

Existing Air Quality

Air quality standards and goals refer to pollutant levels which include the quarry-related and existing sources.

Dust Deposition

Since 2001, three dust deposition gauges (CD-1, CD-2a/2b, and CD-3), located in and around Stage 3 of the Calga Sand Quarry, have been monitoring deposited dust levels attributable to the Calga Sand Quarry and other local sources. An additional gauge (CD-4) was installed in October 2006, and a further two gauges (CD-5 and CD-6) were installed in December 2006. **Figure 1** shows the location of each of these gauges.

Monitoring data from these sites is presented in **Table 1**, for the period April 2001 to May 2007. No extraction or processing activities were taking place at the quarry for the period 31 December 2004 to January 2006.

Monitoring period ^(a)	Total Insoluble Solids						
	CD-1	CD-2a	CD-2b	CD-3	CD-4	CD-5	CD-6
01/04/01 to 04/05/01	0.4	0.2		0.7			
04/05/01 to 01/06/01	0.4	0.5		0.4			
01/06/01 to 24/06/01	1.4	0.3		0.6			
30/06/01 to 01/08/01	0.4	0.3		0.2			
01/08/01 to 11/09/01	0.9	0.3		0.6			
12/09/01 to 03/10/01	1.2	1.3		0.7			
04/10/01 to 06/11/01	1.2	0.4		0.5			
07/11/01 to 10/12/01	19.1*	0.7		0.4			
2001 average	0.9	0.6		0.5			
11/12/01 to 09/01/02	1.3	1.8		0.5			
10/01/02 to 08/04/02	0.7	2.3		0.2			
08/04/02 to 01/05/02	0.7	0.5		1.6			
01/05/02 to 14/06/02	0.3	0.5		0.5			
14/06/02 to 01/08/02	0.3	0.7		0.3			
01/08/02 to 04/09/02	0.7	0.4		0.4			
04/09/02 to 01/10/02	1.1	2.0		1.7			
01/10/02 to 07/11/02	1.6	2.6		2.4			
07/11/02 to 03/12/02	0.5	4.1		1.6			
03/12/02 to 17/12/02	2.5	1.8		1.1			
2002 average	0.9	1.7		1.1			
17/12/02 to 11/02/03	1.5	1.4		1.4			
11/02/03 to 04/03/03	0.5	2.5		0.4			
04/03/03 to 08/04/03	0.5	5.5		0.6			
08/04/03 to 13/05/03	0.8	1.6		0.4			
13/05/03 to 03/06/03	0.3	1.6		0.1			
03/06/03 to 08/07/03	0.6	0.4		0.1			
08/07/03 to 08/08/03	0.4	0.4		0.2			
08/08/03 to 08/09/03	0.7	0.6		0.3			
08/09/03 to 16/10/03	0.6	0.4		4.4			
16/10/03 to 18/11/03	0.8	0.4		0.8			
2003 average	0.7	1.5		0.9			

Table 7 (cont'd): Summary of Dust Monitoring Results (g/m²/month)

Monitoring period ^(a)	Total Insoluble Solids						
	CD-1	CD-2a	CD-2b	CD-3	CD-4	CD-5	CD-6
18/11/03 to 12/01/04	0.9	1.0		2.5			
12/01/04 to 10/02/04	1.0	1.1		0.8			
10/02/04 to 16/03/04	0.9	0.8		0.4			
16/03/04 to 08/04/04	0.5	2.4		0.3			
08/04/04 to 01/06/04	1.2	1.2		0.5			
01/06/04 to 14/07/04	0.3	0.4		0.2			
14/07/04 to 31/07/04	1.5	1.1		0.3			
31/07/04 to 31/08/04	1.0	0.5		0.3			
31/08/04 to 30/09/04	1.4	0.8		0.4			
30/09/04 to 31/10/04	1.0	0.2		0.5			
31/10/04 to 30/11/04	1.5	0.7		0.5			
30/11/04 to 31/12/04	1.3	1.1		1.0			
2004 average	1.0	0.9		0.6			
31/12/05 to 02/02/05	1.3	1.1		0.8			
02/02/05 to 01/03/05	^(b)	1.9		2.3			
01/03/05 to 08/02/06**	^(b)	0.8		0.5			
2005 average	1.3	1.3		1.2			
09/02/06 to 02/03/06	^(b)	1.6		0.5			
03/03/06 to 04/04/06	^(b)	4.0		0.4			
04/04/06 to 1/05/06	^(b)	4.3		0.5			
01/05/06 to 02/06/06	1.2 ^(c)	6.9*		0.4			
02/06/06 to 03/07/06	1.2	5.0*		0.2			
03/07/06 to 02/08/06	0.7	*		1.1			
02/08/06 to 04/09/06	1.6		1.0	0.5			
04/09/06 to 03/10/06	0.9		0.3	0.9			
03/10/06 to 01/11/06	2.3		1.2	0.8	0.7		
01/11/06 to 01/12/06	3.3		1.1	1.7	1.6		
2006 average	1.6	3.3	0.9	0.7	1.2		
03/01/07 to 02/02/07	0.8		0.9	0.6	519*	126*	9.3*
02/02/07 to 01/03/07	1.9		1.3	1.2	1.2	0.8	0.4
01/03/07 to 02/05/07	0.5		1.1	0.4	0.7	0.6	20.8*
02/05/07 to 01/06/07	0.9		0.6	0.4	0.8	1.6	3.0
01/06/07 to 02/07/07	1.0		1.6	0.4	0.2	0.2	0.1
02/07/07 to 02/08/07	1.0		1.5	0.6	0.8	0.5	1.0
02/08/07 to 04/09/07	1.3		1.8	0.9	0.9	0.6	0.9
04/09/07 to 03/10/07	0.6		0.9	0.5	3.3	1.0	0.9
03/10/07 to 01/11/07	2.1		4.8	1.3	1.6	1.4	1.4
01/11/07 to 03/12/07	2.6		2.5	1.1	0.9	0.9	1.2
3/12/07 to 02/01/08	0.4		1.2	1.4	1.1	1.0	1.4
2007 average	1.4		1.6	0.9	1.2	1.0	1.3

Notes:

(a) Not all data complies with period of exposure specified in Australian Standard AS 3580 10 1 (1991)

(b) CD-1 removed from Rozmanec Property

(c) CD-1 relocated 1st May 2006

* Sample contaminated Levels are not included in annual average calculation

** No extraction or processing activities for the period 31 December 2004 to January 2006 – monthly dust data were not collected for this period

The data presented in **Table 7** show that, on an annual average basis, dust deposition levels are generally very low with annual averages of 1g/m²/month to 2g/m²/month. There have been occasions when elevated levels have been

measured. These samples have been demonstrated to be contaminated due to a variety of sources. Contamination can include bird droppings, vegetation (such as plant matter, algae, pollen or seeds), insects or some other interference to the gauges. The elevated levels recorded at CD-4, CD-5 and CD-6 in January 2007 are consistent with material being added to the gauges. The levels are not due to normal dust deposition processes.

PM₁₀ and Inferred TSP Concentrations

No PM₁₀ or TSP data are collected on a continuous basis close to the Calga Sand Quarry. However, PM₁₀ data were collected over a 2-week period from 16th May 2007 to 1st June 2007 by Carbon Based Environmental Pty Ltd at the residence inside the Australia Walkabout Park facility. The location of the DustTrak monitor used is shown on **Figure 1**. Due to the high density of trees with the park and around the residence it was not possible to meet the requirements of Australian Standard AS 2922 Ambient Air – Guide for Siting of Sampling Units. The monitoring location chosen was the best available with the highest probable impact from the quarry.

Data was collected every five minutes and averaged into daily 24-hour average concentrations for comparison against the NEPM PM₁₀ goal. **Table 2** presents a summary of the monitoring results. The data collected show low levels of PM₁₀ except on 17th May when the 24-hour average concentration measured was 64µg/m³. This exceeds the NEPM goal of 50µg/m³. It should be noted that the PM₁₀ levels are from all sources, not just the Calga Sand Quarry. In addition, the NEPM standard for PM₁₀ states that the goal should not be exceeded on more than five occasions over the period of a year.

Carbon Based Environmental Pty Ltd investigated the correlation of the wind data collected at the Calga Sand Quarry on the day of the exceedance and while there were a fair proportion of winds blowing from the Project site towards the Walkabout Park, the highest levels PM₁₀ levels occurred when the wind was blowing from the southwest. The wind direction that would bring particulate matter from the quarry to the Walkabout Park is from the north and northwest. There were consistent 5-minute average levels above 30µg/m³ from the north/northeast. Subsequent assessment of site activities on that day showed no unusual activity at the quarry site.

The dust deposition data collected at CD-4 (the closest to the Walkabout Park) for the period 2nd May to 1st June was measured to be 0.8g/m²/month which is below the goal of 4g/m²/month.

Date	PM₁₀ 24-hour average concentration (µg/m³)
16/5/07	24
17/05/07	64
18/05/07	10
19/05/07	1
20/05/07	3
21/05/07	3
22/05/07	4
23/05/07	2
24/05/07	3
25/05/07	7
26/05/07	19
27/05/07	21
28/05/07	15
29/05/07	12
30/05/07	5
31/05/07	10
01/06/07	9
Average	12.5

In February 2007, a High Volume Air Sampler (HVAS) was installed at a similar location to CD-1 and set to collect samples for a 24-hour period every three days, this is twice as often as the 6-day protocol defined by the DECC. The sampling program was designed to collect additional data over a short timeframe.

A HVAS was also installed at the Walkabout Park for a period of a month in August 2007. The data collected in August were collected according to the 6-day DECC protocol.

Table 3 presents a summary of the data collected. Notably, all the measured concentrations are below the NEPM goal of 50µg/m³.

Table 3: HVAS PM₁₀ concentrations (µg/m³)	
Date	PM₁₀ 24-hour average concentration (µg/m³)
February 2007 – Location CD-1	
04/02/07	14
07/02/07	15
10/02/07	12
13/02/07	10
16/02/07	13
19/02/07	20
22/02/07	17
25/02/07	12
28/02/07	13
Average	14
August 2007 – Walkabout Park	
03/08/07	1
09/08/07	1
15/08/07	4
21/08/07	5
27/08/07	8
Average	3.8