

# **OPAL VALE SALT VALLEY ROAD CLASS II LANDFILL**

**LOT 11 CHITTY ROAD, TOODYAY**

## **DUST MANAGEMENT PLAN**



**Prepared for**

**OPAL VALE PTY LTD**

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## 1. Introduction

Opal Vale Pty Ltd (Opal Vale) operates the Salt Valley Road Class II Landfill facility at Lot 11 Chitty Road, Hoddy's Well, Toodyay.

This Dust Management Plan (DMP) has been developed to manage dust originating from on-site landfill activities as well as considering the adjacent clay extraction operation.

The objective of dust management will be to minimise significant impacts on amenity and environmental impacts as a result of dust emissions, with the primary focus of eliminating dust emissions beyond the Lot 11 property boundary.

Opal Vale takes the responsibility associated with dust management extremely seriously.

In accordance with the *Guideline for managing the impacts of dust and associated contaminants from land development sites, contaminated sites and remediation and other related activities – Department of Environment and Conservation – March 2011*, the site activities, both landfill construction and operation are classified as Classification 1; hence, the activities are considered as having negligible risk, with no special provisions or contingency arrangements required.

## 2. Purpose

The purpose of this procedure is to:

- Identified potential dust sources;
- Provide guidance to the Site Operators on how best to manage dust emissions from site; and,
- Ensure appropriate dust management procedures are carried.

## 3. Reference

- Salt Valley Road Class II Landfill, Landfill Management Plan Section 12.7 – Dust Management.
- Environmental Protection Act 1986.
- Draft - A Guideline for the Development and Implementation of a Dust Management Program – DEC May 2008.
- A guideline for managing the impacts of dust and associated contaminants from land development sites, contaminated sites and remediation and other related activities – Department of Environment and Conservation – March 2011.

## 4. Distribution

This Plan is distributed to:

- All employees involved in the management and operation of the landfill site.
- Department of Environment Regulation.
- Customers as applicable.
- Any other relevant parties.

## 5. Definitions

**Dust** - the generic term used to describe solid airborne particles generated and dispersed into the air by processes such as handling, crushing and grinding of organic or inorganic materials such as rock, ore, metal, coal, wood or grain and stockpiling of materials.

**Nearest Receptor** – the single residential dwelling 1.35 km to the north east of the landfill site.

**Person in Control** - means a person who has control of the site. The person with control is the site supervisor or, when he is not on site, his nominated representative.

**Sensitive Receptor** - Individuals/communities/components of the environment which could be adversely affected by dust emissions, such as dwellings, schools, hospitals, offices, protected wetlands or public recreation areas that exist now and in the future.

**Site** – Lot 11 Chitty Road, Hoddy's Well, Toodyay – Salt Valley Road Class II Landfill Facility.

**Site Operator** - means a person undertaking the operational activities of the site.

**Trigger Levels** - The "Corrective Action" trigger level is the ambient air dust level/condition which if exceeded will result in corrective action being taken to reduce dust emissions until the dust levels fall below the Corrective Action trigger level.

The Corrective Action trigger level is when dust is seen to be blowing close to a site boundary.

The "Work Stoppage" trigger level is the ambient air dust level/condition, which will result in Work Stoppage until the dust levels fall below the Work Stoppage trigger level.

The Work Stoppage trigger level is when all reasonable dust suppression strategies have been utilized and dust is seen to be blowing across a site boundary (dust suppression activities are no longer effective in controlling dust generated from site activities).

**Vehicle Driver** - means a person driving a vehicle, which either delivers or removes material (waste or recyclable materials) from the site.

## 6. Chemical Composition of Dust

The chemical composition of dust particles will depend on the nature of the source material. For example, wind-borne dust from cleared areas will reflect the composition of the underlying soil types. In cases where soil has been contaminated, dust may also be associated with inorganic and organic pollutants such as heavy metals and polycyclic aromatic hydrocarbons.

In this particular application the majority of dust being generated is as a result of the physical disturbance of natural soils and road surface material on site as a result of vehicle movements. The chemical composition of this source of dust will typically reflect the underlying soil type on site or road surface material utilised (gravel).

To a lesser extent dust will be generated by the mechanical handling of waste materials delivered to site. The chemical composition of this source of dust will reflect the type of waste and recyclable material being handled. As a Class II landfill site there are strict controls (*Landfill Waste Classification and Waste Definitions 1996 - as amended December 2009*) on the type of materials received on-site. Typically the dust generating waste materials will consist of minor quantities of sand, building rubble, asphalt and sawdust.

## 7. Site Background

Lot 11 Chitty Road is within the Shire of Toodyay, approximately 65 km northeast of Perth and 13 km south of the town site of Toodyay. The total property is 619 ha in size, however, the landfill operations occupy approximately 50 ha in the south east corner of the site. A large portion of the site has previously been cleared for grazing, including the immediate surrounds of the landfill operational area.

## 8. Receptors

The landfill site only occupies a small 50 ha portion of the overall 619 ha lot.

Land uses surrounding Lot 11 include:

- Remnant native vegetation to the north and east.
- Remnant native vegetation and a clay pit to the south.
- Remnant native vegetation and partially cleared land for livestock grazing to the west and southwest.
- Nearest Receptor, is a neighbouring residential property approximately 1.35 km to the north east of the proposed landfill site.
- There are no Sensitive Receptors or sensitive environmental areas immediately adjacent to Lot 11.

Environmental regulations require that dust not be emitted beyond the property boundary (Lot 11). Although there is no receptor immediately beyond the site boundaries it is essential that dust emissions be managed to eliminate dust blowing from the site.

## 9. Site Weather Data

The nearest weather station to the site is the Northam weather station (Station No. 010111), approximately 20 km to the east of the site.

Northam has an average annual rainfall of 426 mm with the vast majority (75%) of the rain falling between May and September each year. The period October to April is the main period when dust management strategies will need to be actively implemented; however, there will still be occasional dust management activities during the winter months, typically during the shoulder periods.

During October to April the typical average monthly wind pattern is for south easterly and easterly winds to blow in the morning and westerly and south westerly winds in the afternoon. The maximum wind speed is in the order of 30 km to 35 km per hour. Mornings tend to have the longer windy periods. Detailed weather data is available on the Bureau of Meteorology website [bom.gov.au](http://bom.gov.au).

**Attachment No.1 – Northam Weather Station Annual Wind Roses** provides the annual wind roses from the Northam weather station for 9.00 am and 3.00 pm.

## 10. Implementation Rationale

The rationale for the implementation of dust suppression strategies is to eliminate visible dust emissions beyond the site boundaries.

The Corrective Action trigger level is when dust is seen to be blowing close to a site boundary.

Following the identification of the Corrective Action trigger level and the subsequent implementation of dust suppression strategies, should these activities not adequately prevent dust emissions beyond site the boundary, further dust suppression strategies should be implemented or existing strategies revised to improve system efficiencies.

Following the implementation of all reasonable dust suppression strategies, should Work Stoppage trigger levels be reached, where there is still visible dust emissions beyond the site boundary, the particular activity causing the excessive dust emissions will be stopped until ambient weather conditions (wind) improve so as to eliminate dust emissions beyond the site boundary.

## 11. Sources of Dust Generation

Potential sources of dust emissions include:

- Construction activities;
- Vehicle movements along access roads;
- Landfill active tipping area activities;
- Loading and unloading of cover material;
- Vehicle wheels spreading dirt around the site; and,
- Adjacent clay extraction operations (existing activity).

All identified sources are deemed relatively minor and easily manageable within the confines of the Prescribed Boundary and the larger Lot 11.

## 12. Dust Mitigation Strategies

There will be a number of dust mitigation strategies that will be employed in order to reduce dust emissions on-site. The mitigation strategy will be a function of the source of dust generation.

### 12.1. Construction Activities

As part of the construction activity, the construction contractor will be required to control dust. During construction, the primary source of dust generation will be vehicle movements along access roads. This dust will be controlled by using a water tanker to wet down the roads.

There will only be minimal dust generated during earthworks as the insitu clayey material will be moist when excavated and moisture conditioned (moisture added) prior to fill compaction. Even the use of stockpiled material will not generate excessive dust, as has been observed during the clay extraction operation, where only access road dust suppression has been required. This will be primarily due to the schistose nature of the clayey material where it is not a true clay material as it lacks the finer clay particles, which are the particles that generate the most dust.

### 12.2. Vehicle Movements Along Access Roads

The type of construction materials used on the road surface will significantly influence the generation of dust. All internal roads (excluding those on the landfill) consist of a gravel surface layer (wearing course). This road construction material will result in some minor dust being generated by vehicle movements along internal access roads; consequently, dust management strategies will be required to be implemented.



Speed is the primary cause of dust generation from vehicles moving along access roads. The reduction of vehicle speed will be the primary method for reducing the generation of dust. A maximum site speed limit of 40 km per hour will be enforced. Appropriate signage will be utilised to indicate the maximum speed limit. Should dust generation continue to be a problem at 40 km per hour, the speed limit will either be reduced or alternative dust control strategies employed to reduce dust emissions.

The primary means of dust suppression along all internal roads will consist of watering via water tanker. The site water tanker will be used on an as needed basis to spread appropriate quantities of water to prevent excessive dust generation as a result of vehicle movements along internal access roads. The "appropriate quantities of water" will be dependent on the ambient weather conditions (heat and wind speed), number of traffic movements and the performance of the road construction material (gravel surface); hence, it will not be appropriate to determine a prescribed application rate. The application rate will be varied dependent on site conditions. The determining factor influencing the water application rate will be the quantity of dust being generated.

Adequate dust suppression will also be achieved by the use of dust suppression agents (Dustex or similar). These dust suppression agents will be spread using the water tanker and in accordance with the manufacturer's recommendations (application rates). Again dust suppression agents will be used in conjunction with the water tanker to provide additional dust suppression capabilities. Dust suppression agents are ideal for the main internal access roads to reduce water tanker activity and water consumption.

### **12.3. Landfill Active Tipping Area Activities**

The water tanker will be used within the landfill area to suppress dust along the access roads and on the active tipping area. The unloading, placement and compaction of waste material will be unlikely to generate excessive dust (minor dust contributor). If a particular dusty load of waste material were received during periods of adverse weather conditions, the material will be unloaded as close to the landfill tipping face as possible, wet down by the water tanker and left until weather conditions improve. Once weather conditions have improved, only then will the dusty load be pushed and compacted into the landfill.

### **12.4. Loading and Unloading of Cover Material**

Due to the nature of this activity it will be difficult to adequately control dust emissions during adverse weather conditions; however, this activity will not be seen as a potential major contributor towards dust loading on site. The primary method for controlling dust emissions would be, where possible, to delay these activities until weather conditions improve. Where this were not possible, due care would be taken to place the material in vehicles and not drop it from a height. There will be little option for change of methodology with regards to unloading of vehicles during adverse weather conditions. There may; however, be opportunities to load and unload vehicles further away from the site boundary to reduce the risk of dust emissions blowing beyond the boundary.

## **12.5. Vehicle Wheels Spreading Dirt Around the Site**

The site is an active clay pit and landfill facility with non-sealed access roads; consequently, there will be some spreading of dirt in and around active areas on site. The quantity and consequence of the spreading of dirt will be minimal such that it could be managed by the use of a water tanker as part of the usual dust suppression activities on the site access roads.

## **12.6. Adjacent Clay Extraction Operation (Existing Activity)**

Austral Bricks has been excavating and removing clay material from site for many years without causing dust generation issues. The use of a water tanker to wet down the internal access roads is all that has been necessary to manage dust from this operation. As mentioned above, the schistose nature of the material being excavated results in low dust generation and hence, can be easily managed.

## **13. Water Source**

The primary source of dust suppression water will be from the water storage ponds within the clay void (existing source) and from the new surface water storage dam external to the clay pit. In addition, leachate will be used for dust suppression on the internal access roads within the lined landfill area.

As a fallback position, there will also be water available from the adjacent BGC clay void if required.

## **14. Emissions Limits**

There is a target of no visible dust emissions beyond the Lot 11 property boundary and nil community complaints.

## **15. Monitoring**

Dust emissions will be visually monitored on a continuous basis by site operations staff. The facility will also maintain a comprehensive complaints register, which will be used as a gauge of success with regards to dust emissions management. In the event that there be a dust emissions issue identified, formal dust monitoring will be undertaken by an independent third party to determine the extent of the problem and propose appropriate improved dust management solutions.

## 16. Dust Management Response Plan

In the event that the regular dust monitoring identifies potential problems with the dust management activities, a response plan will be implemented. This response plan will incorporate the following:

- Assess the location that has been identified as a problem and consider the possible cause(s);
- Consider the impact of the problem(s);
- If possible, rectify the problem (eg. increased use of the water tanker);
- If not possible to rectify the problem (eg. dust from cover material handling), assess the likely impact on neighbouring properties and whether there be any contingency measures that could be implemented to minimise the impact (eg. stop the activity or move further away from the site boundary);
- Consider amending the standard operating procedures if the current procedures are ineffective (eg. increase stockpiled material at the active tipping area during low wind periods to allow for suspension of this activity during high wind periods).

It will not be possible to develop a response plan that covers each likely eventuality and proposed feasible solutions to those possible problems. In the event that a problem be identified, the appropriate specialist will be engaged to develop an incident specific remedial solution. Depending on the degree of the incident, the DER may need to be involved in the process.

## 17. Responsibility

The Person in Control of the site has a duty of care to:

- Implement, maintain and update this DMP.
- Ensure adequate appropriate training of Site Operators.
- Assess the effectiveness of the various dust suppression strategies implemented on site.
- If necessary, develop measures to improve the dust suppression strategies utilised on site (may include obtaining specialist technical assistance).
- Ensure the appropriate maintenance of dust suppression systems.
- Maintain adequate supplies of appropriate dust suppression system spares on-site.
- Monitor dust emissions beyond the site boundary.
- Ensure that this dust management plan is regularly reviewed.

Site Operator(s) has a duty of care to:

- Be aware of the site dust suppressions strategies.
- Ensure that dust suppression systems are utilised when weather conditions dictate.
- Report faulty or inefficient dust suppression systems to the Person in Control.

Vehicle Driver(s) has the duty of care to:

- Comply with site speed restrictions.
- Obey site-specific instructions directed towards reducing dust emissions.

## 18. Awareness Training

Information and training is to be provided on an as needed basis to Site Operators, Vehicle Drivers, contractors and others who may be involved in on-site activities that could generate dust emissions.

If adequate in-house expertise is not available to undertake the training, suitable external training will be made available.

The dust management awareness training is to include:

- The purpose of the training.
- The potential sources of dust emissions.
- Available dust suppression methodologies.
- The trainees' roles and responsibilities under the DMP.
- Site operating licence conditions surrounding the management of dust on site.
- Provision of a copy of the DMP.

## 19. Plan Review

This Plan is to be reviewed by the Person in Control at least every three years or more regularly if circumstances warrant.

# Appendices

## Appendix No 1 – Northam Weather Station Annual Wind Roses

### Rose of Wind direction versus Wind speed in km/h (01 Jan 1965 to 30 Sep 2010)

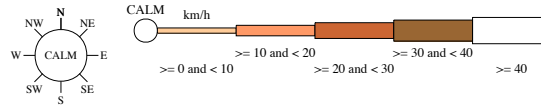
Custom times selected, refer to attached note for details

#### NORTHAM

Site No: 010111 • Opened Jan 1877 • Still Open • Latitude: -31.6508° • Longitude: 116.6586° • Elevation 170m

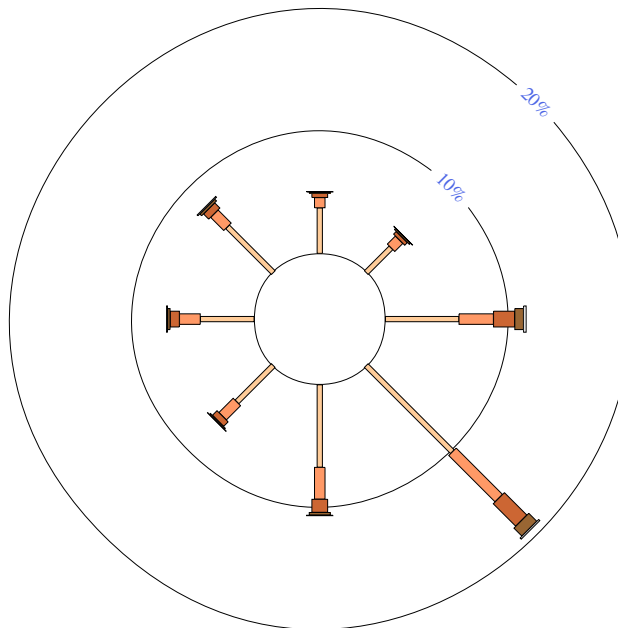
An asterisk (\*) indicates that calm is less than 0.5%.

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



9 am  
 15478 Total Observations

Calm 27%



**Rose of Wind direction versus Wind speed in km/h (01 Jan 1965 to 30 Sep 2010)**

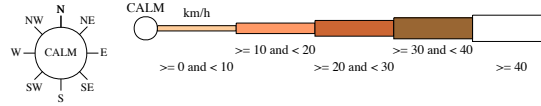
Custom times selected, refer to attached note for details

**NORTHAM**

Site No: 010111 • Opened Jan 1877 • Still Open • Latitude: -31.6508° • Longitude: 116.6586° • Elevation 170m

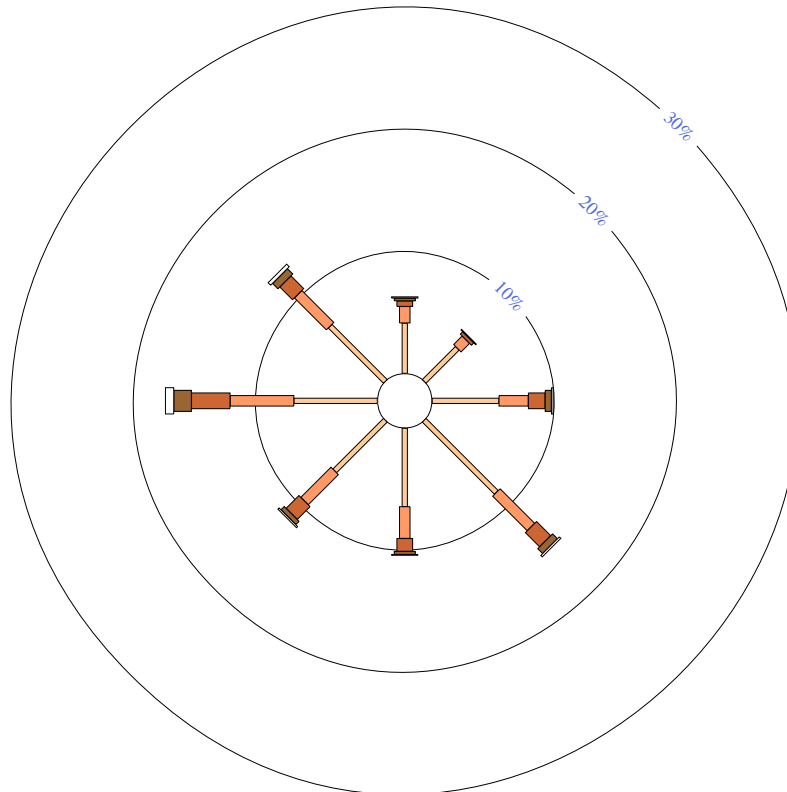
An asterisk (\*) indicates that calm is less than 0.5%.

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



3 pm  
 14954 Total Observations

Calm 11%



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