdale Heights, approximately 7km north east of Albury, see *Figure One*.

The land contains a functioning mine known as Anderson's Clay Mine.

The property is owned by PGH Bricks and Pavers Pty Ltd under freehold title.

A development application is being sought for the proposed expansion of an existing clay mine located at 253 Shaw Street, Springdale Heights. The proposed development is deemed to be a Designated Development in Schedule 3 of the Environmental Planning and Assessment Regulation 2000 and a request for the Secretary's Environmental Assessment Requirements (SEARs) was made in April 2017. The SEARs were issued by the Secretary on the 18th of May 2017.

The aim of this report is to provide additional information, as guided by the SEARs to assist the Department and relevant authorities in determining the development application.

1.2. Secretary's Requirements

1.2.1. SEARs

The SEARs require that the EIS, which will include this report, shall address the following issues relating to air quality.

Table 1. SEARs Air Quality Issues to be Addressed

Key Issue	Where Addressed in this Document
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	Section 6

1.2.2. Council Requirements

Table 2. Albury City Council Air Quality Issues to be Addressed

Key Issue	Where Addressed in this Document
The EIS should include an assessment of all potential impacts of the proposed development on the existing environment (including cumulative impacts where relevant and appropriate).	-
Dust generation, management and mitigation	Section 4 & Section 6

1.2.3. NSW EPA Requirements

Table 3. NSW EPA Air Quality Issues to be Addressed

Key Issue	Where Addressed in this Document
The objectives of the proposal should be clearly stated and refer to and include the following. Environmental protection measures, including noise mitigation measures, dust control measures and erosion and sediment control measures.	Section 6 & Section 7
Mitigation and management options that will be used to prevent, control, abate or mitigate identified potential environmental impacts associated with the project and to reduce risks to human health and prevent the degradation of the environment. This should include an assessment of the effectiveness and reliability of the measures and any residual impacts after these measures are implemented.	Section 6 & Section 7
Potential Impacts of Air Quality The goals of the project in relation to air quality should include mitigation of air quality impacts such that potential impacts on sensitive receptors are minimised in accordance with Environmental Protection Authority (EPA) particulate matter and deposited dust criteria.	Section 6
Dust is a concern with potential emissions including but not necessarily limited to construction, traffic movements, open exposed areas, material processing and handling, transfer points and loading facilities. Details would need to be provided on the proposed measures to manage dust from these activities and their performance.	Section 6 & Section 7
An assessment for dust as detailed in the <i>Approved Methods and Guidance for the Modelling and Assessment of Air Pollutants in NSW</i> in conjunction with analysis of local meteorologic and terrain data would be sufficient to inform decisions about design and management options for the proposed development.	Section 4 & Section 6
The EIS should identify any other existing impacts on air quality within the area and is necessary provide an assessment and commentary on the predicted cumulative impacts that may arise.	Section 4 & Section 6

Section 2. Statutory Requirements and Guidelines

2.1. Environmental Planning and Assessment Act 1979

The clay extraction activities will continue to be subject to the provisions of the EP&A Act for any subsequent changes or modifications to the operations. Additionally the operations will need to be able to demonstrate compliance against the current Conditions of Approval issued under the provisions of the EP&A Act.

2.2. Protection of Environment Operations Act 1997

Section 126 of the PoEO Act states that:

Dealing with materials

(1) The occupier of any premises who deals with materials in or on those premises in such a manner as to cause air pollution from those premises is guilty of an offence if the air pollution so caused, or any part of the air pollution so caused, is caused by the occupier's failure to deal with those materials in a proper and efficient manner.

(2) In this section:

Deal with materials means process, handle, move, store or dispose of the materials.

Materials includes raw materials, materials in the process of manufacture, manufactured materials, by-products or waste materials.

The development will have such mitigations measures in place as to comply with the Act.

2.3. Current Council Consent Conditions

In August 1983, the Albury -Wodonga Development Corporation granted a permit (number N72), which approved the mining of clay brick within the north-eastern portion of the subject land. The activity involved an area of 7.975 hectares. The permit did not include an end date to the approval.

Council consent conditions that pertain to the management of Air Quality are reproduced below.

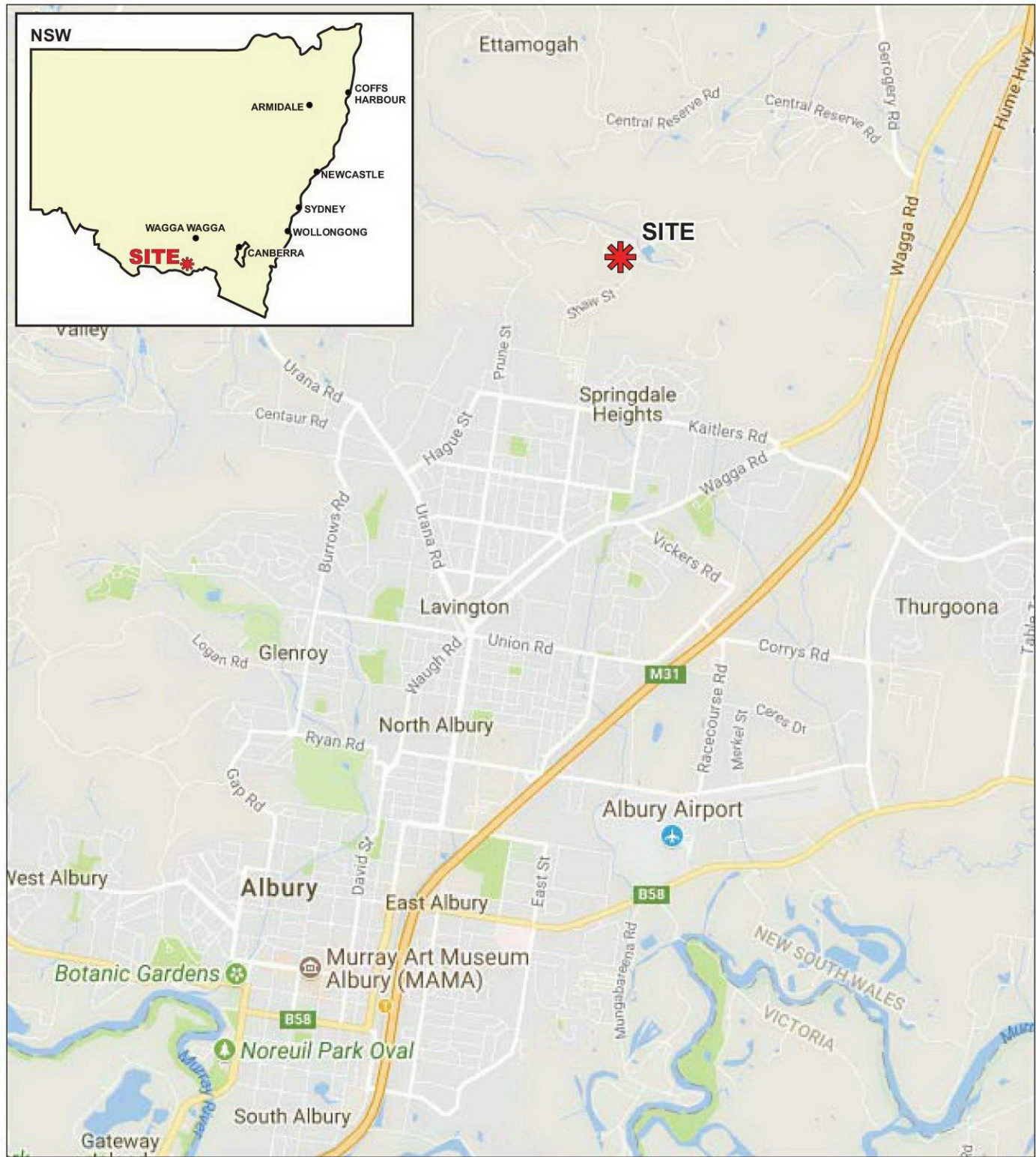
Condition 7- *The permit holder shall ensure that excavated material does not spill on to public roads as a results of improper loading and shall ensure that on hot, dry or windy days the loads are thoroughly wetted to adequately covered with a tarpaulin.*

Condition 8- *the permit holder shall ensure that dust resulting from the operations, including excavation, loading, transport and stockpiling, shall be controlled to the satisfaction of the Corporation.*

Condition 9- *The permit holder shall ensure that all roads are located, properly formed, adequately drained, surface treated and maintained to the satisfaction of the Corporation. Further any dust nuisance originating from the roads shall also be controlled to the satisfaction of the Corporation.*

Plan of:	Climate & Air Quality Assessment for Andersons Clay Mine Environmental Impact Statement 2018 - Site Location	Location:	253 Shaw Street, Springdale Heights, NSW	Source:	nearmap - Image Date 01/05/2018 & Google Maps 2018	Our Ref:	3618_BAN_CAQ_DA17_C001_V1_F1.cdr
Figure:	ONE	Council:	Albury Wodonga Shire Council	Survey:	N/A	Plan By:	JD
Sheet:	1 of 1	Tenure:	Permit Number N72	Projection:	N/A	Project Manager:	TO
Version/Date:	V1 03/10/2018	Client:	PGH Bricks & Pavers Pty Ltd	Contour Interval:	N/A	Office:	Thornton

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Approx Scale: 0 1 2km

Legend

- Site (Lot 2 DP 856969)
- N72 Consent Boundary
- Lot Boundary



Approx Scale: 0 150m

Manager/Authorisation Holder PGH Bricks & Pavers Pty Ltd: Joe Gauci

Signed: 

Date: 27/11/2018

Project Manager VGT: Tara O'Brien

Signed: 

Date: 27/11/2018

Plan of:	Climate & Air Quality Assessment for Andersons Clay Mine Environmental Impact Statement 2018 - Site Layout Plan	Location:	253 Shaw Street, Springdale Heights, NSW	Source:	nearmap - Image Date 01/05/2018 & Landair Surveys	Our Ref:	3618_BAN_CAQ_DA17_C002_V1_F2.cdr
Figure:	TWO	Council:	Albury - Wodonga Shire Council	Survey:	Landair Surveys - Image Flown 08/02/2017	Plan By:	SK/JD
Sheet:	1 of 1	Tenure:	Permit Number N72	Projection:	MGA	Project Manager:	TO
Version/Date:	V1 03/10/2018	Client:	PGH Bricks & Pavers Pty Ltd	Contour Interval:	1m	Office:	Thornton

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Signed: [Signature]
Date: 27/11/2018

LEGEND	
Feature/Domain	
	Property Boundary
	Consent Boundary (N72)
	Water Management Area
	River/Major Drainage Line
	Road
	Contour
	Area of Disturbance

Section 3. Proposed Development

The proposal is for the extension of an existing mine to extract and process a maximum of 50,000 tonnes of clay/shale in any year for a period of up to 20 to 30 years.

Mining campaigns are undertaken approximately three times each year, with each campaign lasting around four weeks. Up to 50,000 tonnes (approx. 25,000m³) is currently mined per annum. Mining is undertaken using a combination of a dozer, dump truck and excavator which rip the shale and push the raw material up into one or more internal stockpiles within the mine floor. The stockpile is managed by a front end loader which is also used to load trucks when transporting the clay/shale to the Jindera brickworks. As the material can be quite hard, screening of the material will be undertaken within the pit floor so as to reduce the volume of oversize material transported to the brickworks and make more efficient use of the material won.

The extension of the mine will increase the footprint of the mine from 4.7Ha to approximately 11Ha (see *Figure Three*). There will be no change to the consented extraction depth of 50 metres. Operating hours will also remain identical.

Plan of:	Climate & Air Quality Assessment for Andersons Clay Mine Environmental Impact Statement 2018 - Proposed Extension Area	Location:	253 Shaw Street, Springdale Heights, NSW	Source:	nearmap - Image Date 01/05/2018 & Landair Surveys	Our Ref:	3618_BAN_CAQ_DA17_C007_V1_F3.cdr
Figure:	THREE	Council:	Albury - Wodonga Shire Council	Survey:	Landair Surveys - Image Flown 08/02/2017	Plan By:	SK/JD
Sheet:	1 of 1	Tenure:	Permit Number N72	Projection:	MGA	Project Manager:	TO
Version/Date:	V1 03/10/2018	Client:	PGH Bricks & Pavers Pty Ltd	Contour Interval:	1m	Office:	Thornton

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Date: 27/11/2018
Project Manager VGT: Tara O'Brien
Signed: [Signature]
Date: 27/11/2018

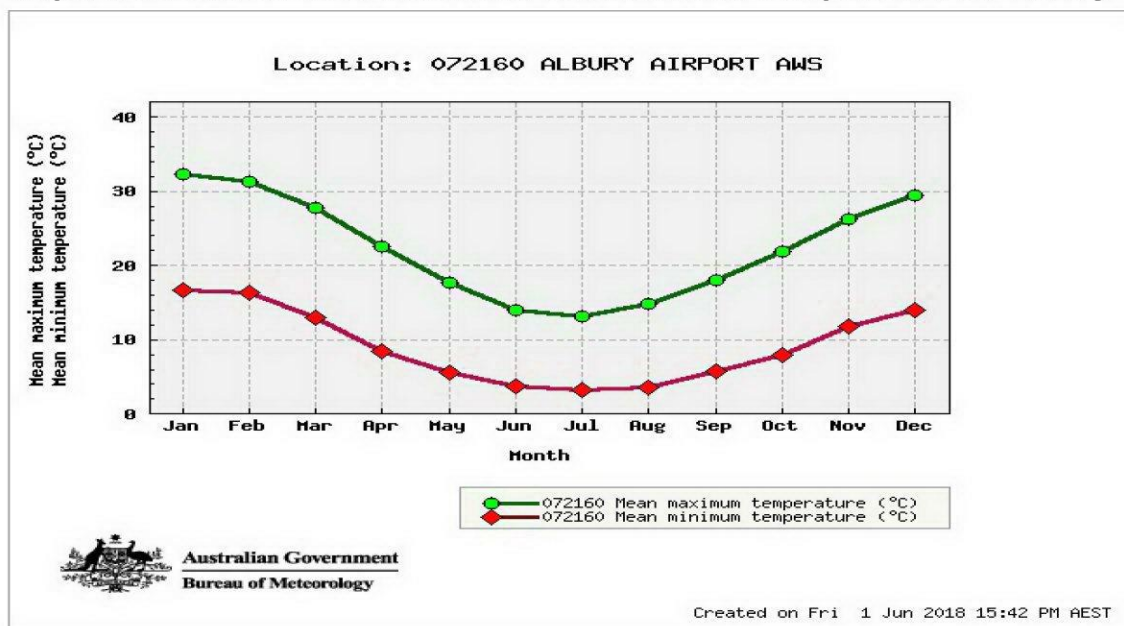
LEGEND	
Feature/Domain	
	Property Boundary
	Consent Boundary (N72)
	Water Management Area
	Proposed Extension Area
	River/Major Drainage Line
	Road
	Contour
	Area of Disturbance

Section 4.Existing Environment

4.1. Climate

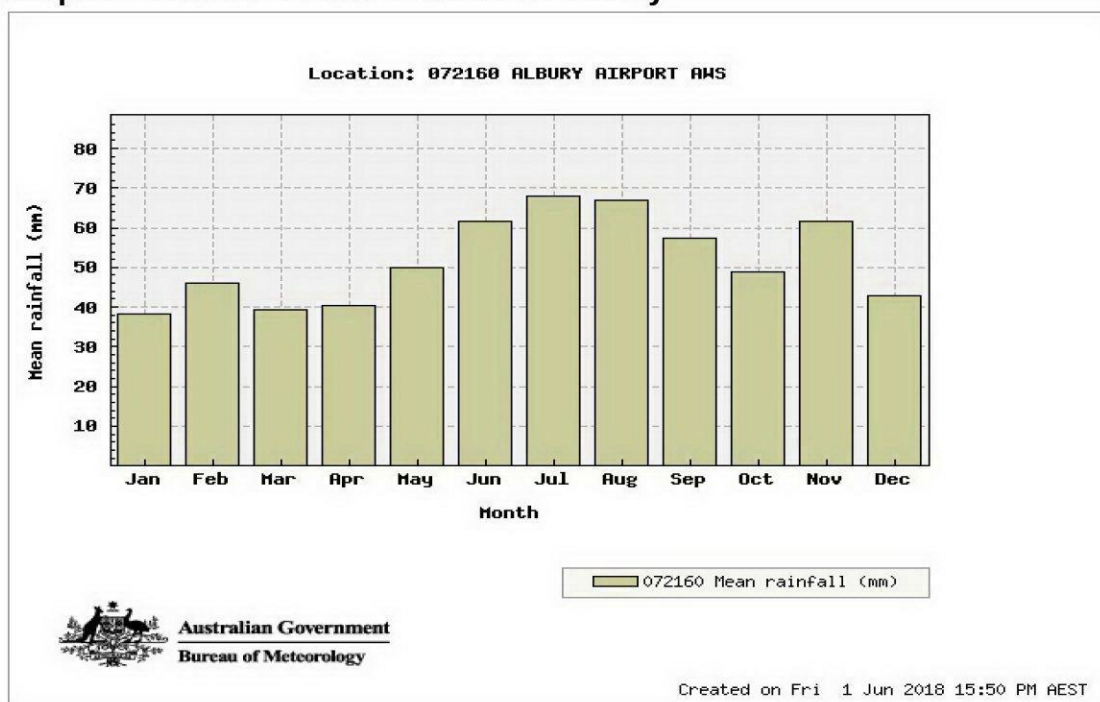
The mean annual maximum and minimum temperatures are shown in the graph below for data recorded from 1993 to 2018 at the Albury Airport AWS (site number 72160).

Graph 1: Historical Mean Maximum and Minimum Temperature for Albury



Albury has a warm, temperate climate with cool to mild winters and very warm to not summers. Frosts are common place in winter.

Graph 2: Historical Mean Rainfall for Albury



Rain can occur all year round, however the highest rainfall months occur during winter. The average annual rainfall according to BOM is 662mm (from years 1994 to 2018). Despite this, Albury has quite a high evaporation rate with more than 100 days of clear sky annually, giving it a more arid appearance than would be otherwise expected.

Graph 3: 9am Wind Rose

Rose of Wind direction versus Wind speed in km/h (05 May 1993 to 10 Aug 2017)

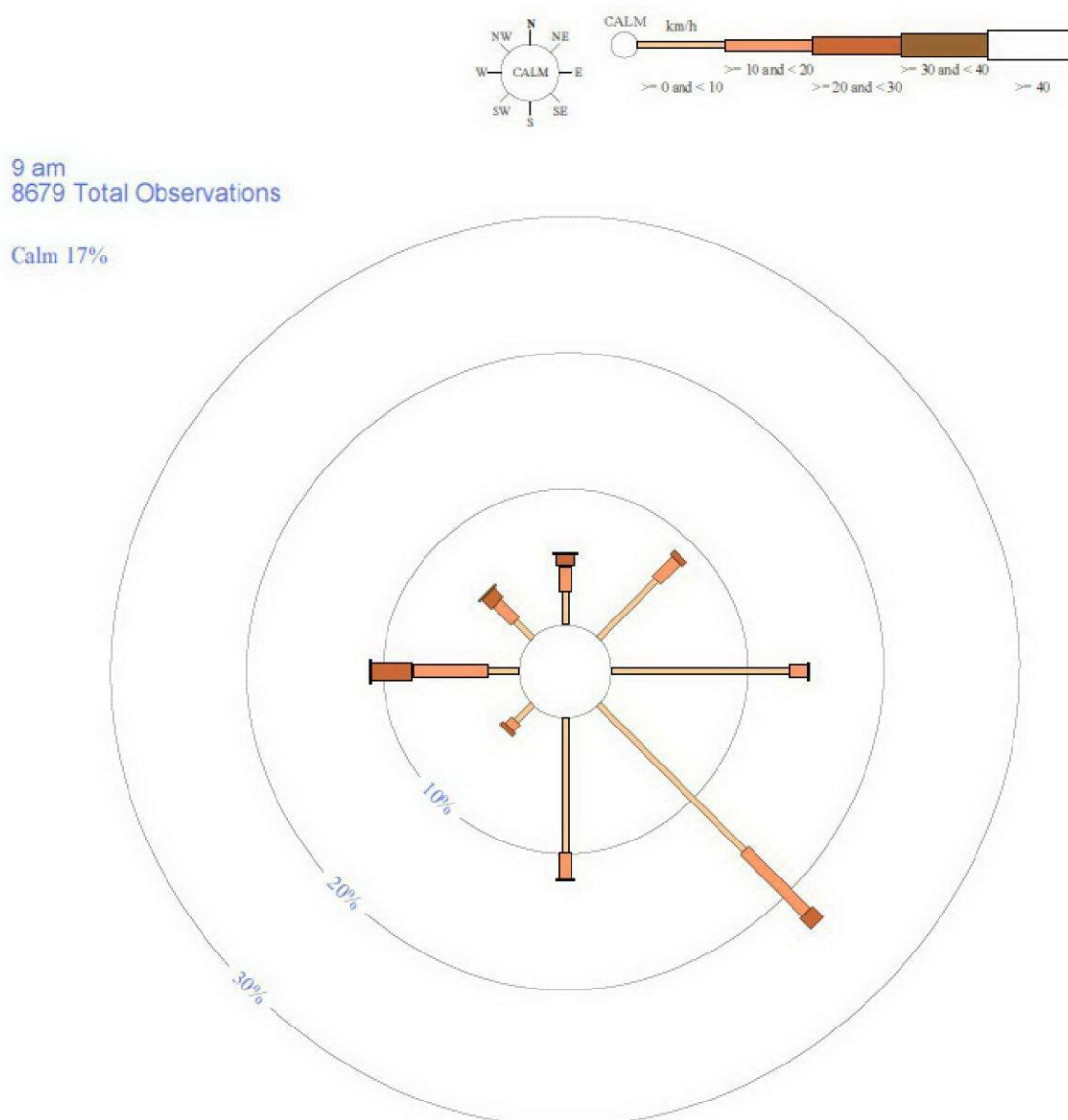
Custom times selected, refer to attached note for details

ALBURY AIRPORT AWS

Site No: 072160 • Opened Apr 1993 • Still Open • Latitude: -36.069° • Longitude: 146.9509° • Elevation 163 m

An asterisk (*) indicates that calm is less than 0.5%.

Other important info about this analysis is available in the accompanying notes.



Morning winds are predominately south east with some southerly and north easterly winds. Seasonally, summer wind direction is dominated by south easterly winds whereas winter winds are predominately west to north west.

Graph 4: 3pm Wind Rose

Rose of Wind direction versus Wind speed in km/h (05 May 1993 to 10 Aug 2017)

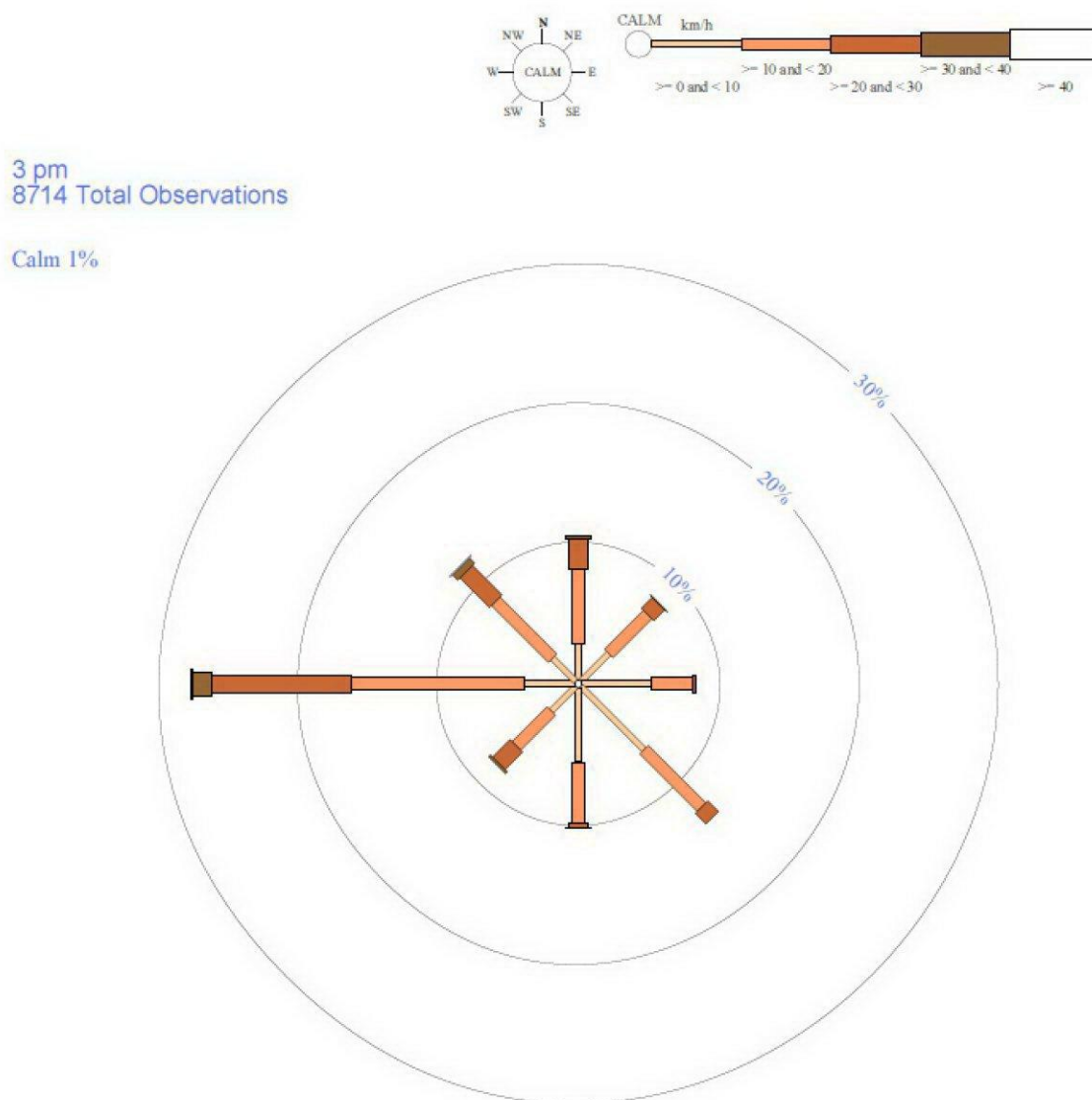
Custom times selected, refer to attached note for details

ALBURY AIRPORT AWS

Site No: 072160 • Opened Apr 1993 • Still Open • Latitude: -36.069° • Longitude: 146.9509° • Elevation 163 m

An asterisk (*) indicates that calm is less than 0.5%.

Other important info about this analysis is available in the accompanying notes.



Afternoon winds are predominately westerly. Seasonally, summer wind direction is dominated by westerly winds. Winter winds during the afternoon are largely unchanged from this pattern being dominantly westerly with slightly more frequency of north westerly wind directions.

4.2. Potential Pollutants

Airborne dust is the main source of potential air pollution on the site. The other potential air pollutant is diesel fumes emanating from the plant and equipment used during mining campaigns and rehabilitation activities. There are no other activities on-site that have the potential to cause air pollution.

4.2.1. Diesel Exhaust

The main chemical components of diesel exhaust emissions are:

Gases and vapours – these are mostly the gases found in air like nitrogen, oxygen, water vapour and carbon dioxide. There are also hazardous chemicals like nitrous oxide, nitrogen dioxide, sulphur dioxide and carbon monoxide.

Fine particles known as diesel particulate matter (DPM) including fine carbon particles – hazardous chemicals known as poly aromatic hydrocarbons (PAHs) adhere to the surface of carbon particles. Fine particles from vehicle exhausts and mobile equipment only account for about 5 per cent of the particles emitted during the mining process ^{Ref. 2}.

DPM can act like a gas and stay airborne for long periods of time. DPM can penetrate deep into the lungs because of its small size.

4.2.2. Onsite Sources of Dust

There are several sources of airborne dust on the Andersons Clay Mine site. The principal source is earth-moving activities, including vegetation and topsoil stripping, overburden and ore extraction, screening and stockpiling, and re-spreading of overburden and topsoil for rehabilitation. Dozers and loaders will produce air-borne dust while undertaking clearing, mining and stockpiling activities and also by travelling along the unsealed internal roads. Construction of bund walls will also cause dust pollution. Screening to remove large particles will be undertaken on a campaign basis only in conjunction with mining.

Equipment expected to be used on the site includes:

- Dozer
- Excavator
- Front end loader
- Screen
- Dump truck
- Haul trucks
- Water Cart

4.2.3. Existing Local Sources of Pollutants

According to the National Pollutant Inventory (NPI) there are 5 facilities located within 6 kilometres of the site with potential pollutant emissions to air listed below.

Table 4. NPI Existing Local Sources of Pollutants

Facility Name	Registered Business Name	Potential Emissions
Albury Renewable Energy Facility	LMS Energy Pty Ltd	Acetonitrile Benzene Carbon monoxide Chloroform Dichloromethane Oxides of nitrogen Particulate matter 10µm Particulate matter 2.5µm Sulphur dioxide Tetrachloroethylene Toluene Total volatile organic compounds Trichloroethylene Vinyl chloride monomer Xylenes
Albury Water Filtration Plant	Albury City Council	Chlorine and compounds
Mobil Aviation Albury	Mobil Oil Australia Pty Ltd	Total Volatile organic compounds
Norske Skog Albury Paper Mill	Norske Skog Paper Mills (Australia) Ltd	Arsenic and compounds Benzene Beryllium and compounds Cadmium and compounds Carbon monoxide Chromium III compounds Chromium VI compounds Copper and compounds Cumene Cyclohexane Ethylbenzene Fluoride compounds n-hexane Hydrochloric acid Lead and compounds Magnesium oxide fume

Facility Name	Registered Business Name	Potential Emissions
		Mercury and compounds Nickel and compounds Oxides of nitrogen Particulate matter 10µm Particulate matter 2.5µm Polychlorinated dioxans and furans Polycyclic aromatic hydrocarbons Sulphur dioxide Toluene Total volatile organic compounds Xylenes
Overall Forge	Overall Forge Pty Ltd	Arsenic and compounds Beryllium and compounds Cadmium and compounds Carbon monoxide Chromium III compounds Chromium VI compounds Copper and compounds Fluoride compounds Hydrochloric acid Lead and compounds Magnesium oxide fume Mercury and compounds Nickel and compounds Oxides of nitrogen Particulate matter 10µm Particulate matter 2.5µm Polychlorinated dioxans and furans Polycyclic aromatic hydrocarbons Sulphur dioxide Total volatile organic compounds

Other local industries that could impact air quality include a Waste Management Facility 5 kilometres to the west, and the Burgess Earth Moving Pty Ltd quarry on Central Reserve Road located 3 kilometres north of the site and the AP & Delany and Co Pty Ltd's Rockwood quarry on Winchester Lane some 4 kilometres north of the site.

In addition to these industrial and commercial emission sources, other contributing emission sources to existing ambient concentrations in Albury include:

- Wind generated dust from exposed areas within the surrounding region;
- Dust emissions from agricultural activities;
- Dust entrainment due to vehicle movements along unsealed and sealed town and rural roads;
- Seasonal emissions from household wood burning; and
- Episodic emissions from vegetation fires.

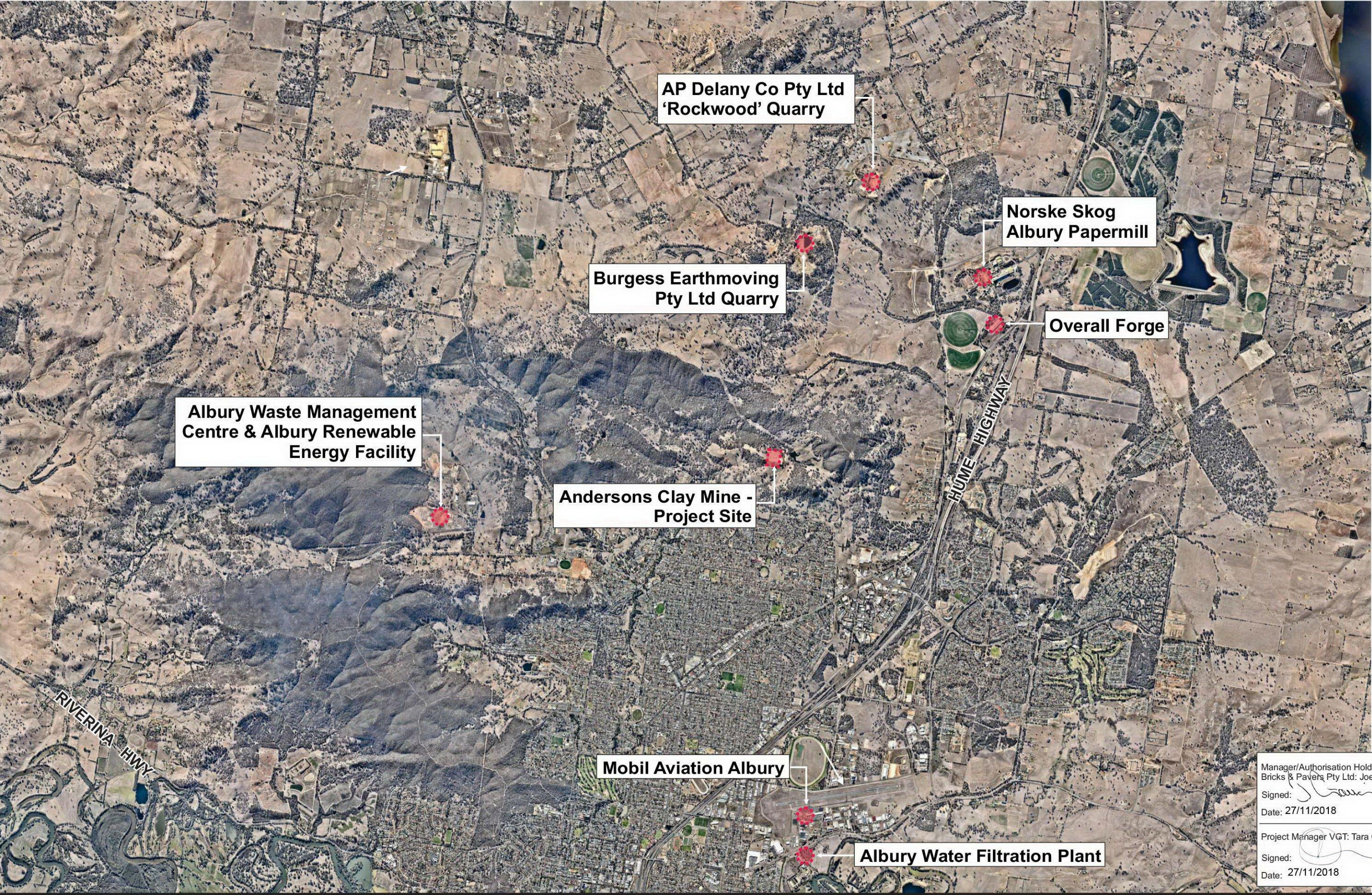
Plan of:	Climate & Air Quality Assessment for Andersons Clay Mine Environmental Impact Statement 2018 - Location of NPI Facilities & Other Local Pollution Sources	Location:	253 Shaw Street, Springdale Heights, NSW	Source:	nearmap - Image Date 01/05/2018	Our Ref:	3618_BAN_CAQ_DA17_C003_V2_F4.cdr
Figure:	FOUR	Council:	Albury - Wodonga Shire Council	Survey:	N/A	Plan By:	JD
Sheet:	1 of 1	Tenure:	Permit Number N72	Projection:	N/A	Project Manager:	TO
Version/Date:	V2 03/10/2018	Client:	PGH Bricks & Pavers Pty Ltd	Contour Interval:	N/A	Office:	Thornton

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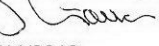


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Manager/Authorisation Holder PGH Bricks & Pavers Pty Ltd: Joe Gauci

Signed: 

Date: 27/11/2018

Project Manager VGT: Tara O'Brien

Signed: 

Date: 27/11/2018

4.3. Sensitive Receptors

The nearest sensitive receptor is the residence located approximately 200m to the south east of the extraction area. As the extraction progresses to the south, as is currently consented, the residence will be within 120 to 130m metres from the disturbed area. The extension area will be directly north of the residence but will be more distant than current operations.

The next most proximate residences are located 500 to 600m to the south west of the site and 500m to the north east. Directly to the west of the site is located a resident. Residential housing is currently located some 800 to 900m to the south. A number of subdivisions have been approved adjacent to Shaw Street that will bring the residential development within 600 to 700m of the mine.

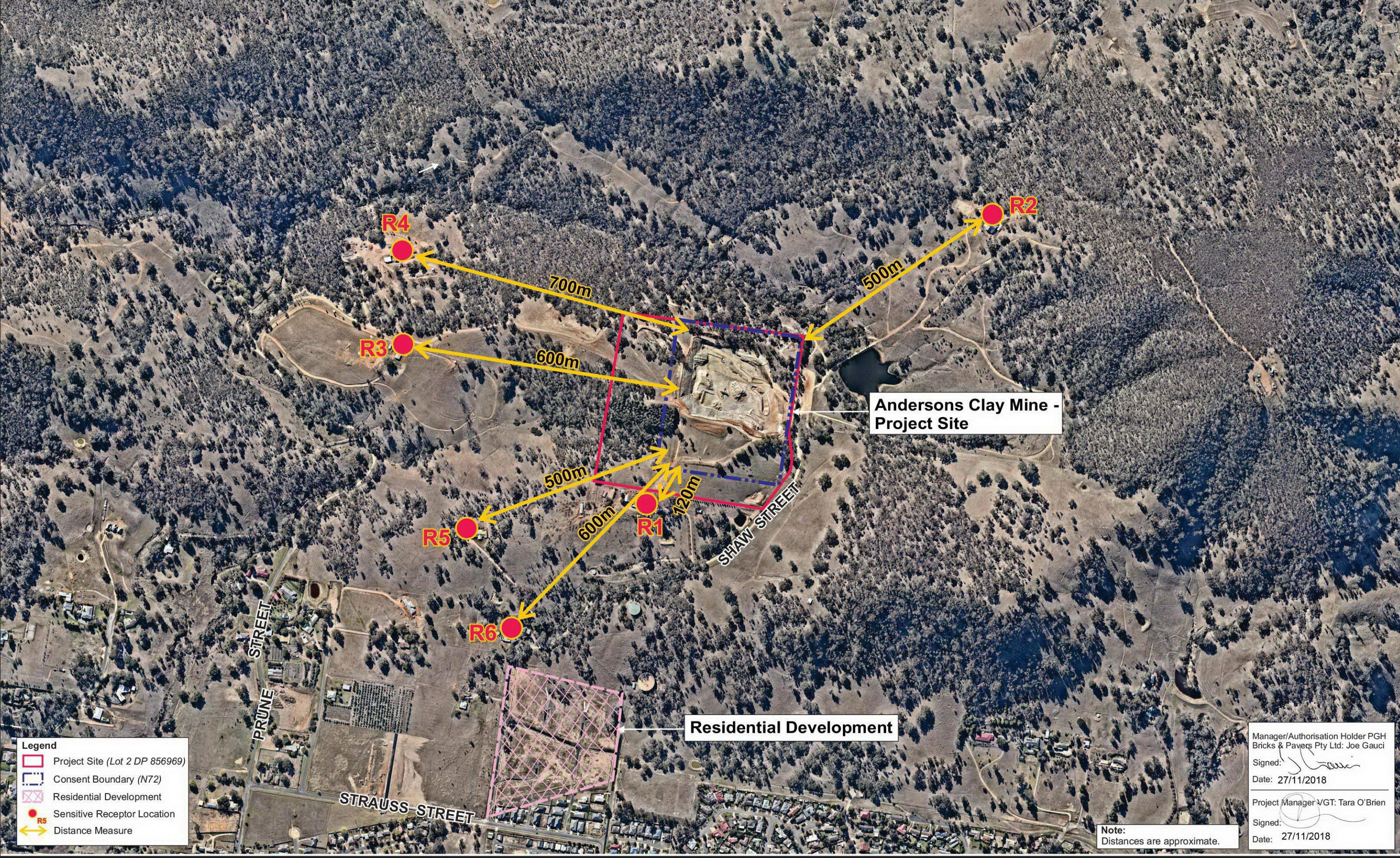
Plan of:	Climate & Air Quality Assessment for Andersons Clay Mine Environmental Impact Statement 2018 - Location of Sensitive Receptors	Location:	253 Shaw Street, Springdale Heights, NSW	Source:	nearmap - Image Date 01/05/2018	Our Ref:	3618_BAN_CAQ_DA17_C004_V2_F5.cdr
Figure:	FIVE	Council:	Albury - Wodonga Shire Council	Survey:	N/A	Plan By:	JD
Sheet:	1 of 1	Tenure:	Permit Number N72	Projection:	N/A	Project Manager:	TO
Version/Date:	V2 03/10/2018	Client:	PGH Bricks & Pavers Pty Ltd	Contour Interval:	N/A	Office:	Thornton

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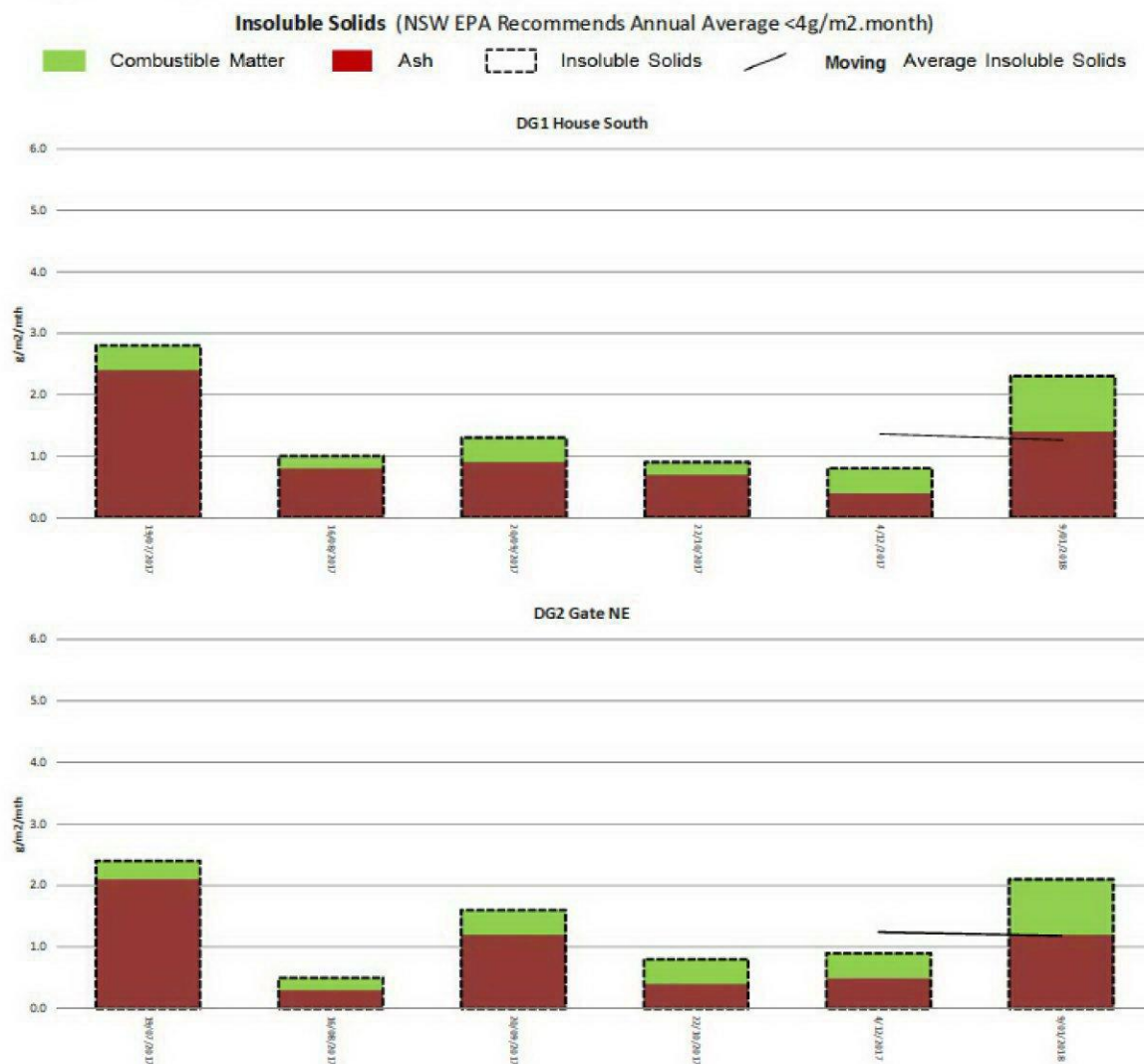




4.4. Dust Monitoring Results

Depositional dust monitoring has been undertaken on the site since June 2017. The results to date are shown in the graphs below.

Graph 5: Depositional Dust Gauge Monitoring



The EPA recommends that the Annual Average for Insoluble Solids is less than 4g/m² per month. As can be seen by the monitoring results, the results are below the EPA recommended criteria.

Plan of:	Climate & Air Quality Assessment for Andersons Clay Mine Environmental Impact Statement 2018 - Dust Monitoring Locations	Location:	253 Shaw Street, Springdale Heights, NSW	Source:	Landair Surveys - Image Flown 08/02/2017 & Photomapping March 2015	Our Ref:	3618_BAN_CAQ_DA17_C005_V2_F6.cdr
Figure:	SIX	Council:	Albury - Wodonga Shire Council	Survey:	Landair Surveys - Image Flown 08/02/2017	Plan By:	JD
Sheet:	1 of 1	Tenure:	Permit Number N72	Projection:	MGA	Project Manager:	TO
Version/Date:	V2 03/10/2018	Client:	PGH Bricks & Pavers Pty Ltd	Contour Interval:	1m	Office:	Thornton

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Legend

- Project Site (Lot 2 DP 856969)
- Consent Boundary (N72)
- ▲ Dust Monitoring Location
- Receiver Location

R1

Manager/Authorisation Holder PGH Bricks & Pavers Pty Ltd: Joe Gauci

Signed:

Date: 27/11/2018

Project Manager VGT: Tara O'Brien

Signed:

Date: 27/11/2018

4.5. Consultation

PGH has conducted a letter drop in May 2018 to nearby residents to outline the proposed mine extension and provided contact details should residents require more information. To date no responses have been received.

One complaint regarding dust impacts has been received during the period of time PGH has owned the property. Fuge Earthworks, the mining contracting company, was contacted by an Albury Council Officer in August 2018 regarding a complaint received by a neighbour regarding noise and dust. Upon notification, Fuge Earthworks and PGH committed to increasing the frequency of the water cart along the unsealed portion of Shaw Street during hauling operations and further limited the speed of trucks on Shaw Street to 30km/hr. No further complaints were received.

Section 5. Modelling

Modelling for dust has not been undertaken as there are no changes to the extraction rate and on-site processing regime. The impacts of nuisance dust are expected to be similar to the present levels experienced under the current approvals.

Section 6. Impacts and Mitigation

6.1. Dust

Exposure to dust can be associated with health and amenity impacts. The likely risk of these impacts depends on a range of factors including the size, structure and composition of the dust and the general health of the person.

The vast majority of dust from mining activities consists of coarse particles (typically around 40 per cent ^{Ref. 2}) and particles larger than PM10 (greater than 10µm in size). These larger particles can have amenity impacts as well as health impacts. However, it is thought that fine particles below 2.5µm in diameter may be of a greater health concern than larger particles as they can reach the air sacs deep in the lungs.

Symptoms that may arise from health effects from exposure to coarse particles, such as from mining activities could include:

- cough
- wheeze, or worsening of asthma
- increased need for medications (e.g. puffers, antibiotics)
- increased breathlessness.

High levels of Total Suspended Particulate matter may also cause coughing, sneezing or sore eyes.

Concerns about amenity from mine site dust often relate to "visibility" of dust plumes and dust sources. Visible dust is usually due to short-term episodes of high emissions, such as from blasting, which is not applicable to this site.

Other amenity impacts include dust depositing on fabrics (such as washing) or on house roofs, and the transport of dust from roofs to water tanks, during rain. The closest resident in the south of site is most likely to be impacted when winds are north to north east. According to historical climate data, this wind direction is not commonly experienced but most likely found in the afternoon. The resident some 500m to the north east of the site is most likely to be impacted when winds are south westerly which is also not commonly experienced but more prevalent in the afternoon. The distance and elevation from the site of this resident affords some mitigation from any potential dust impacts. The residents located to the west of the site are the least likely to be impacted by nuisance dust given the predominately westerly nature of the prevailing winds. There are no residents located directly north or west of the site.

The vegetation in and around the site, including the forested areas of Humbug Gully and water ways are not likely to be adversely impacted by nuisance dust. There is no evidence that the vegetation or streams are currently affected and dust levels are not predicted to increase due to the development.

6.1.1. Mitigation

The impact from nuisance dust is likely to be low given the distance from sensitive receptors. Extraction of the clay will progressively deepen mine and assist in shielding the site from windborne dust generation.

As the foot print of the mine increases, dust suppression measures such as the water cart will be more frequently employed to reduce impacts. Rehabilitation will reduce exposed surfaces where practical to do so.

Dust control measures that are currently and will continue to be employed on the site include:

- Backfilling, contouring and top soiling of previously extracted areas will assist with revegetation and dust minimization.
- Access roads are sheeted with coarse material where possible to minimise the potential for dust generations associated with traffic.
- All vehicles are restricted to a speed limit of 15km/h on-site and 30km per hour on the unsealed section of Shaw Street.
- Delaying non-essential earth-moving activities during periods of high wind. Should the wind exceed 10m/sec mining and hauling activities will cease.
- The day-to-day on-site visual dust assessment determines whether PGH staff or contractors are required to deploy a water cart. If required, a water cart may be used for temporary dust suppression during active extraction campaigns and rehabilitation activities.
- Disturbed clay, once watered, develops a surface crust that resists dust generation provided the surface is not subsequently disturbed.
- All laden trucks are required to have their loads tarped.
- Longer term revegetation of the disturbed areas of the site and the perimeter visual and acoustic bunds will assist with the reduction in wind velocity across the site and hence lessen the potential for dust generation.
- There is a phone number displayed at the front gate to allow the public to make complaints if necessary.
- Depositional Dust Gauge monitoring will continue through the life of the mine to ascertain if mitigation measures are effective.

6.2. Diesel Exhaust

There will be no change to the frequency and duration of mining campaigns therefore the volume of diesel particulates is not expected to increase over currently consented levels. The impact to local residents is expected to remain low given the distance from the operation and compatibility with surrounding landuses.

Diesel exhaust is most likely to impact the operators of the plant and equipment who are in close proximity to the source of the emissions.

6.2.1. Mitigation

Measures to reduce exposure to diesel exhaust may include:

- Ensuring appropriate mufflers are fitted to all equipment,
- switching off engines whenever possible, rather than leaving them idling,

- adopting a programme of regular engine maintenance,
- where reasonably practicable, reducing the number of workers directly exposed and their period of exposure, for example;
 - Job rotation, and
 - Scheduling work to minimise the number of workers near the plant while it is operating.

6.3. Cumulative Impacts

As can be seen from *Section 4.2.3* there are a number of local industries that contribute to particulate matter in air as well as agricultural activities, wood burning and episodic bushfires. The level of nuisance dust generated on the site is not expected to increase and it follows that there will be no appreciable cumulative increase in particulate matter.

Similarly, diesel exhaust emissions will not increase as the number and frequency of mining campaigns and hauling activities will remain substantially the same.

The site does not produce any other pollutants in common with the industries listed in *Section 4.2.3*.

Section 7. Monitoring and Maintenance

The monitoring of depositional dust gauges will continue at the two locations shown in *Figure Five*.

The dust deposition gauges will be sampled every 30 days $\pm$ 2 days as recommended in AS3580.10.1. The gauges contain 2.5L bottles, which are large enough to collect the highest average monthly rainfall of approximately 70mm. Continuous monitoring will provide a total amount of dust present on the perimeter of the development in all seasons and weather conditions. Past trends indicate that even in the drier months, the dust levels have been, and are predicted to remain, below air quality goals.

Daily visual monitoring will be undertaken during mining and rehabilitation activities to assess the level of nuisance dust being generated and the water cart will be engaged as appropriate.

Regular monitoring of rehabilitation areas will be undertaken to determine if additional measure are required to increase the groundcover and reduce the potential for nuisance dust. The intersection with Shaw Street will be inspected daily during mining and hauling activities to ensure material is not tracked off-site. Street sweepers would be engaged if required.

Section 8. References

- Ref. 1.** NSW Health Website-
<http://www.health.nsw.gov.au/environment/factsheets/Pages/mine-dust.asp>
- Ref. 2.** Bureau of Meteorology (2017) *Albury Airport AWS Statistics*
- Ref. 3.** EPA (2018) Contaminated Sites Register
- Ref. 4.** NSW Coal Association (February 1995) – *Mine Rehabilitation*
- Ref. 5.** NSW Department of Primary Industries – Mineral Resources (January 2006)
Guidelines to the Mining, Rehabilitation and Environmental Management Process
- Ref. 6.** VGT (2016) Mine Operations Plan for: Andersons Clay Mine Springdale Heights
- Ref. 7.** Personal Communication Tim Fuge (Fuge Earthmoving) 06/07/2017

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- Environmental & Geological Assessments
- Environmental Monitoring & Management
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