
Appendix A
Sensitive Receptors



Table A-1: Sensitive Receptor locations

Receptor ID	Easting	Northing
Location A	372086	6369960
Location C	372267	6367158
Location D	370641	6365854
Location E1	367453	6366696
Location E2	366962	6366813
Location E3	366599	6367281
Location F	367494	6367193
Location G	362850	6368708
Location H	364868	6371691
Location I	369571	6372598
Location J	370881	6371194
Location K1	370623	6366895
Location K2	370150	6366614
Location K3	370097	6366164
Location L	367424	6372364
Location M	366348	6367539
Location N	365108	6367702
Location R	366541	6364866
Location S	366125	6365252

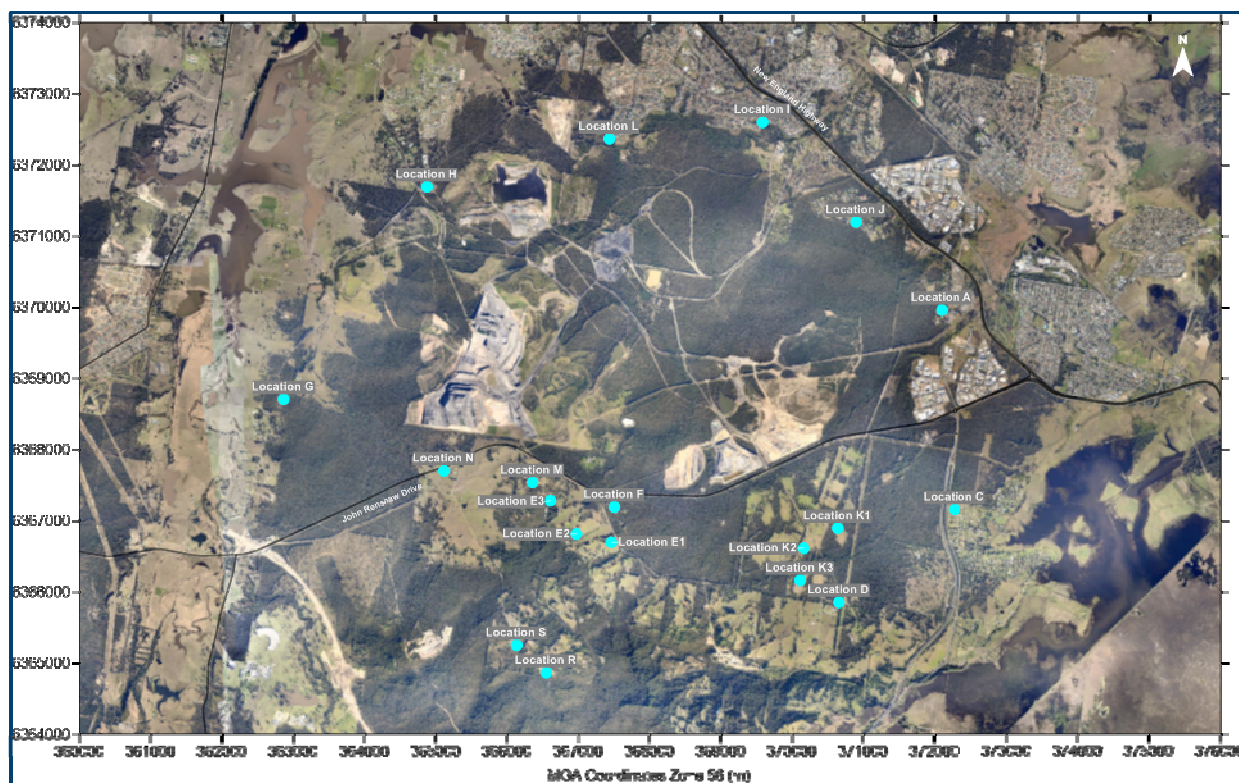


Figure A-1: Location of sensitive receptors

Appendix B
Monitoring Data

Table B-1: TEOM PM₁₀ Monitoring Data (µg/m³)

Date	WALLSEND	BERESFIELD	Date	WALLSEND	BERESFIELD
1/01/2010	11.7	12.5	1/01/2011	19.7	16.5
2/01/2010	10.7	12.3	2/01/2011	20.1	22.0
3/01/2010	16.1	17.0	3/01/2011	12.0	13.8
4/01/2010	14.9	17.0	4/01/2011	14.8	16.6
5/01/2010	21.0	20.0	5/01/2011	20.9	21.4
6/01/2010	25.2	28.4	6/01/2011	13.7	12.5
7/01/2010	19.0	20.1	7/01/2011	13.9	13.0
8/01/2010	18.6	17.9	8/01/2011	12.1	11.6
9/01/2010	27.8	21.9	9/01/2011	17.0	15.6
10/01/2010	25.6	30.0	10/01/2011	15.4	12.0
11/01/2010	26.7	23.7	11/01/2011	23.9	18.5
12/01/2010	27.8	23.8	12/01/2011	19.6	16.2
13/01/2010	58.3	30.7	13/01/2011	23.6	16.1
14/01/2010	20.0	15.9	14/01/2011	18.9	14.2
15/01/2010	17.7	16.3	15/01/2011	20.7	19.5
16/01/2010	15.5	13.5	16/01/2011	18.0	16.2
17/01/2010	28.0	23.4	17/01/2011	23.1	25.4
18/01/2010	31.6	19.6	18/01/2011	21.0	22.6
19/01/2010	34.1	33.3	19/01/2011	24.7	20.1
20/01/2010	26.7	47.2	20/01/2011	16.4	14.1
21/01/2010	-	50.0	21/01/2011	13.8	12.3
22/01/2010	-	28.9	22/01/2011	11.5	10.5
23/01/2010	-	36.1	23/01/2011	12.9	9.5
24/01/2010	-	36.5	24/01/2011	23.6	24.8
25/01/2010	-	32.1	25/01/2011	38.9	42.8
26/01/2010	-	-	26/01/2011	28.4	26.6
27/01/2010	-	-	27/01/2011	18.4	21.6
28/01/2010	-	15.7	28/01/2011	20.1	21.3
29/01/2010	29.0	20.1	29/01/2011	20.5	21.2
30/01/2010	20.3	15.3	30/01/2011	21.3	22.0
31/01/2010	24.6	17.4	31/01/2011	25.8	25.3
1/02/2010	20.2	20.0	1/02/2011	28.5	30.9
2/02/2010	17.8	17.4	2/02/2011	32.1	39.6
3/02/2010	23.6	20.5	3/02/2011	26.4	30.9
4/02/2010	29.5	12.4	4/02/2011	19.0	14.7
5/02/2010	26.1	12.8	5/02/2011	19.2	16.2
6/02/2010	18.1	16.7	6/02/2011	15.1	14.4
7/02/2010	13.7	11.9	7/02/2011	14.0	13.4
8/02/2010	20.4	17.5	8/02/2011	12.5	12.9
9/02/2010	16.4	14.1	9/02/2011	15.8	17.6
10/02/2010	17.2	14.0	10/02/2011	13.0	10.3
11/02/2010	19.9	15.4	11/02/2011	22.6	15.3
12/02/2010	21.5	22.1	12/02/2011	16.2	14.3
13/02/2010	12.6	14.7	13/02/2011	14.2	10.8
14/02/2010	16.9	14.9	14/02/2011	12.7	9.1
15/02/2010	15.2	12.4	15/02/2011	14.1	11.7
16/02/2010	14.9	17.4	16/02/2011	14.2	13.0
17/02/2010	19.5	17.1	17/02/2011	15.1	10.1
18/02/2010	16.0	13.9	18/02/2011	22.2	22.2
19/02/2010	20.9	16.0	19/02/2011	16.9	12.8
20/02/2010	19.6	14.8	20/02/2011	18.1	19.7
21/02/2010	13.9	15.4	21/02/2011	19.2	19.1
22/02/2010	18.4	19.8	22/02/2011	16.6	17.1
23/02/2010	32.8	30.2	23/02/2011	13.7	17.8
24/02/2010	24.1	22.7	24/02/2011	14.7	21.7
25/02/2010	18.2	17.7	25/02/2011	22.5	26.4
26/02/2010	13.2	16.2	26/02/2011	20.0	20.7

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Date	WALLSEND	BERESFIELD	Date	WALLSEND	BERESFIELD
27/02/2010	14.1	10.0	27/02/2011	17.5	20.7
28/02/2010	15.3	15.9	28/02/2011	18.3	21.7
1/03/2010	14.8	14.4	1/03/2011	24.3	20.7
2/03/2010	11.3	12.5	2/03/2011	25.5	25.4
3/03/2010	9.4	9.2	3/03/2011	17.6	21.4
4/03/2010	9.3	9.2	4/03/2011	23.9	26.0
5/03/2010	-	9.2	5/03/2011	15.2	15.6
6/03/2010	-	8.5	6/03/2011	13.3	14.3
7/03/2010	-	9.3	7/03/2011	9.6	11.7
8/03/2010	-	12.4	8/03/2011	10.5	8.7
9/03/2010	-	21.2	9/03/2011	19.0	15.9
10/03/2010	-	20.4	10/03/2011	18.1	19.4
11/03/2010	-	15.0	11/03/2011	11.5	13.7
12/03/2010	-	14.6	12/03/2011	15.9	16.1
13/03/2010	-	7.5	13/03/2011	14.3	12.8
14/03/2010	-	7.6	14/03/2011	18.4	25.1
15/03/2010	-	12.6	15/03/2011	16.9	21.3
16/03/2010	-	15.1	16/03/2011	18.0	19.5
17/03/2010	-	15.4	17/03/2011	11.8	12.3
18/03/2010	-	14.2	18/03/2011	9.1	12.0
19/03/2010	-	16.9	19/03/2011	9.8	11.3
20/03/2010	-	21.9	20/03/2011	11.2	11.4
21/03/2010	-	24.6	21/03/2011	11.3	7.2
22/03/2010	-	26.7	22/03/2011	12.3	16.1
23/03/2010	-	20.4	23/03/2011	9.7	21.8
24/03/2010	-	25.7	24/03/2011	11.5	27.1
25/03/2010	-	20.6	25/03/2011	11.8	14.0
26/03/2010	-	26.0	26/03/2011	10.5	13.2
27/03/2010	-	40.6	27/03/2011	8.3	10.5
28/03/2010	-	15.4	28/03/2011	7.2	10.5
29/03/2010	-	18.5	29/03/2011	11.4	12.6
30/03/2010	8.0	9.3	30/03/2011	14.6	18.5
31/03/2010	10.7	9.0	31/03/2011	20.6	23.9
1/04/2010	16.0	16.0	1/04/2011	16.5	17.7
2/04/2010	14.6	13.2	2/04/2011	19.4	23.6
3/04/2010	14.1	11.4	3/04/2011	18.1	22.9
4/04/2010	9.6	7.2	4/04/2011	13.7	17.4
5/04/2010	9.7	7.6	5/04/2011	5.7	7.7
6/04/2010	12.9	12.8	6/04/2011	7.0	10.0
7/04/2010	12.0	9.7	7/04/2011	8.1	10.7
8/04/2010	14.2	14.7	8/04/2011	5.9	8.5
9/04/2010	16.8	16.7	9/04/2011	7.4	8.2
10/04/2010	18.9	18.6	10/04/2011	9.6	12.1
11/04/2010	14.9	21.0	11/04/2011	6.4	12.9
12/04/2010	15.1	25.0	12/04/2011	10.0	21.0
13/04/2010	20.4	29.7	13/04/2011	16.5	30.7
14/04/2010	23.1	21.5	14/04/2011	13.5	27.4
15/04/2010	19.7	28.3	15/04/2011	14.5	24.9
16/04/2010	17.1	17.3	16/04/2011	7.5	8.0
17/04/2010	12.9	12.1	17/04/2011	10.2	12.8
18/04/2010	10.6	12.4	18/04/2011	13.1	16.1
19/04/2010	10.7	13.3	19/04/2011	15.7	19.0
20/04/2010	10.7	12.5	20/04/2011	19.2	25.2
21/04/2010	11.5	13.2	21/04/2011	15.5	21.1
22/04/2010	12.3	28.5	22/04/2011	14.2	20.0
23/04/2010	24.7	37.3	23/04/2011	11.0	13.7
24/04/2010	26.1	28.1	24/04/2011	13.0	14.3
25/04/2010	11.5	11.7	25/04/2011	8.1	9.5

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Date	WALLSEND	BERESFIELD	Date	WALLSEND	BERESFIELD
26/04/2010	14.1	14.3	26/04/2011	9.7	8.8
27/04/2010	11.1	18.0	27/04/2011	7.9	8.7
28/04/2010	13.4	17.7	28/04/2011	8.7	11.3
29/04/2010	16.0	22.0	29/04/2011	8.0	9.7
30/04/2010	14.0	20.0	30/04/2011	12.8	13.6
1/05/2010	10.7	8.5	1/05/2011	13.8	15.6
2/05/2010	14.4	16.1	2/05/2011	13.0	20.2
3/05/2010	19.1	20.7	3/05/2011	13.8	18.0
4/05/2010	12.8	15.8	4/05/2011	12.5	18.9
5/05/2010	11.4	15.1	5/05/2011	15.0	17.1
6/05/2010	12.4	26.9	6/05/2011	15.4	16.7
7/05/2010	15.6	24.0	7/05/2011	15.3	21.3
8/05/2010	16.1	21.8	8/05/2011	20.5	24.2
9/05/2010	16.8	22.8	9/05/2011	15.5	21.9
10/05/2010	15.1	20.4	10/05/2011	11.0	16.6
11/05/2010	18.6	28.1	11/05/2011	16.0	29.9
12/05/2010	17.3	23.8	12/05/2011	10.6	14.1
13/05/2010	13.9	26.4	13/05/2011	11.0	13.0
14/05/2010	11.9	20.3	14/05/2011	8.7	10.8
15/05/2010	17.7	19.6	15/05/2011	12.7	20.9
16/05/2010	15.1	18.6	16/05/2011	20.4	27.9
17/05/2010	9.3	13.4	17/05/2011	18.9	23.8
18/05/2010	7.5	12.9	18/05/2011	16.1	22.0
19/05/2010	7.6	11.1	19/05/2011	15.5	14.0
20/05/2010	12.4	16.8	20/05/2011	16.0	18.5
21/05/2010	13.0	13.7	21/05/2011	17.5	21.1
22/05/2010	7.9	7.2	22/05/2011	14.4	20.0
23/05/2010	9.8	10.0	23/05/2011	7.4	11.5
24/05/2010	14.0	12.2	24/05/2011	7.8	11.7
25/05/2010	12.2	11.3	25/05/2011	5.3	5.3
26/05/2010	10.5	9.8	26/05/2011	9.9	9.8
27/05/2010	16.9	17.2	27/05/2011	11.9	16.0
28/05/2010	15.1	12.2	28/05/2011	9.2	15.7
29/05/2010	6.0	5.6	29/05/2011	6.8	10.1
30/05/2010	5.0	6.6	30/05/2011	10.2	11.1
31/05/2010	10.9	11.7	31/05/2011	14.6	13.0
1/06/2010	10.9	11.8	1/06/2011	20.0	21.3
2/06/2010	10.4	11.4	2/06/2011	12.0	12.7
3/06/2010	12.3	12.9	3/06/2011	12.9	17.8
4/06/2010	13.0	11.2	4/06/2011	12.4	14.8
5/06/2010	11.9	12.3	5/06/2011	5.4	8.1
6/06/2010	8.9	10.8	6/06/2011	11.9	12.0
7/06/2010	9.3	12.5	7/06/2011	11.7	19.6
8/06/2010	13.1	18.0	8/06/2011	10.1	17.2
9/06/2010	11.4	19.3	9/06/2011	12.6	19.5
10/06/2010	11.7	16.1	10/06/2011	10.5	16.1
11/06/2010	13.2	20.6	11/06/2011	12.8	11.8
12/06/2010	12.3	17.3	12/06/2011	7.1	6.8
13/06/2010	16.0	17.5	13/06/2011	11.4	11.2
14/06/2010	15.0	16.0	14/06/2011	14.5	14.0
15/06/2010	15.3	20.8	15/06/2011	18.1	16.6
16/06/2010	15.5	17.6	16/06/2011	10.5	12.8
17/06/2010	12.4	13.3	17/06/2011	6.8	12.9
18/06/2010	17.5	20.1	18/06/2011	8.5	12.8
19/06/2010	13.2	16.7	19/06/2011	12.0	17.1
20/06/2010	13.5	16.0	20/06/2011	10.7	14.3
21/06/2010	12.5	17.1	21/06/2011	16.4	14.6
22/06/2010	8.5	8.4	22/06/2011	8.2	11.4



Date	WALLSEND	BERESFIELD	Date	WALLSEND	BERESFIELD
23/06/2010	8.7	10.3	23/06/2011	11.2	13.7
24/06/2010	9.9	12.8	24/06/2011	16.3	24.5
25/06/2010	14.5	16.0	25/06/2011	20.0	19.4
26/06/2010	7.4	8.8	26/06/2011	14.7	22.7
27/06/2010	9.8	12.3	27/06/2011	16.4	22.9
28/06/2010	13.0	22.7	28/06/2011	12.0	17.7
29/06/2010	13.3	16.9	29/06/2011	12.0	13.4
30/06/2010	12.6	15.5	30/06/2011	13.8	15.6
1/07/2010	15.7	24.8	1/07/2011	6.9	9.2
2/07/2010	15.8	18.5	2/07/2011	13.6	13.7
3/07/2010	10.6	9.5	3/07/2011	12.8	15.5
4/07/2010	11.2	15.3	4/07/2011	14.0	17.1
5/07/2010	13.3	16.8	5/07/2011	11.9	16.5
6/07/2010	9.5	10.0	6/07/2011	14.3	17.1
7/07/2010	10.4	11.9	7/07/2011	10.7	16.0
8/07/2010	8.6	10.2	8/07/2011	12.1	20.4
9/07/2010	8.4	11.2	9/07/2011	11.5	14.4
10/07/2010	10.3	8.3	10/07/2011	11.9	18.7
11/07/2010	11.3	13.2	11/07/2011	12.5	18.2
12/07/2010	12.6	13.1	12/07/2011	14.8	23.7
13/07/2010	11.5	11.9	13/07/2011	18.8	25.8
14/07/2010	8.0	11.0	14/07/2011	13.4	15.7
15/07/2010	7.7	12.2	15/07/2011	10.2	12.7
16/07/2010	13.7	24.1	16/07/2011	9.9	9.4
17/07/2010	15.0	17.5	17/07/2011	9.2	7.6
18/07/2010	14.5	16.6	18/07/2011	6.4	11.2
19/07/2010	18.1	23.8	19/07/2011	7.5	11.3
20/07/2010	10.3	12.7	20/07/2011	8.6	6.9
21/07/2010	9.0	10.9	21/07/2011	4.9	4.1
22/07/2010	10.7	13.6	22/07/2011	8.4	8.9
23/07/2010	12.2	15.2	23/07/2011	6.8	6.0
24/07/2010	11.8	13.3	24/07/2011	6.8	8.6
25/07/2010	10.5	11.1	25/07/2011	10.7	14.4
26/07/2010	10.9	11.7	26/07/2011	9.4	12.3
27/07/2010	12.2	14.2	27/07/2011	10.1	16.7
28/07/2010	10.7	9.5	28/07/2011	14.5	19.6
29/07/2010	9.3	9.0	29/07/2011	16.6	22.5
30/07/2010	9.9	13.4	30/07/2011	17.0	17.3
31/07/2010	6.2	7.2	31/07/2011	16.9	27.0
1/08/2010	7.1	9.5	1/08/2011	20.4	25.3
2/08/2010	6.5	12.3	2/08/2011	22.5	34.9
3/08/2010	10.6	10.8	3/08/2011	26.7	38.7
4/08/2010	10.2	14.9	4/08/2011	25.6	25.8
5/08/2010	11.4	16.8	5/08/2011	24.2	28.6
6/08/2010	11.9	19.9	6/08/2011	20.1	21.0
7/08/2010	12.8	16.4	7/08/2011	11.4	12.9
8/08/2010	12.9	17.7	8/08/2011	7.7	9.9
9/08/2010	17.7	21.3	9/08/2011	7.5	11.2
10/08/2010	10.2	8.5	10/08/2011	11.0	13.9
11/08/2010	6.2	8.1	11/08/2011	14.6	25.7
12/08/2010	8.6	10.0	12/08/2011	12.6	19.0
13/08/2010	13.0	17.8	13/08/2011	14.3	19.2
14/08/2010	12.4	14.6	14/08/2011	12.2	12.6
15/08/2010	13.2	16.4	15/08/2011	7.9	13.2
16/08/2010	9.7	12.0	16/08/2011	10.9	17.4
17/08/2010	12.4	20.7	17/08/2011	8.8	10.1
18/08/2010	18.0	24.0	18/08/2011	8.0	9.9
19/08/2010	11.2	14.5	19/08/2011	9.3	12.4

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Date	WALLSEND	BERESFIELD	Date	WALLSEND	BERESFIELD
20/08/2010	8.3	9.9	20/08/2011	17.2	15.4
21/08/2010	10.9	11.7	21/08/2011	13.7	13.2
22/08/2010	12.0	11.7	22/08/2011	8.3	10.0
23/08/2010	11.8	13.2	23/08/2011	6.6	11.1
24/08/2010	6.2	9.5	24/08/2011	12.0	13.5
25/08/2010	8.4	12.2	25/08/2011	12.6	20.8
26/08/2010	12.7	27.8	26/08/2011	17.4	25.6
27/08/2010	10.6	12.0	27/08/2011	17.2	21.6
28/08/2010	13.3	13.3	28/08/2011	20.4	22.4
29/08/2010	17.4	20.6	29/08/2011	18.4	24.3
30/08/2010	16.6	19.4	30/08/2011	14.0	14.4
31/08/2010	19.4	19.2	31/08/2011	12.0	17.3
1/09/2010	28.6	30.3	1/09/2011	13.9	17.7
2/09/2010	21.6	24.5	2/09/2011	12.8	14.5
3/09/2010	11.9	9.6	3/09/2011	12.2	12.9
4/09/2010	7.2	5.6	4/09/2011	11.8	11.7
5/09/2010	8.9	16.6	5/09/2011	19.9	19.9
6/09/2010	9.0	13.8	6/09/2011	17.9	22.1
7/09/2010	12.4	16.1	7/09/2011	13.6	22.1
8/09/2010	12.3	13.3	8/09/2011	13.7	17.1
9/09/2010	16.7	17.5	9/09/2011	5.3	8.8
10/09/2010	9.2	9.3	10/09/2011	6.0	10.9
11/09/2010	13.3	12.7	11/09/2011	8.3	14.2
12/09/2010	17.3	15.5	12/09/2011	13.3	21.2
13/09/2010	16.4	22.9	13/09/2011	13.5	18.9
14/09/2010	14.2	14.9	14/09/2011	18.8	34.2
15/09/2010	10.0	13.0	15/09/2011	24.9	36.2
16/09/2010	11.9	16.1	16/09/2011	16.1	37.2
17/09/2010	11.6	16.2	17/09/2011	22.4	30.6
18/09/2010	18.5	21.2	18/09/2011	23.8	27.7
19/09/2010	27.3	29.2	19/09/2011	26.3	24.6
20/09/2010	21.5	25.7	20/09/2011	35.2	41.4
21/09/2010	20.7	23.2	21/09/2011	17.1	29.9
22/09/2010	21.3	20.4	22/09/2011	27.3	34.8
23/09/2010	17.0	19.4	23/09/2011	31.5	41.0
24/09/2010	21.5	22.3	24/09/2011	24.8	29.0
25/09/2010	21.0	25.9	25/09/2011	8.5	8.1
26/09/2010	19.2	26.1	26/09/2011	11.2	12.8
27/09/2010	22.9	32.2	27/09/2011	9.4	11.5
28/09/2010	17.9	23.8	28/09/2011	10.4	15.5
29/09/2010	17.5	19.2	29/09/2011	8.3	10.0
30/09/2010	13.7	18.9	30/09/2011	8.8	12.6
1/10/2010	20.6	20.6	1/10/2011	8.7	11.4
2/10/2010	11.7	10.4	2/10/2011	11.5	11.9
3/10/2010	12.2	8.4	3/10/2011	9.8	11.7
4/10/2010	15.7	10.6	4/10/2011	11.0	16.1
5/10/2010	10.2	10.8	5/10/2011	11.3	15.1
6/10/2010	8.7	8.7	6/10/2011	14.1	18.4
7/10/2010	18.7	20.1	7/10/2011	14.3	17.7
8/10/2010	23.7	21.4	8/10/2011	10.5	12.1
9/10/2010	14.2	12.7	9/10/2011	7.5	11.2
10/10/2010	13.7	12.9	10/10/2011	13.0	18.4
11/10/2010	17.0	13.4	11/10/2011	12.0	20.3
12/10/2010	16.5	13.7	12/10/2011	13.7	18.4
13/10/2010	18.3	18.2	13/10/2011	12.4	15.4
14/10/2010	15.4	17.1	14/10/2011	14.8	12.4
15/10/2010	10.3	8.7	15/10/2011	14.9	13.6
16/10/2010	7.8	10.0	16/10/2011	17.0	21.3

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Date	WALLSEND	BERESFIELD	Date	WALLSEND	BERESFIELD
17/10/2010	12.1	13.1	17/10/2011	16.8	22.3
18/10/2010	17.3	22.0	18/10/2011	15.7	21.2
19/10/2010	18.0	25.2	19/10/2011	13.4	16.4
20/10/2010	14.7	14.4	20/10/2011	17.5	18.3
21/10/2010	18.3	15.4	21/10/2011	19.4	23.8
22/10/2010	21.8	18.8	22/10/2011	23.0	27.8
23/10/2010	13.1	13.1	23/10/2011	18.4	22.4
24/10/2010	6.9	7.1	24/10/2011	23.6	32.3
25/10/2010	11.9	13.0	25/10/2011	19.9	21.4
26/10/2010	19.3	13.8	26/10/2011	12.2	14.8
27/10/2010	18.5	20.9	27/10/2011	9.8	13.0
28/10/2010	13.5	13.4	28/10/2011	14.7	12.7
29/10/2010	16.8	16.5	29/10/2011	15.7	18.9
30/10/2010	17.9	14.5	30/10/2011	11.2	14.3
31/10/2010	16.1	14.6	31/10/2011	11.1	13.1
1/11/2010	14.1	12.5	1/11/2011	-	12.8
2/11/2010	10.3	10.7	2/11/2011	-	19.1
3/11/2010	12.6	16.0	3/11/2011	9.3	15.5
4/11/2010	10.2	10.5	4/11/2011	11.7	16.7
5/11/2010	9.9	9.0	5/11/2011	15.9	16.8
6/11/2010	9.9	9.5	6/11/2011	18.7	20.9
7/11/2010	11.2	10.9	7/11/2011	21.9	22.8
8/11/2010	15.6	13.9	8/11/2011	19.0	16.0
9/11/2010	13.9	15.7	9/11/2011	23.0	23.8
10/11/2010	14.1	14.1	10/11/2011	23.1	27.2
11/11/2010	13.0	15.1	11/11/2011	20.3	23.4
12/11/2010	16.8	20.8	12/11/2011	19.1	19.7
13/11/2010	18.2	18.4	13/11/2011	15.0	20.7
14/11/2010	17.8	14.5	14/11/2011	24.6	25.6
15/11/2010	13.2	15.7	15/11/2011	20.5	25.0
16/11/2010	8.7	9.7	16/11/2011	16.9	23.0
17/11/2010	13.4	14.2	17/11/2011	10.4	8.8
18/11/2010	14.5	16.8	18/11/2011	6.3	7.2
19/11/2010	21.2	20.8	19/11/2011	15.0	15.5
20/11/2010	14.5	16.6	20/11/2011	21.3	22.9
21/11/2010	13.5	15.0	21/11/2011	11.7	13.1
22/11/2010	15.0	13.1	22/11/2011	7.6	7.7
23/11/2010	17.7	15.2	23/11/2011	8.5	8.7
24/11/2010	18.9	15.5	24/11/2011	10.7	11.2
25/11/2010	21.1	19.0	25/11/2011	8.3	6.2
26/11/2010	20.4	20.4	26/11/2011	5.7	7.2
27/11/2010	16.3	14.6	27/11/2011	12.4	16.9
28/11/2010	16.2	15.2	28/11/2011	16.9	12.6
29/11/2010	16.4	17.9	29/11/2011	17.4	15.8
30/11/2010	22.3	16.4	30/11/2011	14.5	18.4
1/12/2010	11.5	9.1	1/12/2011	13.2	15.7
2/12/2010	13.8	10.1	2/12/2011	11.8	15.4
3/12/2010	19.6	13.0	3/12/2011	9.1	9.5
4/12/2010	15.9	14.3	4/12/2011	12.0	12.4
5/12/2010	18.0	15.3	5/12/2011	9.7	9.9
6/12/2010	16.0	14.3	6/12/2011	8.9	9.4
7/12/2010	17.3	12.3	7/12/2011	8.3	7.7
8/12/2010	14.0	11.3	8/12/2011	7.6	6.4
9/12/2010	15.1	11.3	9/12/2011	8.5	9.1
10/12/2010	10.2	10.5	10/12/2011	11.0	-
11/12/2010	17.6	18.5	11/12/2011	11.9	-
12/12/2010	14.1	18.2	12/12/2011	10.9	-
13/12/2010	20.3	22.8	13/12/2011	14.1	-

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Date	WALLSEND	BERESFIELD	Date	WALLSEND	BERESFIELD
14/12/2010	19.1	19.5	14/12/2011	14.3	-
15/12/2010	19.1	19.6	15/12/2011	11.8	-
16/12/2010	19.4	21.6	16/12/2011	9.6	-
17/12/2010	13.5	17.9	17/12/2011	9.7	-
18/12/2010	12.8	20.0	18/12/2011	10.4	-
19/12/2010	9.4	10.8	19/12/2011	10.9	-
20/12/2010	8.6	15.2	20/12/2011	12.4	-
21/12/2010	15.7	19.6	21/12/2011	11.1	-
22/12/2010	19.6	26.6	22/12/2011	7.8	-
23/12/2010	23.2	24.9	23/12/2011	9.8	13.9
24/12/2010	23.6	26.2	24/12/2011	8.9	13.7
25/12/2010	19.4	15.3	25/12/2011	13.2	15.4
26/12/2010	6.8	7.2	26/12/2011	12.6	17.9
27/12/2010	11.8	13.8	27/12/2011	14.2	21.9
28/12/2010	17.4	19.0	28/12/2011	16.2	23.6
29/12/2010	17.5	14.1	29/12/2011	9.3	14.8
30/12/2010	19.0	17.8	30/12/2011	12.3	29.0
31/12/2010	18.6	13.5	31/12/2011	11.5	20.3

Table B-2: HVAS PM₁₀ monitoring data (µg/m³)

DATE	R.F.S.	Blackhill	Golf course	Bloomfield
1/01/2010	20	15	13	-
7/01/2010	22	18	16	-
13/01/2010	37	7	36	-
19/01/2010	25	10	19	-
25/01/2010	32	23	28	-
31/01/2010	34	13	14	-
6/02/2010	15	13	15	-
12/02/2010	20	22	23	-
18/02/2010	11	8	8	-
24/02/2010	20	16	22	-
2/03/2010	6	8	10	-
8/03/2010	10	10	10	-
14/03/2010	3	1	5	-
20/03/2010	17	23	24	-
26/03/2010	26	22	23	-
1/04/2010	17	10	13	-
7/04/2010	14	5	9	-
13/04/2010	18	13	20	-
19/04/2010	9	5	13	-
25/04/2010	11	7	7	-
1/05/2010	8	6	6	-
7/05/2010	13	14	15	-
13/05/2010	13	12	16	-
19/05/2010	11	6	7	-
25/05/2010	15	5	10	-
31/05/2010	12	12	7	-
6/06/2010	7	3	4	-
12/06/2010	11	8	9	-
18/06/2010	14	9	10	-
24/06/2010	10	5	13	-
30/06/2010	13	10	8	-
6/07/2010	5	3	8	-
12/07/2010	10	10	14	-
18/07/2010	10	11	11	-
24/07/2010	3	8	12	-
30/07/2010	5	1	10	-
5/08/2010	1	6	11	-

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DATE	R.F.S.	Blackhill	Golf course	Bloomfield
11/08/2010	4	8	7	-
17/08/2010	2	6	11	-
23/08/2010	7	7	6	-
29/08/2010	14	11	15	-
4/09/2010	3	0	2	-
10/09/2010	5	1	4	-
16/09/2010	8	8	10	-
22/09/2010	12	15	17	-
28/09/2010	14	16	13	-
4/10/2010	3	9	7	-
10/10/2010	3	7	9	-
16/10/2010	7	3	6	-
22/10/2010	9	14	18	-
28/10/2010	5	7	10	-
3/11/2010	10	11	11	-
9/11/2010	11	11	13	-
15/11/2010	10	8	11	-
21/11/2010	9	7	9	-
27/11/2010	11	9	14	-
3/12/2010	14	9	8	-
9/12/2010	12	11	15	-
15/12/2010	24	16	21	-
21/12/2010	15	12	12	-
27/12/2010	12	10	10	-
2/01/2011	20	19	21	-
8/01/2011	10	6	7	-
14/01/2011	15	9	15	-
20/01/2011	10	10	12	-
26/01/2011	22	23	23	-
1/02/2011	28	31	33	-
7/02/2011	11	8	11	-
13/02/2011	11	9	8	-
19/02/2011	20	12	11	-
25/02/2011	17	13	19	-
3/03/2011	13	15	14	-
9/03/2011	17	15	14	-
15/03/2011	15	21	23	-
21/03/2011	16	6	5	-
27/03/2011	5	6	6	-
2/04/2011	18	13	14	-
8/04/2011	8	4	5	-
14/04/2011	10	13	15	-
20/04/2011	14	13	29	-
26/04/2011	4	6	6	-
2/05/2011	11	8	14	-
8/05/2011	18	13	14	-
14/05/2011	6	4	6	-
20/05/2011	15	13	17	-
26/05/2011	4	2	5	11
1/06/2011	21	13	13	16
7/06/2011	14	7	8	14
13/06/2011	16	4	6	9
19/06/2011	8	8	9	11
25/06/2011	18	11	13	20
1/07/2011	9	2	8	18.9
7/07/2011	6	8	21	10
13/07/2011	21	19	18	26
19/07/2011	6	4	4	16

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DATE	R.F.S.	Blackhill	Golf course	Bloomfield
25/07/2011	11	8	8	14
31/07/2011	12	12	16	18
6/08/2011	26	16	19	25
12/08/2011	8	8	9	16
18/08/2011	6	7	7	10
24/08/2011	14	11	13	12
30/08/2011	9	12	14	17
5/09/2011	27	15	20	27
11/09/2011	5	10	9	9
17/09/2011	25	23	26	43
23/09/2011	39	34	38	41
29/09/2011	11	-	10	12
5/10/2011	20	13	12	17
11/10/2011	16	15	14	19
17/10/2011	16	18	16	21
23/10/2011	26	27	26	26
29/10/2011	20	18	14	20.3
4/11/2011	19	13	16	13
10/11/2011	32	34	26	25
16/11/2011	21	27	28	22
22/11/2011	14	15	14	12
28/11/2011	22	20	13	18
4/12/2011	12	20	7	18
10/12/2011	12	14	14	17
16/12/2011	11	10	9	14
22/12/2011	7	8	6	10
28/12/2011	15	15	14	22
3/01/2012	-	-	-	14
9/01/2012	-	-	-	21
15/01/2012	-	-	-	12
21/01/2012	-	-	-	17
27/01/2012	-	-	-	12

Table B-3: HVAS TSP monitoring data ($\mu\text{g}/\text{m}^3$)

DATE	R.F.S.	Blackhill	Bloomfield
1/01/2010	29	23	-
7/01/2010	74	33	-
13/01/2010	95	15	-
19/01/2010	59	29	-
25/01/2010	89	47	-
31/01/2010	40	22	-
6/02/2010	23	21	-
12/02/2010	40	53	-
18/02/2010	18	17	-
24/02/2010	35	39	-
2/03/2010	18	18	-
8/03/2010	25	32	-
14/03/2010	9	7	-
20/03/2010	30	40	-
26/03/2010	41	50	-
1/04/2010	26	20	-
7/04/2010	21	11	-
13/04/2010	31	33	-
19/04/2010	17	17	-
25/04/2010	17	19	-
1/05/2010	16	14	-
7/05/2010	22	27	-
13/05/2010	26	26	-

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DATE	R.F.S.	Blackhill	Bloomfield
19/05/2010	14	9	-
25/05/2010	37	8	-
31/05/2010	15	19	-
6/06/2010	7	9	-
12/06/2010	18	18	-
18/06/2010	28	28	-
24/06/2010	23	9	-
30/06/2010	29	37	-
6/07/2010	9	11	-
12/07/2010	21	16	-
18/07/2010	20	19	-
24/07/2010	9	13	-
30/07/2010	15	12	-
5/08/2010	8	20	-
11/08/2010	10	20	-
17/08/2010	9	24	-
23/08/2010	11	16	-
29/08/2010	25	25	-
4/09/2010	10	9	-
10/09/2010	12	14	-
16/09/2010	23	37	-
22/09/2010	30	28	-
28/09/2010	33	46	-
4/10/2010	11	17	-
10/10/2010	11	16	-
16/10/2010	9	19	-
22/10/2010	25	33	-
28/10/2010	16	15	-
3/11/2010	18	24	-
9/11/2010	19	23	-
15/11/2010	24	23	-
21/11/2010	22	16	-
27/11/2010	26	31	-
3/12/2010	27	19	-
9/12/2010	32	32	-
15/12/2010	43	30	-
21/12/2010	33	37	-
27/12/2010	23	23	-
2/01/2011	33	31	-
8/01/2011	21	12	-
14/01/2011	36	21	-
20/01/2011	25	20	-
26/01/2011	46	42	-
1/02/2011	82	74	-
7/02/2011	37	31	-
13/02/2011	23	18	-
19/02/2011	49	25	-
25/02/2011	42	29	-
3/03/2011	34	42	-
9/03/2011	55	38	-
15/03/2011	36	34	-
21/03/2011	28	14	-
27/03/2011	13	18	-
2/04/2011	33	27	-
8/04/2011	12	11	-
14/04/2011	21	30	-
20/04/2011	31	27	-
26/04/2011	12	12	-

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DATE	R.F.S.	Blackhill	Bloomfield
2/05/2011	22	14	-
8/05/2011	28	25	-
14/05/2011	13	22	-
20/05/2011	36	32	-
26/05/2011	8	7	29
1/06/2011	35	23	39
7/06/2011	26	27	34
13/06/2011	27	16	20
19/06/2011	15	18	22
25/06/2011	34	21	34
1/07/2011	12	13	33.4
7/07/2011	17	26	33
13/07/2011	43	58	44
19/07/2011	13	17	25
25/07/2011	27	26	30
31/07/2011	24	22	32
6/08/2011	51	35	49
12/08/2011	17	23	34
18/08/2011	14	18	21
24/08/2011	43	22	31
30/08/2011	19	21	52
5/09/2011	70	32	55
11/09/2011	14	20	24
17/09/2011	56	51	80
23/09/2011	76	68	73
29/09/2011	18	-	21
5/10/2011	55	21	36
11/10/2011	40	30	46
17/10/2011	39	35	52
23/10/2011	43	32	53
29/10/2011	39	33	41.8
4/11/2011	46	17	36
10/11/2011	60	65	57
16/11/2011	38	31	78.9
22/11/2011	23	21	28
28/11/2011	-	29	48
4/12/2011	-	29	34
10/12/2011	34	21	37
16/12/2011	21	16	39
22/12/2011	13	11	28
28/12/2011	28	20	36
3/01/2012	-	-	65
9/01/2012	-	-	46
15/01/2012	-	-	28
21/01/2012	-	-	33
27/01/2012	-	-	29



Table B-4: Dust deposition monitoring data (g/m²/month)

Month	TASMAN_D01	TASMAN_D02	TASMAN_D03	Donaldson D1	Donaldson D2	Donaldson D3	Donaldson D4	Donaldson D5A	Donaldson D6	Donaldson D7	Donaldson D8	Donaldson D9	Donaldson D10	Donaldson D11	Donaldson D12	Bloomfield D1	Bloomfield D2	Bloomfield D3	Bloomfield D4	Bloomfield D5	Bloomfield D6	Bloomfield D7	Bloomfield D8	Bloomfield D9	Bloomfield D10
Jan-10	1.2	1.1	1.5	0.6	0.8	5.6	1.2	2.4	1.2	0.8	1.4	1.3	0.8	1.3	1.1	2.1	2.1	1.5	2.1	0.9	2.0	2.6	1.6	1.2	3.0
Feb-10	0.8	0.4	0.7	1.9	11.3	1.9	1.4	1.5	1.1	1.2	1.6	1.1	0.8	1.8	1.3	2.9	3.1	2.9	2.1	2.0	1.9	2.8	434c	ns	1.7
Mar-10	0.4	0.1	0.7	0.6	0.6	3.2	1	4.1	0.6	0.6	1.2	0.6	0.2	0.8	1.1	0.9	1.8	1.8	1.5	0.9	1.5	1.5	1.2	1.1	3.2
Apr-10	0.7	1.1	0.6	0.8	1.8	2.4	0.7	*	0.3	0.6	0.9	0.6	0.4	0.8	0.8	1.0	2.0	1.9	1.9	1.4	2.8	1.7	2.1	1.0	4.9
May-10	0.6	0.3	0.4	0.8	4.9	3	1.1	1.2	1	0.7	1.3	1	0.5	1.1	0.8	0.8	2.7	2.9	2.8	1.0	2.9	1.1	1.5	1.3	9.9c
Jun-10	0.4	0.5	0.6	0.3	2.2	3	0.6	0.2	1.2	0.5	0.5	0.6	0.7	0.7	0.4	2.2	1.3	1.8	1.9	0.8	15.8c	1.2	1.5	1.0	50.3c
Jul-10	0.5	0.3	0.3	0.6	1.1	0.7	0.7	0.5	0.3	0.5	0.6	0.7	0.2	0.8	0.5	0.5	0.7	2.9d	2.5	0.8	2.4	0.9	0.9	0.3	2.4
Aug-10	0.7	0.5	0.6	0.4	0.5	1.9	0.8	0.2	0.7	0.5	0.5	0.6	0.5	0.7	0.4	0.4	1.1	1.0	1.4	0.8	5.1	1.7	0.8	0.9	1.9
Sep-10	0.4	1.9	0.9	0.6	2.6	1.6	1	0.5	1.1	0.5	1	0.9	0.6	0.8	0.9	0.8	2.6	7.6c	1.5	1.5	1.5	1.9	1.9	1.6	2.1
Oct-10	0.7	6.4	0.9	0.9	1.6	0.9	0.5	0.4	0.5	1	1.3	1.2	2	1.2	0.4	2.8	1.9	1.1	0.8	0.7	0.7	0.8	0.6	1.0	1.6
Nov-10	0.4	0.5	0.7	0.9	3.5	0.9	1.4	1.1	0.9	0.6	0.9	-	0.9	0.8	1.1	1.4	1.3	0.9	0.9	0.7	0.8	0.7	1.8	0.5	1.7
Dec-10	0.4	2.4	1.1	1	0.7	0.9	1.1	0.5	0.4	0.6	2.4	1	0.5	1	1.4	0.6	1.5	1.4	1.1	0.6	2.1	1.4	1.5	1.8	2.1
Jan-11	0.5	0.6	1.1	1	0.7	1.8	1.2	0.6	0.7	0.9	1.3	1	0.5	1.5	1	0.3	1.6	3.0	1.0	0.6	3.6	1.9	1.3	1.7	1.2
Feb-11	0.9	1	2.1	0.7	4.1	0.9	1	0.7	0.7	1	1.2	-	0.6	1.4	1.4	1.5	1.3	2.5	1.0	0.8	4.7c	1.2	3.1c	0.9	1.3
Mar-11	0.6	0.4	0.9	0.5	2.9	-	0.9	1.7	0.8	0.9	1.9	-	0.8	1.2	1.3	0.6	1.3	1.2	1.8	1.4	3.9c	2.5	1.1	0.6	1.9
Apr-11	0.6	1.4	1.2	0.7	0.6	4.9	0.8	1.1	0.7	0.9	2.1	0.8	1	0.3	0.7	2.5	2.2	1.2	2.3	1.7	3.1	1.3	1.5	1.4	1.7
May-11	0.4	0.4	0.6	0.4	1.1	5.4	0.7	0.4	0.5	0.6	1.5	0.4	0.4	0.6	0.7	1.3	1.5	1.0	6.5	1.3	1.1	0.7	0.9	0.6	0.4
Jun-11	0.2	0.8	0.7	0.7	1.1	1.7	0.9	0.7	0.8	0.6	1.2	0.7	0.9	0.8	1.1	1.3	0.9	1.1	3.2	1.2	2.0	1.1	1.9	0.8	1.2
Jul-11	0.5	0.8	0.9	0.6	0.5	1.6	0.1	0.4	0.3	0.3	1.8	0.8	0.5	0.9	0.7	0.7	1.6	1.3	3.8	1.6	3.9	1.2	1.1	1.1	0.9
Aug-11	0.2	1.3	0.8	0.4	0.1	0.6	0.7	0.5	0.4	0.5	2.4	1	1	0.6	0.8	0.6	0.5	-	2.5	0.7	10.2	1.0	0.7	0.3	2.1
Sep-11	0.8	2.5	1.3	1.3	0.4	0.8	0.5	0.6	-	0.6	1.5	0.6	2.3	0.7	0.7	1.5	0.9	0.7	2.0	1.3	7.1	1.5	23.5	0.7	6.1
Oct-11	0.7	3.8	2	-	-	-	-	-	-	-	-	-	-	-	-	1.4	1.7	0.7	8.6	1.4	3.4	1.4	1.0	0.9	4.8
Nov-11	0.9	7.5	1.5	-	-	-	-	-	-	-	-	-	-	-	-	2.5	2.4	1.4	1.7	2.3	4.7	1.7	1.7	1.4	2.0
Dec-11	0.5	3.7	0.8	-	-	-	-	-	-	-	-	-	-	-	-	1.9	1.6	3.4c	0.6	1.3	2.4	1.1	1.4	0.7	0.5



Appendix C
Emission Calculation

Abel Underground Mine - Emission Calculation

The Abel Underground Mine mining schedule and designs provided by Donaldson Coal have been combined with emissions factor equations that relate to the quantity of dust emitted from particular activities based on intensity, the prevailing meteorological conditions and composition of the material being handled.

Emission factors and associated controls have been sourced from the US EPA AP42 Emission Factors (US EPA, 1985 and Updates), the National Pollutant Inventory document "*Emission Estimation Technique Manual for Mining, Version 3.1*" (National Pollutants Inventory (NPI), 2012), the State Pollution Control Commission document "*Air Pollution from Coal Mining and Related Developments*" (NSW SPCC, 1983) and the OEH document, "*NSW Coal Mining Benchmarking Study: International Best Practise Measures to Prevent and/or Minimise Emissions of Particulate Matter from Coal Mining*", prepared by Katestone Environmental (Katestone, 2010).

Measurements of the ROM and product coal silt and moisture contents were conducted by Introspec Consulting to determine site specific variables. A summary of the testing report is presented in Appendix G.

The emission factor equation for the loading / unloading coal has been re-derived following analysis of the coal silt measurements. A review of the AP42 equation for coal loading and background data was used to develop the relationship between the silt and moisture content of coal material and the potential dust emissions during handling activities.

The emission factor equations used for each dust generating activity are outlined in Table C-1 below. A detailed emission inventory for the modelled scenario is presented in Table C-2.



Table C-1: Emission factor equations

Activity	Emission factor equation	Variables used in emission factor equation	Dust controls applied to emission factor equation	Source
Conveyor transfers	$EF = k \times 0.0016 \times \left(\left(\frac{U}{2.2} \right)^{1.4} / \left(\frac{M}{2} \right)^{1.4} \right) \text{ kg/tonne}$	k = 0.74 U = wind speed (m/s) M = moisture content (%)	70% control for enclosed transfer points	NPI, 2012 Katestone, 2010
Conveying	$EF = 0.4 \text{ kg/ha/hour}$	-	70% control for enclosed conveyors	NSW SPCC, 1983 Katestone, 2010
Hauling on sealed surfaces	$EF = 0.00323 \times sL^{0.91} \times (M \times 0.90718)^{1.02} \text{ kg/VKT}$	sL = silt loading g m ² M = Average vehicle mass (tonnes)	50% control for use of water and regular cleaning	US EPA , 1985 and updates Katestone, 2010
Hauling on unsealed surfaces	$EF = \frac{0.4536}{1.6093} \times \left(\left(\frac{s}{12} \right)^{0.7} \times 4.9 \right) \times \left(M \times \frac{1.1023}{3} \right)^{0.45} \text{ kg/VKT}$	S = silt content (%) M = average vehicle mass (tonnes)	75% control with watering of trafficked areas	US EPA , 1985 and updates Katestone, 2010
Dozers on coal	$EF = 35.6 \times \frac{s^{1.2}}{M^{1.4}} \text{ kg/hour}$	S = silt content (%) M = moisture content (%)	-	US EPA , 1985 and updates
Loading / unloading material	$EF = k \times 0.0016 \times \left(\left(\frac{U}{2.2} \right)^{1.4} / \left(\frac{M}{2} \right)^{1.4} \right) \text{ kg/tonne}$	k = 0.74 U = wind speed (m/s) M = moisture content (%)	-	US EPA , 1985 and updates
Loading / unloading coal	$EF = \frac{\left(0.58 \times \left(\frac{s}{2} \right)^{1.2} \times \left(\frac{u}{2} \right)^{1.3} \right)}{M^{1.2}}$	S = silt content (%) U = wind speed (m/s) M = moisture content (%)	-	-
Crushing	$EF = 0.0006 \text{ kg/Mg}$	-	Control achieved with water sprays	US EPA , 1985 and updates
Screening	$EF = 0.0011 \text{ kg/Mg}$	-	Control achieved with water sprays	US EPA , 1985 and updates
Wind erosion	$EF = 1.9 \times \left(\frac{s}{1.5} \right) \times 365 \times \left(\frac{365 - p}{235} \right) \times \left(\frac{f}{15} \right) \frac{\text{kg}}{\text{ha}} / \text{hour}$	S = silt content (%) P = number of days when rainfall >0.25mm F = % of time wind speed >5.4m/s	50% control	NPI, 2012 Katestone, 2010

Table C-2: Emissions inventory

ACTIVITY	TSP emission (kg/y)	Intensity	Units	Emission Factor	Units	Variable 1	Units	Variable 2	Units	Variable 3	Units	Variable 4	Units	Variable 5	Units	Variable 6	Units									
Stack-out conveyor, conveying ROM to Abel Pit Top ROM Stockpile	18	0.02	ha	0.4	kg/ha/hour	8,760	hours/year										70	% Control								
Unloading ROM to Abel Pit Top ROM Stockpile	1,991	6,065,000	tonnes/year	0.0003	kg/t	1.00	average of (wind speed/2.2) ^{1.3} in m/s	5.0	moisture content in %																	
Loading ROM to haul trucks (FEL)	23,924	6,065,000	tonnes/year	0.0039	kg/t	1.00	average of (wind speed/2.2) ^{1.3} in m/s	8.0	moisture content in %	0.25	silt content in %															
Hauling Abel ROM to ROM Pad (sealed road)	24,780	6,065,000	tonnes/year	0.008	kg/t	40	tonnes/load	0.6	km/return trip	0.54	kg/VKT	5.0	g/m ³	40	Ave GMV (tonnes)		50	% Control								
Hauling Tasman ROM to ROM Pad (sealed road)	4,719	1,155,000	tonnes/year	0.008	kg/t	40	tonnes/load	0.6	km/return trip	0.54	kg/VKT	5.0	g/m ³	40	Ave GMV (tonnes)		50	% Control								
Unloading at ROM pad (Abel)	23,924	6,065,000	tonnes/year	0.0039	kg/t	1.00	average of (wind speed/2.2) ^{1.3} in m/s	8.0	moisture content in %	0.25	silt content in %															
Unloading at ROM pad (Tasman)	4,556	1,155,000	tonnes/year	0.0039	kg/t	1.00	average of (wind speed/2.2) ^{1.3} in m/s	8.0	moisture content in %	0.25	silt content in %															
Unloading at ROM pad (Bloomfield)	9,014	1,300,000	tonnes/year	0.0069	kg/t	1.00	average of (wind speed/2.2) ^{1.3} in m/s	5.0	moisture content in %	0.25	silt content in %															
Loading ROM to hopper (FEL) (Bloomfield)	2,704	1,300,000	tonnes/year	0.0069	kg/t	1.00	average of (wind speed/2.2) ^{1.3} in m/s	5.0	moisture content in %	0.25	silt content in %							70	% Control							
Loading ROM to hopper (FEL) (Abel and Tasman)	8,544	7,220,000	tonnes/year	0.0039	kg/t	1.00	average of (wind speed/2.2) ^{1.3} in m/s	8.0	moisture content in %	0.25	silt content in %								70	% Control						
Plant feed conveyor	62	0.06	ha	0.4	kg/ha/hour	8,760	hours/year												70	% Control						
Crushing	5,112	8,520,000	tonnes/year	0.0006	kg/Mg																					
Screening	9,372	8,520,000	tonnes/year	0.0011	kg/Mg																					
No2 conveyor, conveying to CHPP	32	0.03	ha	0.4	kg/ha/hour	8,760	hours/year													70	% Control					
CHPP Activity (enclosed, no emission)																										
Product conveyors, conveying to Product Coal Stockpile	69	0.07	ha	0.4	kg/ha/hour	8,760	hours/year														70	% Control				
Unloading to Product Stockpile	1,106	6,504,000	tonnes/year	0.0002	kg/t	1.00	average of (wind speed/2.2) ^{1.3} in m/s	8	moisture content in %																	
Dozers at Product Stockpile	11,030	7096	hours/year	1.55	kg/h	0.7	silt content in %	8	moisture content in %																	
Conveying from Product Coal Stockpile to Rail loading conveyor	134	0.13	ha	0.4	kg/ha/hour	8,760	hours/year															70	% Control			
Rail loading conveyor, conveying to Rail loadout bin	241	0.23	ha	0.4	kg/ha/hour	8,760	hours/year																70	% Control		
Unloading Product to Train	2,602	6,504,000	tonnes/year	0.0004	kg/t																					
Loading Rejects	280	1,645,000	tonnes/year	0.0002	kg/t	1.00	average of (wind speed/2.2) ^{1.3} in m/s	8.0	moisture content in %																	
Hauling Rejects	144,403	1,645,000	tonnes/year	0.35	kg/t	40	tonnes/load	5.6	km/return trip	2.5	kg/VKT	5.0	% silt content	40	Ave GMV (tonnes)							75	% Control			
Unloading Rejects	280	1,645,000	tonnes/year	0.0002	kg/t	1.00	average of (wind speed/2.2) ^{1.3} in m/s	8.0	moisture content in %																	
Wind erosion from Abel Pit Top ROM stockpile	57	2.0	ha	57.43	kg/ha/year	0.25	silt content in %	87	(p)														50	% Control		
Wind erosion from ROM Pad stockpile	150	5.2	ha	57.43	kg/ha/year	0.25	silt content in %	87	(p)															50	% Control	
Wind erosion from Product stockpile	1,393	17.3	ha	160.80	kg/ha/year	0.7	silt content in %	87	(p)																50	% Control
Mine Ventilation System	25,278	4,715	mg/m ³		170	m ³ /sec		31,536,000	sec/year																	
Mine Ventilation System	25,278	4,715	mg/m ³		170	m ³ /sec		31,536,000	sec/year																	
TOTAL	331,053																									

Appendix D

CALMET/CALPUFF Input Variables



Table D-1: CALMET input variables

Parameter	Value
Terrain radius of influence (TERRAD)	10km
Vertical extrapolation of surface wind observations (IEXTRP)	-4
Layer dependent weighting factor of surface vs. upper air wind observations (BIAS [NZ])	-1, -0.5, -0.25, 0, 0, 0, 0
Weighting parameter for Step 1 wind field vs. observations	R1 = 0.5km, R2 = 0.5km
Maximum radius of influence for meteorological stations in Layer 1 and layers aloft	RMAX1=1.0km, RMAX2=1.0km

Table D-2: CALPUFF input variables

Parameter	Used option	Value
Aqueous phase transformation modelled?	No	0
Boundary conditions modelled?	No	0
CGRUP (species groups)	PM2.5, PM10 and TSP	-
Chemical transformation	Not modelled	0
Dry deposition modelled?	Yes	1
Gravitational settling (plume tilt) modelled?	No	0
Horizontal size of puff (m) beyond which time-dependent dispersion equations (Heffter) are used to determine sigma-y and sigma-z	Default	550
Individual source conditions saved?	No	0
Maximum length of a slug (met. grid units)	Default	1
Maximum mixing height	Default	3000
Maximum number of sampling steps for one puff/slug during one time step	-	60
Maximum number of slugs/puffs release from one source during one time step	-	60
Maximum sigma z allowed to avoid numerical problem in calculating virtual time or distance	Default	5.00E+06
Maximum travel distance of a puff/slug during one sampling step	Default	1
Method used to compute dispersion coefficients?	Internally calculated sigma v, sigma w using micrometeorological variables	2
Method used for Lagrangian timescale for Sigma-y	Draxler default 617.284	0
Method used to compute turbulence sigma-v & sigma-w using micrometeorological variables	Standard CALPUFF subroutines	1
Minimum mixing height	Default	50
Minimum sigma y for a new puff/slug	Default	1
Minimum sigma z for a new puff/slug	Default	1
Minimum turbulence velocities sigma-v and sigma-w for each stability class over land and over water	Default	-
Near-field puffs modelled as elongated slugs?	No	0
Plume path coefficients for each stability class	Default	-
Potential temperature gradient for stable classes E, F	Default	-
Puff splitting allowed?	No	0
Range of land use categories for which urban dispersion is assumed	Default	-
Slug - to - puff transition criterion factor	Default	10
Stability class used to determine plume growth rates for puffs above the boundary layer	Default	5
Sub grid-scale complex terrain	Not Modelled	0
Switch for using Heffter equation for sigma-z	Default(Not use Heffter)	0
Terrain adjustment method	Default(Partial plume path adjustment)	3
Vegetation state in unirrigated areas	Default(Active and unstressed)	1
Vertical dispersion constant for stable conditions	Default	0.01
Vertical distribution used in the near field	Default (Gaussian)	1
Wet removal modelled?	No	0
Wind speed classes	Default	-
Wind speed profile power-law exponents for stabilities	Default	-

Appendix E
Isopleth Diagrams

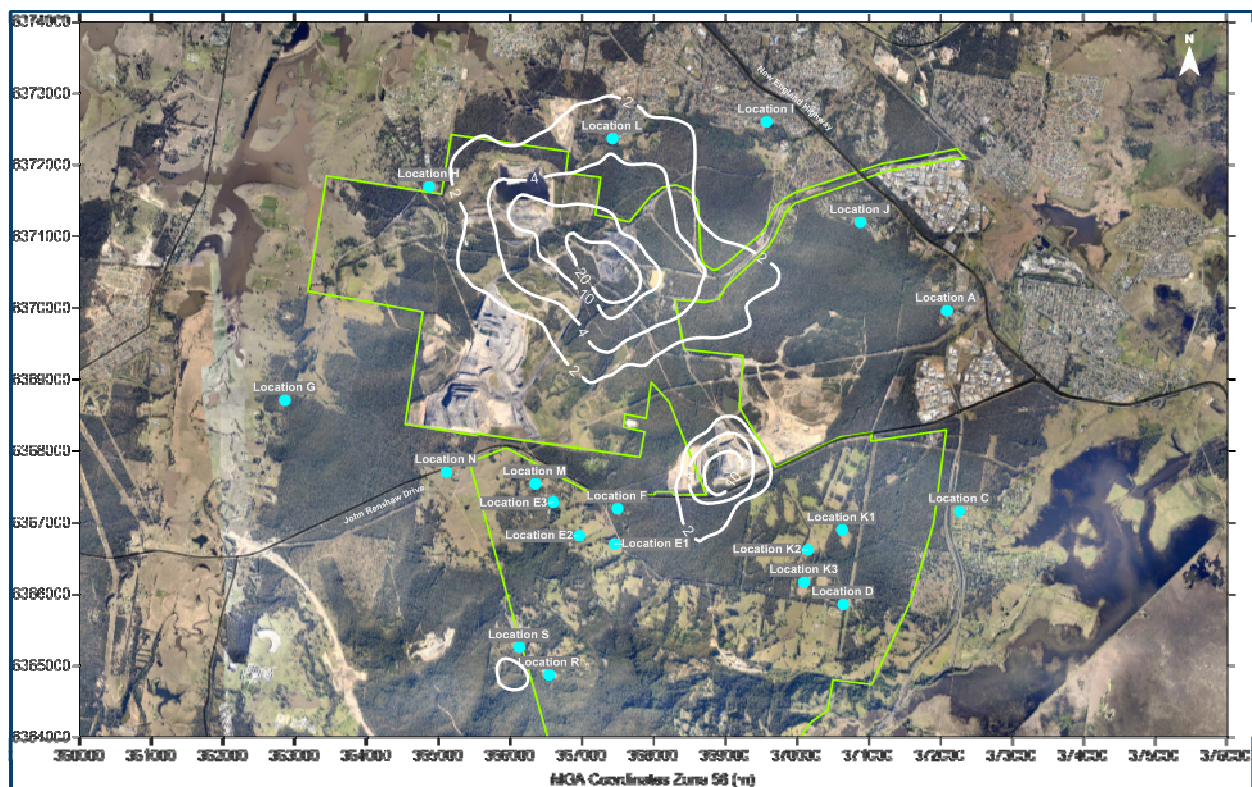


Figure E-1: Predicted maximum 24-hour average $PM_{2.5}$ concentrations due to emissions from the Modification ($\mu g/m^3$)

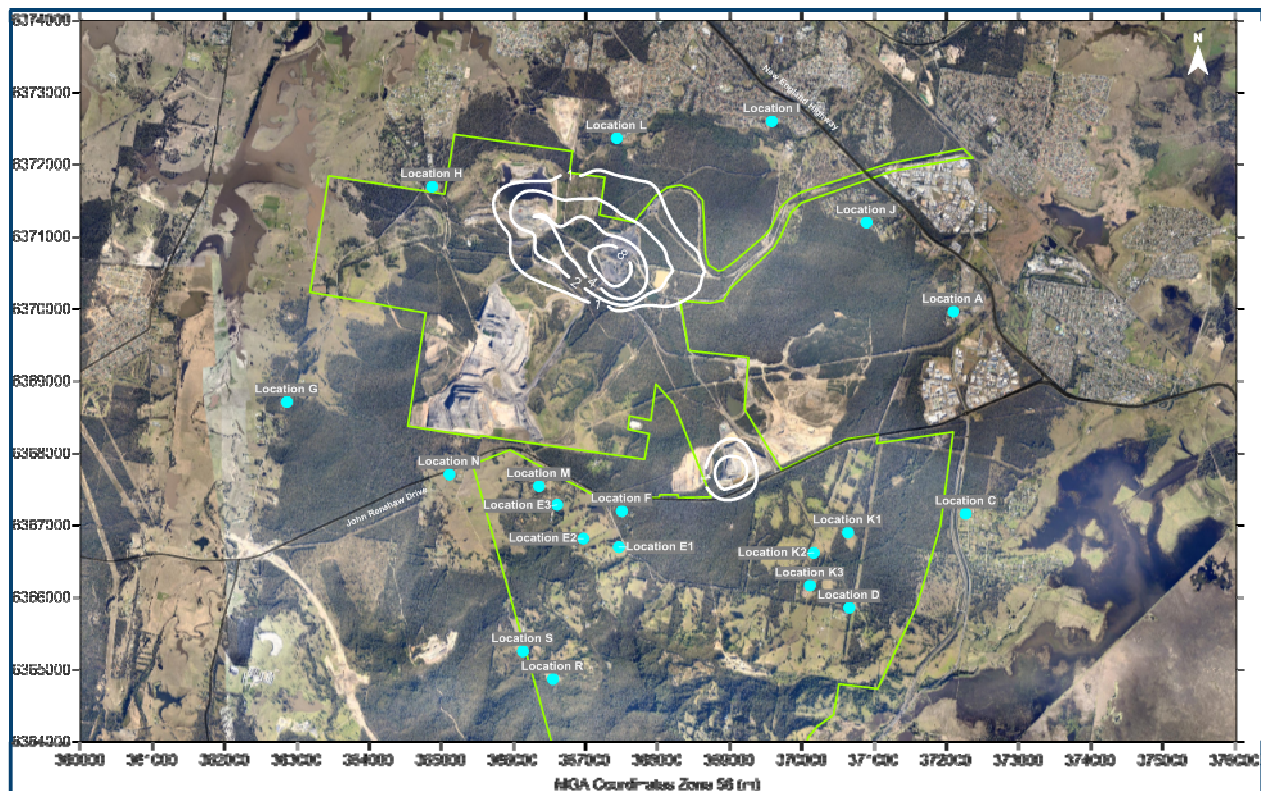


Figure E-2: Predicted annual average $PM_{2.5}$ concentrations due to emissions from the Modification ($\mu g/m^3$)

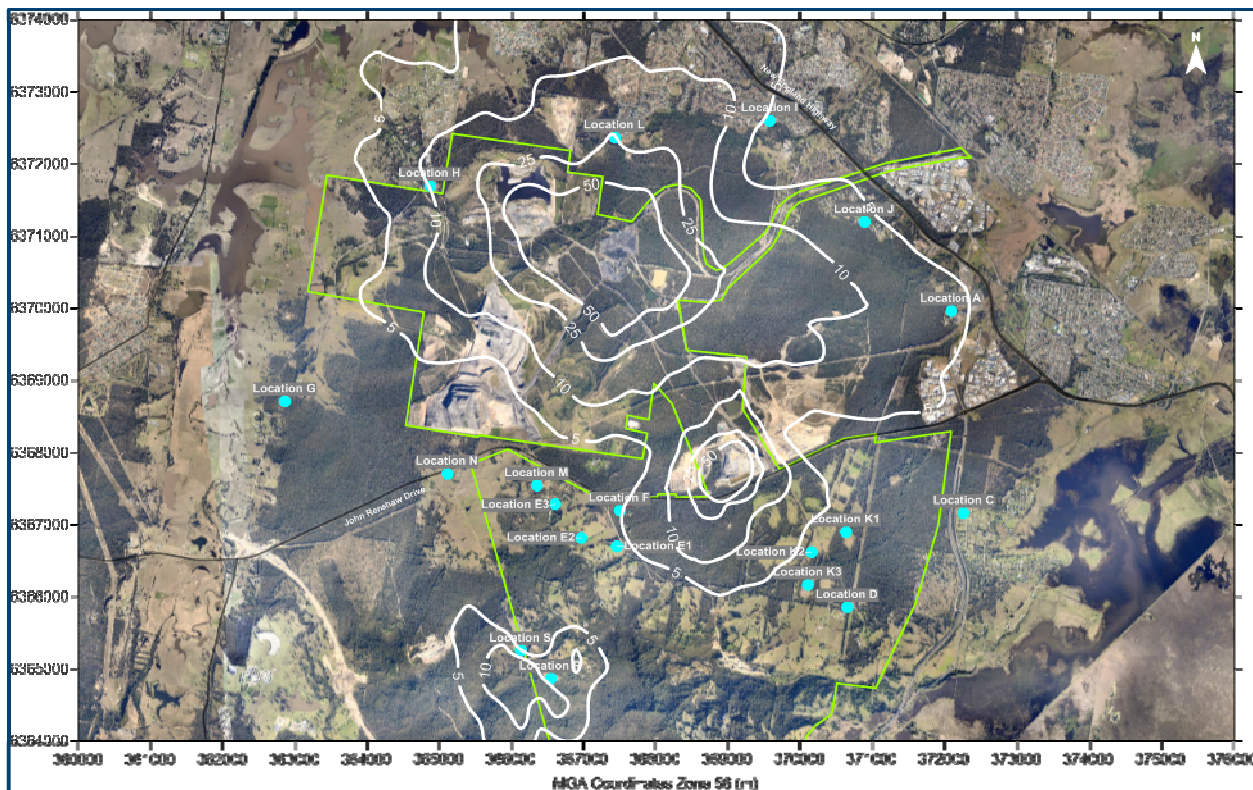


Figure E-3: Predicted maximum 24-hour average PM₁₀ concentrations due to emissions from the Modification ($\mu\text{g}/\text{m}^3$)

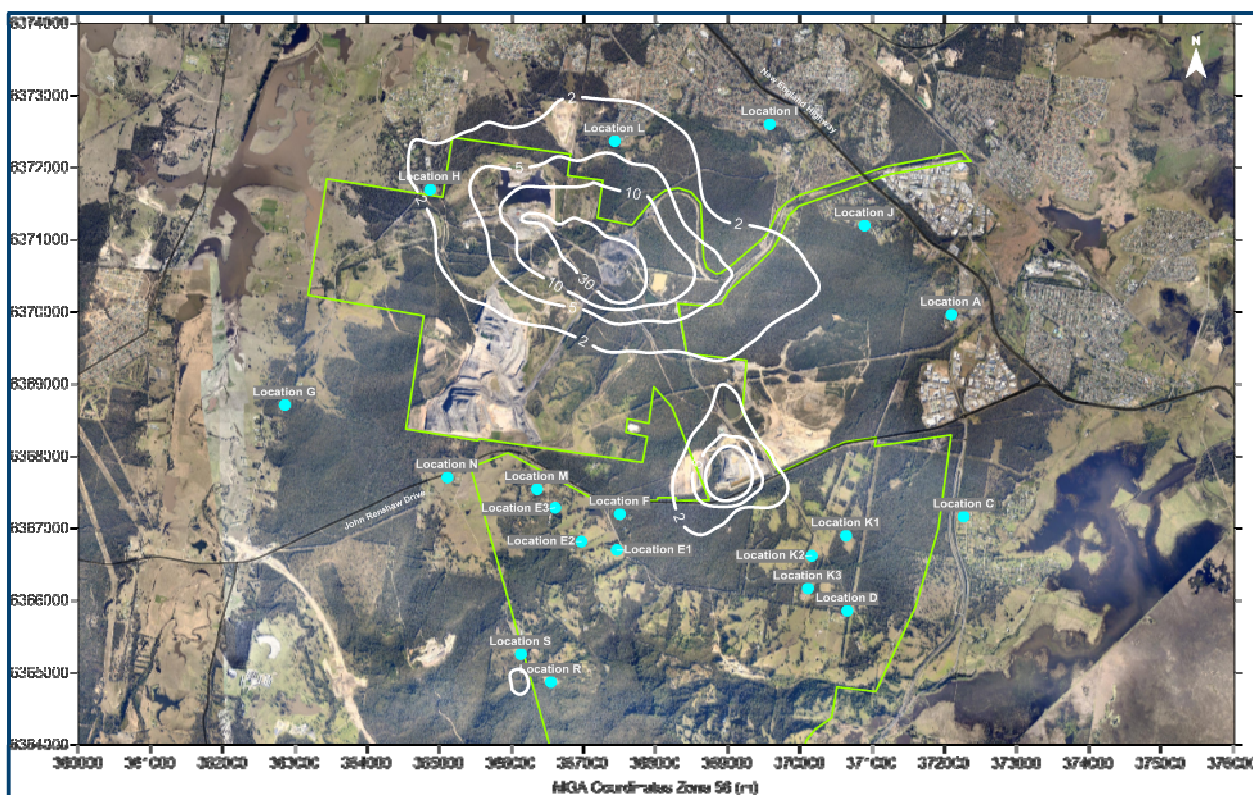


Figure E-4: Predicted annual average PM₁₀ concentrations due to emissions from the Modification ($\mu\text{g}/\text{m}^3$)

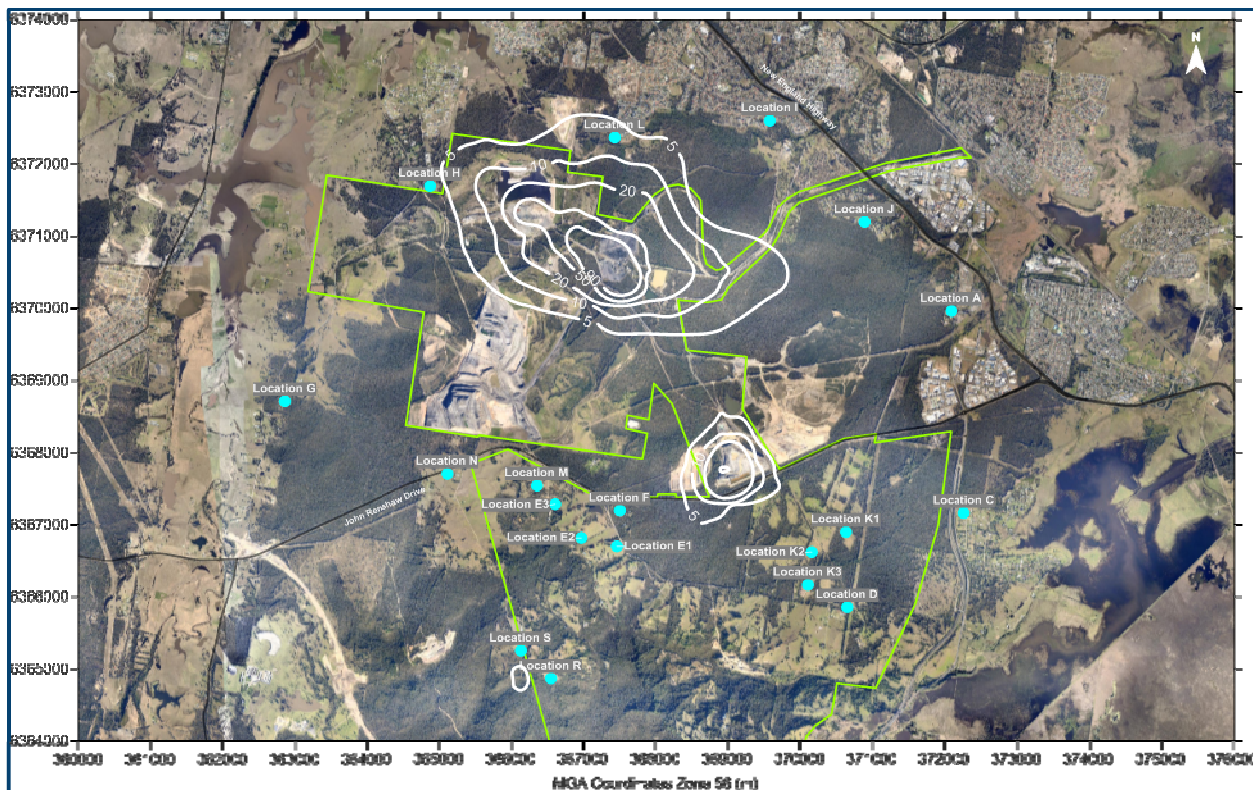


Figure E-5: Predicted annual average TSP concentrations due to emissions from the Modification ($\mu\text{g}/\text{m}^3$)

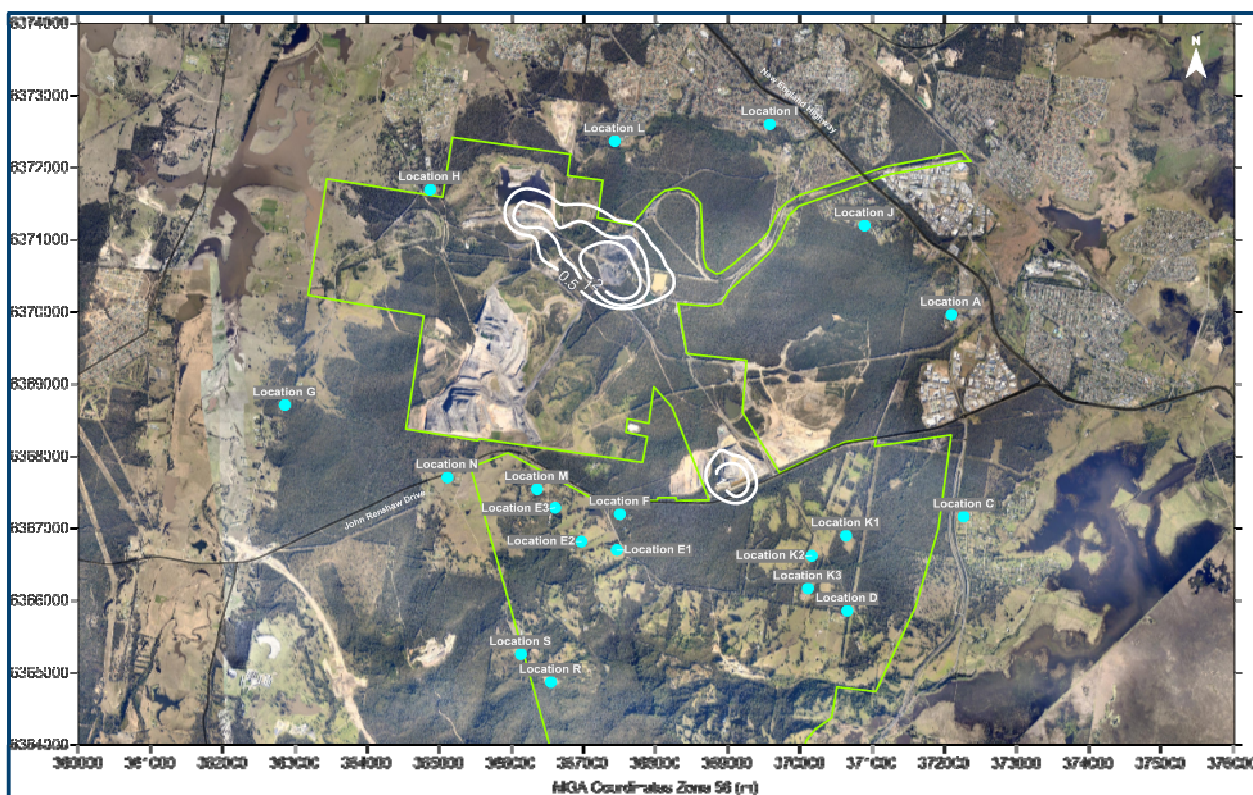


Figure E-6: Predicted annual average dust deposition due to emissions from the Modification ($\text{g}/\text{m}^2/\text{month}$)

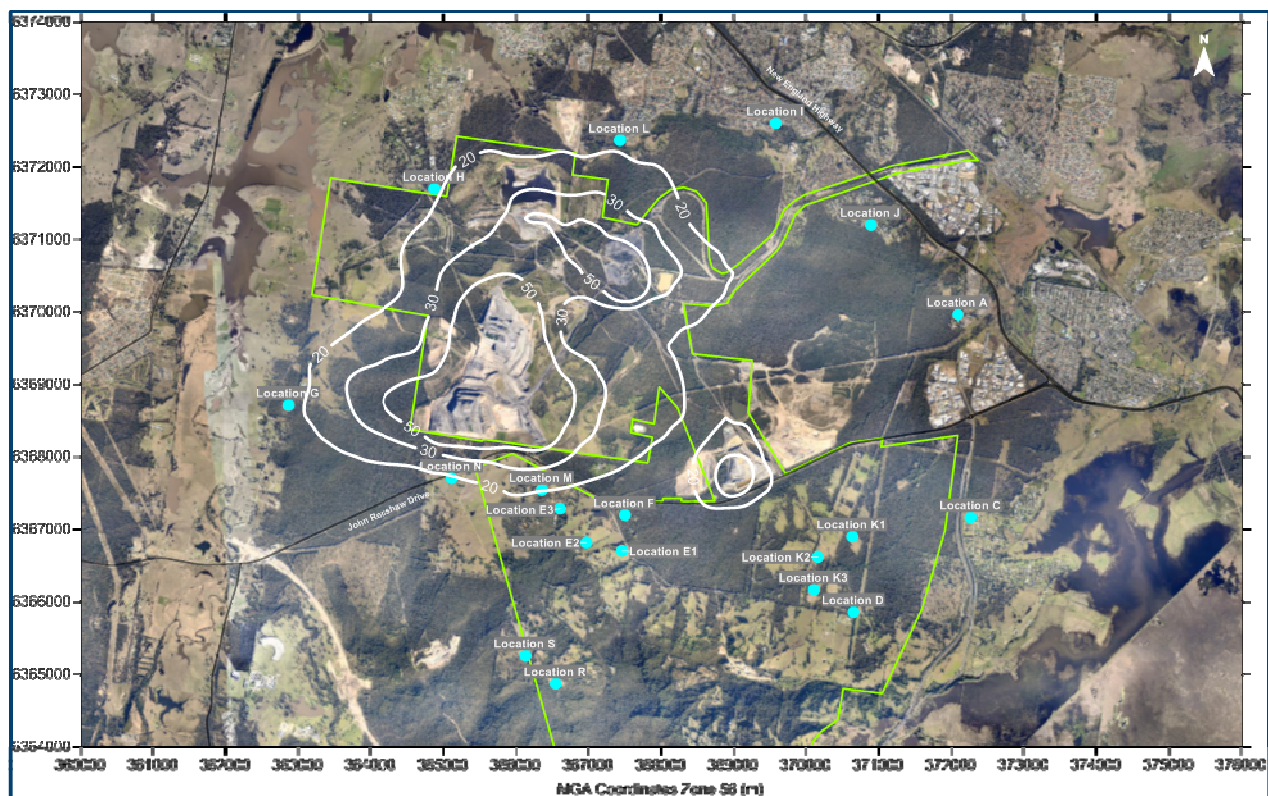


Figure E-7: Predicted annual average PM₁₀ concentrations due to emissions from the Modification and other sources (µg/m³)

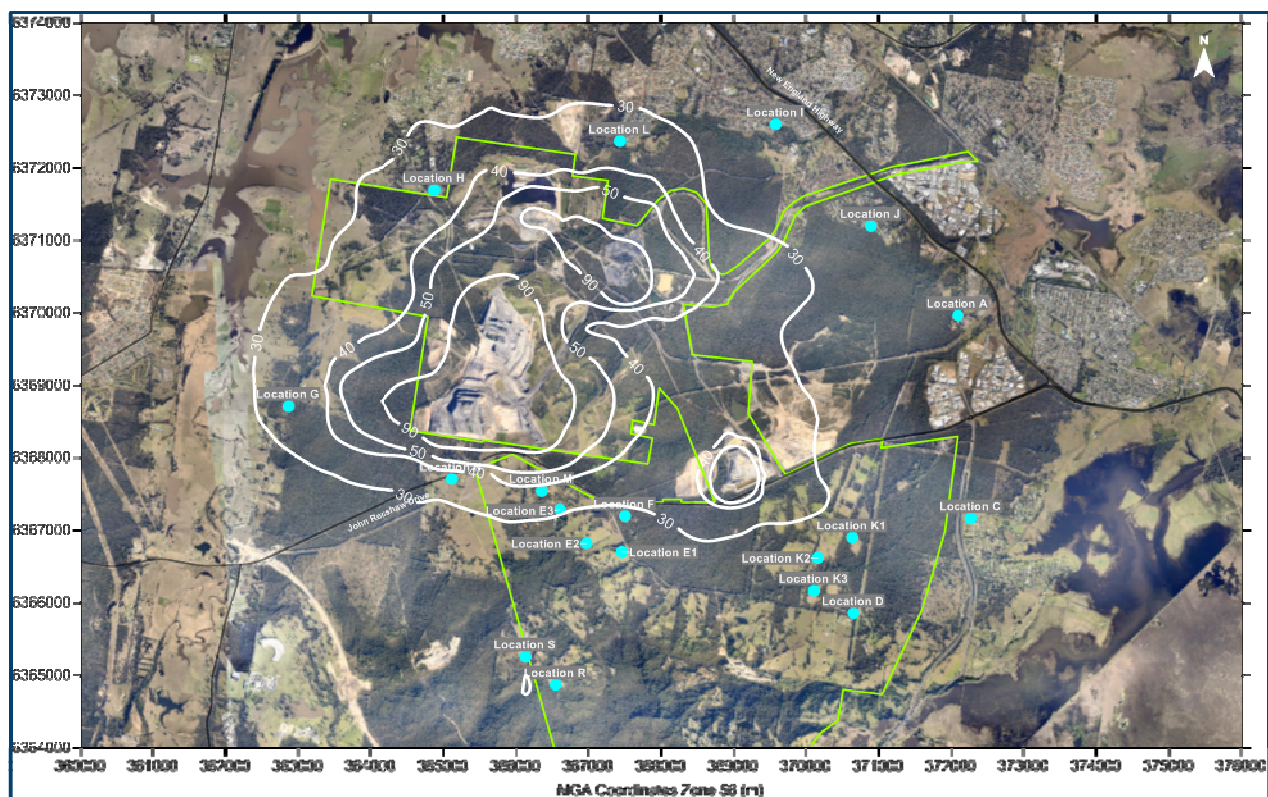


Figure E-8: Predicted annual average TSP concentrations due to emissions from the Modification and other sources (µg/m³)

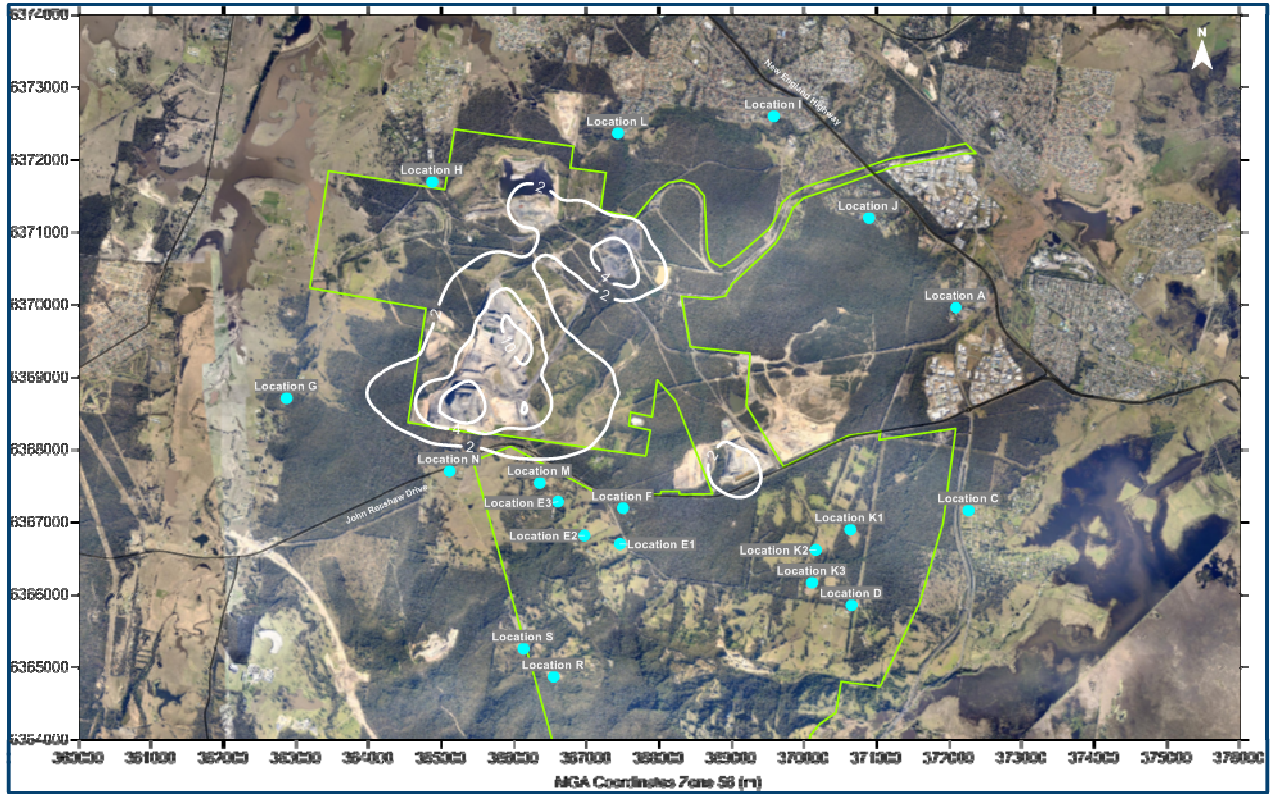


Figure E-9: Predicted annual average dust deposition due to emissions from the Modification and other sources ($\text{g}/\text{m}^2/\text{month}$)

Appendix F

Further Detail Regarding 24-hour PM_{10} Analysis

Table F-1: Location A

PM ₁₀ 24-hour average (µg/m ³)				PM ₁₀ 24-hour average (µg/m ³)			
Date	Background	Predicted increment	Total	Date	Highest predicted increment	Background	Total
21/01/2010	45	1	46	19/06/2010	15	6	21
20/01/2010	42	3	46	18/06/2010	18	6	24
27/03/2010	37	2	38	5/08/2010	15	5	20
23/04/2010	34	0	34	11/06/2010	19	5	23
24/01/2010	33	0	33	6/09/2010	12	5	17
23/01/2010	33	3	35	2/07/2010	17	5	21
19/01/2010	30	0	30	30/06/2010	14	4	18
27/09/2010	29	1	30	1/07/2010	22	4	26
25/01/2010	29	0	29	7/09/2010	14	4	18
13/01/2010	28	1	29	28/06/2010	20	4	24

Table F-19: Location C

PM ₁₀ 24-hour average (µg/m ³)				PM ₁₀ 24-hour average (µg/m ³)			
Date	Background	Predicted increment	Total	Date	Highest predicted increment	Background	Total
21/01/2010	45	1	46	4/08/2010	13	2	16
20/01/2010	42	1	43	1/09/2010	27	2	30
27/03/2010	37	1	37	17/06/2010	12	2	14
23/04/2010	34	2	35	1/01/2010	11	2	13
24/01/2010	33	0	33	14/08/2010	13	2	15
23/01/2010	33	1	33	19/08/2010	13	2	15
19/01/2010	30	0	30	1/07/2010	22	2	24
27/09/2010	29	2	31	11/08/2010	7	2	9
25/01/2010	29	0	29	18/07/2010	15	2	17
13/01/2010	28	0	28	5/09/2010	15	2	17

Table F-15: Location D

PM ₁₀ 24-hour average (µg/m ³)				PM ₁₀ 24-hour average (µg/m ³)			
Date	Background	Predicted increment	Total	Date	Highest predicted increment	Background	Total
21/01/2010	45	0	45	25/06/2010	14	2	16
20/01/2010	42	0	43	22/02/2010	18	2	20
27/03/2010	37	0	37	9/09/2010	16	2	17
23/04/2010	34	1	34	14/02/2010	13	2	15
24/01/2010	33	0	33	15/10/2010	8	1	9
23/01/2010	33	0	33	7/04/2010	9	1	10
19/01/2010	30	0	30	24/04/2010	25	1	27
27/09/2010	29	0	29	8/03/2010	11	1	12
25/01/2010	29	0	29	14/10/2010	15	1	17
13/01/2010	28	0	28	13/07/2010	11	1	12

Table F-12: Location E1

PM ₁₀ 24-hour average (µg/m ³)				PM ₁₀ 24-hour average (µg/m ³)			
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Date	Background	Predicted increment	Total	Date	Highest predicted increment	Background	Total
21/01/2010	45	2	47	7/03/2010	8	4	12
20/01/2010	42	1	43	4/12/2010	13	4	17
27/03/2010	37	1	37	20/02/2010	13	4	17
23/04/2010	34	1	34	12/11/2010	19	4	22
24/01/2010	33	0	33	31/12/2010	12	4	16
23/01/2010	33	0	33	5/03/2010	8	3	12
19/01/2010	30	0	30	12/01/2010	21	3	25
27/09/2010	29	0	29	6/03/2010	8	3	11
25/01/2010	29	0	29	5/01/2010	18	3	21
13/01/2010	28	0	28	11/02/2010	14	3	17

Table F-11: Location E2

PM ₁₀ 24-hour average (µg/m ³)				PM ₁₀ 24-hour average (µg/m ³)			
Date	Background	Predicted increment	Total	Date	Highest predicted increment	Background	Total
21/01/2010	45	2	47	31/12/2010	12	3	15
20/01/2010	42	1	43	20/02/2010	13	3	16
27/03/2010	37	1	37	11/02/2010	14	3	16
23/04/2010	34	1	34	6/03/2010	8	2	10
24/01/2010	33	0	33	27/02/2010	9	2	11
23/01/2010	33	0	33	10/02/2010	13	2	15
19/01/2010	30	0	30	15/12/2010	18	2	20
27/09/2010	29	0	29	2/12/2010	9	2	11
25/01/2010	29	0	29	7/03/2010	8	2	11
13/01/2010	28	0	28	13/06/2010	16	2	18

Table F-9: Location E3

PM ₁₀ 24-hour average (µg/m ³)				PM ₁₀ 24-hour average (µg/m ³)			
Date	Background	Predicted increment	Total	Date	Highest predicted increment	Background	Total
21/01/2010	45	1	46	10/02/2010	13	2	15
20/01/2010	42	1	43	13/07/2010	11	2	13
27/03/2010	37	0	37	9/12/2010	10	2	12
23/04/2010	34	1	34	25/06/2010	14	2	16
24/01/2010	33	0	33	16/01/2010	12	2	14
23/01/2010	33	0	33	9/02/2010	13	2	14
19/01/2010	30	0	30	6/04/2010	11	2	13
27/09/2010	29	0	29	20/04/2010	11	2	13
25/01/2010	29	0	29	21/06/2010	15	2	17
13/01/2010	28	0	28	18/11/2010	15	2	17

Table F-10: Location F

PM ₁₀ 24-hour average (µg/m ³)				PM ₁₀ 24-hour average (µg/m ³)			
Date	Background	Predicted increment	Total	Date	Highest predicted	Background	Total

					increment		
21/01/2010	45	2	47	10/02/2010	13	5	18
20/01/2010	42	1	44	5/02/2010	12	4	15
27/03/2010	37	0	37	6/03/2010	8	3	11
23/04/2010	34	1	34	9/02/2010	13	3	16
24/01/2010	33	0	33	4/02/2010	11	3	14
23/01/2010	33	0	33	11/02/2010	14	3	17
19/01/2010	30	1	31	2/12/2010	9	3	12
27/09/2010	29	0	29	1/02/2010	18	3	21
25/01/2010	29	1	30	31/10/2010	13	3	16
13/01/2010	28	0	28	7/03/2010	8	3	11

Table F-6: Location G

PM ₁₀ 24-hour average (µg/m ³)				PM ₁₀ 24-hour average (µg/m ³)			
Date	Background	Predicted increment	Total	Date	Highest predicted increment	Background	Total
21/01/2010	45	0	45	7/03/2010	8	2	10
20/01/2010	42	0	43	26/11/2010	18	2	20
27/03/2010	37	0	37	10/08/2010	8	2	9
23/04/2010	34	0	34	12/10/2010	12	2	14
24/01/2010	33	0	33	23/11/2010	14	1	15
23/01/2010	33	0	33	24/11/2010	14	1	15
19/01/2010	30	0	30	25/11/2010	17	1	18
27/09/2010	29	0	29	7/11/2010	10	1	11
25/01/2010	29	0	29	4/12/2010	13	1	14
13/01/2010	28	0	28	25/12/2010	14	1	15

Table F-5: Location H

PM ₁₀ 24-hour average (µg/m ³)				PM ₁₀ 24-hour average (µg/m ³)			
Date	Background	Predicted increment	Total	Date	Highest predicted increment	Background	Total
21/01/2010	45	5	50	5/02/2010	12	10	22
20/01/2010	42	4	47	1/05/2010	8	10	18
27/03/2010	37	2	38	19/04/2010	12	10	22
23/04/2010	34	2	36	20/04/2010	11	10	21
24/01/2010	33	3	36	22/04/2010	26	10	35
23/01/2010	33	0	33	25/05/2010	10	10	20
19/01/2010	30	3	33	24/06/2010	12	10	21
27/09/2010	29	1	30	4/02/2010	11	9	21
25/01/2010	29	4	33	13/07/2010	11	9	20
13/01/2010	28	0	28	10/10/2010	12	9	20

Table F-3: Location I

PM ₁₀ 24-hour average (µg/m ³)				PM ₁₀ 24-hour average (µg/m ³)			
Date	Background	Predicted increment	Total	Date	Highest predicted increment	Background	Total
21/01/2010	45	0	45	19/05/2010	10	5	15

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20/01/2010	42	0	42	31/03/2010	8	4	12
27/03/2010	37	0	37	17/05/2010	12	3	16
23/04/2010	34	0	34	9/04/2010	15	3	18
24/01/2010	33	0	33	19/07/2010	21	3	25
23/01/2010	33	0	33	5/06/2010	11	3	14
19/01/2010	30	1	31	2/04/2010	12	3	15
27/09/2010	29	0	29	23/07/2010	14	3	17
25/01/2010	29	0	29	1/06/2010	11	3	14
13/01/2010	28	0	28	18/05/2010	12	3	15

Table F-2: Location J

PM ₁₀ 24-hour average (µg/m ³)				PM ₁₀ 24-hour average (µg/m ³)			
Date	Background	Predicted increment	Total	Date	Highest predicted increment	Background	Total
21/01/2010	45	2	47	12/04/2010	23	6	28
20/01/2010	42	1	43	4/07/2010	14	5	19
27/03/2010	37	3	40	28/06/2010	20	5	25
23/04/2010	34	1	34	5/05/2010	14	5	18
24/01/2010	33	0	33	16/05/2010	17	5	21
23/01/2010	33	0	33	21/06/2010	15	4	20
19/01/2010	30	4	34	15/05/2010	18	4	22
27/09/2010	29	2	31	10/03/2010	18	4	23
25/01/2010	29	0	29	14/05/2010	18	4	23
13/01/2010	28	0	28	13/06/2010	16	4	20

Table F-18: Location K1

PM ₁₀ 24-hour average (µg/m ³)				PM ₁₀ 24-hour average (µg/m ³)			
Date	Background	Predicted increment	Total	Date	Highest predicted increment	Background	Total
21/01/2010	45	1	46	19/08/2010	13	4	17
20/01/2010	42	1	43	30/05/2010	6	3	9
27/03/2010	37	1	38	26/08/2010	25	3	28
23/04/2010	34	2	36	24/04/2010	25	3	28
24/01/2010	33	0	33	2/01/2010	11	3	14
23/01/2010	33	1	34	11/08/2010	7	3	10
19/01/2010	30	0	30	25/08/2010	11	3	14
27/09/2010	29	2	31	14/07/2010	10	3	13
25/01/2010	29	0	29	2/08/2010	11	3	14
13/01/2010	28	1	29	15/08/2010	15	3	17

Table F-17: Location K2

PM ₁₀ 24-hour average (µg/m ³)				PM ₁₀ 24-hour average (µg/m ³)			
Date	Background	Predicted increment	Total	Date	Highest predicted increment	Background	Total
21/01/2010	45	1	46	13/07/2010	11	4	14
20/01/2010	42	0	43	25/06/2010	14	4	18
27/03/2010	37	0	37	14/10/2010	15	3	19

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23/04/2010	34	2	35	22/02/2010	18	3	21
24/01/2010	33	0	33	15/10/2010	8	3	11
23/01/2010	33	1	33	9/09/2010	16	3	19
19/01/2010	30	1	30	11/11/2010	14	3	16
27/09/2010	29	2	31	4/09/2010	5	3	8
25/01/2010	29	0	29	22/10/2010	17	3	19
13/01/2010	28	1	28	24/04/2010	25	3	28

Table F-16: Location K3

PM ₁₀ 24-hour average (µg/m ³)				PM ₁₀ 24-hour average (µg/m ³)			
Date	Background	Predicted increment	Total	Date	Highest predicted increment	Background	Total
21/01/2010	45	0	45	14/10/2010	15	3	18
20/01/2010	42	0	43	25/06/2010	14	3	17
27/03/2010	37	0	37	15/10/2010	8	2	10
23/04/2010	34	1	34	9/12/2010	10	2	12
24/01/2010	33	0	33	22/02/2010	18	2	20
23/01/2010	33	0	33	13/07/2010	11	2	13
19/01/2010	30	0	30	22/10/2010	17	2	19
27/09/2010	29	0	29	14/02/2010	13	2	15
25/01/2010	29	0	29	9/09/2010	16	2	17
13/01/2010	28	0	28	10/11/2010	13	2	14

Table F-4: Location L

PM ₁₀ 24-hour average (µg/m ³)				PM ₁₀ 24-hour average (µg/m ³)			
Date	Background	Predicted increment	Total	Date	Highest predicted increment	Background	Total
21/01/2010	45	1	46	26/07/2010	11	25	35
20/01/2010	42	0	43	14/06/2010	14	20	35
27/03/2010	37	3	39	25/07/2010	10	20	30
23/04/2010	34	1	34	4/04/2010	6	20	26
24/01/2010	33	5	38	9/07/2010	10	19	29
23/01/2010	33	1	33	8/07/2010	9	19	28
19/01/2010	30	1	31	2/06/2010	10	17	28
27/09/2010	29	0	29	1/06/2010	11	16	27
25/01/2010	29	1	30	21/05/2010	12	16	28
13/01/2010	28	1	29	24/07/2010	12	16	28

Table F-8: Location M

PM ₁₀ 24-hour average (µg/m ³)				PM ₁₀ 24-hour average (µg/m ³)			
Date	Background	Predicted increment	Total	Date	Highest predicted increment	Background	Total
21/01/2010	45	1	46	9/12/2010	10	3	13
20/01/2010	42	0	43	13/07/2010	11	2	13
27/03/2010	37	0	37	28/11/2010	14	2	16
23/04/2010	34	1	35	18/08/2010	22	2	23
24/01/2010	33	0	33	8/03/2010	11	2	13

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23/01/2010	33	0	33	25/06/2010	14	2	16
19/01/2010	30	0	30	10/02/2010	13	2	14
27/09/2010	29	0	29	14/11/2010	13	2	15
25/01/2010	29	0	29	6/03/2010	8	1	9
13/01/2010	28	0	28	29/07/2010	8	1	10

Table F-7: Location N

PM ₁₀ 24-hour average (µg/m ³)				PM ₁₀ 24-hour average (µg/m ³)			
Date	Background	Predicted increment	Total	Date	Highest predicted increment	Background	Total
21/01/2010	45	0	45	18/08/2010	22	2	24
20/01/2010	42	0	43	13/10/2010	16	1	18
27/03/2010	37	0	37	9/12/2010	10	1	11
23/04/2010	34	1	34	19/03/2010	15	1	16
24/01/2010	33	0	33	8/12/2010	10	1	11
23/01/2010	33	0	33	28/11/2010	14	1	15
19/01/2010	30	0	30	27/11/2010	13	1	14
27/09/2010	29	0	29	6/03/2010	8	1	9
25/01/2010	29	0	29	14/11/2010	13	1	14
13/01/2010	28	0	28	8/03/2010	11	1	12

Table F-14: Location R

PM ₁₀ 24-hour average (µg/m ³)				PM ₁₀ 24-hour average (µg/m ³)			
Date	Background	Predicted increment	Total	Date	Highest predicted increment	Background	Total
21/01/2010	45	1	46	18/01/2010	18	4	22
20/01/2010	42	2	44	2/11/2010	10	4	14
27/03/2010	37	2	38	10/01/2010	27	4	31
23/04/2010	34	1	35	15/09/2010	12	4	15
24/01/2010	33	0	33	25/04/2010	11	4	14
23/01/2010	33	2	34	19/01/2010	30	3	33
19/01/2010	30	3	33	31/05/2010	11	3	14
27/09/2010	29	0	29	29/03/2010	17	3	20
25/01/2010	29	0	29	26/03/2010	23	3	27
13/01/2010	28	3	30	22/02/2010	18	3	21

Table F-13: Location S

PM ₁₀ 24-hour average (µg/m ³)				PM ₁₀ 24-hour average (µg/m ³)			
Date	Background	Predicted increment	Total	Date	Highest predicted increment	Background	Total
21/01/2010	45	0	45	7/02/2010	11	5	15
20/01/2010	42	0	43	3/06/2010	12	5	16
27/03/2010	37	1	38	11/03/2010	13	4	18
23/04/2010	34	0	34	6/02/2010	15	4	19
24/01/2010	33	1	34	14/01/2010	14	4	18
23/01/2010	33	1	33	27/05/2010	15	4	19
19/01/2010	30	0	30	18/02/2010	13	4	16



27/09/2010	29	0	29	4/06/2010	10	3	14
25/01/2010	29	1	30	30/01/2010	14	3	17
13/01/2010	28	2	29	28/10/2010	12	3	15

Appendix G
Coal Testing Results



The dust extinction moisture level for the Abel Underground Mine product coal (minus 6.3mm) is 5.5% moisture content, as shown in the dustiness/moisture level relationship shown below in Figure G-1.

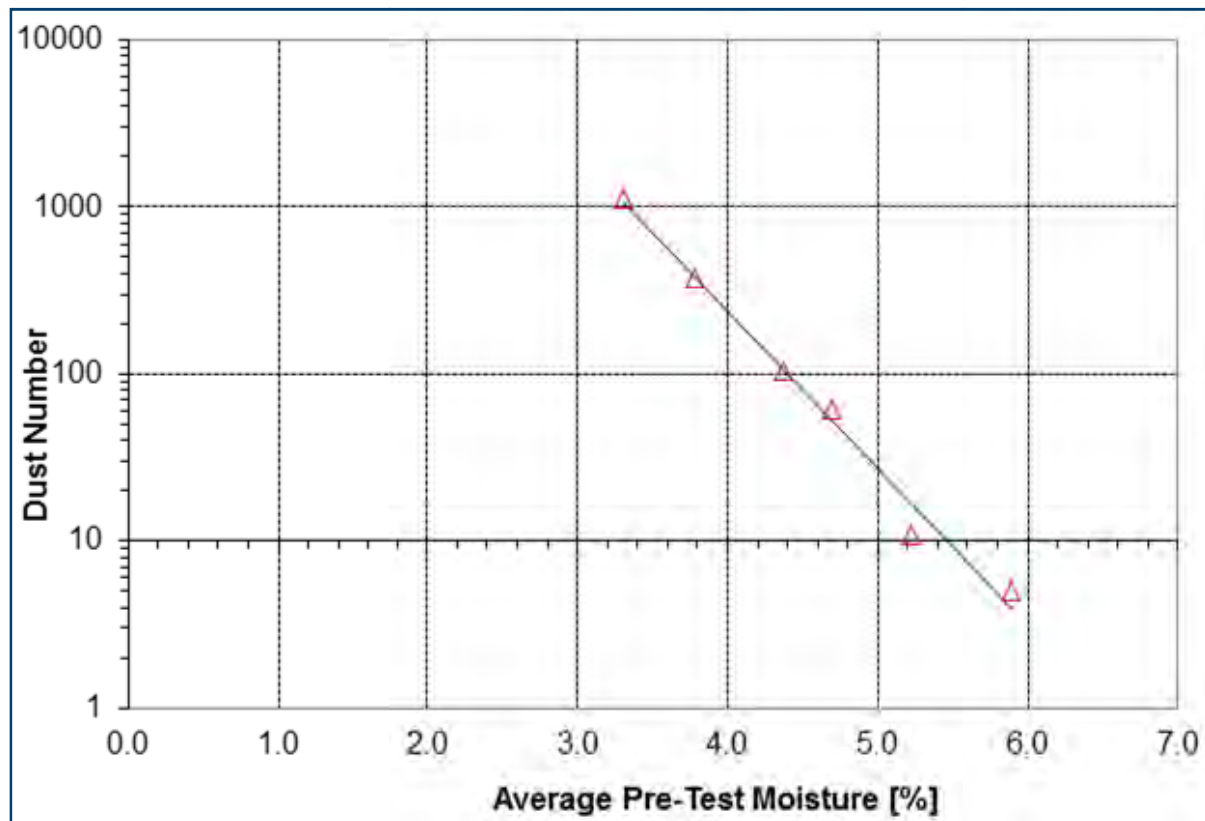


Figure G-1: Dustiness / moisture level for Abel Underground Mine product coal

The particle size analysis for Abel Underground Mine ROM coal and product coal is shown below in Table G-1.

Table G-1: Particle size analysis

Sieve Openings (mm)	ROM Coal	Product Coal
	Percent Finer (%)	Percent Finer (%)
100	100.0	100.0
75	71.5	100.0
50	60.0	100.0
37.5	53.8	95.4
25	48.9	85.0
19	40.6	74.0
16	37.7	63.9
11.2	31.4	46.1
8	25.9	35.3
5.6	20.8	26.0
4	16.0	20.8
2.8	13.7	16.9
2	10.2	13.7
1.4	6.9	10.8
1	4.6	8.3
0.71	3.0	6.1
0.5	2.0	4.1
0.355	1.3	2.9
0.25	0.8	2.1
0.18	0.6	1.6
0.125	0.4	1.1
0.09	0.3	0.8
0.063	0.2	0.6
0.045	0.1	0.5

Observed dust lift-off wind speeds (Saltation, Minor Dust Lift-off, and Major Dust Lift-off) for Abel Underground Mine ROM coal and product coal is shown below in Table G-2.

Table G-2: Dust lift-off wind speeds

Project:7863							
Material: Able Coal (Product & ROM)							
Date	Material	Sample's moisture content	Saltation (m/s)	Minor Lift-Off (m/s)	Major Lift-Off (m/s)	Temp (°C)	Humidity
6/06/2012	Product	8.0%	28.5	29.6	30+	15.0	76%
6/06/2012	ROM	5.0%	8.4	12.8	15.7	15.0	76%