



## Dust Management Plan

### Nobles Nob Gold Project - Nobles Nob & Juno

Tennant Consolidated Mining Group Pty Ltd

Final Version 1.1

December 2022





## Acknowledgement of Country

Tennant Mining acknowledges the Traditional Owners of the lands on which we work. We pay our respects to elders, past, present and emerging.

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# 1 Introduction

This dust management plan has been prepared for the Nobles Nob Gold Project. To provide guidance for the management of the site and meet environmental requirements and conditions of the Mining Authorisation (1123-01) under the Northern Territory *Mining Management Act 2001*, which took effect on 15 August 2022; and commitments made in the approved Mining Management Plan (MMP).

Tennant Consolidated Mining Group (TCMG) holds the title to and operates the Nobles Nob mining tenements, listed in Appendix A. TCMG currently conducts mining exploration on these tenements, with the plan to commence site preparatory works, construction, mining and gold processing operations on site in 2023. TCMG are the nominated operator of the nearby Juno mining tenements, the title is currently held by Tennant Gold Pty Ltd, as listed in Appendix A. TCMG plans to access the Juno tenements for the purposes of dewatering the existing mine workings, groundwater extraction, and potential future mining. It is planned to pipe this extracted water across to the Nobles Nob tenements within a connecting infrastructure corridor, for use in mining and processing operations. Collectively these operations are known as the Nobles Nob Gold Project (the Project).

## 1.1 Scope & objectives

This dust management plan has been prepared to meet Condition 23 of the Mining Authorisation (1123-01) under the Northern Territory *Mining Management Act 2001*, granted on 15 August 2022. The scope of this plan is to outline the dust management measures that will be implemented throughout site activities including earthworks, construction, and operation. To minimise dust emissions and ensure dust related impacts to site and surrounds are appropriately monitored and mitigated.

The objectives of this dust management plan are to:

- Comply with all applicable legislation, regulations, and approval conditions;
- Address any specific dust management requirements of land owners;
- Outline mitigation measures to manage and minimise the impact of dust emissions from the Project on the community and environment;
- Establish a dust monitoring program to monitor dust levels against national air quality standards;
- Establish a complaints process to investigate any complaints relating to dust in a timely manner;
- Detail corrective actions and responsibilities in the event of an exceedance of a dust trigger level or a legitimate complaint; and
- Outline reporting requirements related to dust management.

This management plan is applicable to all activities associated with the site and will be implemented by all personnel (including contractors) involved in onsite project activities.

## 1.2 Key site contacts

The Project has two back-to-back site managers, whose contact details are listed below.

### Site Manager

### Alternative Site Manager



## 2 Project Area

Nobles Nob is located approximately 13 km southeast of Tennant Creek in the Northern Territory; and Juno is located approximately 10 km southeast of Tennant Creek, and 5 km west of Nobles Nob. The Project area encompasses a total of 419 ha, with 253 ha within Nobles Nob mining tenements, 102 ha within Juno tenements, and 64 ha within the infrastructure corridor between the two sites.

The Nobles Nob and Juno mine sites have been inactive since the 1980s, with only rehabilitation, care and maintenance, and exploration activities undertaken since then. Nobles Nob was historically mined for gold over a period of over 50 years from the late 1930s to the 1980s, with a processing plant located at the same location as the new one will be constructed. Juno was an underground polymetallic mine that operated from 1967 to 1977 and was processed along with ore from other sites at the neighbouring Peko Mine processing plant.

The new Nobles Nob Gold Project involves the construction of a 700 kt+ CIL ore processing plant at Nobles Nob and associated infrastructure, including a tailings storage facility, water management infrastructure including raw and process water dams, water extraction monitoring bores and a water pipeline, a solar field, and energy generation infrastructure. Ore processing, mining and tailings storage activities will occur at the Nobles Nob site, with only water extraction and pipeline activities planned for the Juno site within the initial stages of the project. Once the Juno mine is operational the infrastructure corridor will be used for vehicle access, a water pipeline, and a potential haulage road. Overall the majority of site works will occur at Nobles Nob. The site infrastructure layout at Nobles Nob is shown in Figure 2.1 below.

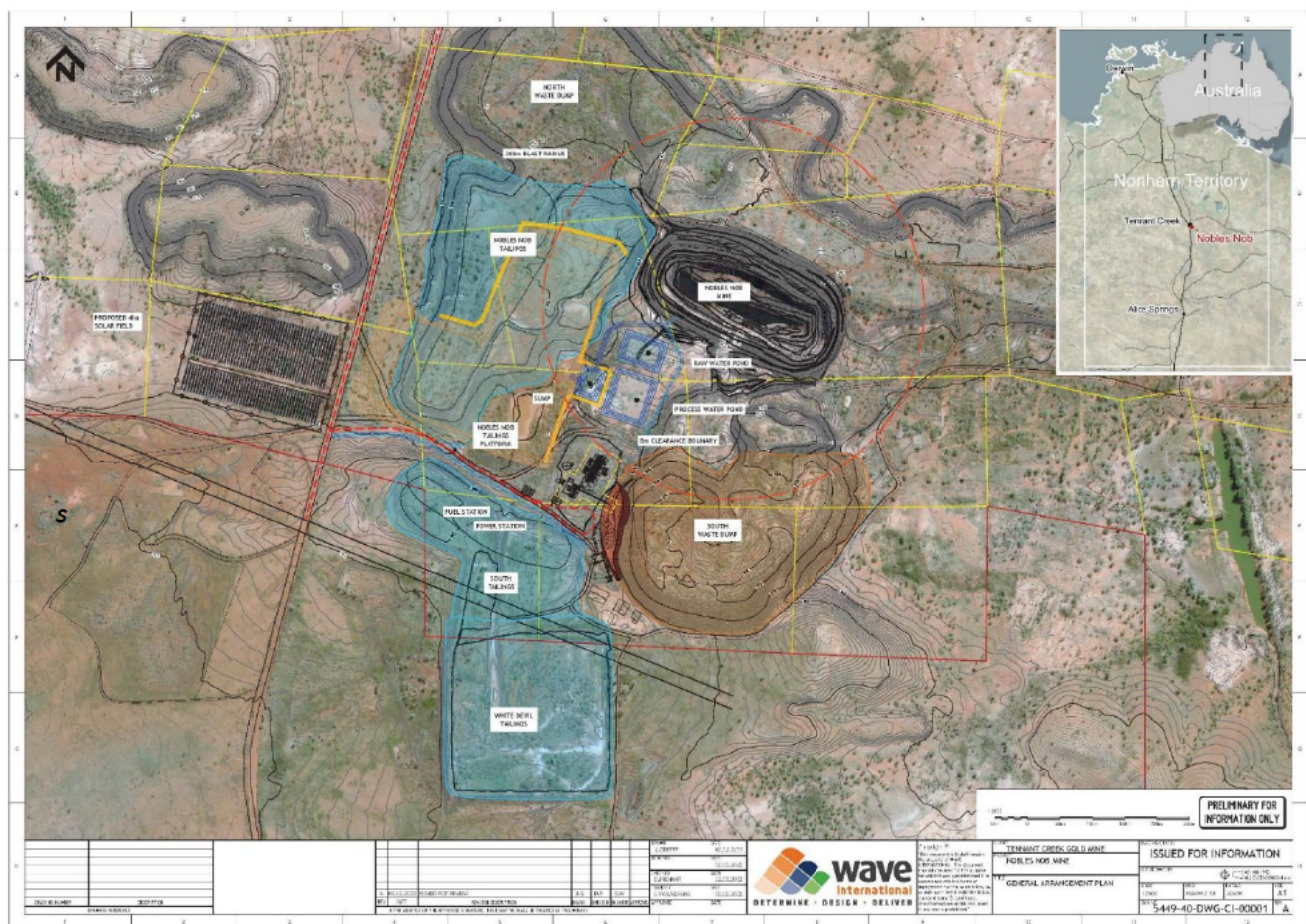


Figure 2.1 Nobles Nob site infrastructure layout.

### 3 Site Conditions

The Project site is within an *Arid Climate Zone*, as classified by the NT Water Resource Climate Zones, and a *Hot Arid Desert Climate (BWh)* according to the Köppen-Geiger Classification. The Tennant Creek area experiences high temperatures, low rainfall, and high evaporative loss. With a mean daily maximum temperature of 32.1 °C; mean annual rainfall of 466.7 mm concentrated between November and February; a mean number of 181 clear days of sunshine per year; and mean daily evaporation of 10.8 mm (BOM 2022).

There are few permanent surface water bodies in the region, with the majority of available water sourced from groundwater aquifers. The underlying aquifer mapped within the project area is described as *Fractured and Weathered Rocks, with sandstone, conglomerate, minor volcanics* (NR Maps 2022). The climate and geological conditions within the project area mean that the soil is typically dry. This will make it more prone to dust when fine soil is disturbed.

According to the Australian Soil Classification, the dominant soils at Nobles Nob are Kandosol, Rudosol and Tenosol. With Kandosol predominant in the northern part of the infrastructure area including the tailings storage areas and solar field; and Tenosol in the south including the southern wasterock dump and the processing plant. Kandosols are often referred to as red, yellow and brown earth. Rudosols are very shallow soils with minimal soil development and include very shallow rocky and gravelly soils across rugged terrain and pure sand soils in deserts. Areas in the north with more soil development are therefore likely to be more prone to dust when disturbed. However, most of these areas are previously disturbed, with little soil development. The only undisturbed area is the solar field, which will be at a higher risk of dust emissions when cleared.

Average wind speed varies between 15.8 km/h in the afternoon, which is considered *light winds* on the Beaufort Scale; and 22.1 km/h in the morning, which is considered *moderate winds* on the Beaufort scale. Average monthly wind speeds are fairly consistent throughout the year, with stronger gusts more frequent during the winter months. Wind direction is predominantly East to South-east and is considered *Calm* only 2% of the time (BOM 2022). Wind roses which show the frequency of occurrence of wind speed and direction for the Tennant Creek Airport are included in Appendix B. This will need to be considered in dust management and monitoring on site.

## 4 Statutory Requirements

The following legislation, statutory obligations and guidelines were considered during the preparation of this dust management plan.

### 4.1 Commonwealth legislation

There are requirements under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* to provide for the protection of the environment and promote sustainable development and sustainable use of natural resources.

The *National Environment Protection Council Act 1994* establishes the role of the National Environment Protection Council to set National Environment Protection Measures. The *National Environment Protection (Ambient Air Quality) Measure* is in force, with the stated desired environmental outcome of *ambient air quality that minimises the risk of adverse health impacts from exposure to air pollution*. Within the Measure standards are set for air quality pollutants including particulates, and measurement protocols. For particulates the standards are for small airborne particulate matter measuring 10 micrometres in diameter or smaller (PM<sub>10</sub>); and measuring 2.5 micrometres in diameter or smaller (PM<sub>2.5</sub>), as outlined in Table 4.1 below. There are no maximum allowable exceedances of these standards. Dust will therefore need to be managed on site to maintain air quality below these standards.

Table 4.1 Standards for particulate pollutants in the NEPM Measure for Ambient Air Quality

Pollutant	Averaging period	Maximum concentration standard*
Particles as PM <sub>10</sub>	1 day	50 µg/m <sup>3</sup>
	1 year	25 µg/m <sup>3</sup>
Particles as PM <sub>2.5</sub>	1 day	25 µg/m <sup>3</sup>
	1 year	8 µg/m <sup>3</sup>

\*Concentrations to be calculated as the arithmetic mean of one-hour records over the averaging period. 1 day = calendar day average; 1 year = calendar year average. Measurements are in microgram per cubic metre referenced to a temperature of 0 degrees Celsius and an absolute pressure of 101.325 kilopascals.

This management plan has been prepared to reduce the impacts of dust on the environment and maintain air quality within the NEPM limits to protect community health.

### 4.2 NT Environmental Legislation

In the Northern Territory, the *National Environment Protection Council (Northern Territory) Act 1994* is in force, which mirrors the national legislation outlined above. The *Environment Protection Act 2019* also imposes general environmental duty – which means a person must not carry out any activity that causes or is likely to cause environmental harm, unless measures to prevent or minimise the harm have been taken. As well as a duty to notify of environmental harm – to inform the administering authority and landowner or occupier when an incident has occurred that may have caused or threatens serious or material environmental harm.

The *Northern Territory Environment Protection Authority Act 2012* establishes the NT Environment Protection Authority (EPA) as an independent body to advise and report on the implementation of environmental legislation and promote ecologically sustainable development. The NT EPA has set out guiding environmental factors and objectives for key environmental areas. The objective for the factor of Air Quality is to: *Protect air quality and minimise emissions and their impact so that*



*environmental values are maintained.* This management plan has been prepared to meet the legislated duties and EPA objective.

### 4.3 NT Mineral Laws and Regulations

The Northern Territory *Mining Management Act 2001* requires approval of a Mining Management Plan (MMP) for mining authorisation approval, prior to any mining activity (including exploration or operational activities) taking place. An MMP for the Project has been approved, with mining authorisation given as of 15 August 2022. With the following condition of approval:

**Condition 23:** *A detailed Dust Management Plan, for the purposes of minimising dust emissions and ensuring dust-related impacts to the site and surrounds are appropriately mitigated, must be submitted to the Department for approval prior to the commencement of ground disturbing works.*

The MMP also contains commitments in relation to dust management and controls to be implemented on site, as outlined in Table 4.2 below.

*Table 4.2 Commitments relating to dust management contained within the MMP for the Nobles Nob Gold Project*

Management actions & Mitigation measures	Targets / performance indicators	Monitoring	Corrective actions and contingencies	Reporting and record keeping
<ul style="list-style-type: none"> <li>• Dust generated during site activities will be managed through dust suppression controls</li> <li>• Controls will include the use of water carts where necessary</li> <li>• Stockpiles of soil will be covered and kept to heights &lt;3 m</li> <li>• Any vehicle transporting waste or other materials that may produce dust will be covered during transportation</li> </ul>	<ul style="list-style-type: none"> <li>• No complaints regarding dust</li> </ul>	<ul style="list-style-type: none"> <li>• Visual monitoring of dust levels within the Project area during site works</li> <li>• If dust becomes an issue, mitigation measures will be implemented</li> </ul>	<ul style="list-style-type: none"> <li>• Implement more dust suppression activities where required</li> <li>• Community notification will be undertaken, where work is likely to cause impact on the public and nearby residents</li> </ul>	<ul style="list-style-type: none"> <li>• Incident reporting records will be kept</li> <li>• A complaints register will be maintained</li> </ul>

This management plan has been prepared to meet the commitments and requirements under the Act, including fulfilment of condition 23 of approval, and commitments made in the MMP.

### 4.4 Guidelines and strategies

The following guidelines associated with the management of dust have been considered during the preparation of this management plan:

- Airborne Contaminants, Noise and Vibration – Leading Practice Sustainable Development Program for the Mining Industry (DIIS 2009)
- Good Practice guide for assessing and managing the environmental effects of dust emissions (NZME 2001)
- Good practice guide: control and measurement of nuisance dust and PM10 from the extractive industries (MIRO 2011)
- Guideline Dust emissions (DWER 2021)



#### 4.5 Landowner consultation

The Project site is located on Aboriginal freehold land scheduled under the *Aboriginal Land Rights (Northern Territory) Act 1976*, owned by the Warumungu Aboriginal Land Trust. Traditional owners of these sites have been consulted through the Central Land Council during project development, and dust emissions were identified as a key community concern in relation to site works. This dust management plan has been prepared to reduce the risk of dust concerns for the landowners resulting from site works.

## 5 Site Risk Assessment

There is a potential for dust emissions to be generated from site activities and vehicle movement at all stages of the project, including earthworks, construction, and run of mine. The amount, composition and size of the Project's dust emissions will be influenced by a number of factors, including the nature of the source materials disturbed or handled, the intensity of on-site activities, the climatic conditions being experienced, and the degree of dust mitigation measures implemented during operation.

Mining activities with the potential to generate significant airborne particulate matter during the Project's operation include:

- Wheel generated dust emissions from vehicle movements on unsealed roads
- Dust from uncovered loads during vehicle movement
- Dust from clearing activities
- Dust generated from exposed soil in disturbed areas
- Dust generated from stockpiles
- Dust from extraction of the open cut pit
- Dust from materials handling, crushing, and dumping.

These activities will be concentrated around the main processing area, as shown in the site infrastructure layout in Figure 2.1. The key areas in which dust emissions are more likely include:

- Site access road and tracks on site
- All infrastructure areas during earthworks and construction activities
- Waste rock dump (Southern WRD) to be processed
- Nobles Nob pit during excavation activities
- Run-of-mine (ROM) pad
- Solar field during and post clearing activities.

Given the predominant wind direction of east to south-east, during processing activities there is the potential for wind to blow dust from the wasterock dump and ROM pad across site towards the processing plant, tailings area, and solar field, as shown in Figure 2.1.

## 6 Mitigation Measures

Based on the site risk assessment undertaken, mitigation measures have been identified to reduce the risk of dust emissions on site. Table 6.1 below outlines the key risks identified, the associated mitigation measures that will be implemented on site, and the responsible personnel. Dust mitigation measures will be implemented in high-risk areas and during activities with the potential to generate dust. The aims will be to minimise visual dust emissions on site as measured by monitoring activities; to maintain dust levels below the NEPM standards for ambient air quality; and avoid community complaints.

*Table 6.1 Dust risk and mitigation measures*

Dust risk	Mitigation measures	Responsible personnel
Dust emissions from disturbed areas	Active work areas will be wetted down with water trucks as required, to minimise the production of airborne dust.	Site Manager and water cart operators
	Unused disturbance areas will be kept to a minimum. Vegetation clearing and topsoil stripping is to be conducted immediately before overburden stripping begins.	TCMG management and Site Manager
	Vegetation clearing and topsoil stripping will be avoided as much as possible when wind conditions and low moisture promote dust generation.	TCMG management and Site Manager
	Cleared vegetation will be windrowed to reduce surface wind speeds.	TCMG management and Site Manager
	The rehabilitation of disturbed areas will be performed as soon as practicable. The forming of final surfaces will be avoided during dry and windy weather.	TCMG management and Site Manager
Dust emissions from dumps and stockpiles	As the wasterock dump is progressively removed for processing, the remaining areas will be rehabilitated as soon as practicable.	TCMG management and Site Manager
	Disused roads will be windrowed off as appropriate to prevent vehicular access.	
	Stockpiles of soil will be covered and kept to heights <3 m.	TCMG management and Site Manager
Dust emissions from traffic movement	Vehicles will be operated at speeds that avoid the generation of excessive dust, with maximum speeds of 40 km/hr on site. Speed limits will be sign posted.	Site Manager and vehicle operators
	Water trucks will regularly wet down unsealed roads and tracks that are in frequent use.	Site Manager
	The frequency of watering will be determined by the traffic frequency and wind conditions.	
	Any dropped ore or waste rock will be graded off the road surface as soon as possible, to minimise the chance of fines and dust being generated.	Site Manager and vehicle operators

Dust risk	Mitigation measures	Responsible personnel
	Graded ore will be pushed into a heap where it can be recovered.	
	Any vehicle transporting waste or other materials that may produce dust will be covered during transportation.	Site Manager and vehicle operators
Dust emissions from material handling during operations	Drop heights will be minimised when handling ore, soil and waste rock, and double handling will be avoided wherever practicable.	Site Manager and operators
	Overloading will be avoided to limit spillage during transit.	Site Manager and operators
Dust emissions from drilling	Drilling rigs will be fitted with effective dust control and collection equipment.	Site Manager and drill operators
	Dust curtains, water sprays and air extraction systems will be implemented wherever practicable.	
	Drill pads and adjacent hardstand areas; as well as drill cuttings including dust cones will be wetted down to prevent dust generation.	Site Manager and drill operators
	Care will be taken when moving drilling equipment not to disturb drill cuttings.	
	In the event of defects that prevent the effective operation of a drill rig dust suppression system, the drill rig operator will cease operations until the defect is rectified.	Site Manager and drill operators
Dust exposure to operators	Personnel operating trucks, earthmoving or loading equipment will ensure the cab windows are closed so cab dust (air con) filter systems can operate effectively during operations as appropriate to the machine.	Operators
	Vehicle cab dust filter systems will be maintained to ensure the system remains effective.	Operator management
	Operators to remain within the dust filtered cab during operations as much as practicable.	Operators
	Vehicle operators are to report defective cab dust filter systems in accordance with a preventative maintenance schedule.	

## 6.1 Training and Awareness

The requirements of this plan will be provided to contractors and employees through training, site induction, toolbox talks, and site alerts. Training will be part of the safety inductions that will be conducted prior to commencing site work. It will be a mandatory requirement that everyone undertaking any site work will have to be properly inducted. All inductions are to be recorded in the TCMG Training Register on *Skytrust*.

Site inductions will cover:

- Identification of site environmental values
- An understanding of the requirements of applicable environmental management and monitoring plans
- Roles and responsibilities of site personnel
- Communication procedures (both normal and emergency)
- Incident reporting procedure to be followed on site
- Environmental emergency response procedures
- Site environmental controls required to be implemented
- The potential consequences of not meeting environmental obligations/responsibilities.

## 6.2 Complaint management

Any community complaints received in relation to dust concerns will be recorded and follow-up action taken as warranted. It will be the responsibility of the Stakeholder Engagement Manager to liaise with the complainant, and the Site Manager to implement the appropriate site investigations and controls. All complaints and follow up actions are to be recorded in the TCMG Training Register on *Skytrust*. Follow up actions may include some or all of the following steps, as appropriate to the nature of the complaint:

- Liaison with the complainant to verify the concerns and assure them that a follow up investigation will occur as appropriate
- A visual site inspection of the site of the complaint
- An investigation of meteorological conditions at the time of the incident
- An investigation of potential dust generating sources in the vicinity of the complaint site
- A review of visual and depositional dust monitoring results
- If the site of the complaint is outside of the depositional monitoring area, a new monitoring site could be established if the concern is ongoing and not explained by an exceptional event
- A review and adjustment of dust controls on site, e.g. increased frequency of water carts during related disturbance activities
- Communication with the complainant to explain the actions taken and ensure that the concerns have been addressed.



## 7 Monitoring

### 7.1 Visual monitoring

Regular site monitoring will be undertaken to visually monitor for dust and ensure the mitigation measures are appropriately implemented on site. This will be included in weekly environmental monitoring to be conducted on site, once site works commence. Monitoring of all active work areas will be undertaken, including the site access road and tracks being utilised.

In cases where dust emissions are observed, this will be recorded and reported to the site manager. The site manager will then adjust the type or frequency of dust mitigation measures as appropriate.

All operational staff will also be responsible for reporting excessive dust observed on site to the site manager. Details of this will be included within site environmental inductions, which are required to be completed by all site personnel upon commencing site works.

### 7.2 Dust deposition monitoring

Dust deposition gauges will be installed at monitoring stations and monitored monthly during all active site works. These will be located to the west of site, downwind of the prevailing wind conditions, as shown in Figure 7.1 below.

The monthly dust deposition monitoring program will measure dust deposition (fall out) data for the management of background dust levels in accordance with *AS/NZS 3580.10.1:2016: Methods for sampling and analysis of ambient air: Determination of particulate matter - Deposited matter - Gravimetric method*. This will be achieved by sampling dust particulate matter at the designated dust deposition monitoring locations every 30 days following the methodology outlined in Appendix C.

The dust deposition gauges will provide deposited dust results (total solids) in g/m<sup>2</sup>/month. The analysis of samples will be undertaken at a NATA accredited laboratory. Monthly results will be analysed for any exceedances of the NEPM measures for Ambient Air Quality as shown in Table 4.1.

If exceedances of the NEPM measures for Ambient Air Quality are exceeded on a given month, samples will also be analysed for ash content, combustible matter, total soluble matter and total insoluble matter to assist in determining possible contamination and dust sources.

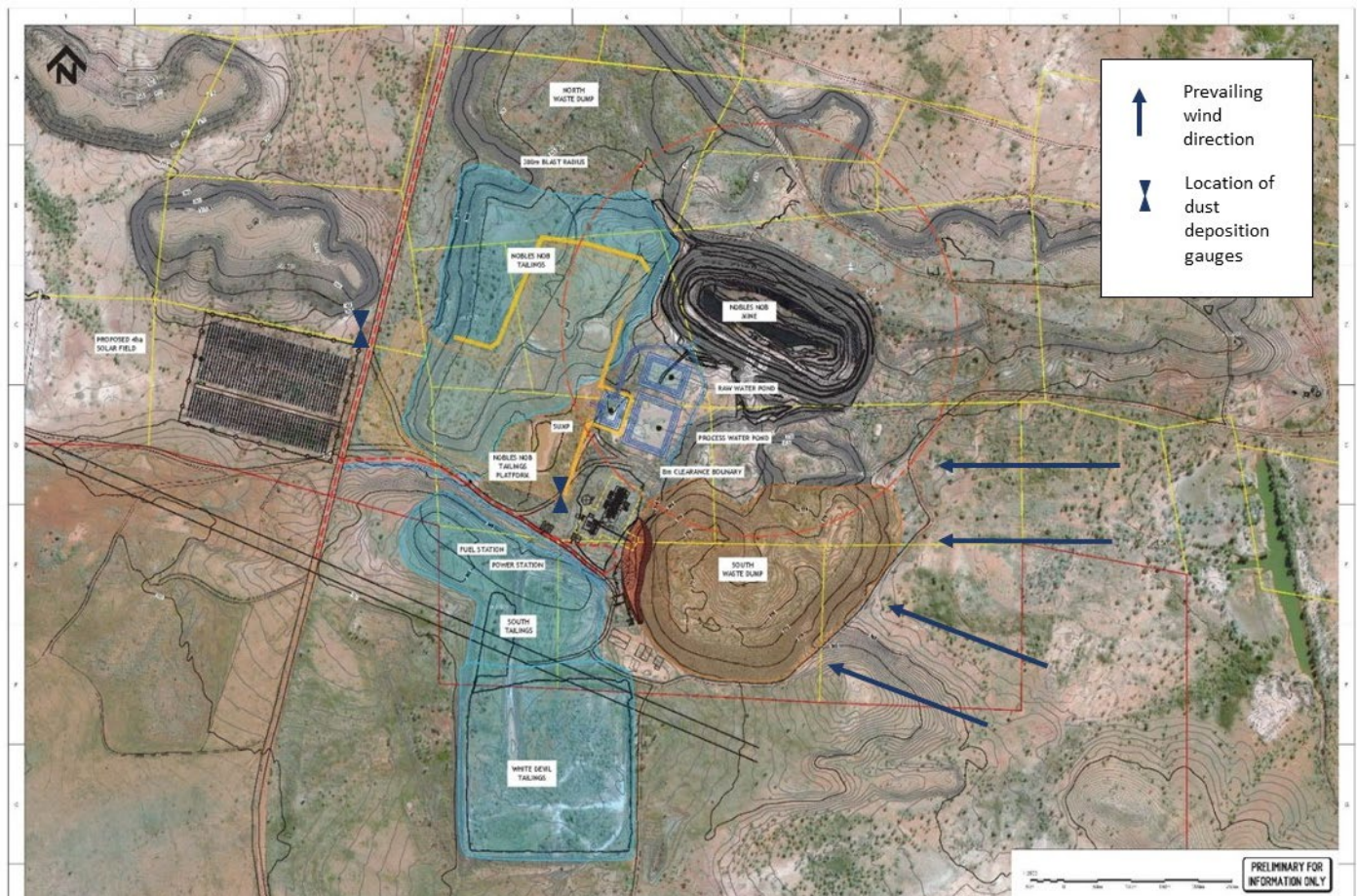


Figure 7.1 Location of dust deposition monitoring stations on site

## 8 Record Keeping and Reporting

### 8.1 Record keeping

Records will be kept within the Tennant Mining environmental management system, training register, and incident register, within the online document management system *Skytrust*. This includes:

- Weekly environmental monitoring field inspection sheets
- Records of inductions
- All incidents and near-misses
- Any community complaints received.

In the event of an incident, the Site Manager will record the following details:

- The time, date, nature, duration and location of the incident or non-conformance;
- The nature of the incident/non-conformance and the cause;
- Details of the circumstances in which the incident/non-conformances occurred; and
- The actions that have been taken and are proposed to be taken to deal with the incident/non-conformance.

If a community complaint is received, the personnel receiving the complaint will record the following details:

- The date and time of the complaint;
- The nature of the complaint (e.g. dust);
- The method by which the complaint was received (e.g. by telephone);
- The name and title of the person who received the complaint;
- The personal details of the complainant, if made available, or if no details were provided, a note to that effect.

The Site Manager will then be responsible for following up on the complaint, and will record the following information:

- The action taken in relation to the complaint, including any follow-up contact, the outcome of investigations and any required on-going actions; and
- Any follow-up actions taken, or reasons why no action was taken.

### 8.2 Notification procedure

In the event of an environmental incident the DITT Chief Executive Officer will be notified of the occurrence via a Notification of an Environmental Incident Form as soon as practicable, as required by section 29 of the *Mining Management Act 2001*. Any significant pollution events will also be reported to the NT EPA Pollution Hotline:

**NT EPA Pollution Hotline**

Phone: 1800 064 567

The duty to notify will be applicable to the following people:

- The personnel/contractor/sub-contractor undertaking the activity; and
- TCMG management as the responsible operator of the site.

### 8.3 Reporting

TCMG's Environmental Manager will prepare an annual report detailing the implementation of this management plan in the year prior. This information will be included within the annual Environmental Mining Report to be submitted to the NT Mining Authority. This will include:

- Details of site control activities implemented to address dust emissions
- An indication of the implementation success and suitability of the mitigation measures outlined in Table 6.1
- Details of weekly visual monitoring, including any excessive dust observed, and the mitigation measures implemented in response
- Details of monthly dust deposition monitoring results, any exceedances of the NEPM guidelines for ambient air quality, details of contributing events, and measures implemented in response
- Any modifications to controls required to improve dust management on site.

### 8.4 Review

Monitoring and reporting information will be used to track and assess the effectiveness of dust management practices. Where found ineffective, or improvements or modifications have been identified, this will trigger a review of this management plan. This management plan will also be reviewed and updated with any significant alterations in project planning and development, or site layout.

## 9 References

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## Appendix A. Mining Tenements

The mining tenements the subject of this management plan include those listed in Table A below, comprising the historic Nobles Nob and Juno mining areas.

*Table A Mining tenements to which this dust management plan applies.*

Site	Tenement	Title Holder	Nominated Operator
Nobles Nob	MLC512	TCMG	TCMG
Nobles Nob	MLC513	TCMG	TCMG
Nobles Nob	MLC514	TCMG	TCMG
Nobles Nob	MLC515	TCMG	TCMG
Nobles Nob	MLC516	TCMG	TCMG
Nobles Nob	MLC517	TCMG	TCMG
Nobles Nob	MLC521	TCMG	TCMG
Nobles Nob	MLC525	TCMG	TCMG
Nobles Nob	MLC526	TCMG	TCMG
Nobles Nob	MLC531	TCMG	TCMG
Nobles Nob	MLC532	TCMG	TCMG
Nobles Nob	MLC533	TCMG	TCMG
Nobles Nob	MLC534	TCMG	TCMG
Nobles Nob	MLC537	TCMG	TCMG
Nobles Nob	MLC538	TCMG	TCMG
Nobles Nob	MLC539	TCMG	TCMG
Nobles Nob	MLC540	TCMG	TCMG
Nobles Nob	MLC541	TCMG	TCMG
Nobles Nob	MLC542	TCMG	TCMG
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Nobles Nob	MLC690	TCMG	TCMG
Nobles Nob	MLC691	TCMG	TCMG
Juno	MCC284	Tennant Gold Pty Ltd	TCMG
Juno	MLC154	Tennant Gold Pty Ltd	TCMG
Juno	MLC155	Tennant Gold Pty Ltd	TCMG
Juno	MLC45	Tennant Gold Pty Ltd	TCMG
Juno	MLC46	Tennant Gold Pty Ltd	TCMG
Juno	MLC47	Tennant Gold Pty Ltd	TCMG
Juno	MLC578	Tennant Gold Pty Ltd	TCMG
Juno	MLC579	Tennant Gold Pty Ltd	TCMG
Juno	MLC652	Tennant Gold Pty Ltd	TCMG
Juno	MLC68	Tennant Gold Pty Ltd	TCMG

## Appendix B. Wind Roses for Tennant Creek Airport

### Rose of Wind direction versus Wind speed in km/h (25 Jul 1969 to 10 Aug 2022)

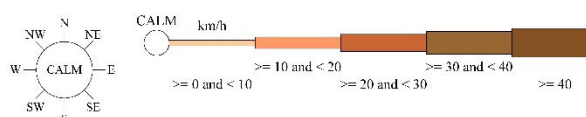
Custom times selected, refer to attached note for details

#### TENNANT CREEK AIRPORT

Site No: 015135 • Opened Jan 1969 • Still Open • Latitude: -19.6423° • Longitude: 134.1833° • Elevation 375.m

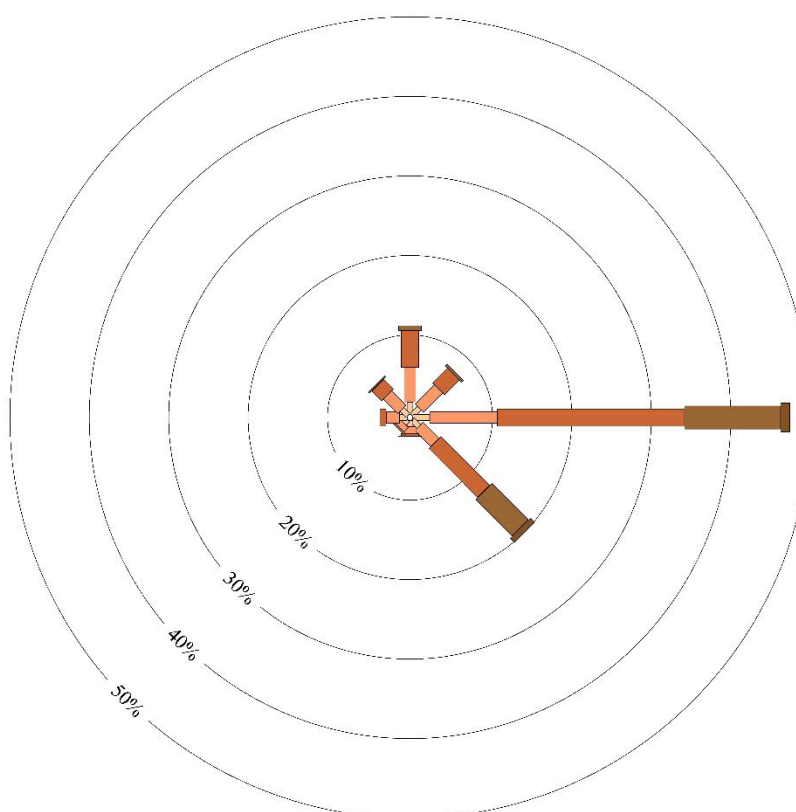
An asterisk (\*) indicates that calm is less than 0.5%.

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



9 am  
21618 Total Observations

Calm 2%



## Rose of Wind direction versus Wind speed in km/h (25 Jul 1969 to 10 Aug 2022)

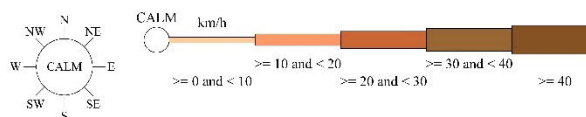
Custom times selected, refer to attached note for details

### TENNANT CREEK AIRPORT

Site No: 015135 • Opened Jan 1969 • Still Open • Latitude: -19.6423° • Longitude: 134.1833° • Elevation 375.m

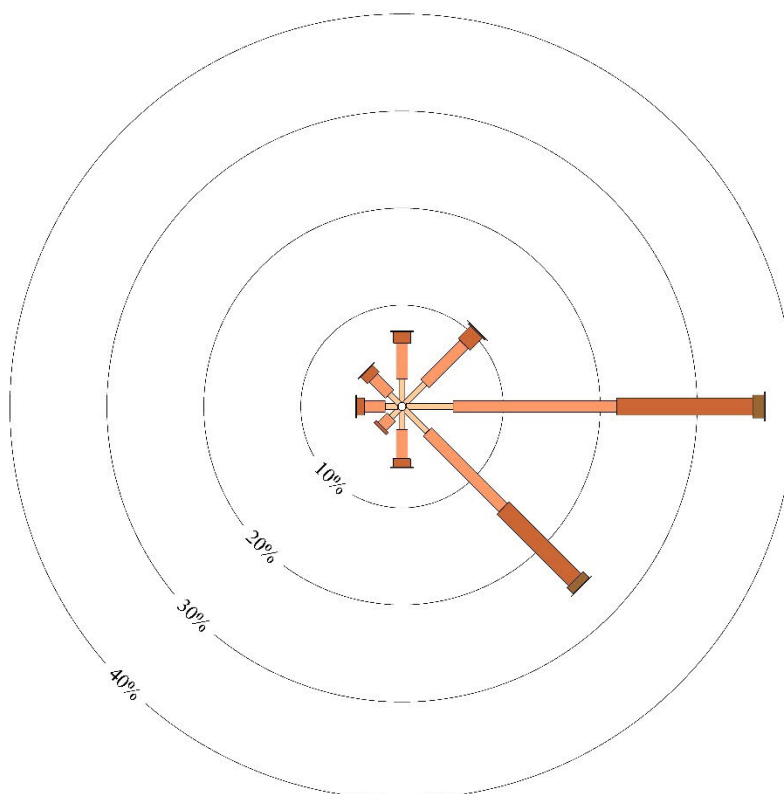
An asterisk (\*) indicates that calm is less than 0.5%.

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



3 pm  
21423 Total Observations

Calm 2%



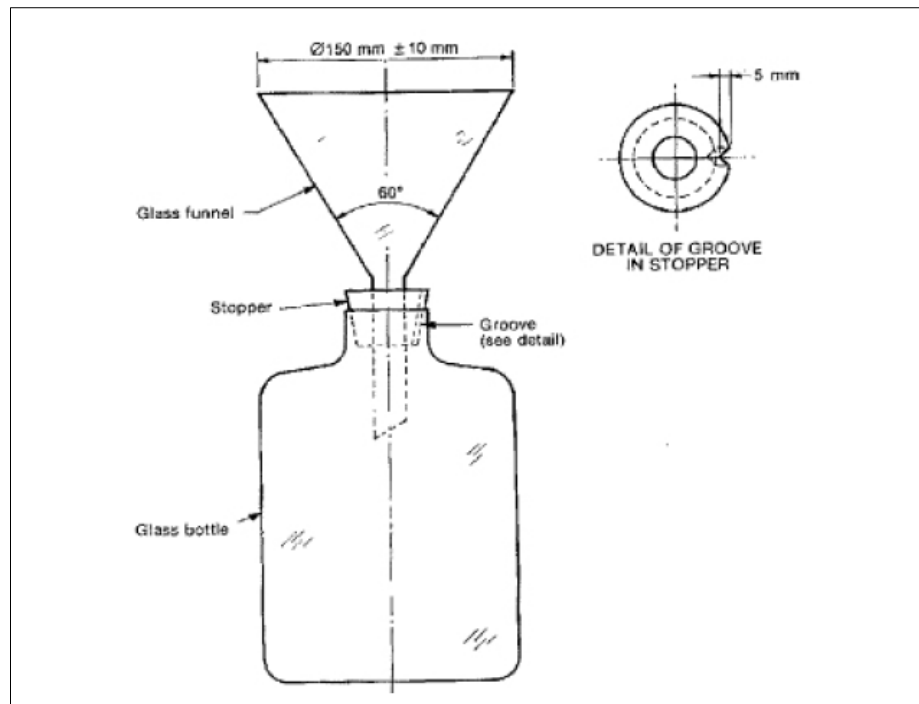
## Appendix C. Methodology for dust depositional monitoring

Australian Standard *AS/NZS 3580.10.1:2016: Methods for sampling and analysis of ambient air: Determination of particulate matter - Deposited matter - Gravimetric method* outlines the equipment required to collect depositional dust samples. The key equipment is a deposit gauge, which comprises a  $150 \pm 10$  mm diameter funnel inserted into a glass bottle (at least 4 L in size) through a rubber stopper. This equipment is to be provided by the NATA accredited laboratory used for analyses. The deposit gauge and stand are erected so that the height of the top of the funnel is  $2 \text{ m} \pm 0.2 \text{ m}$  above the ground level of the immediate surrounding area. A typical depositional monitoring gauge and site setup is shown in Figure C below.

Once the gauge is installed on site, the following procedure is to be followed:

- After 30 days  $\pm$  2 days, any deposited matter in the funnel is washed into the glass bottle using distilled water;
- The funnel is then removed and the glass bottled sealed with a lid;
- The glass bottle is appropriately labelled to denote site location, the date sampling began and ended, and the funnel diameter to the nearest millimetre; and
- A fresh bottle is then prepared and installed in the dust gauge with a clean funnel.

The glass bottle can also collect rainwater and other material such as bugs and leaf litter, etc. This does not contaminate the sample and should not be removed in the field. However, it is recommended that the type of any contamination be noted for each sample at the time of collection (for example, note the presence of bird droppings, leaf litter, sticks, spider webs, Christmas beetles, etc. or whether the bottle was broken). This record may help explain unusual results (such as high insoluble matter) during laboratory analysis.



*Figure C. Typical deposition dust bottle, field setup on stand, and sample bottle replacement.*