APPENDIX 6

DUST MANAGEMENT PLAN

LUNDSTROM ENVIRONMENTAL

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DUST MANAGEMENT PLAN
Prepared for Carbone Bros Pty Ltd
On Lot 5 Old Coast Road, Myalup, Shire of Harvey

1. INTRODUCTION

This Dust Management Plan (DMP) has been prepared in accordance with guidelines published by the Department of Environment and Conservation (DEC) (Jan. 2011).

The objectives of this DMP are as follows:

- To describe the nature of the proposed operation
- To identify any sources of dust that might arise from these operations
- To identify the proximity of any sensitive premises in this regard
- To identify measures that will limit the generation of dust from the operations
- To identify measures that will limit the impact of dust on sensitive premises

2. SITE BACKGROUND

Locality: Lot 5 Old Coast Road, Myalup, Shire of Harvey
Ownership: P. Ivankovich.
Total Area: 111.2ha

Figure 1 is a recent aerial photograph showing the property and its surrounds, the proposed extraction areas and the nearest residences.

2.3 Land Use

The property is mainly used for vegetable production. Figure 1 illustrates the land use of the property and its immediate surrounds

2.4 Geology and Soils

Shallow, sandy topsoil overlies inter-bedded limestone, calcarenite, marl and shell beds of the Tamala Formation. Previous work done by Commander (1988) shows that the limestone is approximately 20 to 25 metres thick and unconformably overlies sands, shales and siltstones of the Leederville Formation.

The soil texture (based on field tests) is dominantly sand, with grain size distribution being approximately as follows:

Coarse, medium and fine sand:	80%
Gravel:	8%

Silt: 6%
Clay: 6%

Although there will be some uplift of the finer particle component of this soil during stripping and stockpiling operations, this will be limited due to the low proportion of fines. During strong winds the potential exists for fine particles to become airborne especially when they are disturbed by excavation activities and further discussion on mitigation measures in this regard is contained in section 4 below.

In its in-situ state, the limestone is a cemented material with a low percentage of loose fines. However, during the crushing operation very fine particles of less than PM50 can produced as fugitive dust and require suppression as is discussed in section 4 below. A particle size analysis for crushed limestone from the site is as follows:

Gravel (>1.18mm) 50%
Sand (<1.18>0.0135mm) 46%
Fines (<0.0135mm) 4%
(Particle size analysis laboratory report is included as Appendix 1)

Whilst the analysis presented above does not determine the quantity of PM50 particles it is estimated that the potential for total suspended particles (TSP) less than PM50 is approximately 1%. Mitigation measures are discussed in section 4 below.

2.5 Potentially Sensitive Receptors

2.5.1 Residential Dwellings

The details of closest residential dwellings are identified in Table 1.

Table 1: Residential Dwellings within 1 500m of the Site*

Reference No. On Figure 2	House No.	Occupants Name	Distance to centre of pit (metres)	Distance to closest part of pit (metres)
Res 1	6816 Old Coast Road	Galati Bros	1000	650
Res 2	6693 Old Coast Road	M. Patane	1520	1384
Res 3	6616 Old Coast Road	G. Rose	1500	1180

*Residences marked on Figure 1

2.6 Prevailing Winds

Winds are strongest in this area in the afternoon and so data has been extracted for this time from Perth Airport data. These data show that prevailing winds during the dry (dusty) season of October to April are from the south-west (36%) and west (25%). Winds from the east occur less than 15% of the time, whilst all other wind directions occur less than 10% of the time. Wind rose for Perth is included as Appendix 2 (Bureau of Meteorology 2013).

3. PROPOSED WORKS AND POTENTIAL IMPACTS

Carbone Bros intend to extract 300,000 tonnes of limestone from the site over a period of 8 years. This will be done in 3 stages of 3.7ha, with each stage being rehabilitated progressively. The total area to be disturbed is 11.3ha and it is intended to rehabilitate 10ha the area back to pastures and 1.3ha to native

trees. Table 2 provides a description of all activities, their duration, aspect and an assessment of potential for dust impacts.

Table 2: Aspects and Impacts of Dust Generating Activities

Activity	Duration	Aspect	Impact
Topsoil Stripping and stockpiling in Stages 1 to 3	2 weeks every 30 months from 2013 to 2021.	Disturbance of vegetation and soil exposes ground to wind erosion	Dust may create an amenity issue with nearby residents
Rip and blade limestone to crusher site	8 weeks every 30 months from 2013 to 2021.	Actions may release dust into the atmosphere	Fine dust may create an amenity issue with nearby residents
Crushing, screening and stockpiling of limestone	4 weeks each per year from 2013 to 2021.	Crushing and screening actions may release dust into the atmosphere	Fine dust may create an amenity issue with nearby residents
Rehabilitation of Stages 1 to 3	2 weeks each per year from 2014 to 2021.	Disturbance of topsoil could release dust into the atmosphere	Dust may create an amenity issue with nearby residents
Loading of trucks from stockpiles	8 years at an average of 10 trucks per day	Loading of limestone may release dust into the atmosphere	Fine dust may create an amenity issue with nearby residents
Transport of limestone from site	8 years	Dust could escape from the truck in transit	Amenity, health or traffic safety issue

3.1 Plant and Equipment to be used

The list of Equipment to be used is as follows:

D10 Bulldozer
Caterpillar 980 and 950 front end loaders
Parker 4230 Crusher
Finlay Screen 693
Striker 25m Stacker
Caterpillar generator set
Caterpillar 322 Excavator

3.2 Summary of Mining Actions

Proposed mining actions are as follows:

- The extraction of limestone from an area of 11.3ha in 3 Stages as shown on Figure 1 (300,000 tonnes).
- Topsoil and overburden will be removed from the extraction area in stages with only the areas targeted for immediate extraction being opened. Topsoil and over-burden will be stockpiled separately along the edges of the extraction area, with stockpiles being no higher than 4 metres.
- Limestone will be ripped and bladed by bulldozer to the crusher in the centre of the site.
- Extraction activity will result in the lowering of the ground level by approximately 4 metres.
- Crushing and screening will be undertaken in campaigns of 40,000 tonnes on an annual basis.
- The removal of limestone from existing stockpiles
- The completion of rehabilitation commitments.

3.3 Site Risk Assessment and Classification

The site risk assessment is based on the format provided in the Appendices of the DEC guideline document referred to in this DMP. Based on the risk assessment conducted (Appendix 4), the classification derived is "negligable risk". Measures for managing dust impacts are discussed in Section 4 below.

4. Measures Proposed for Managing Dust

This report has identified the potential dust generating activities associated with the proposed development and has also identified the potentially sensitive receptors. The measures that are proposed to manage dust impacts are listed below:

- A 15kl water cart will be on site during all periods when earth is being moved or crushing is being conducted. If and when dust is caused to occur during these periods, the water cart will be employed to damp down the areas of concern. During crushing a spray bar is employed at all times.
- If the wind is blowing strongly from in the direction of the closest residences on and conditions are dusty, then operations will be stopped until such time as adequate wetting down has occurred.
- A polymer based spray-on soil stabilizer will be applied to topsoil and overburden stockpiles if they do not stabilize by crusting and grass regrowth.
- Internal roads will be surfaced with limestone.
- Truck loads will always be covered so that no dust is generated in transit
- A complaints system will be put in place and these will be recorded by the Quarry Manager and acted on promptly.
- A notice will be erected at the front gate and this will provide emergency contact details for the Quarry Manager.

5. REFERENCES

Bureau of Meteorology 2013. Wind rose for Perth Airport. (Accessed from www.bom.gov.au)

Department of Environment and Conservation, 2011. A guideline for managing the impacts of dust and associated contaminants from land development sites, contaminated sites remediation and other related activities.

Lundstrom Environmental, 2013. Extractive Industries Licence Application for Lot 5 Old Coast Road, Myalup.

Lundstrom Environmental 21 Sellen Court Leeming WA 6149 Mob 0417934863 mikelund1@bigpond.com	Scale: 1:16000 Original Size: A4 Air Photo Date: March 2012 Datum: Australian Geocentric 1994 (GDA9	**CARBONE BROS PTY LTD** **Lot 5 Old Coast Rd, Myalup** **Limestone Extraction**	**Property and Surrounds** **Figure 1**

C:\Users\Mike\Documents\Carbone\Lot 5 - Myalup\2010 EIL Application\Drawings\Drawing for Noise Man Plan.map 10/06/2013

APPENDIX 1
Particle Size Analysis for Crushed Limestone

South West Soil and Aggregate Laboratory

Lot 2 North Boyanup Road, Bunbury W.A 6230 SHEET..1..OF..1..
Phone/Fax (08) 9725 4243 Mobile 041 798 4403

SOIL CLASSIFICATION TEST REPORT

Client:	Carbone
Sample No:	09SW 0200-0202
Field No:	50
Date Sampled:	22.01.09
Date Received:	22.01.09
Soil Description:	Limestone
Location:	Ivankovich Pit, Stockpile 10
Proposed Use:	Sub - Base
Depth / Position	Stockpile

PSD WA 115.1						
Initial Mass		5189				
Sieve Size		75				
% passing	75.0	100				
	37.5	97				
	19	80				
	9.5	67				
	4.75	62				
	2.36	52				
	1.18	50				
	0.600	46				
	0.425	43				
	0.300	38				
	0.150	20				
	0.075	8				
	0.0135	4				
LL WA 120.1 (Cup) ☐						
LL WA 120.2 (Pen) ☐						
PL WA 121.1						
PI WA 122.1						
LS WA 123.1						
$CaCO^3$ WA 915.1		61.4				
MDCS WA 140.1		1720				

Comments:

NATA Accredited Laboratory Number 1822. Accredited for compliance with ISO / IEC 17025..

NATA

Sampled To MRWA☐ AS☐ Method

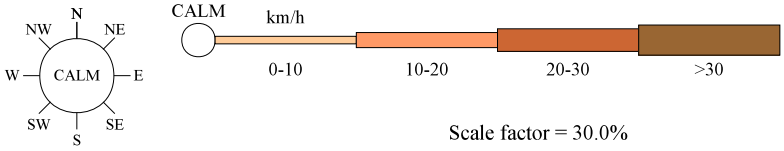
Issuing Authority	Accreditation: ISO/IEC 17025:2005	**Approved Signatory**
SOUTH WEST SOIL & AGGREGATE LABORATORY	Page 1 of 1	C.Purcell
	Document Number - SWSR 005	
	Issue Number: 6	
	Document Issue Date: March 2008	
Accreditation No. 1822	Issue Revision: March 2010	Date: 27.01.09

APPENDIX 2
Wind Rose for Perth

WIND FREQUENCY ANALYSIS (in km/h)

PERTH AIRPORT STATION NUMBER 009021

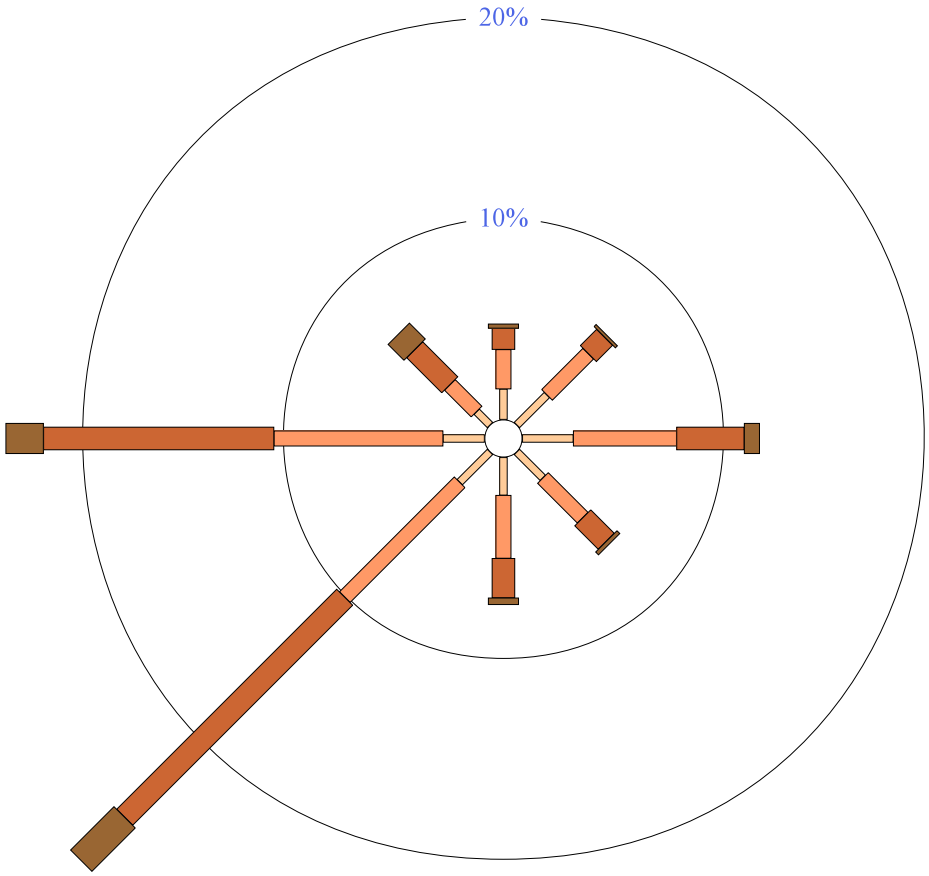
Latitude: -31.93 ° Longitude: 115.98 °



Scale factor = 30.0%

3 pm
21917 Total Observations (1944 to 2004)

Calm 5%



Wind directions are divided into eight compass directions. Calm has no direction.
An asterisk (*) indicates that calm is less than 1% .
An observed wind speed which falls precisely on the boundary between two divisions (eg 10km/h) will be included in the lower range (eg 1-10 km/h). Only quality controlled data have been used.

APPENDIX 3
Site Classification Assessment Chart

ADDENDUM

The Department of Environment and Conservation (DEC) released an updated dust guideline in January 2011, *"A guideline for managing the impacts of dust and associated contaminants from land development sites, contaminated sites remediation and other related activities, January 2011"*. An error was identified in Appendix 1 on page 35. This error has since been corrected (See below). This document is the corrected version published in March 2011.

Appendix 1: Site risk assessment/classification for activities generating uncontaminated dust

Sheet 1: Site classification assessment chart

Part A. Nature of site

Item	Score options				Allocated score
1. Nuisance potential of soil, when disturbed	Very low.....1	Low.....(2)	Medium.....4	High.....6	2
2. Topography and protection provided by undisturbed vegetation	Sheltered and screened.....1	Medium screening...(6)	Little screening.....12	Exposed and wind prone.....18	6
3. Area of site disturbed by the works	Less than 1ha.....1	Between 1 and 5ha.(3)	Between 5 and 10ha.....6	More than 10ha.....9	3
4. Type of work being done	roads or shallow trenches.....1	roads, drains and medium depth sewers.....3	Roads, drains, sewers and partial earthworks.....6	Bulk earthworks and deep trenches.....(9)	9
				TOTAL score for Part A	20

Part B. Proximity of site to other land uses

Item	Score options				Allocated score
1. D istance of other land uses from site	More than 1km.....1	Between 1km and 500m.....(6)	Between 100m and 500m.....12	Less than 100m.....18	6
2. Effect of prevailing wind direction (at time of construction) on other land uses	Not affected.....(1)	Isolated land uses affected by one wind direction.....6	Dense land uses affected by one wind direction.....9	Dense/sensitive land uses highly affected by prevailing winds.....12	1
				TOTAL score for Part B	7

SITE CLASSIFICATION SCORE (A X B) = 140

NEGLIGABLE RISK.