

EXTRACTS FOR MID-COAST COUNCIL

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2. RESPONSES TO ISSUES RAISED ABOUT THE AMENDED PROJECT

2.4 AIR QUALITY

2.4.1 General

2.4.1.2 Representative Comment(s)

With residences within one kilometre and the centre of the town of Gloucester only some five kilometres away, it is inevitable there will be dust episodes.

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Response

Air quality modelling has been undertaken for the amended Project and predicts compliance with relevant criteria at all surrounding private residences. It is acknowledged that at three residences there is an increased probability that cumulative 24-hour PM_{10} and $PM_{2.5}$ concentrations could result in less than one additional day of average 24-hour PM_{10} concentrations over $50\mu g/m^3$ and two additional days of average 24-hour $PM_{2.5}$ concentrations over $25\mu g/m^3$.

Management measures would include meteorological forecasting and real-time monitoring enabling mine personnel to proactively alter operations / implement management measures to avoid exceedances. Air quality monitoring results from the amended Project would be regularly made available on GRL's website.

Notwithstanding the above, it is noted that, where a site does not comply with approved air quality, or other criteria/conditional requirements, NSW EPA and DPE have a range of enforcement options.

2.4.2 Air Quality Criteria

2.4.2.1 Representative Comment(s)

In addition to Ministers agreeing to set an annual average standard for PM_{10} particles of $25\mu g/m^3$ (reduced from $30\mu g/m^3$) the National Clean Air Agreement will also reduce annual average $PM_{2.5}$ reporting standards from $8\mu g/m^3$ to $7\mu g/m^3$ and maximum 24-hour $PM_{2.5}$ reporting standards from $25\mu g/m^3$ to $20\mu g/m^3$ by 2025. The 2025 $PM_{2.5}$ standards have been reflected in the National Environment Protection (Ambient Air Quality) Measure and a particularly important to this Project, as mining operations will be in full production when the standards come to place.

The Air Quality Assessment has not discussed the National Clean Air Agreement or the National Environment Protection (Ambient Air Quality) Measure $PM_{2.5}$ goal.

Council recommends to the Department of Planning and Environment that before any consideration is given to whether consent is granted, the proponent review the Air Quality Assessment to address the National Clean Air Agreement standards and the National Environment Protection (Ambient Air Quality) Measure goals in terms of PM_{10} and $PM_{2.5}$

impacts and report on the amended modelling/assessment and that all potentially affected residences be considered, rather than limiting reporting.

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Response

As required by the DGRs, the dispersion modelling has been completed in accordance with NSW DEC (2005)¹ “*Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales*” (Approved Methods) and assessed against the impact assessment criteria for TSP, PM₁₀ and dust deposition contained in that document. Assessment was also made against the DPE Voluntary Land Acquisition and Mitigation Policy (VLAMP).

On 20 January 2017, NSW EPA released an update to the Approved Methods² to make the cumulative impact assessment criteria for PM₁₀ and PM_{2.5} equivalent to the Ambient-Air NEPM. There is no change to the impact assessment criterion for 24-hour average PM₁₀. The impact assessment criterion for annual average PM₁₀ has been updated from 30µg/m³ to 25µg/m³, however, the impact assessment criteria for PM_{2.5} now included in the updated Approved Methods are equivalent to the Ambient-Air NEPM as assessed for the amended Project.

It is also noted that NSW EPA has stated that the updated Approved Methods only apply to any air quality assessments submitted with a planning application on or after the gazettal date of the updated Approved Methods (20 January 2017), and as such do not apply to the amended Project. Notwithstanding the non-applicability of the new impact assessment criterion for annual average PM₁₀ concentrations, the predictions for privately-owned residences/receivers in the AQA (Table 9.2) demonstrate the amended Project would easily satisfy the new 25µg/m³ criterion with the maximum cumulative concentrations varying from 10.57µg/m³ in Year 1 to 14.80µg/m³ in Year 7.

With respect to PM_{2.5}, neither the Approved Methods or VLAMP currently provide impact assessment criteria. However, Section 4.2.2 of the AQA specifically refers to the most current National Environment Protection (Ambient Air Quality) Measure 2016 (NEPM) (hereafter referred to as the Ambient-Air NEPM) and explains that the amendment to the Ambient-Air NEPM changed the ‘advisory reporting standards’ status for PM_{2.5}, as included within the National Clean Air Agreement, to ‘standards’. In the absence of specific PM_{2.5} impact assessment criteria in the Approved Methods, the Ambient-Air NEPM standards have been adopted.

It is also important to note that the Ambient-Air NEPM is a national monitoring and reporting protocol and is not designed for use in the assessment of proposals. Notwithstanding, all privately-owned residences/receivers are predicted to meet the most stringent of the annual average Ambient-Air NEPM for both PM₁₀ and PM_{2.5}.

¹ NSW Environment Protection Authority (EPA) (2005), *Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales* published by Department of Environment and Conservation, August 2005

² NSW EPA (2016), *Approved Methods for the Modelling and Assessment of Air Pollutants in NSW*, Available from: <http://www.epa.nsw.gov.au/air/appmethods.htm>

2.4.2.3 Representative Comment(s)

That the applicant should assess cumulative 24-hour PM_{10} and $PM_{2.5}$ against current and 2025 reduced air quality standards prior to any consent being granted to extract 2.0Mtpa of coal.

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Response

As noted in the response in Section 2.4.2.1 of this document, the amended Project has been assessed against the relevant impact assessment criteria contained in the Approved Methods and, in the absence of a criteria for $PM_{2.5}$, the Ambient-Air NEPM standard has been applied. The 2025 standards referred to within the National Clean Air Agreement are reporting standards which the government aims to move to by 2025. These standards do not apply to the assessment of a project.

2.4.3 Air Quality Modelling

2.4.3.1 Representative Comment(s)

The Air Quality Assessment only reports maximum 24-hour $PM_{2.5}$ at 5 residences (R18, R19A, R23, R6, R36) in the form of a Monte Carlo analysis, which indicates that cumulative $PM_{2.5}$ particle emissions may exceed the existing air quality standard of $25\mu\text{g}/\text{m}^3$ at all five residences on two days per year. The National Environment Protection (Ambient Air Quality) Measure does not allow for any exceedances of this standard.

It is also noted that the Air Quality Assessment may understate or not accurately reflect 24-hour $PM_{2.5}$ air quality impacts as only 5 residences have been assessed. As residences R19A and R36 (which is located in Jacks Road estate) are in close proximity to numerous other residences, the number of residences that may experience days over reporting standards are likely to be greater than reported by the Air Quality Assessment.

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Response

The Ambient-Air NEPM is a national monitoring and reporting protocol - it is not designed for use in the assessment of proposals. However, the Ambient-Air NEPM $PM_{2.5}$ standard was applied to the amended Project as there is no impact assessment criterion in the Approved Methods. Whilst there are no 'allowable' exceedances, consideration of exceptional events is built into the Ambient-Air NEPM.

Section 9.8.1 of the AQA discusses the complexity in accurately predicting cumulative 24-hour average concentrations as it is simply not possible to know precisely what activities would be occurring where on a particular day with the Mine Area, what other dust-generating activities (for example, bushfires, land-clearing, mining, etc.) may be occurring at the same time within the area or more distantly which may affect the $PM_{2.5}$ level, and what the meteorological conditions would be.

When considering the predicted contribution of the amended Project to ambient air quality concentrations, it is important to note that there are a number of inherent conservatisms in the emission calculations used in the dispersion modelling, resulting in a conservative assessment of the potential emissions and subsequently the predicted impacts.

The calculated emissions were based on years considered to be representative of worst-case operations; for example when coal and overburden production would be highest, when extraction or wind erosion areas were largest, or where operations were located closest to residences/receivers. In addition, the dispersion modelling completed assumes that all dust-generating activities occur equally over each hour of the year. In reality, activities on a coal mine vary significantly on a day-to-day basis. When combined with the fact that the emission calculations were in themselves based on worst-case operations, the results of the dispersion modelling are considered to be conservative. It is therefore considered that the predicted 24-hour average PM_{2.5} concentrations due to the amended Project-alone are conservative.

The five privately-owned residences/receivers selected for the cumulative 24-hour average analysis were based on their proximity to mining operations, spatial variability and also the magnitude of the amended Project-only predictions. Assessing the cumulative 24-hour average concentrations at these locations has identified the potential risk areas so that these can be appropriately managed by the operation on a day-to-day basis. All other residences/receivers have lower predicted incremental contributions from the amended Project-only than those assessed and, as such, would have lower potential to be adversely impacted when assessed from a cumulative perspective.

Identified risks from the amended Project would be managed in respect of all privately-owned residences by the proposed predictive/proactive mitigation and management options, e.g. predictive meteorological forecasting and real-time monitoring.

2.4.3.2 Representative Comment(s)

Section 9.9 of the Air Quality Assessment considers a modelling scenario at 2.0 Mtpa of ROM coal during year 10 of the amended Project. Cumulative 24-hour PM₁₀ and PM_{2.5} information has not been provided for the higher extraction rate. As the Air Quality Assessment Monte Carlo analysis predicted there may be days where cumulative PM emissions exceed air quality standards at 1.8 Mtpa any additional emissions must be assessed.

Further, as the data tables in this Section 9.9 are headed '2.5 Mt of ROM Coal', it should be confirmed that a maximum extraction rate of 2Mtpa is being sought.

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Response

Table 2.4.2 presents the maximum 24-hour average PM₁₀ and PM_{2.5} concentrations due to the Project-only for Year 10 operations at 1.65 Mtpa and 2.0 Mtpa (reproduced from Tables 9.5, 9.6 and 9.10 of the AQA). **Table 2.4.3** presents the difference between the two scenarios. The maximum difference is less than 2µg/m³ for PM₁₀ and 0.8µg/m³ for PM_{2.5}. Given the minor differences, the conclusions presented for the 1.65Mtpa Year 10 cumulative assessment would not materially change for the 2.0Mtpa scenario.

In relation to the rate of “2.5Mt of ROM Coal”, the title of Table 9.10 in the AQA has a typographical error and should read “Predicted Dust Concentrations and Levels for Year 10 at 2.0Mt of ROM Coal”. It is also noted that a transcription error led to incorrect results being presented in Table 9.10 from Residence ID 155 onwards. The correct results are shown in **Table 2.4.4**. The error arose when the predicted result for Residence 154 was duplicated for 155 which meant all subsequent predicted levels were incorrect and the level for Residence 193 was excluded.

Table 2.4.2
Maximum predicted 24-hour average PM₁₀ concentrations Year 10 at 1.65Mtpa and 2.0Mtpa¹

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Residence/Receiver ID	Year 10 – Project alone		
	1.65 Mtpa	2.0 Mtpa	Difference
	24-hour PM ₁₀ (µg/m ³)		
Privately-owned residences/receivers			
2	2.41	2.48	0.08
6	21.03	21.67	0.64
7	7.94	8.25	0.31
11A	2.18	2.30	0.12
11B	1.89	1.99	0.10
18	24.91	25.64	0.73
19A	14.01	14.49	0.48
21A.1	5.88	6.09	0.21
21A.2	5.95	6.16	0.21
22	6.23	6.42	0.19
23	16.85	17.39	0.55
24	4.49	4.66	0.16
25A.1	4.60	4.76	0.17
25A.2	5.21	5.39	0.18
25B	4.81	4.97	0.16
25C	5.11	5.28	0.17
26	5.02	5.21	0.19
27	5.85	6.05	0.20
28	5.90	6.10	0.20
30	6.30	6.50	0.20
31M	6.45	6.67	0.22
31N	6.46	6.67	0.21
32	7.41	7.65	0.24
33	8.64	8.92	0.28
36	7.42	7.68	0.26
38	7.28	7.53	0.25
39	7.18	7.43	0.25
40	7.08	7.33	0.25
42	7.07	7.32	0.25
43	7.02	7.26	0.24
44	6.88	7.12	0.24
45	6.77	7.00	0.24
46	6.67	6.90	0.23
47	6.54	6.77	0.23
50	6.80	7.03	0.23
52	7.08	7.32	0.24
53	7.12	7.36	0.24
56A	5.66	5.79	0.13
63	3.76	3.89	0.13
64	4.20	4.35	0.15
65	4.59	4.75	0.16
68	5.25	5.43	0.18
70	5.54	5.73	0.19
71	5.83	6.03	0.20
73	6.44	6.66	0.22
74	6.57	6.80	0.23
75	6.73	6.96	0.24
76	6.49	6.72	0.23
77	6.77	7.00	0.24
78	6.50	6.73	0.23
80	6.14	6.35	0.22
81	5.99	6.20	0.21
82	5.76	5.96	0.21
83A	5.52	5.72	0.20
84	5.35	5.54	0.19
85	4.78	4.95	0.17
86	4.52	4.68	0.16
87	4.52	4.69	0.16
88	3.95	4.09	0.14
89	3.89	4.03	0.14
90	3.65	3.77	0.13
91	5.09	5.27	0.18
92	5.54	5.73	0.19
94	5.79	6.00	0.20
99	3.72	3.86	0.13
100	3.82	3.95	0.13
Note : Reproduced from AQA (Table 9.5 and Table 9.10 - corrected)			

Note : Reproduced from AQA (Table 9.5 and Table 9.10 - corrected).



Table 2.4.2 (Cont'd)
Maximum predicted 24-hour average PM₁₀ concentrations Year 10 at 1.65Mtpa and 2.0Mtpa¹

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Residence/Receiver ID	Year 10 – Project alone		
	1.65 Mtpa	2.0 Mtpa	Difference
	24-hour PM ₁₀ (µg/m ³)		
Privately-owned residences/receivers			
101	3.86	4.00	0.14
102	4.00	4.14	0.14
103	4.00	4.14	0.14
104	4.07	4.21	0.14
105	4.09	4.23	0.14
106	3.88	4.02	0.14
107A	3.79	3.92	0.13
107B	3.85	3.98	0.13
108	3.84	3.97	0.13
109	4.40	4.55	0.15
110	4.50	4.66	0.16
112	5.14	5.32	0.18
113	4.84	5.01	0.17
114	4.86	5.04	0.18
115	4.92	5.10	0.18
117	5.37	5.57	0.19
118	4.99	5.17	0.18
119	5.06	5.24	0.18
120	5.06	5.25	0.19
121	5.10	5.28	0.19
122	5.12	5.31	0.19
123	5.15	5.34	0.19
125	5.66	5.86	0.20
126	5.63	5.84	0.21
127	5.65	5.86	0.21
128	6.05	6.27	0.23
129	6.04	6.27	0.23
130	5.61	5.83	0.22
132	5.50	5.72	0.22
133	4.37	4.52	0.15
135	7.15	7.42	0.28
137	4.91	5.12	0.20
138	4.52	4.65	0.13
139	4.70	4.84	0.13
140	4.65	4.79	0.14
141	5.06	5.20	0.15
142	5.42	5.56	0.14
143	5.12	5.27	0.15
144	6.39	6.65	0.26
145	5.87	6.02	0.15
146	6.99	7.27	0.28
147	7.19	7.47	0.28
148	7.03	7.31	0.28
149	8.23	8.56	0.32
150	8.64	8.98	0.34
151	7.17	7.38	0.21
152	7.77	7.99	0.22
153	8.20	8.43	0.23
154	8.61	8.85	0.25
155	6.14	6.29	0.15
156	5.40	5.53	0.14
157	4.88	5.03	0.15
158	4.77	4.92	0.15
159	4.02	4.17	0.14
160	5.84	5.99	0.15
161	5.87	6.04	0.17
163A	5.21	5.40	0.20
163B	4.29	4.46	0.17
164A.1	3.49	3.54	0.05
164A.2	3.20	3.24	0.05
165	2.62	2.66	0.04
171	3.94	4.08	0.14
172	3.18	3.35	0.17

Note : Reproduced from AQA (Table 9.5 and Table 9.10 - corrected).

Table 2.4.2 (Cont'd)
Maximum predicted 24-hour average PM₁₀ concentrations Year 10 at 1.65Mtpa and 2.0Mtpa¹

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Residence/Receiver ID	Year 10 – Project alone		
	1.65 Mtpa	2.0 Mtpa	Difference
	24-hour PM ₁₀ (µg/m ³)		
Privately-owned residences/receivers			
173	7.05	7.34	0.29
174A	5.68	5.92	0.24
174B.2	3.62	3.80	0.18
174B.1	4.26	4.46	0.20
179	3.43	3.57	0.13
180	2.88	2.99	0.11
181A	1.94	2.01	0.06
181B	4.17	4.29	0.13
181C	4.08	4.21	0.14
182A	2.38	2.44	0.06
182B	2.98	3.07	0.09
183	3.08	3.13	0.05
184A	2.47	2.51	0.04
184B	2.99	3.08	0.09
185	1.94	1.98	0.04
186	1.79	1.85	0.07
187	1.72	1.77	0.04
188	1.99	2.02	0.03
189	2.02	2.05	0.03
191A	2.54	2.58	0.04
192A	2.54	2.59	0.06
193	9.50	9.78	0.28
197	7.40	7.64	0.23
200	6.28	6.50	0.22
203	3.82	3.96	0.14
204	3.70	3.83	0.13
205	4.80	4.97	0.17
206	2.90	3.01	0.11
Resource Company-owned Residences			
1B	9.44	9.81	0.36
1C	8.34	8.60	0.26
1D	7.99	8.26	0.28
1E	14.72	15.23	0.51
1F	15.20	15.74	0.54
1G	31.61	32.47	0.85
1K	29.29	30.14	0.85
1L	46.85	51.25	4.40
1M	23.24	25.12	1.88
1N	49.54	54.24	4.69
1O	25.06	25.99	0.93
1P	27.21	29.74	2.54
1Q	8.05	8.65	0.60
1R	7.47	8.04	0.57
3A	16.59	17.18	0.59
3B	19.82	20.44	0.61
4A.1	16.07	16.57	0.50
4A.2	18.35	18.92	0.57
5	123.53	126.62	3.09
8	16.77	17.33	0.56
12	14.87	16.07	1.19
13	11.31	12.08	0.77
14	27.37	28.29	0.91
15	39.59	40.60	1.01
17	35.63	36.69	1.06
20	14.14	14.64	0.51
54	6.95	7.17	0.22
55	6.78	7.02	0.25
58	53.92	55.39	1.47
166A	2.63	2.72	0.09
167A	3.89	4.05	0.15
168A	2.90	3.04	0.14
Gloucester Township Residences/Receivers			
S4 (Gloucester High School)	0.55	1.69	1.13
H1 (Gloucester Hospital)	0.48	1.44	0.96
P5 (Captain Cook Park)	0.79	2.18	1.39
Note : Reproduced from AOA (Table 9.5 and Table 9.10 - corrected).			

Note : Reproduced from AQA (Table 9.5 and Table 9.10 - corrected).



Table 2.4.3
Maximum predicted 24-hour average PM_{2.5} concentrations Year 10 at 1.65Mtpa and 2.0Mtpa¹

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Residence/Receiver ID	Year 10 – Project alone		
	1.65 Mtpa	2.0 Mtpa	Difference
	24-hour PM _{2.5} (µg/m ³)		
Privately-owned residences/receivers			
2	0.52	0.53	0.01
6	3.48	3.58	0.1
7	1.36	1.42	0.06
11A	0.44	0.46	0.02
11B	0.44	0.47	0.03
18	4.61	4.74	0.13
19A	2.47	2.54	0.07
21A.1	1.21	1.26	0.05
21A.2	1.20	1.25	0.05
22	1.55	1.61	0.06
23	2.83	2.92	0.09
24	1.09	1.13	0.04
25A.1	0.92	0.96	0.04
25A.2	1.03	1.07	0.04
25B	0.88	0.90	0.02
25C	0.96	0.98	0.02
26	0.94	0.98	0.04
27	1.31	1.36	0.05
28	1.30	1.35	0.05
30	1.21	1.25	0.04
31M	1.32	1.37	0.05
31N	1.31	1.36	0.05
32	1.29	1.34	0.05
33	1.48	1.53	0.05
36	1.41	1.47	0.06
38	1.42	1.47	0.05
39	1.41	1.47	0.06
40	1.41	1.46	0.05
42	1.39	1.45	0.06
43	1.40	1.46	0.06
44	1.39	1.45	0.06
45	1.39	1.45	0.06
46	1.39	1.45	0.06
47	1.38	1.44	0.06
50	1.38	1.44	0.06
52	1.40	1.46	0.06
53	1.39	1.44	0.05
56A	1.06	1.10	0.04
63	0.85	0.88	0.03
64	0.95	0.98	0.03
65	1.04	1.08	0.04
68	1.19	1.24	0.05
70	1.27	1.31	0.04
71	1.31	1.36	0.05
73	1.37	1.43	0.06
74	1.37	1.43	0.06
75	1.37	1.43	0.06
76	1.35	1.40	0.05
77	1.36	1.41	0.05
78	1.32	1.37	0.05
80	1.28	1.34	0.06
81	1.26	1.31	0.05
82	1.22	1.26	0.04
83A	1.20	1.25	0.05
84	1.15	1.19	0.04
85	1.04	1.08	0.04
86	0.99	1.03	0.04
87	1.00	1.04	0.04
88	0.95	0.98	0.03
89	0.87	0.90	0.03
90	0.86	0.89	0.03
91	1.14	1.18	0.04
92	1.23	1.28	0.05
94	1.29	1.34	0.05
99	0.85	0.88	0.03
Note 1: Reproduced from AQA (Table 9.5 and Table 9.10 - corrected)			

Note 1: Reproduced from AQA (Table 9.5 and Table 9.10 - corrected).

Table 2.4.3 (Cont'd)
Maximum predicted 24-hour average PM_{2.5} concentrations Year 10 at 1.65Mtpa and 2.0Mtpa¹

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Residence/Receiver ID	Year 10 – Project alone		
	1.65 Mtpa	2.0 Mtpa	Difference
	24-hour PM _{2.5} (µg/m ³)		
Privately-owned residences/receivers			
100	0.87	0.90	0.03
101	0.88	0.91	0.03
102	0.91	0.94	0.03
103	0.91	0.94	0.03
104	0.93	0.96	0.03
105	0.93	0.96	0.03
106	0.89	0.92	0.03
107A	0.86	0.89	0.03
107B	0.88	0.91	0.03
108	0.89	0.91	0.02
109	1.00	1.03	0.03
110	1.02	1.05	0.03
112	1.10	1.14	0.04
113	1.06	1.09	0.03
114	1.06	1.10	0.04
115	1.06	1.10	0.04
117	1.12	1.16	0.04
118	1.07	1.10	0.03
119	1.07	1.11	0.04
120	1.07	1.11	0.04
121	1.07	1.11	0.04
122	1.07	1.11	0.04
123	1.06	1.10	0.04
125	1.16	1.20	0.04
126	1.14	1.18	0.04
127	1.12	1.16	0.04
128	1.18	1.22	0.04
129	1.17	1.21	0.04
130	1.09	1.13	0.04
132	1.05	1.09	0.04
133	0.85	0.89	0.04
135	1.31	1.37	0.06
137	0.95	0.99	0.04
138	0.78	0.82	0.04
139	0.82	0.84	0.02
140	0.81	0.84	0.03
141	0.90	0.92	0.02
142	0.99	1.02	0.03
143	0.94	0.97	0.03
144	1.20	1.25	0.05
145	1.11	1.14	0.03
146	1.30	1.35	0.05
147	1.32	1.38	0.06
148	1.29	1.35	0.06
149	1.49	1.55	0.06
150	1.56	1.62	0.06
151	1.34	1.38	0.04
152	1.45	1.49	0.04
153	1.52	1.57	0.05
154	1.60	1.65	0.05
155	1.11	1.14	0.03
156	0.96	1.00	0.04
157	0.92	0.96	0.03
158	0.94	0.98	0.04
159	0.96	1.00	0.04
160	1.10	1.14	0.04
161	1.44	1.50	0.06
163A	1.29	1.35	0.05
163B	1.13	1.18	0.05
164A.1	0.80	0.84	0.04
164A.2	0.72	0.75	0.03
165	0.67	0.70	0.02
171	0.90	0.93	0.03
172	0.54	0.58	0.03

Note 1: Reproduced from AOA (Table 9.5 and Table 9.10 - corrected).

Note 1: Reproduced from AQA (Table 9.5 and Table 9.10 - corrected).

Table 2.4.3 (Cont'd)
Maximum predicted 24-hour average PM_{2.5} concentrations Year 10 at 1.65Mtpa and 2.0Mtpa¹

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Residence/Receiver ID	Year 10 – Project alone		
	1.65 Mtpa	2.0 Mtpa	Difference
	24-hour PM _{2.5} (µg/m ³)		
Privately-owned residences/receivers			
173	1.20	1.25	0.05
174A	1.00	1.01	0.01
174B.2	0.78	0.78	0.00
174B.1	0.67	0.67	0.00
179	0.75	0.78	0.03
180	0.65	0.68	0.03
181A	0.47	0.49	0.02
181B	0.77	0.80	0.03
181C	0.88	0.92	0.03
182A	0.64	0.67	0.04
182B	0.79	0.81	0.02
183	0.67	0.70	0.04
184A	0.53	0.55	0.02
184B	0.70	0.72	0.02
185	0.40	0.41	0.01
186	0.45	0.46	0.02
187	0.42	0.43	0.01
188	0.45	0.46	0.01
189	0.45	0.45	0.01
191A	0.61	0.63	0.02
192A	0.70	0.73	0.03
193	1.76	1.81	0.05
197	1.35	1.40	0.05
200	1.34	1.39	0.05
203	0.85	0.89	0.03
204	0.83	0.86	0.03
205	1.07	1.11	0.04
206	0.67	0.69	0.03
Resource Company-owned Residences			
1B	1.58	1.64	0.07
1C	1.43	1.48	0.05
1D	1.44	1.50	0.06
1E	2.37	2.45	0.09
1F	2.44	2.54	0.10
1G	5.08	5.21	0.13
1K	5.09	5.24	0.14
1L	6.50	7.24	0.74
1M	3.42	3.76	0.34
1N	6.56	7.36	0.81
1O	5.02	5.18	0.16
1P	4.08	4.56	0.48
1Q	1.38	1.50	0.12
1R	1.28	1.39	0.11
3A	2.65	2.76	0.10
3B	3.31	3.41	0.10
4A.1	2.71	2.79	0.08
4A.2	3.08	3.17	0.09
5	18.17	18.59	0.42
8	2.84	2.93	0.09
12	2.34	2.57	0.23
13	2.23	2.37	0.14
14	4.57	4.73	0.16
15	6.36	6.51	0.16
17	5.68	5.84	0.16
20	2.40	2.49	0.09
54	1.29	1.34	0.05
55	1.66	1.72	0.06
58	8.53	8.75	0.22
166A	0.78	0.81	0.03
167A	1.00	1.04	0.04
168A	0.64	0.66	0.02
Gloucester Township Residences/Receivers			
S4 (Gloucester High School)	0.41	0.42	0.01
H1 (Gloucester Hospital)	0.36	0.37	0.00
P5 (Captain Cook Park)	0.49	0.51	0.02
Note 1: Reproduced from AOA (Table 9.5 and Table 9.10 - corrected).			

Note 1: Reproduced from AQA (Table 9.5 and Table 9.10 - corrected).

Table 2.4.4
Predicted Dust Concentrations and Levels for Year 10 at 2.0Mtpa of ROM Coal¹

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Residence/ Receiver ID	Year 10 – Project alone					Year 10 - Project and other sources				
	24-hour PM ₁₀ (µg/m ³)	Annual PM ₁₀ (µg/m ³)	24-hour PM _{2.5} (µg/m ³)	Annual PM _{2.5} (µg/m ³)	Annual TSP (µg/m ³)	Annual Dust Deposition (g/m ² /month)	Annual PM ₁₀ (µg/m ³)	Annual PM _{2.5} (µg/m ³)	Annual TSP (µg/m ³)	Annual Dust Deposition (g/m ² /month)
	Assessment criteria/guideline									
	50	N/A	N/A	N/A	N/A	2	30	8	90	4
Privately-owned Residences/Receivers										
2	2.48	0.31	0.53	0.07	0.70	0.02	9.49	4.72	24.04	1.03
6	21.67	1.09	3.58	0.19	3.08	0.08	10.22	4.82	26.36	1.09
7	8.25	1.46	1.42	0.26	3.82	0.08	10.63	4.91	27.15	1.09
11A	2.30	0.22	0.46	0.05	0.60	0.03	9.33	4.67	23.86	1.05
11B	1.99	0.17	0.47	0.04	0.44	0.02	9.28	4.66	23.71	1.04
18	25.64	5.08	4.74	0.85	14.33	0.24	14.63	5.57	38.49	1.27
19A	14.49	3.29	2.54	0.56	8.99	0.16	12.77	5.27	32.99	1.19
21A.1	6.09	0.65	1.26	0.14	1.62	0.02	9.91	4.80	25.11	1.04
21A.2	6.16	0.69	1.25	0.15	1.74	0.03	9.95	4.81	25.23	1.04
22	6.42	1.14	1.61	0.22	2.90	0.06	10.61	4.93	27.07	1.08
23	17.39	0.91	2.92	0.16	2.55	0.08	10.03	4.79	25.82	1.09
24	4.66	0.49	1.13	0.11	1.18	0.02	9.75	4.78	24.70	1.03
25A.1	4.76	0.80	0.96	0.16	1.98	0.04	9.96	4.80	25.27	1.05
25A.2	5.39	0.82	1.07	0.16	2.04	0.04	9.98	4.80	25.34	1.05
25B	4.97	0.93	0.90	0.18	2.35	0.05	10.09	4.82	25.65	1.06
25C	5.28	1.02	0.98	0.19	2.60	0.06	10.18	4.83	25.89	1.07
26	5.21	0.97	0.98	0.19	2.44	0.05	10.12	4.82	25.74	1.06
27	6.05	0.70	1.36	0.15	1.76	0.03	9.93	4.80	25.17	1.04
28	6.10	0.77	1.35	0.16	1.93	0.03	9.99	4.81	25.34	1.04
30	6.50	0.93	1.25	0.18	2.37	0.04	10.14	4.84	25.76	1.05
31M	6.67	0.97	1.37	0.19	2.51	0.04	10.19	4.84	25.92	1.05
31N	6.67	1.02	1.36	0.20	2.62	0.04	10.23	4.85	26.03	1.05
32	7.65	1.09	1.34	0.21	2.82	0.05	10.30	4.86	26.28	1.06
33	8.92	1.19	1.53	0.22	3.10	0.05	10.39	4.87	26.49	1.06
36	7.68	1.13	1.47	0.21	2.95	0.05	10.36	4.87	26.38	1.06
38	7.53	1.03	1.47	0.20	2.66	0.04	10.26	4.85	26.10	1.05
39	7.43	0.98	1.47	0.19	2.52	0.04	10.21	4.85	25.96	1.05
40	7.33	0.93	1.46	0.18	2.38	0.04	10.16	4.84	25.82	1.05
42	7.32	0.90	1.45	0.18	2.31	0.03	10.14	4.84	25.76	1.05
43	7.26	0.89	1.46	0.18	2.27	0.03	10.13	4.83	25.72	1.05
44	7.12	0.84	1.45	0.17	2.14	0.03	10.08	4.83	25.59	1.05
45	7.00	0.82	1.45	0.17	2.07	0.03	10.05	4.82	25.51	1.04
46	6.90	0.82	1.45	0.17	2.07	0.03	10.05	4.82	25.50	1.04
47	6.77	0.80	1.44	0.16	2.03	0.03	10.03	4.82	25.45	1.04
50	7.03	0.96	1.44	0.19	2.46	0.04	10.18	4.84	25.88	1.05
52	7.32	1.02	1.46	0.20	2.65	0.04	10.25	4.85	26.07	1.05
53	7.36	1.09	1.44	0.21	2.84	0.04	10.32	4.86	26.26	1.06
56A	5.79	1.25	1.10	0.25	3.23	0.07	10.93	4.99	27.97	1.10
63	3.89	0.34	0.88	0.08	0.77	0.01	9.57	4.74	24.26	1.03
64	4.35	0.37	0.98	0.09	0.86	0.01	9.61	4.75	24.34	1.03
65	4.75	0.40	1.08	0.09	0.95	0.02	9.64	4.75	24.41	1.03
68	5.43	0.47	1.24	0.11	1.14	0.02	9.71	4.77	24.58	1.03
70	5.73	0.53	1.31	0.12	1.29	0.02	9.76	4.77	24.72	1.03
71	6.03	0.66	1.36	0.14	1.65	0.03	9.89	4.79	25.06	1.04
73	6.66	0.72	1.43	0.15	1.80	0.03	9.95	4.81	25.24	1.04
74	6.80	0.74	1.43	0.15	1.87	0.03	9.98	4.81	25.32	1.04
75	6.96	0.79	1.43	0.16	1.99	0.03	10.03	4.82	25.45	1.04
76	6.72	0.72	1.40	0.15	1.81	0.03	9.96	4.81	25.27	1.04
77	7.00	0.80	1.41	0.16	2.04	0.03	10.05	4.82	25.50	1.04
78	6.73	0.74	1.37	0.15	1.87	0.03	9.99	4.81	25.34	1.04
80	6.35	0.65	1.34	0.14	1.63	0.03	9.90	4.80	25.10	1.04
81	6.20	0.63	1.31	0.13	1.56	0.02	9.88	4.79	25.03	1.04
82	5.96	0.60	1.26	0.13	1.48	0.02	9.85	4.79	24.96	1.04
83A	5.72	0.53	1.25	0.12	1.30	0.02	9.78	4.78	24.77	1.03
84	5.54	0.54	1.19	0.12	1.33	0.02	9.80	4.78	24.81	1.03
85	4.95	0.48	1.08	0.11	1.16	0.02	9.74	4.77	24.66	1.03
86	4.68	0.46	1.03	0.11	1.09	0.02	9.71	4.77	24.59	1.03
87	4.69	0.44	1.04	0.10	1.04	0.02	9.69	4.76	24.54	1.03
88	4.09	0.41	0.98	0.10	0.96	0.02	9.66	4.76	24.47	1.03
89	4.03	0.38	0.90	0.09	0.89	0.01	9.63	4.75	24.40	1.03
90	3.77	0.35	0.89	0.09	0.81	0.01	9.60	4.75	24.33	1.03
91	5.27	0.46	1.18	0.11	1.11	0.02	9.71	4.77	24.58	1.03

Note 1: Reproduced from AQA (Table 9.5 and Table 9.10 - corrected).



Table 2.4.4 (Cont'd)
Predicted Dust Concentrations and Levels for Year 10 at 2.0Mtpa of ROM Coal¹

Page 2 of 4

Residence/ Receiver ID	Year 10 – Project alone					Year 10 - Project and other sources				
	24-hour PM ₁₀ (µg/m ³)	Annual PM ₁₀ (µg/m ³)	24-hour PM _{2.5} (µg/m ³)	Annual PM _{2.5} (µg/m ³)	Annual TSP (µg/m ³)	Annual Dust Deposition (g/m ² /month)	Annual PM ₁₀ (µg/m ³)	Annual PM _{2.5} (µg/m ³)	Annual TSP (µg/m ³)	Annual Dust Deposition (g/m ² /month)
	Assessment criteria/guideline									
	50	N/A	N/A	N/A	N/A	2	30	8	90	4
92	5.73	0.52	1.28	0.12	1.26	0.02	9.76	4.77	24.71	1.03
94	6.00	0.56	1.34	0.12	1.37	0.02	9.80	4.78	24.81	1.03
99	3.86	0.29	0.88	0.07	0.67	0.01	9.54	4.73	24.22	1.02
100	3.95	0.30	0.90	0.07	0.68	0.01	9.54	4.73	24.24	1.02
101	4.00	0.30	0.91	0.07	0.69	0.01	9.55	4.73	24.25	1.02
102	4.14	0.31	0.94	0.08	0.72	0.01	9.57	4.74	24.28	1.02
103	4.14	0.31	0.94	0.08	0.71	0.01	9.56	4.74	24.28	1.02
104	4.21	0.31	0.96	0.08	0.72	0.01	9.57	4.74	24.29	1.02
105	4.23	0.31	0.96	0.08	0.72	0.01	9.57	4.74	24.29	1.02
106	4.02	0.30	0.92	0.07	0.69	0.01	9.55	4.73	24.25	1.02
107A	3.92	0.31	0.89	0.08	0.72	0.01	9.56	4.74	24.26	1.02
107B	3.98	0.32	0.91	0.08	0.73	0.01	9.57	4.74	24.27	1.02
108	3.97	0.33	0.91	0.08	0.76	0.01	9.58	4.74	24.30	1.02
109	4.55	0.34	1.03	0.08	0.78	0.01	9.60	4.74	24.36	1.02
110	4.66	0.34	1.05	0.08	0.79	0.01	9.60	4.75	24.38	1.02
112	5.32	0.38	1.14	0.09	0.90	0.01	9.66	4.76	24.54	1.03
113	5.01	0.36	1.09	0.09	0.85	0.01	9.63	4.75	24.48	1.03
114	5.04	0.36	1.10	0.09	0.86	0.01	9.64	4.75	24.49	1.03
115	5.10	0.37	1.10	0.09	0.87	0.01	9.64	4.75	24.51	1.03
117	5.57	0.40	1.16	0.09	0.95	0.01	9.68	4.76	24.59	1.03
118	5.17	0.37	1.10	0.09	0.89	0.01	9.65	4.75	24.53	1.03
119	5.24	0.38	1.11	0.09	0.90	0.01	9.66	4.75	24.55	1.03
120	5.25	0.38	1.11	0.09	0.91	0.01	9.66	4.76	24.56	1.03
121	5.28	0.38	1.11	0.09	0.92	0.01	9.67	4.76	24.57	1.03
122	5.31	0.39	1.11	0.09	0.92	0.01	9.67	4.76	24.58	1.03
123	5.34	0.39	1.10	0.09	0.94	0.01	9.68	4.76	24.60	1.03
125	5.86	0.42	1.20	0.10	1.01	0.01	9.71	4.76	24.66	1.03
126	5.84	0.43	1.18	0.10	1.03	0.02	9.72	4.77	24.71	1.03
127	5.86	0.45	1.16	0.10	1.09	0.02	9.75	4.77	24.79	1.03
128	6.27	0.49	1.22	0.11	1.19	0.02	9.79	4.78	24.90	1.03
129	6.27	0.50	1.21	0.11	1.23	0.02	9.81	4.78	24.95	1.03
130	5.83	0.49	1.13	0.11	1.20	0.02	9.80	4.78	24.93	1.03
132	5.72	0.57	1.09	0.12	1.43	0.02	9.90	4.80	25.21	1.04
133	4.52	0.55	0.89	0.12	1.38	0.02	9.89	4.79	25.21	1.04
135	7.42	0.74	1.37	0.15	1.87	0.03	10.09	4.83	25.67	1.05
137	5.12	0.63	0.99	0.13	1.59	0.02	9.98	4.81	25.43	1.04
138	4.65	0.55	0.82	0.12	1.38	0.02	9.90	4.79	25.22	1.04
139	4.84	0.58	0.84	0.12	1.46	0.02	9.93	4.80	25.31	1.04
140	4.79	0.55	0.84	0.11	1.38	0.02	9.90	4.79	25.25	1.04
141	5.20	0.64	0.92	0.13	1.61	0.03	10.00	4.81	25.50	1.05
142	5.56	0.70	1.02	0.14	1.80	0.03	10.08	4.83	25.70	1.05
143	5.27	0.67	0.97	0.14	1.70	0.03	10.03	4.82	25.57	1.05
144	6.65	0.84	1.25	0.17	2.17	0.03	10.22	4.85	26.03	1.05
145	6.02	0.80	1.14	0.16	2.05	0.03	10.17	4.84	25.93	1.05
146	7.27	0.95	1.35	0.18	2.47	0.04	10.33	4.87	26.34	1.06
147	7.47	0.88	1.38	0.17	2.27	0.03	10.25	4.86	26.11	1.06
148	7.31	0.81	1.35	0.16	2.07	0.03	10.17	4.84	25.90	1.05
149	8.56	1.09	1.55	0.21	2.83	0.04	10.47	4.89	26.68	1.06
150	8.98	1.24	1.62	0.23	3.26	0.05	10.63	4.92	27.13	1.07
151	7.38	1.05	1.38	0.20	2.72	0.04	10.44	4.89	26.61	1.06
152	7.99	1.16	1.49	0.22	3.02	0.05	10.56	4.91	26.93	1.07
153	8.43	1.25	1.57	0.23	3.29	0.05	10.66	4.92	27.20	1.08
154	8.85	1.36	1.65	0.25	3.58	0.06	10.78	4.94	27.53	1.08
155	6.29	0.83	1.14	0.16	2.13	0.03	10.22	4.85	26.07	1.06
156	5.53	0.71	1.00	0.14	1.80	0.03	10.09	4.83	25.74	1.05
157	5.03	0.63	0.96	0.13	1.59	0.03	10.00	4.81	25.51	1.05
158	4.92	0.62	0.98	0.13	1.56	0.03	9.99	4.81	25.50	1.05
159	4.17	0.52	1.00	0.11	1.30	0.02	9.88	4.79	25.22	1.04
160	5.99	0.81	1.14	0.16	2.06	0.04	10.21	4.85	26.05	1.06
161	6.04	0.93	1.50	0.18	2.35	0.04	10.36	4.88	26.42	1.07
163A	5.40	0.97	1.35	0.21	2.44	0.05	10.77	4.97	27.47	1.09
163B	4.46	0.71	1.18	0.17	1.72	0.04	10.35	4.90	26.33	1.07

Note 1: Reproduced from AQA (Table 9.5 and Table 9.10 - corrected).

Table 2.4.4 (Cont'd)
Predicted Dust Concentrations and Levels for Year 10 at 2.0Mtpa of ROM Coal¹

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Residence/ Receiver ID	Year 10 – Project alone					Year 10 - Project and other sources				
	24-hour PM ₁₀ (µg/m ³)	Annual PM ₁₀ (µg/m ³)	24-hour PM _{2.5} (µg/m ³)	Annual PM _{2.5} (µg/m ³)	Annual TSP (µg/m ³)	Annual Dust Deposition (g/m ² /month)	Annual PM ₁₀ (µg/m ³)	Annual PM _{2.5} (µg/m ³)	Annual TSP (µg/m ³)	Annual Dust Deposition (g/m ² /month)
	Assessment criteria/guideline									
	50	N/A	N/A	N/A	N/A	2	30	8	90	4
164A.1	3.54	0.54	0.84	0.14	1.25	0.02	10.62	4.93	26.99	1.08
164A.2	3.24	0.49	0.75	0.12	1.13	0.02	10.57	4.92	26.84	1.07
165	2.66	0.39	0.70	0.10	0.88	0.02	10.27	4.87	26.00	1.05
171	4.08	0.31	0.93	0.08	0.71	0.01	9.56	4.74	24.27	1.02
172	3.35	0.29	0.58	0.06	0.79	0.03	9.38	4.68	23.98	1.03
173	7.34	0.46	1.25	0.09	1.24	0.05	9.56	4.71	24.47	1.06
174A	5.92	0.39	1.01	0.07	1.05	0.04	9.49	4.70	24.27	1.05
174B.1	4.46	0.33	0.78	0.06	0.88	0.03	9.42	4.68	24.08	1.04
174B.2	3.80	0.30	0.67	0.06	0.81	0.03	9.39	4.68	24.01	1.03
179	3.57	0.35	0.78	0.08	0.84	0.01	9.63	4.75	24.54	1.03
180	2.99	0.25	0.68	0.06	0.60	0.01	9.50	4.72	24.23	1.02
181A	2.01	0.16	0.49	0.04	0.38	0.01	9.35	4.69	23.84	1.01
181B	4.29	0.46	0.80	0.10	1.13	0.02	9.79	4.77	24.98	1.04
181C	4.21	0.48	0.92	0.10	1.20	0.02	9.83	4.78	25.08	1.04
182A	2.44	0.32	0.67	0.07	0.76	0.01	9.60	4.74	24.49	1.03
182B	3.07	0.46	0.81	0.10	1.11	0.02	9.79	4.78	24.96	1.04
183	3.13	0.47	0.70	0.11	1.13	0.02	9.79	4.78	24.95	1.04
184A	2.51	0.29	0.55	0.07	0.67	0.01	9.52	4.72	24.24	1.02
184B	3.08	0.50	0.72	0.11	1.21	0.02	9.84	4.79	25.06	1.04
185	1.98	0.18	0.41	0.05	0.42	0.01	9.39	4.70	23.93	1.02
186	1.85	0.16	0.46	0.04	0.34	0.01	9.32	4.68	23.73	1.01
187	1.77	0.20	0.43	0.05	0.44	0.01	9.38	4.70	23.88	1.01
188	2.02	0.22	0.46	0.05	0.48	0.01	9.41	4.70	23.93	1.02
189	2.05	0.22	0.45	0.05	0.48	0.01	9.40	4.70	23.92	1.02
191A	2.58	0.41	0.63	0.09	0.98	0.02	9.69	4.76	24.68	1.03
192A	2.59	0.35	0.73	0.08	0.81	0.02	9.64	4.75	24.48	1.03
193	9.78	1.67	1.81	0.30	4.44	0.07	11.10	5.00	28.39	1.10
197	7.64	1.17	1.40	0.22	3.05	0.05	10.39	4.87	26.53	1.06
200	6.50	0.66	1.39	0.14	1.65	0.03	9.91	4.80	25.11	1.04
203	3.96	0.37	0.89	0.09	0.86	0.01	9.62	4.75	24.36	1.03
204	3.83	0.34	0.86	0.08	0.80	0.01	9.59	4.74	24.29	1.03
205	4.97	0.44	1.11	0.10	1.06	0.02	9.69	4.76	24.54	1.03
206	3.01	0.23	0.69	0.06	0.55	0.01	9.47	4.71	24.14	1.02
Resource Company-owned Residences										
1B	9.81	1.70	1.64	0.30	4.51	0.09	10.88	4.94	27.85	1.10
1C	8.60	1.38	1.48	0.25	3.64	0.06	10.60	4.91	27.07	1.07
1D	8.26	1.29	1.50	0.24	3.39	0.05	10.52	4.90	26.84	1.06
1E	15.23	2.24	2.45	0.38	6.05	0.11	11.44	5.03	29.44	1.12
1F	15.74	2.50	2.54	0.43	6.80	0.13	11.70	5.07	30.18	1.14
1G	32.47	2.07	5.21	0.35	5.86	0.14	11.22	4.99	29.18	1.15
1K	30.14	6.39	5.24	1.05	18.30	0.31	15.86	5.75	42.26	1.34
1L	51.25	7.11	7.24	1.19	28.95	0.58	16.35	5.84	52.52	1.59
1M	25.12	2.59	3.76	0.43	9.50	0.21	11.80	5.08	33.00	1.22
1N	54.24	6.35	7.36	0.99	26.06	0.40	15.62	5.65	49.72	1.42
1O	25.99	3.08	5.18	0.53	10.71	0.18	12.45	5.21	34.60	1.21
1P	29.74	2.69	4.56	0.48	10.08	0.19	11.93	5.14	33.67	1.21
1Q	8.65	0.97	1.50	0.19	3.24	0.08	10.18	4.83	26.72	1.10
1R	8.04	0.69	1.39	0.14	2.23	0.06	9.90	4.78	25.74	1.08
3A	17.18	2.80	2.76	0.47	7.64	0.14	11.99	5.12	31.03	1.15
3B	20.44	2.34	3.41	0.41	6.30	0.08	11.64	5.08	29.89	1.10
4A.1	16.57	2.26	2.79	0.39	6.07	0.08	11.54	5.06	29.62	1.10
4A.2	18.92	2.44	3.17	0.42	6.58	0.09	11.73	5.09	30.15	1.11
5	126.62	21.60	18.59	3.30	68.45	1.94	30.80	7.95	91.88	2.95
8	17.33	0.96	2.93	0.17	2.70	0.08	10.08	4.80	25.97	1.09
12	16.07	1.49	2.57	0.30	5.36	0.13	10.76	4.95	29.00	1.15
13	12.08	1.33	2.37	0.25	4.39	0.08	10.68	4.93	28.24	1.11
14	28.29	4.17	4.73	0.75	12.72	0.21	13.63	5.45	36.82	1.24
15	40.60	6.71	6.51	1.19	20.19	0.30	16.14	5.89	44.20	1.33
17	36.69	8.62	5.84	1.45	25.61	0.40	18.05	6.14	49.57	1.43
20	14.64	1.71	2.49	0.31	4.57	0.06	11.09	4.99	28.35	1.09
54	7.17	1.08	1.34	0.21	2.79	0.04	10.29	4.86	26.19	1.06
55	7.02	1.45	1.72	0.28	3.75	0.07	11.05	5.01	28.24	1.11
58	55.39	10.68	8.75	1.69	36.10	0.81	19.89	6.34	59.59	1.82

Note 1: Reproduced from AQA (Table 9.5 and Table 9.10 - corrected).



Table 2.4.4 (Cont'd)
Predicted Dust Concentrations and Levels for Year 10 at 2.0 Mtpa of ROM Coal¹

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Residence/ Receiver ID	Year 10 – Project alone					Year 10 - Project and other sources				
	24-hour PM ₁₀ (µg/m ³)	Annual PM ₁₀ (µg/m ³)	24-hour PM _{2.5} (µg/m ³)	Annual PM _{2.5} (µg/m ³)	Annual TSP (µg/m ³)	Annual Dust Deposition (g/m ² /month)	Annual PM ₁₀ (µg/m ³)	Annual PM _{2.5} (µg/m ³)	Annual TSP (µg/m ³)	Annual Dust Deposition (g/m ² /month)
	Assessment criteria/guideline									
	50	N/A	N/A	N/A	N/A	2	30	8	90	4
166A	2.72	0.40	0.81	0.11	0.94	0.01	12.76	5.35	32.94	1.19
167A	4.05	0.62	1.04	0.15	1.63	0.03	10.60	4.95	27.10	1.10
168A	3.04	0.32	0.66	0.08	0.80	0.02	11.42	5.11	29.48	1.13
Gloucester Township Residences/Receivers										
S4 (Gloucester high school)	1.69	0.20	0.42	0.05	0.43	0.01	9.37	4.70	23.75	1.02
H1 (Gloucester Hospital)	1.44	0.17	0.37	0.04	0.36	0.01	9.33	4.69	23.68	1.02
P5 (Captain Cook Park)	2.18	0.26	0.51	0.06	0.57	0.01	9.42	4.71	23.86	1.02

Note 1: Reproduced from AQA (Table 9.5 and Table 9.10 - corrected).

2.4.4 Changes to Particulate Fraction Emission Ratios

2.4.4.1 Representative Comment(s)

... the Air Quality Assessment be amended to adequately address the differing assumptions between the assessments and to demonstrate how air quality impacts at residential properties have decreased while total TSP emission rates have been maintained.

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It is requested that differing assumptions between the assessments be clarified to demonstrate how air quality impacts at residential properties have decreased while total TSP emission rates have been maintained.

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Response

The use of lower contribution ratios (than used in the 2013 EIS) for PM_{2.5} and PM₁₀ as a proportion of TSP has not been raised as an issue in the EPA's submission. To the contrary, although NSW EPA has noted that there has been a change in the approach to calculating PM₁₀ and PM_{2.5} emissions within the AQA for the amended Project compared with the 2013 Air Quality Assessment (2013 AQA) (PAEHolmes, 2013a³) their submission notes that the "emissions estimation has been done to greater detail than in the original application. ...In the original [2013] application, a single value for each [PM₁₀ and PM_{2.5}] was used for all sources. Emission estimation for the amended proposal applies source-specific ratios."

These changes in contribution ratios are consistent with the continued development of dispersion modelling methodologies that Pacific Environment undertakes on an ongoing basis, with adoption of source-specific ratios developed during the validation of the Upper Hunter

³ Pacific Environment Limited (2013a), *Rocky Hill Coal Project Air Quality Assessment*, Part 2A of the *Specialist Consultant Studies Compendium*, Prepared on behalf of GRL

Particle Model (Pacific Environment, 2013b⁴) where it was found the application of source specific ratios in the dispersion modelling provided much better correlation with subsequent monitoring data than the original (i.e. single value) method. It is also consistent with the approach taken in other recent air quality assessments, including the recently approved Mount Owen Continued Operations Project (Pacific Environment, 2014⁵) and the Bylong Coal Mine currently under assessment (Pacific Environment, 2015⁶).

In the 2013 AQA, only a TSP emission inventory was developed and the modelling was based on the use of three particle-size categories, namely:

- 0µm to 2.5µm – referred to as fine particles [FP] or PM_{2.5};
- 2.5µm to 10µm – referred to as coarse matter [CM]; and
- 10µm to 30µm – referred to as the Rest.

In 2013, the modelling was undertaken (using just the TSP emissions) for each of the three size fractions with the distribution of particles in each particle size range as follows (State Pollution Control Commission (1986)⁷):

- PM_{2.5} (FP) is 0.0468 of TSP.
- PM_{2.5-10} (CM) is 0.3440 of TSP.
- PM₁₀₋₃₀ (Rest) is 0.6090 of TSP.

and deposit from the plume in accordance with the deposition rate appropriate for particles with an aerodynamic diameter equal to the geometric mass mean of the particle size range.

The resultant predicted concentrations were then combined as follows to determine the concentrations of each size fraction:

- PM_{2.5} = FP.
- PM₁₀ = FP + CM.
- TSP = FP + CM + Rest.

Since the 2013 AQA was completed, Pacific Environment has further developed the modelling approach adopted for the amended Project in order to represent the particles sizes more accurately, and thus allow the dispersion modelling to represent more appropriately the way the particles behave in the atmosphere, which in turn improves the reliability of the predicted concentrations. Therefore, in the AQA for the amended Project, emissions inventories were developed for TSP, PM₁₀ and PM_{2.5} and dispersion completed for three particle size categories, namely:

- TSP;

⁴ Pacific Environment Limited (2013b), *Upper Hunter Air Quality Particle Model*, Prepared on behalf of NSW Environment Protection Authority

⁵ Pacific Environment (2014), *Air Quality Impact Assessment – Mount Owen Continued Operations*, Job No: 60436C. 29 October 2014

⁶ Pacific Environment (2015), *Bylong Coal Project – Air Quality and Greenhouse Gas Impact Assessment*, Job No: 5832. 1 July 2015

⁷ State Pollution Control Commission (1986) *Particle size distributions in dust from open cut coal mines in the Hunter Valley*, Report Number 10636-002-71, Prepared by Dames & Moore

- Coarse Matter (CM) = $PM_{10} - PM_{2.5}$; and
- $PM_{2.5}$.

The resultant predicted CM and $PM_{2.5}$ concentrations were then summed to determine the PM_{10} concentrations. It is considered that this revised approach provides a more accurate estimate of the predicted concentrations.

As detailed in Appendix A of the AQA for the amended Project, there are significant differences between the assumptions in the 2016 (amended Project) AQA compared with the 2013 AQA, including the following.

- Removal of processing activities at the Site
- Years assessed
- Production schedule
- Timing of operations
- Terrain
- Meteorology

It is therefore not possible to make a like-for-like comparison between the scenarios and outcomes of the two assessments as all of these changes will have influenced the predicted concentrations, not just total emissions.

The total TSP emissions are lower in the 2016 AQA in all years except for Year 7, which has a marginal increase in TSP when compared with Year 7.75 from the 2013 AQA. **Figure 2.4.3** shows the source locations used in the 2013 AQA for Year 7.75 compared with the source locations used in Year 7 of the 2016 AQA. It is apparent from this figure that the source locations in the 2013 AQA were closer to residences than those in the 2016 AQA. This alone explains the lower predicted concentrations for the amended Project compared with the 2013 Project.

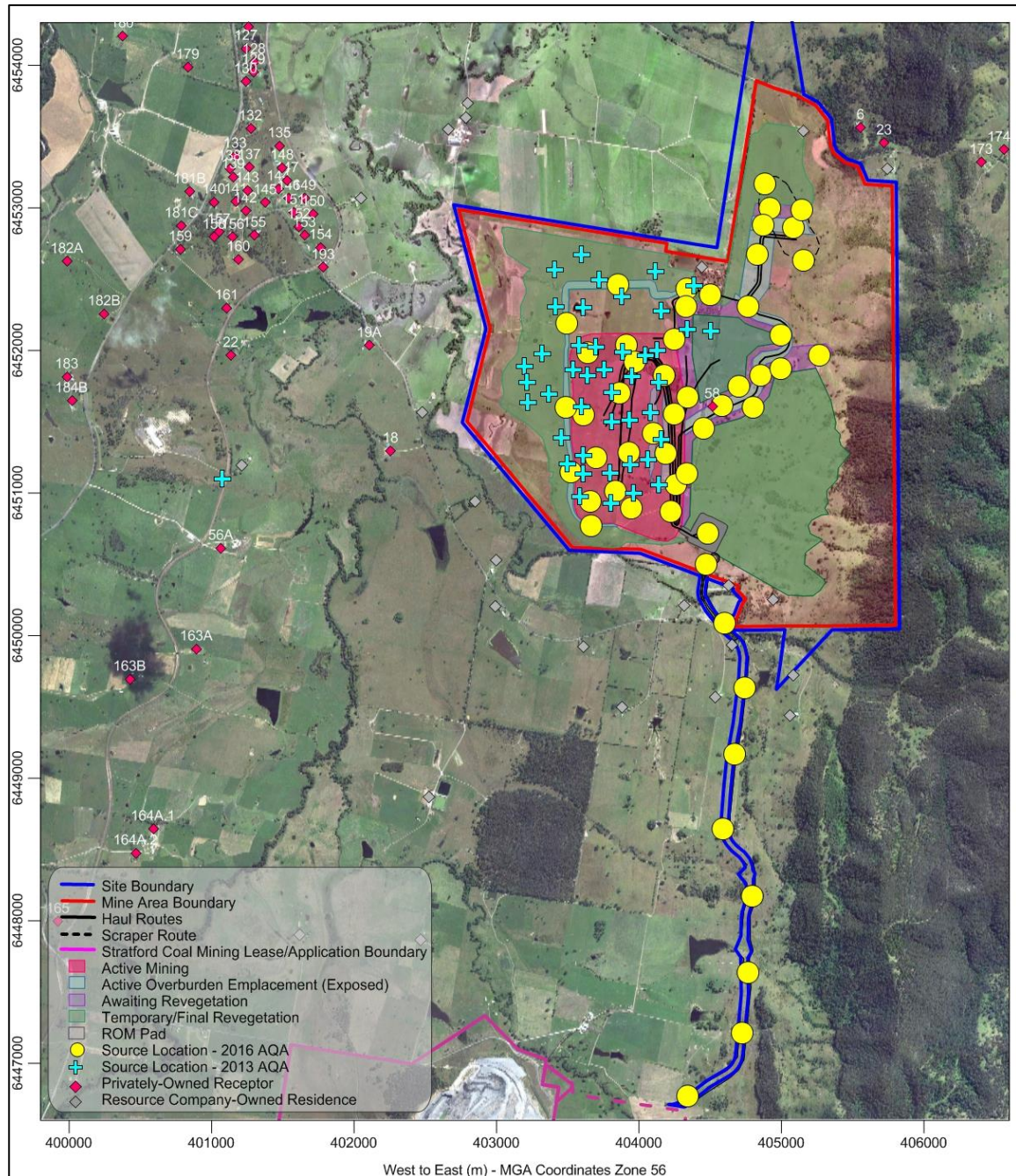


Figure 2.4.3 Year 7 (2016 AQA) Source Locations Compared with Year 7.75 (2013 AQA) Source Locations

2.4.9 Dust Controls

2.4.9.1 Representative Comment(s)

The NSW EPA in their submission to the 2013 Project advised that the proposed 90% control efficiency for haul road dust emissions is higher than that currently achieved at other coal mining operations in NSW.

Best Practice Control Measures included in the NSW Benchmarking Study suggest that 'level 2' watering (an application rate of greater than 2 litres per metre squared per hour) can achieve a particulate matter control effectiveness of 75%, which is substantially lower than the 90% considered by the Air Quality Assessment. Should chemical suppressants be applied up to 84% control is suggested, depending on the proposed suppressant.

Council recommends to the Department of Planning and Environment that the applicant remodels the air quality emissions using a maximum control factor of 75% as per the NSW Benchmarking Study if level 2 watering is proposed or a maximum control factor of 84% if chemical suppressants are to be used. Should it be proposed to use chemical suppressants, the potential impacts and issues associated with their use should also be discussed.

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Response

As discussed in Section 7.2 of the AQA, GRL is committed to best practice control of particulate matter (PM) emissions from hauling activities and haul roads. In accordance with the scientific literature, and ACARP investigations (Cox & Isley, 2013⁸; Cox & Laing, 2014⁹), a 90% control efficiency was adopted in the modelling undertaken for the AQA. It is acknowledged that the 'NSW Coal Mining Benchmarking Study: International Best Practice Measures to Prevent and/or Minimise Emissions of Particulate Matter from Coal Mining' (Donnelly et al, 2011¹⁰) defines best practice measures to reduce PM emissions from haul roads and suggests achievable control efficiencies up to 84% for surface treatments. However, control efficiencies greater than 84% are reported elsewhere in the literature (PAEHolmes (2012)¹¹; Buonicore and Davis (1992)¹²; US EPA (2006)¹³).

Since the preparation of the 2014 Response to Submissions, all open-cut coal mines in NSW have been required to demonstrate the level of control efficiency being achieved on their haul roads under a Pollution Reduction Program. These reports are publicly available on the individual company websites and a review of the results shows that the average control across all sites was 92% (varying between 80% and 99%).

Notwithstanding this, it is considered that use of 84% control is unlikely to show any significant change to the conclusions of the AQA assessment. This is demonstrated in the 2014 Response to Submissions (Table 2.4.1) which compared modelling results incorporating an increase in total ROM coal, night-time operations, and 84% control on haul roads. The percentage change in emissions are similar in each situation, with the modelling completed for the 2014 Response to Submissions showing that the changes to predicted concentrations at sensitive

⁸ Cox J. and Isley C. (2013), *Generation, Measurement, and Control of Dust Emissions from Unsealed Roads*, ACARP Project C20023, Stage 1 Report

⁹ Cox J. and Laing G. (2014), *Mobile Sampling of Dust Emissions from Unsealed Roads*, ACARP Project C20023, Stage 2 Final Report

¹⁰ Donnelly, S.J., Balch, A., Wiebe, A., Shaw, N., Welchman, S., Schloss, A., Castillo, E., Henville, K., Vernon, A., Planner, J. (2011), *NSW Coal Mining Benchmarking Study: International Best Practice Measures to Prevent and/or Minimise Emissions of Particulate Matter from Coal Mining*, Prepared by Katestone Environmental Pty Ltd for Office of Environment and Heritage June 2011

¹¹ PAEHolmes (2012), *Stratford Extension Project – Air Quality and Greenhouse Gas Assessment*, Prepared by PAEHolmes, Available from http://majorprojects.planning.nsw.gov.au/index.pl?action=view_job&job_id=4966

¹² Buonicore & Davis (1992), *Air Pollution Engineering Manual*, Air & Waste Management Association (US), Van Nostrand Reinhold, New York

¹³ US EPA (2006), *AP-42 Emission Factors Section 13.2.2 Unpaved Roads*, United States Environment Protection Agency (2006).

residences/receivers were minimal. There were no increases in predicted concentrations of cumulative PM₁₀, TSP (Project alone or cumulatively), PM_{2.5} (Project alone or cumulatively) or dust deposition (Project alone or cumulatively), that resulted in additional predicted exceedances of the relevant criteria.

Chemical suppressants are widely used across the mining industry when water supplies for dust suppression are limited, without any known adverse impacts. It is therefore considered that impacts on receivers beyond operational areas as a consequence of their use is unlikely. It should also be noted that based on the dust control efficiencies achieved through the use of water and the predicted availability of water for dust suppression purposes within the Rocky Hill Coal Mine Area, it is unlikely that use of dust suppressant would be required or adopted.

2.4.9.2 Representative Comment(s)

Dust control for the haul road proposed by the Air Quality Assessment is '3 applications per hour at 2L/m² or 2 applications per hour at 3L/m²'. It is questioned if the proposed haul road water control regime is feasible and practical. Based upon the Inventory tables in Appendix D of the Air Quality Assessment, there will be approximately 13km of unsealed haul roads at year 10 of the amended Project. Assuming a haul road width of 4 metres, 4,680,000 litres of water may be required for dust control over the 15 hour per day operational mining period (13,000 metres x 4 metres x 6 litres x 15 hours). Excessive water application may result in other issues, as the NSW Benchmarking Study advises that watering of roads can result in a slippery surface and in some cases the addition of water can lead to the production of increased fine particles.

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Response

Section 3.5.1 of the Surface Water Assessment outlines the calculated water demand for haul road dust suppression. The volumes required would range from approximately 173ML and 416ML per year (EIS Table 4.53) duplicated as **Table 2.4.7**.

The water balance prepared for the amended Project has established that the water requirements for dust suppression in all operational areas could be readily satisfied through the use of the saline water/surface water accumulating in the open cut pits.

Table 2.4.7
Water Demand for Dust Suppression

Haul Road Parameters	Year 0.5	Year 2	Year 4	Year 8	Year 15
Total Length (km)	4.50	11.20	11.80	13.40	11.00
Watered Road Width (m)	22	22	22	22	22
Average Daily Dust Suppression (ML)	0.42	0.76	0.79	0.95	0.88
Average Annual Dust Suppression (ML)	153	276	290	345	321
Average Annual Dust Suppression (OPSIM realisations) (ML)	173	257	310	416	259
Source: WRM (2016) ¹⁴ – Table 3.8					

2.4.10 Daily Emission Rates

2.4.10.1 Representative Comment(s)

The National Environment Protection (Ambient Air Quality) Measure provides maximum 24-hour PM₁₀ and PM_{2.5} standards which have been identified in the Air Quality Assessment. As mining operations are proposed to be limited to an 11 hour period being (7am to 6pm) in years 1 to 3 and then a 15 hour period (7am to 10pm) from years 4 to 16, there is potential that emission rates, or effectiveness of control measures could be understated during operations if emissions are reported over the 24 hour period.

Should the amended Project be approved, a condition of consent in relation to air quality monitoring and reporting has been included. It is recommended that any air quality reporting requirement should include data and review of emissions during operational hours.

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Response

As detailed in Table 2.1 of the AQA, emissions have been assessed for the proposed hours of operation. With the exception of emissions from wind erosion (which are assumed to occur 24-hours per day), if an activity is not occurring there would be no emissions from it. Similarly, the control measures have been applied to the emissions based on the hours the site operates. This does not change the criteria against which the amended Project is required to be assessed.

The impact assessment criteria listed in the Approved Methods are based on a 24-hour (or annual) average. As outlined in Section 7.3.1 of the AQA, real-time dust monitoring is proposed as part of a proactive dust management system. The results of this monitoring would be included in relevant reporting, such as the Annual Review.

¹⁴ WRM Water and Environment Pty Ltd (WRM) (2016), *Amended Rocky Hill Coal Mine Surface Water Assessment*, Part 5 of the *Specialist Consultant Studies Compendium*, Prepared on behalf of GRL

2.4.11 Resource Company-owned Residences

2.4.11.1 Representative Comment(s)

The Air Quality Report does not include resource company-owned residences in the maximum 24-hour PM₁₀ and PM_{2.5} Monte Carlo analysis and does not assess NO₂ impacts at these residences.

It is recommended that should air quality monitoring indicate that resource company-owned residences experience emissions above air quality standards that they not be permitted to be used for residential purposes.

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Response

Consistent with the contemporary approach adopted by DPE (and the PAC) in conditions of approval for various mining proposals, with respect to resource-company owned residences GRL would:

- advise tenants and landowners (if a residence is owned by another mining or resource company) of any health risks associated with exceedances of air quality criteria;
- enable the tenant on any land owned by GRL where exceedance of any air quality criterion is predicted or identified, to terminate their tenancy agreement without penalty at any time, subject to given reasonable notice;
- if so requested by the tenant of any residence or landowner (if the residence is owned by another mining or resource company), install air mitigation measures such as air filters, a first flush roof water drainage system and/or air conditioning;
- undertake regular air quality monitoring to inform the tenant or landowner (if the residence is owned by another mining or resource company) of particulate emissions in the vicinity of the residence; and
- provide the data from the air quality monitoring to the tenant or landowner in an appropriate format for a medical practitioner to assist the tenant and landowner in making informed decisions on the health risks associated with occupying the residence.

2.4.12 Cumulative Impacts

2.4.12.1 Representative Comment(s)

Reporting of cumulative 24-hour maximum PM₁₀ and PM_{2.5} concentrations have been predicted using a Monte Carlo analysis. The Monte Carlo analysis is based upon random repeated sampling and does not give due consideration to conditions which may result in more frequent exceedances of air quality standards. It is likely that windy, hot days would result in higher mine generated emissions coinciding with elevated background levels, which may result in the number of days exceeding 24 hour standards being more frequent than reported.

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Response

Section 9.8.2 of the AQA provides an overview of the Monte Carlo analysis. The use of the Monte Carlo analysis is consistent with the Approved Methods and combines the frequency distribution of both the background and predicted 24-hour average PM_{2.5} and PM₁₀ concentrations. The Monte Carlo analysis randomly combines these values for each residence 250 000 times to provide a new data set which is then presented as a frequency distribution. This process yields a good statistical estimate of the combined and independent effects of varying background and amended Project contributions to total PM_{2.5} and PM₁₀.

Notwithstanding this, in the event that severe weather conditions were to result in elevated background particulate levels, the proposed use of real-time monitoring stations would enable mine personnel to respond to elevated background dust levels by modifying the location or intensity of mine activities or increasing controls as required to avoid exceedances.

2.4.13 Blast Fume

2.4.13.1 Representative Comment(s)

Should there be a blast plume episode and depending on the plume level, the residents of the areas close to the mine may suffer a significant health and/or environmental event.

Mid-Coast Council Report – Page 2

Response

It was an inadvertent omission that the EIS did not include text relating to the proposed hours of blasting as outlined in the AQA (Section 11.4 Blast Fume Assessment). GRL in its 2014 Response to Submissions acknowledged the need to confine blasting to between 10:00am and 4:00pm to achieve compliance with the NO₂ criterion. GRL has incorporated this commitment in the amended consolidated Environmental Management and Monitoring Measures presented in Section 4 of this document.

As detailed in Section 11.4 of the AQA, blasting would only occur between the hours of 10:00am and 4:00pm with the dispersion modelling undertaken showing that within these hours there were no predicted exceedances of either the 1-hour average or annual average NO₂ criteria. As such, it is assessed that there would be no potential air quality impacts due to blasting.

It is also important to note that the dispersion modelling is considered to be extremely conservative as all blast fume emissions were assumed to be equivalent to a Rating 4 Fume category which, as detailed in Section 11.1 of the AQA, was only observed in a single blast out of almost 500 blasts (approximately 0.2%) during a ACARP monitoring study completed by CSIRO in 2013 (Day et. al 2013¹⁵). It is also worth noting that during the ACARP study, approximately 80% of the blasts that passed over the monitors did not detect any increase in NO₂ concentrations above ambient concentrations. GRL recognises the importance of correct blast design and, as such, is committed to the preparation and implementation of a comprehensive Blast Management Plan which would incorporate a Blast Fume Management Strategy (with related procedures) to manage the factors known to contribute to fume

¹⁵ Day S., Azzi M., Fry R., Garland E., Jacyna D., Javanmard H., Patterson M. and Tibbett A. (2013), *Emission from Blasting in Open-Cut Coal Mining*, ACARP Project C18034

generation, including geology, moisture levels, meteorological conditions, blast design, production selection, duration charges remain in the ground, quality and blast crew education, on-bench practices and emergency response procedures.

In summary, with the adoption of these management measures and restrictions on blast hours, there are no residences/receivers predicted to experience NO₂ levels above the 1-hour or annual average criteria. The modelling therefore shows that no residences/receivers would experience adverse blast fume impacts, neither those closest residences/receivers presented in the blast fume assessment or others located at greater distances based on the size of blasts assessed. Smaller blasts would have a more frequent but lower individual contribution to air quality than larger ones. However, on the basis of the modelling outcomes and the often expressed desirability that on mine sites fewer larger blasts are preferred to more frequent smaller blasts, it is not considered necessary to reduce the size of the blasts.

2.6 BIODIVERSITY OFFSET

2.6.2 Offsetting of Residual Biodiversity Impacts

2.6.2.1 Representative Comment(s)

4a) BioBanking calculations are constrained by the limitations, coarse resolution and inaccuracies of the vegetation community description. This prejudices the outcomes of the Assessment by concluding that the currently proposed offset is reasonable and appropriate, when it is not.

Mid-Coast Council Senior Ecologist's Comments – Pages 10-13

Response

Comments provided by the Mid-Coast Council regarding the selection of vegetation communities for assessment under the BBAM are addressed in Section 2.14.4 of this document. In summary, it is concluded that the selection of Plant Community Types (PCTs) allocated to vegetation units within the study area for the ecological field studies were at the appropriate resolution for a BioBanking Assessment and that any minor areas that may not be consistent with these communities are very limited in extent and represent intergrading variants or natural micro-variations within the vegetation units. In addition, the selection of PCTs was concluded after consideration of potential alternative or additional PCTs that could potentially be used to classify the vegetation units within the Study Area (see Section 3.1.3.2 of TBA).

The vegetation community descriptions used in the TBA are therefore considered to be the most appropriate for an assessment under the BBAM. As a result, it is concluded that the currently proposed BOA more than adequately compensates for the residual impacts to native vegetation and the type and quantity of habitat lost in terms of the PCTs defined in the BBAM. This conclusion is supported by the OEH submission that states the following.

OEH has reviewed the proposal (including the new haul road) with respect to impacts on biodiversity and threatened species, and is of the opinion that the EIS has generally provided adequate assessment of the likely impacts, plus provided suitable mitigation and/or offset measures to compensate these impacts.....

OEH notes that Midcoast Council (as per their correspondence to OEH) have indicated that they have concerns with the offset package, with respect to landscape location and geology... However, OEH notes that the proponent, via BBAM, has shown that the offset area has comparable PCT (vegetation) matches to that of the impact area, and as such is suitable offset area with respect to OEH requirements.

2.6.2.3 Representative Comment(s)

4b) The Biodiversity Offset Area conserves significantly different vegetation types, habitats and soil landscapes than is affected in the disturbance area. Whilst in itself, the Offset Area has merit, it does not serve to maintain or improve environmental values lost from the disturbance area.

Mid-Coast Council Senior Ecologist's Comments – Page 14

Response

The matter of classifications (PCTs) applied for vegetation units for the purpose of assessment is addressed in Sections 2.14.4 and 2.6.2.1 of this document.

The BOA provides a substantial conservation outcome that, allowing for local floristic micro-variations, represents a like-for-like offset to the vegetation and habitats that would be removed within the proposed disturbance area. This has been demonstrated by the BioBanking credit calculations undertaken for the assessment and is supported by comments in the OEH submission that are quoted in Section 2.6.2.1 of this document.

2.6.2.4 Representative Comment(s)

4c) The Biodiversity Offset Area appears driven by residual reservation and availability than a scientific compensation for the area lost to disturbance

Mid-Coast Council Senior Ecologist's Comments – Page 14

Response

The BOA was selected because:

- it matches the PCTs to be removed, as defined by the BBAM; and
- it is immediately adjacent to the disturbance area and therefore matches the disturbance area more closely than any offsets that could be provided at a greater distance from the proposed disturbance area.

The BOA is supported by the OEH submission (quoted in Section 2.6.2.1 of this document) and notes the concerns of Mid-Coast Council but reiterates the Department's support and notes that it is satisfied that the proposed BOA is a suitable offset area with respect to OEH requirements.

2.6.2.5 Representative Comment(s)

4d) Habitat elements (hollows, large trees etc) appear to be very different between the areas lost to disturbance and the Biodiversity Offset Area

Mid-Coast Council Senior Ecologist's Comments – Page 14

Response

It is correct that initially there may be a greater density of mature and hollow-bearing trees that would occur within the disturbance area compared with the BOA, but this difference would decrease over time as the vegetation in the BOA matures and hollows are naturally created. In recognition of this, in the short term, measures would be taken to enhance habitat with the BOA by the provision of nest boxes and relocation of felled limbs and tree trunks with hollows. These measures would improve habitat quality within the BOA and, in particular, those elements found at a higher density in the disturbance area. This would be implemented through an approved Biodiversity Management Plan and as part of the ongoing environmental management of the BOA.

2.6.2.6 Representative Comment(s)

4e) Further and better consideration should be provided in relation to the location of the Biodiversity Offset Area.

Mid-Coast Council Senior Ecologist's Comments – Page 14

Response

The *OEH Principles for the Use of Biodiversity Offsets in NSW* states that offsets should be located appropriately, in areas with "the same or similar ecological characteristics as the area affected by the development".

As noted in Section 2.6.2.3 of this document, in consideration of the OEH Principles, the proposed BOA is considered to be in the most appropriate location and there are no compelling ecological reasons for it to be located elsewhere. It is unlikely that any areas of land within the nearby locality would provide a superior offset to the habitat affected by the amended Project in terms of the combination of habitat types affected.

It should also be noted that the BOA would improve connectivity between the existing vegetation that extends from Mount Mograni and continues to the south and east of the Mine Area. Much of the land to the north and south of the Mine Area is privately owned and not protected by any form of conservation covenant on those land titles.

2.6.2.7 Representative Comment(s)

4f) The use of a private BioBanking Agreement is not necessarily the best means of securing the offset and other more innovative approaches to conservation should be considered.

Mid-Coast Council Senior Ecologist's Comments – Page 14

Response

The NSW Biodiversity Offset Policy for Major Projects (OEH, 2014c)¹⁶ provides for the in-perpetuity conservation of offset areas through a number of mechanisms, as long as the relevant criteria are met. The exact mechanism to be entered into to secure the BOA would be negotiated with and would have the ultimate approval of OEH, thus ensuring its security in the long term.

However, BioBanking agreements are currently the preferred mechanism for securing in-perpetuity conservation in NSW for OEH and it is for that reason that this mechanism was proposed in the EIS. GRL is aware that changes to biodiversity legislation have been gazetted, resulting in changes to the way offset areas are protected, however this legislation is yet to commence. This may result in the BOA being designated a Biodiversity Stewardship Site under the new legislation. Should an alternative mechanism be preferred at the time the legal process for security of the BOA is required, this would be considered by GRL in consultation with OEH.

2.6.2.8 Representative Comment(s)

9c) If positively determined, the finalisation of all spatial, temporal and administrative details associated with the footprint (avoidance) and offsets for the proposed development be a Deferred Commencement Condition ... which includes input, review and acceptance of the Strategy by a convened Agency Panel that includes MidCoast Council.

Mid-Coast Council Senior Ecologist's Comments – Page 20

Response

OEH's submission confirms that the assessment and proposed mitigation and offsets compensate for the predicted impacts and that the proposed BOA has comparable vegetation communities to satisfy like for like offsetting requirements under the BBAM. The additional level of bureaucracy/red tape required for an Agency Panel would have no value for the assessment of the amended Project or the conservation outcome for the BOA and would more than likely delay the securing of the offset.

2.6.2.9 Representative Comment(s)

4g) Any Biodiversity Offset Management Plan should:

- *Be finalized with input from MidCoast Council officers [*]*
- *Include very detailed prescriptions concerning the revegetation of the cleared areas to install functional, indigenous vegetation community types (including expanding the areas of Dry Rainforest)*
- *Include consideration of local and sub-regional wildlife corridors and integration with proximal protected areas*

¹⁶ OEH (2014c), *NSW Biodiversity Offsets Policy for Major Projects*, Prepared by NSW Office of Environment and Heritage 2014

- *Include prescriptive consideration of fencing, revegetation, pest and weed controls, fire management, signage, restrictions on access, the relocation of habitat features such as logs and hollows, performance measurement and monitoring*
- *Include a program of the relocation of felled hollow trees and nesting boxes to compensate for the loss of natural hollows*
- *Include protection of the area from over-frequent fire*
- *Include details of the staging of revegetation and facilitated natural regeneration works*
- *Establish McKinleys Lane protection area in the Biodiversity Offset Area [*]*
- *Establish the Biodiversity Offset Area in a single lot by subdivision or boundary adjustment [*]*
- *Ensure that the Biodiversity Offset Area is zoned for environmental conservation on the relevant LEP [*]*
- *Operational lighting needs to be directed away from the offset area*

Mid-Coast Council Senior Ecologist's Comments – Page 15

Response

The list of suggested requirements for the Biodiversity Offset Management Plan with the exception of those with [*] above are considered reasonable. The suggestion regarding McKinleys Lane is considered impractical due to its separate, isolated location and site-specific management requirements. It is noted that most of Council's suggestions are generally consistent with the management measures that have been included in the EIS for the amended Project.

2.7 BLASTING

2.7.1 General

2.7.1.1 Representative Comment(s)

... [the Blast Management Plan] *should be prepared by a suitably qualified person prior to every blast.*

Mid-Coast Council Report – Page 20

Response

At the outset, it needs to be recognised that audibility is not a blasting criterion, and the fact that some blast events may be audible at certain times and at certain locations does not mean the impacts are considered by the receiver to be unacceptable.

The NVBA (Section 10) presents a comprehensive blast assessment prepared in accordance with Director-General's Requirements (DGRs) dated 24 April 2012 including *blasting impacts on people, livestock and property*, based on the Australian and New Zealand Environment

Council (ANZEC) guideline entitled, *Technical basis for Guidelines to Minimise Annoyance due to Blasting Overpressure and Ground Vibration* (ANZEC, 1990)¹⁷. Furthermore, the EPA's specific input to the DGRs are also addressed in NVBA (Section 10) by demonstrating that blasting during the life of the amended Project would be designed to comply with the requirements of the subject guideline. The following extracts from the NVBA (Section 10.6.1) present the outcomes of the blasting assessment, with the abbreviations within this extract having the following meanings.

- Maximum Instantaneous Charge (MIC) measured in kilograms (kg)
- Ground vibration velocity measured in millimetres per second (mm/s)
- Airblast level measured in peak linear deciles (dBLpk)

The predicted ground vibration and airblast levels at privately-owned residences and receivers in the vicinity of the Site (NVBA Table 60), show that:

- *For a typical lower overburden MIC of 414kg, compliance with the human comfort criteria of 5mm/s and 115dBLpk at all residences.*
- *For a typical upper overburden MIC of 828kg, compliance with the human comfort criteria of 5mm/s and 115dBLpk at all residences and receivers, except at 18 Collins & Barrett and 19A Boorer (when the closest point from each residence to the blast site is 1,430m or less).*
- *At 18 Collins & Barrett the closest to point from the residence to the blast site is 1,274m and restricting the MIC to 575kg would achieve compliance with the human comfort criteria of 5mm/s and 115dBLpk.*
- *Similarly, at 19A Boorer the closest to point from the residence to the blast site is 1,399m and restricting the MIC to 760kg would achieve compliance with the human comfort criteria of 5mm/s and 115dBLpk.*

Blast Management Plan (BMP)

- *Ground vibration and airblast emission levels would be managed by GRL in accordance with an approved Blast Management Plan (BMP) to ensure that ground vibration and potential blast emission impacts are minimised.*

EIS Section 4.3.4.1 further describes the requirements of a Blast Management Plan (BMP) for the amended Project which would include blast design optimisation procedures aimed to minimise blast emission impacts. The BMP would be prepared by suitably qualified and experienced personnel and reviewed annually. The blast design procedures would involve the use of site-specific blast design formulae (or blast laws) which include the variables of MIC, distance and the measured ground vibration velocities and airblast levels. It is noted that development of the airblast law would capture any adverse meteorological effects on the noise propagation, which in turn, would enable future airblast levels to be predicted and noise impacts minimised at surrounding residences. These formulae can then be used to predict future emission levels and, for a known distance and target ground vibration velocity and airblast

¹⁷ ANZEC (1990), *Technical basis for Guidelines to Minimise Annoyance due to Blasting Overpressure and Ground Vibration*, Australian and New Zealand Environment Council, September 1990

level, enable calculation of the appropriate MIC to achieve compliance with the approved human-comfort criteria.

As the EPA is aware, it would be possible for the amended Project to satisfy all human-comfort criteria for all blasts given the emphasis upon optimising blast designs to achieve compliance with the criteria as reflected by the site-specific blast laws developed for the amended Project. Whilst satisfying all human-comfort criteria, it is inevitable that a number of the blasts would be audible at locations around the Mine Area. It remains GRL's position that by ensuring compliance with the human-comfort criteria, the blast-related impacts would be acceptable.

2.10 ECONOMIC ISSUES

2.10.1 General

2.10.1.1 Representative Comment(s)

As the risks and costs to the community are not quantified, the majority of the negative impacts of the project are borne by the community, without adequate compensation. Table 1 outlines a risk matrix from the community's perspective.

Table 1: Risk Matrix for Current Participants in Mining Developments
(low-green, moderate-orange, high-red)

	Environmental		Social		Economic	
	Short term	Long term	Short term	Long term	Short term	Long term
Proponent	Liability limited to Conditions of License	Liability limited to largely inadequate Conditions of License	Generally ignored but may be mitigated by Conditions of License	No liability Recognised	Liabilities limited to agreements Substantial profit potential with minimal risk	Liabilities usually not recognised in agreements. Depending on the lifetime of the ongoing project, there may be substantial long term profit potential
State Government	License conditions remove liability, some potential short term political fallout if license conditions prove inadequate	Liabilities sparsely covered by license conditions but generally of little interest as they only become apparent to future governments	Generally ignored as they pose no real cost at the state level	Liabilities poorly considered as they only become fully apparent to future governments	No liability Significant revenue from royalties	Poorly considered as they only become fully apparent to future governments
Local Community	Any unmitigated environmental event is a direct cost to the Community. Long history of environmental costs of mining operations accruing to local Communities	Long term and cumulative liabilities poorly considered and accrue directly to the local and regional Communities	Ignored costs are unmanaged by either the State or the Proponent and Communities left to manage as best they can	Serious long-term social dislocation with no explicit support for managing its effects	Significant short term economic costs for incompatible economic sectors. Benefits may accrue to aligned economic sectors and through agreement to share profits	Economic upheaval associated with creation and withdrawal of an industry that is incompatible with many other important and sustainable economic sectors

Mid-Coast Council Report – Page 18-19

Response

It is unclear where Mid-Coast Council has sourced the information displayed in the risk matrix presented in its submission. However, it is noted that this matrix was also presented in the

Gloucester Shire Council submission regarding the 2013 EIS and has been adapted to reflect the amendments to the Project since in the 2013 EIS and that of the statements made in the matrix are generic in nature. Furthermore, Mid-Coast Council does not make it clear how these statements relate to the conclusions of the EIS for the amended Project.

The Economic Assessment considers the economic costs and benefits of the amended Project for the State of NSW and the local community and was prepared in accordance with *Guidelines for the economic assessment of mining and coal seam gas proposals, 2015* (2015 Guidelines) (NSW Government 2015). The 2015 Guidelines are a component of the NSW Government's Integrated Mining Policy and are intended to provide guidance on the assessment requirements, typically referred to in the Secretary's Environmental Assessment Requirements (formerly DGRs), concerning economic impacts associated with State significant development. The 2015 Guidelines present a standardised format for economic assessment of State significant development that is to be integrated into an EIS and allow the NSW Government to complete a 'triple bottom line assessment' of projects (i.e. social, environmental and economic).

The Economic Assessment for the amended Project contains an assessment of a number of external costs to the community such as the key issues relating to noise, particulate matter emissions and greenhouse gas emissions. It also includes a sensitivity analysis around key parameters to account for uncertainties regarding expected costs and benefits.

The results of the Economic Assessment contradict the assertions of Mid-Coast Council in its *Risk Matrix for Current Participants in Mining Developments* regarding the short and long term economic risks of the amended Project. The Cost Benefit Analysis concludes that a net benefit to the State of NSW of \$89.5 million is expected as a result of the amended Project. The Local Effects Analysis, also a requirement of the 2015 Guidelines, identifies net economic benefits to the locality, including those associated with increased employment. In addition, GRL has committed to a Community Grants Program, which includes an expected contribution of \$6.5 million (\$2.9 million in present value terms) over the life of the amended Project (see Section 4.3.1.12 of the Economic Assessment).

It should also be noted that the amended Project has the support of the Hunter Business Chamber, Gloucester Business Chamber and Advance Gloucester, the latter being a local community group based in Gloucester with the aim of promoting, encouraging, supporting and advancing any commercial, industrial, mining, sporting and/or cultural business undertaking, enterprise, project and/or venture and carrying out activities which, in the opinion of the association, will advance Gloucester and surrounding areas for the benefit of the general population. The Hunter Business Chamber, Gloucester Business Chamber and Advance Gloucester stated the following in their submissions.

The Chamber strongly endorses the sentiments expressed in the EIS regarding the importance of the economic returns of the project for employment, suppliers, and local and regional communities.

Hunter Business Chamber Submission: Page 2

The project meets the Business Chamber's charter "to be committed to improving the community of Gloucester through communication, promotion of employment opportunities and quality of lifestyle. This will be achieved through the encouragement, development and support of business and industry which meets all the environmental and statutory guidelines of Federal, State and local

Governments”.
Gloucester Business Chamber Submission

Given mining in the region has existed for nearly 25 years, essentially a whole local generation has now evolved with no other recollection of the dynamics of their home town prior, other than taking for granted the contribution that mining activity has brought to the local economy.

Advance Gloucester Submission: Page 2

The support of the Gloucester Business Chamber and Advance Gloucester in particular, which focus on economic development in the Gloucester area, indicates that the risk of ‘significant local economic costs’ and ‘economic upheaval’ is not shared by business people in the local community. In addition, it is important to consider the numerous individual submissions noting the economic benefits of the amended Project and providing their support and enthusiasm for employment opportunities and other local economic benefits that are predicted to result.

2.10.4 Cost Benefit Analysis and Local Effects Analysis

2.10.4.1 Representative Comment(s)

No cost/benefit analysis including a discussion of coal prices, exchange rates, coal specifications or likely cost structure. This type of cost/benefit analysis is likely to give a more robust economic analysis of the project.

Mid-Coast Council Report – Page 19

Council does not support the proposed Rocky Hill Coal Mine Proposal for the following reasons.....Cost benefit analysis completed by a financial expert, quantifying the residual costs associated with the Project and the mitigation measures. This analysis should include discussion of coal prices, exchange rates, coal specifications or likely cost structure, to realistically assess the Project.

Mid-Coast Council Report – Page 48

Response

The Cost Benefit Analysis for the amended Project has been undertaken in accordance with the 2015 Guidelines as required by DPE and is presented in Section 4 of the Economic Assessment. The analysis includes the predicted costs of the amended Project including management and monitoring measures and predicts that the amended Project would deliver a net economic benefit to the NSW community of approximately \$89.5 million in present value terms. A sensitivity analysis of coal prices and other inputs to the analysis is also included in Section 4.5 of the Economic Assessment. Any discussion of coal specifications and exchange rates are outside the scope of the Economic Assessment as required by the 2015 Guidelines.

2.10.6 Environmental, Health and Social Costs

2.10.6.1 Representative Comment(s)

Although the residual costs to the community were set out within the EIS, they, nor the proposed mitigation measures, have been quantified. As such, they have not been included in the economic analysis.....

Without quantification, the costs to the local community remain hidden and unrecognised by the mining company and the State and Federal governments. Further, one of the mitigation measures, the installation of a water treatment plant, has also not been costed.

Mid-Coast Council Report – Page 18

Response

Section 4.3.8 of the Economic Assessment contains the methodology for estimating externality costs associated with the amended Project and attributing these to NSW, with air quality, noise and greenhouse gas emissions costs quantified and other social impacts which are inherently difficult to appropriately value, assessed qualitatively. Notably, the Groundswell Gloucester Appendix 1 submission acknowledges that quantification of social costs is often not possible, stating the “*existence of local trade-offs between coal mining and rural tourism is regularly reported in survey data, but clean economic assessments of the marginal effects are difficult to find.*” (Australia Institute, p. 124).

It is therefore standard practice in cost benefit analyses, and also in line with the 2015 Guidelines, for costs and benefits which cannot readily or reliably be quantified to be discussed and analysed qualitatively. The fact that these impacts are not quantified in the Economic Assessment does not mean that they are not assessed. Detailed consideration of these impacts are provided in the Aboriginal Cultural Heritage Assessment, Historic Heritage Assessment, Visual Impacts Assessment and the Social Impact Assessment and other specialist assessments undertaken.

It should also be noted that the costs of implementing the proposed management and mitigation measures for the amended Project (summarised in Section 5 of the EIS) have been included in the operating cost estimates as well as some capital cost estimates such as the cost of the water treatment plant. Rehabilitation costs have also been built into the unit rates for materials movement utilised in the financial model operating cost estimates.

2.10.9 Federal Funding

2.10.9.1 Representative Comment(s)

Federal funding initiatives have been mentioned but not included in the economic analysis.

Mid-Coast Council Report – Page 19

Response

Discussions of Federal funding initiatives refer to the re-investment of corporate taxes paid by GRL to the Federal government back into the State of NSW and the local community through funding of infrastructure, health and education services by the Federal government, and other services. This contribution is estimated in Section 4.3.1 of the Economic Assessment and is based on the assumption that 32% of the corporate tax raised by the amended Project would

accrue as benefit to NSW, i.e. the proportion of corporate taxes based on the population of NSW. This assumption and methodology is consistent with the 2015 Guidelines.

2.11 EMPLOYMENT

2.11.4 Proportion of Workforce Resident in Gloucester Area

2.11.4.1 Representative Comment(s)

Jobs – Optimistic estimate of local employment – goals of 75% resident employment are unlikely to be achievable based on data from other local projects, such as the Duralie and Stratford mines (See Economist at Large report in Gloucester Shire Council's previous submission).

Mid-Coast Council Report – Page 19

Response

The target set by GRL for locally-based employment was one of a series of recommendations presented in the SIA and accepted by GRL, as were the measures that would be implemented to attract non-locally resident employees and their families to re-locate to Gloucester. The target is to have 50% of employees living locally in the first 2 years and 75% at the end of Year 3. These targets are based on GRL Management personnel's experience in hiring workers for mining projects; resident employment percentages in places such as Gunnedah and the number of, and experience identified in the expressions of interest received from the local community seeking employment opportunities and the feedback received during GRL's public consultation activities. It is also worth noting that in the period since 2012, and more recently since late 2016, a reduction in employment levels at the Stratford and Duralie Mines has provided an increase in the pool of locally-based personnel experienced in coal mining activities that could be employed for the amended Project.

Several submissions recorded the intentions of possible employees to relocate to Gloucester with their families or in some cases for previous residents to return home to take advantage of employment opportunities. There were also several examples where families are currently separated during the week, with one partner working elsewhere and returning on weekends to their families in Gloucester.

I am a 27 year old male that was born and bred in Gloucester and I have had to leave town to gain employment in Western Australia in a Gold Mine as there is no work available here...I would like the opportunity to return to my home town and I worry if the mine doesn't go ahead there will be no employment for the younger people of Gloucester and more people like myself will have to relocate to find work.
(Name withheld) of Morley, WA (Submission No. 164274).

I support the new mine at Gloucester as I am looking to get a truck driving job at the mine. If I get a job I will relocate my family to Gloucester to live.
(Name withheld) of Werris Creek, NSW (Submission No. 165060)

I am looking forward to moving to Gloucester when my Dad gets a job at the new mine. I also want to get a job in the mine when I leave school.
(Name withheld) of Gunnedah, NSW (Submission No. 165058)

Form Letter C and many other submissions questioning the employment opportunities and commitments also overlook the other recommendations made in the SIA and adopted by GRL that relate to enhancing locally resident employees and local employment opportunities, including:

- Conducting joint recruitment operations with existing organisations to attract families to live in Gloucester;
- investigating incentive packages for employees to relocate to Gloucester;
- actively promote job opportunities to local school leavers through school visits and information packages;
- developing an Indigenous Employment Strategy to target local Indigenous people;
- preferentially contracting with suppliers who employ local people;
- investigating partnerships with other stakeholders to provide relocation incentives to suppliers prepared to establish their businesses in Gloucester and employ local people;
- planning joint training and employment strategies to assist suppliers retain local staff; and
- sponsoring up to three tertiary education scholarships annually and providing trade apprenticeships for local youth at the Rocky Hill Coal Project.

By attracting employees and their partners or families to Gloucester, it is only reasonable to expect that the skills base available to other businesses in the area would also be improved such as, for example, where the partner of a person employed at the amended Project may be a qualified health services or education professional. This, in turn, would have flow-on benefits for the region as described in the following submissions.

Provide much needed income into town, Gloucester has declined rapidly in recent years, on the verge of a ghost town. The town needs business! Whether it be direct or indirect! Business flow on \$ will filter into Gloucester and as a result = jobs = \$ = town becomes sustainable. Families stay, schools maintain no. of students, students support sporting facilities, local shops get customers (not tourism, biggest figure fudged ever) and it goes on!

Mining, farming and local communities CAN CO-EXIST!
Ken Maurer of Gloucester, NSW (Submission No. 162967)

As local residents I am 100% for the Rocky Hill Coal Project to go ahead. Gloucester needs this positive industry - creating flow on economic benefits to the town, region and State.

The company is already proving it is a good corporate citizen, participating in the local community, and most of all listening, and involving the community in decisions relating to the project.

(Name withheld) of Forbesdale, NSW (Submission No. 162954)

2.14 FLORA

2.14.3 Currency and Adequacy of some of the Field Surveys

2.14.3.1 Representative Comment(s)

1a) Key elements of the flora and fauna field surveys used as the basis for the Biodiversity Assessment now more than 5-years old which exceeds the stated requirements of the DGR's. The July 2010, March 2011 and August 2011 flora surveys and the April 2011 fauna surveys all fall outside of the five-year currency period of the EPA for field surveys...

1b) Additional flora and fauna field surveys are now required to provide the necessary completeness of biodiversity investigations to provide a positive a comprehensive determination of the Application.

Mid-Coast Council Senior Ecologist's Comments – Page 5

Response

At the time of submission of the EIS for the amended Project, the earliest field surveys fell approximately one year outside the five-year currency period defined by the then EPA (now OEH) in the Director-General's Requirements as 'recent surveys'.

A visual assessment of the current nature and condition of the habitats within the areas surveyed during the earliest surveys was carried out as part of the 2016 surveys and it was found that there had been no significant changes in the nature or extent of habitat within either the proposed Site or BOA since the earliest field surveys were carried out.

Given the lack of any discernible change in the nature or extent of the habitats within the Study Area for the terrestrial ecological field surveys, as confirmed by the 2016 ecological assessments, and the confirmed continuing presence of threatened fauna such as the Grey-crowned Babbler in the same locations that it was recorded in 2011, it is concluded that the original field surveys remained valid and are a true representation of the biota present. It is not considered warranted to repeat any flora surveys originally carried out.

As described in Section 2.14.1 of this document, the OEH submission supports the extent of surveying used for the assessment of threatened flora. The OEH submission includes a request also made by Mid-Coast Council that targeted surveys for Grey-crowned Babbler, Squirrel Glider and Brush-tailed Phascogale be undertaken prior to any approval. The results of supplementary surveys for Grey-crowned Babbler, Squirrel Glider and Brush-tailed Phascogale within the Site and BOA are presented in full in **Appendix 2** and summarised in Section 2.12.2 of this document.

2.14.4 Vegetation Community Description and Mapping

The following comments are representative of the Mid-Coast Council Senior Ecologist's comments requesting specific information relating to the description and mapping of vegetation within the Site and BOA. Each of the comments and issues raised are addressed in a separate subheading in the following subsection.

2.14.4.1 Representative Comment(s)

2a) The vegetation community mapping and description of the Study Area as published in the Terrestrial Biodiversity Assessment unreasonably aggregates or misrepresents certain vegetation community types which prejudices the assessment and offsetting process by diminishing the actual complexity of the landscape and failing to recognize important community types.

Mid-Coast Council Senior Ecologist's Comments – Page 8

Response

All work for the TBA was undertaken in accordance with the BioBanking Assessment Methodology (BBAM) current at the time of the field surveys (DECC 2009¹⁸ and OEH 2014¹⁹), including the assignment of vegetation units to a Plant Community Type (PCT). Even if the small areas exhibiting micro-variation in species composition or intergrading variants were assigned to additional separate vegetation types, there are no approved PCTs available within the BBAM that could accurately be matched to the areas of varying species composition. As a result it is not possible within an assessment under the BBAM to reflect the complexity that the Mid-Coast Council's Senior Ecologist seems to request.

2.14.4.2 Representative Comment(s)

Derived wet pasture/derived sedgeland should not be aggregated with "cleared open pasture"

The distinct areas of Cabbage Gum dominated forests/ woodlands and Grey Box-dominated forests and woodlands should be separately identified ... and not aggregated within the Vegetation Community 3: River Oak/ Cabbage Gum/ Broad-leaved Apple Riparian Forest and/or Vegetation Community 2: Ironbark/Grey Gum/ Spotted Gum / White Mahogany Open Forest/ Woodland.

The Dry Forest/Woodlands of the steep rocky slopes and of the undulating low hills occupy two very distinct geological and geomorphological landscapes that would (and do) influence vegetation patterns.

All of McKinleys Lane appears to have been mapped in the Terrestrial Biodiversity Assessment as Vegetation Community 2: Ironbark/ Grey Gum/ Spotted Gum/ White Mahogany Open Forest/ Woodland. However, simply driving along the length of McKinleys Lane, it is obvious that there is significant variation in vegetation types. ... I observed no Spotted Gum along the McKinleys Lane.

HU630: Spotted Gum - Grey Ironbark dry open forest of the lower foothills of the Barrington Tops, North Coast is a better match for the Ironbark/Grey Gum/ Spotted Gum/ White Mahogany Open Forest/Woodland vegetation type than HU804: Spotted Gum – Broad-leaved Mahogany – Red Ironbark shrubby open forest.

¹⁸ DECC (2009), *BioBanking Assessment Methodology and Credit Calculator Operational Manual*, Department of Environment and Climate Change NSW

¹⁹ OEH (2014), *BioBanking Assessment Methodology 2014*, Office of Environment and Heritage, Sydney, September 2014

Occurrences of forests where Cabbage Gum and Rough-barked Apple dominate or co-dominate do occur in the wider study area. The flora surveys and mapping should have identified and differentiated these from the general River Oak Riparian Forest Type.

Mid-Coast Council Senior Ecologist's Comments – Pages 6, 7 and 8

Response

Derived Wet Pasture/Derived Sedgelands

A series of randomly located grassland plots throughout the eastern half of study area have objectively demonstrated the lack of any substantial areas of derived native grassland or sedgeland within the cleared pasture areas. These plots were undertaken according to recommended procedures in the BBAM current at the time of the surveys (DECC, 2009²⁰). The vast majority of the area of cleared open pasture in the western half of the study area comprised Whisky Grass or improved exotic pasture.

Of the 10 plots assessed in cleared, open grassland (see Figure 15 of the TBA), none were found to have the >50% native species cover that is considered to be the lower threshold for presence of derived native groundcover. The three plots that had >50% native species cover were all associated with a eucalypt tree layer and were mapped and assessed accordingly. While minor patches of derived grassland comprising areas of grassland with predominantly native species cover were observed, they are insufficient in extent to map separately.

Any Carex-dominated sedgelands within the study area for the terrestrial ecological field studies that comprised greater than 50% native species cover were extremely limited in spatial extent and highly fragmented due to the long site history of grazing, to the point that attempting to separately map the areas would not be meaningful in any analysis. The BBAM (DECC, 2009) stated that the minimum size of any vegetation zone is 0.25ha. Based on the fieldwork undertaken, it is considered unlikely that any larger patches with greater than 50% native species cover exist within the proposed disturbance area.

Cabbage Gum and Grey Box-dominated Forests and Woodlands

It is not accepted that particular small areas with Cabbage Gum or Grey Box should be classified as separate communities. These areas are not distinct, but are intergrading/transitional variants of either Vegetation Community 2 or Vegetation Community 3. The natural variation in species composition within Community 2 in particular was recognised and acknowledged in Section 3.1.3.2 of the TBA, as explained below.

“It should be noted that each community can contain elements of, or intergrade with, other related PCTs according to the classification. Community 2, in particular, is a complex and highly variable community spatially, and difficult to assign to one particular BioMetric map unit. In reality, the community locally comprises a complex of intergrading vegetation types depending on its habitat and, in particular, environmental factors such as slope, moisture, soil type and exposure. It is difficult to map the variants of this community separately since the assemblage of characteristic species at different locations shows considerable variation. Therefore, although Community 2 shows elements of additional vegetation units, this community has been determined to correspond principally to one PCT.”

²⁰ DECC (2009), *BioBanking Assessment Methodology and Credit Calculator Operational Manual*, Department of Environment and Climate Change NSW

A review of the PCTs that contain either Cabbage Gum, Grey Box or both as the dominant overstorey species revealed no satisfactory or better match to the on-ground vegetation types than the PCTs that were used in the current assessment. Of the potentially suitable PCTs containing Cabbage Gum and/or Grey Box, PCT 763 (HU526) – *Cabbage Gum open forest or woodland on flats of the NSW North Coast Bioregion and New England Tableland Bioregion* and PCT 1120 (HU 605) – *Rough-barked Apples grassy open forest on valley flats of the North Coast and Sydney Basin* have both been decommissioned by the Vegetation Information System database (VIS classification 2.1), and are therefore unable to be used in any BioBanking Assessment.

Vegetation on Steep Rocky Slopes and Undulating Low Hills

While it is accepted that a component of the differences in quadrat species data between the steep rocky slopes and the undulating low hills is due to differences in topography and soil type, it is more likely that additional species recorded in the quadrats on the slopes is a reflection of the lower disturbance regime such as less extensive or intensive grazing in the forested patches of the proposed BOA, particularly to the shrub and ground layers. The remnant patches in the proposed disturbance area are highly disturbed and degraded compared to those in the BOA, hence exhibit generally lower native species richness.

It should be noted that the lower to mid slopes of the BOA are not particularly rocky, except in the gullies where the dry rainforest community occurs. It is only the upper ridgetop area of the Mograni Range that is truly 'rocky'. Dominant overstorey species common to and frequently occurring in both areas from the quadrat data include *Eucalyptus acmenoides*, *Eucalyptus siderophloia* and *Eucalyptus punctata*.

Gradational variations in species composition within the same vegetation types due to local soil, moisture, microclimatic or physical influences are to be expected.

Vegetation along McKinleys Lane

These are small-scale and minor, highly localised variants within the vegetation community found along McKinleys Lane based on differences in microhabitat (shallow gullies vs. crest locations). The fact that the species composition varies somewhat over such small distances (reflective of minor undulations) does not necessitate substantive changes in the overall vegetation type. Moist vegetation in limited areas along drainage lines and shallow gullies is generally not mapped as separate vegetation units within dry forest vegetation.

Spotted Gum is only one of several dominant species that is listed as characterising the Ironbark/Grey Gum/Spotted Gum/White Mahogany Open Forest/Woodland community. The lack of Spotted Gum along McKinleys Lane may be more a consequence of this species having been selectively removed as a desirable timber species in the past than a real absence with Spotted Gum often absent from Spotted Gum-Ironbark communities for this reason. Alternatively, even if selective logging never occurred, the lack of one characteristic species within particular parts of a vegetation community does not preclude occurrence of that community, particularly if most other characteristic species and features are present.

Therefore, while it is recognised that some of the patches intergrade and may tend towards a different PCT, it is not accepted that the micro-variations in species composition along McKinleys Lane are sufficient to divide the relatively small area of remnant vegetation into numerous separate vegetation zones allocated to different PCTs.

Classification of the Ironbark/Grey Gum/ Spotted Gum/ White Mahogany Open Forest/Woodland Vegetation Type

It is agreed that HU630 (PCT 1213) would have been a more accurate and satisfactory match to the vegetation community on site than HU804 (PCT 1590). PCT 1213 was originally identified as the best aligning vegetation type for this assessment.

When considered for the purpose of assessment under the BBAM, it is unfortunate that PCT 1213 has now been decommissioned on the VIS classification 2.1, and is therefore not available for use in the BioBanking credit calculator. Furthermore, it has not been replaced by a substantially similar PCT that is available for use. Consequently, there is no option but to select the closest matching PCT available that is currently 'approved' for use in the credit calculator.

River Oak Riparian Forest Type

The minor areas that do contain these species are very limited in extent and represent intergrading variants within the River Oak Riparian Forest type. Where these species do occur, they do not represent true riparian forest types and often occur on elevated, drier, undulating land rather than on the floodplain. Therefore, they would not qualify as an EEC.

More distinct patches of Cabbage Gum and/ or Grey Box vegetation occur in floodplain areas and adjacent to watercourses outside the proposed disturbance area, particularly in the southern part of the study area for the terrestrial ecological field studies where the proposed private haul road was specifically aligned to avoid these patches.

The selection and allocation of PCTs to vegetation zones has been carried out following the procedures set out in BBAM (OEH, 2014) and was based on the information provided in the VIS classification database for each PCT. This included reference to information on the floristics, habitat including landscape position, geographic distribution and other diagnostic features provided for each PCT.

Finally, it is noted that OEH, in its submission, has reviewed the selection of PCTs and application of the BBAM for the amended Project, and is of the opinion that both have been correctly applied (OEH 2016²¹), stating:

“Given that the current EIS utilises a newer version of the credit calculator (OEH 2014) OEH has rechecked the veracity of the assumptions and the data that has been inputted into it (including the selection of Plant Community Types). OEH is of the opinion that it has inputted correctly and in accordance with the BBAM (OEH 2014).”

²¹ OEH (2016), *Review of the Amended Rocky Hill Coal Project Environmental Impact Statement (SSD 5156)*, 22 September 2016

2.14.5 Cumulative Impact and Strategic Ecological Context

2.14.5.1 Representative Comment(s)

9a) The proposal is advanced in the absence of a Strategic Conservation Framework for coal mine development in the Gloucester Region, which limits proper assessment of the cumulative impacts of the proposal.

Mid-Coast Council Senior Ecologist's Comments – Page 20

Response

Cumulative impacts with other mines in the region were considered within Section 5.4 of the TBA including the potential impacts associated with the approved Stratford Extension Project and the Duralie Extension Project.

The analysis highlighted the relatively small area of native vegetation loss due to the amended Project compared to that of the other two projects. The largest cumulative loss due to all projects combined is of the Spotted Gum – Ironbark dry open forest vegetation type, which is not a legislatively listed or regionally/ locally significant vegetation type. The loss of all native vegetation types due to the amended Project alone would be fully accounted for and strategically offset by the BOA.

2.14.5.2 Representative Comment(s)

9b) The proposal should consider the means with which the aspirations and goals of an expanded Tops to Lakes Initiative can be achieved within the context of the development that is proposed and its offsetting measures.

Mid-Coast Council Senior Ecologist's Comments – Page 20

Response

The location of the proposed disturbance areas for the amended Project would not limit the achievement of the objectives of any Tops to Lakes Corridor. The BOA would provide for the long term, in-perpetuity protection of a significant area of habitat within the Tops to Lakes corridor, be consistent with the objectives of this initiative and enhance connectivity in the vicinity of the amended Project.

2.14.5.3 Representative Comment(s)

This is a significant proposal that will cause the clearing and loss of a large area of patchily disturbed native vegetation...

Mid-Coast Council Senior Ecologist's Comments – Page 21

Response

The area of native vegetation to be cleared is not large in a relative sense, compared with a typical coal mine of this size. GRL has gone to considerable effort to avoid clearing or disturbance of native vegetation, as much as practically possible, in the design of its activities within the Mine Area, the private haul road and ancillary components.

Contrary to the claim, the area to be disturbed is in a highly modified condition, with most (approximately 446ha of the estimated 497ha of ground disturbance) having been cleared for cattle grazing and comprising an artificial vegetation community with no native tree or shrub layers (except for isolated paddock trees) and a ground layer of predominantly introduced pasture grasses and herbaceous weeds. The native vegetation within the proposed disturbance area is fragmented and highly disturbed rather than patchily disturbed throughout, in contrast to native vegetation in the proposed BOA that occurs predominantly as large, relatively undisturbed and connecting patches.

It should also be noted that much of the area of native vegetation to be cleared consists of scattered remnant paddock trees.

2.23 NOISE

2.23.2 Noise Criteria

2.23.2.1 Representative Comment(s)

Although the background assessment is in accordance with the Industrial Noise Policy requirements, it may mean that potential impacts to residents are understated during the evening period, as noise levels from mining operations will be permitted to be up to 10dBA above existing background levels. A noise level difference of 10dBA generally represents a perceived doubling of sound, which may result in increased complaints from residents who will be impacted upon by a new noise source once mining commences.

Mid-Coast Council Report – Page 36

Response

NVBA Section 3.2 describes the existing noise environment. In particular, NVBA (Tables 14, 15 and 16) present the Rating Background Levels (RBLs) at various localities in the vicinity of the Mine Area, with the following observations.

- Daytime RBLs range from 35dB(A) to 38dB(A) at residences adjacent to The Bucketts Way as shown in the NVBA (Table 16). A RBL of 35dB(A) has been adopted for noise impact assessment purposes.
- Daytime RBLs range from 30dB(A) to 35dB(A) at residences in the Gloucester urban area with the NVBA (Table 16) adopting a RBL of 32dB(A) for noise impact assessment purposes.
- Daytime RBLs range from 26dB(A) to 31dB(A) at residences in other rural localities with the NVBA (Table 16) adopting a RBL of 30dB(A) for noise impact assessment purposes.
- Evening RBLs range from 27dB(A) to 29dB(A) at residences adjacent to The Bucketts Way with the NVBA (Table 16) adopting a RBL of 30dB(A) for noise impact assessment purposes.
- Evening RBLs range from 28dB(A) to 30dB(A) at residences in the Gloucester urban area with the NVBA (Table 16) adopting a RBL of 30dB(A) for noise impact assessment purposes.

- Evening RBLs range from 24dB(A) to 28dB(A) at residences in other rural localities with NVBA (Table 16) adopting a RBL of 30dB(A) for noise impact assessment purposes.

In general terms, the daytime RBLs are generally 30dB(A) or more at the majority of residences, whereas the evening RBLs are generally 30dB(A) or less at the majority of residences. In accordance with INP Section 3.1, a minimum RBL of 30dB(A) has been adopted as at all residential localities where appropriate to do so. The justification for this background noise assessment procedure is described in the Draft Industrial Noise Guideline Technical Background Paper (EPA, May 2015)^[22] Attachment 1, with the key extract as follows.

Minimum background

The EPA currently specifies that where the existing background noise level is below 30dB(A), the figure of 30dB(A) should be applied as the background level. There are two basic reasons for stipulating a minimum background noise level of 30dB(A). The first is to ensure that amenity is protected and the second is to avoid the situation where applying a very low background noise level would not improve the level of protection but may impose very strict requirements on a new development.

*Currently, there is no real evidence in the literature to suggest that noise impacts on amenity occur at levels lower than 35dB(A), and in using the minimum background noise level of 30dB LA90, the intrusive noise criterion becomes 35dB LAeq. The EPA is also conscious that the World Health Organization (WHO) (eds. Berglund & Lindvall, 1995)^[23] recommends the use of a steady **internal** noise level of 30–35dB(A) for continuous sources and a maximum **internal** level of 45dB(A) for intermittent noise sources to protect against sleep disturbance.*

*Accounting for a noise reduction of approximately 10 dB through an open window, these levels equate to steady **external** noise levels of 40–45dB(A) for continuous noise and a maximum **external** level of 55dB(A) for intermittent noise.*

*These ‘recommended’ **external** noise levels are at least 5 to 10dB above the ‘background +5dB’ criterion level of 35dB(A). Hence, the minimum background of 30dB(A) is considered by the EPA to be a sufficiently conservative figure for the protection of community amenity.*

The NVBA has therefore been prepared based on foregoing background noise assessment procedure being consistent with NSW government policy.

²² Environmental Protection Authority (2015), *Draft Industrial Noise Guideline Technical Background Paper*

²³ World Health Organization, eds Berglund & Lindvall (1995), *Guidelines for Community Noise*

2.23.3 Construction Noise

2.23.3.1 Representative Comment(s)

It is noted that while construction noise impacts associated with works outside of standard construction hours have not been assessed in the NVBA, it is stated in the comments section of Table 4 (page 1-25) that for the site establishment and construction stage Year-0, 'Some activities may be required Monday to Friday 6:00pm - 10:00pm under limited circumstances'.

... should any construction work be proposed outside of standard hours, justification must be provided and further assessment would be required to demonstrate that the more stringent out of hours construction noise management level can be met.

Mid-Coast Council Report – Page 34

Response

GRL generally agrees with the EPA's recommended construction noise conditions (as set-out in the EPA's Draft Conditions of Approval dated 29 September 2016) in any approval for the amended Project. It is noted that the EPA's Draft Conditions of Approval relating to construction noise (i.e. *Conditions 23 and 24*) sets out an approval process for conducting construction work outside standard hours. GRL's response to these proposed conditions (see Section 3.2.1 of this document) which expresses a preference that construction activities are not audible at any privately-owned residence and that under all circumstances, the $L_{Aeq(15\text{ min})}$ noise level remains below 35dB(A).

2.23.9 Noise from Public Roads

2.23.9.1 Representative Comment(s)

That the applicant be requested to provide further assessment of the traffic noise impacts on Jacks Road and Waukivory (east of Jacks Road) to permit informed consideration of the noise impacts to adjoining residential premises. Potential sleep disturbance and the differences in impacts associated with both criteria should be discussed.

Mid-Coast Council Report – Page 38

Response

As discussed in the NVBA (Section 9.1), Jacks Road (SR18) and Waukivory Road (SR17) are both currently classified as local roads. However, as discussed in the NVBA (Section 2.3.2), the primary access route to the Mine Area would be established by upgrading Jacks Road and Waukivory Road (east of Jacks Road), as follows.

The key off-site establishment and construction stage activities are associated with upgrading and improving the safety of the public road network, and include the following:

- *The construction of an upgraded intersection at the corner of Jacks Road and The Bucketts Way to provide deceleration lanes approaching the intersection.*
- *Upgrading and widening the pavement along the full length of Jacks Road.*
- *Construction of a new bridge across the Avon River on Jacks Road.*

- *Upgrading the 1.3km section of Waukivory Road from Jacks Road to McKinleys Lane.*
- *Construction of an upgraded intersection at the junction of Jacks and Waukivory Roads.*
- *Upgrading the intersection of Waukivory Road and McKinleys Lane and the approximately 50m section of McKinleys Lane to the Mine Area access road.*

With the implementation of these works, Section 2.2.2 of the NSW Road Noise Policy (RNP) encourages local government authorities to apply “good planning practice”, and states:

Some industries such as mines and extractive industries are, by necessity, in locations that are often not served by arterial roads. Heavy vehicles must be able to access these often more remote sites and this may mean travelling on local public roads. Good planning practice acknowledges this type of road use and develops ways of managing any associated adverse noise impacts. Principal haulage routes are distinct from private haul roads – further guidance on private haul roads is provided in Appendix C4.

Where local authorities identify a ‘principal haulage route’, the noise criteria for the route should match those for arterial/sub-arterial roads, recognising that they carry a different level and mix of traffic to local roads.

The NVBA (Section 9) was prepared on the reasonable assumption that “good planning practice” would be endorsed by both the EPA and Mid-Coast Council, and where subject to the road upgrade works, Jacks Road and Waukivory Road (east of Jacks Road) would form the primary access route to the Mine Area and therefore be recognised as sub-arterial roads rather than local roads. Notwithstanding, the road traffic noise along the primary access route to the Mine Area has been reassessed against the RNP’s local road criteria, as follows.

Traffic Noise Assessment Procedure

The RNP describes a number of process steps for applying the local road traffic noise criteria to Jacks Road and Waukivory Road (east of Jacks Road). In general accordance with these steps, this assessment has:

- identified a Study Area for the proposed access route to the Mine Area and the nearest privately-owned residences adjacent to Jacks Road and Waukivory Road (east of Jacks Road);
- tabulated road traffic flows within the Study Area, due to the projected base traffic and the additional traffic from the amended Project (i.e. Year 1 and Year 10) sourced from the Transport Assessment;
- calculated traffic noise levels (from existing traffic noise measurements) due to the projected base traffic and the additional traffic from the amended Project (i.e. Year 1²⁴ and Year 10²⁵) for comparison with the predicted increase against the Relative Increase Criteria as applicable; and

²⁴ Assumed to be 2019 throughout this response

²⁵ Assumed to be 2029 throughout this response

- compared the predicted cumulative noise levels against the Total Traffic Noise Criteria as applicable to Jacks Road and Waukivory Road (east of Jacks Road).

The nearest privately-owned residences to Jacks Road and Waukivory Road east of Jacks Road are listed in **Table 2.23.13**.

Table 2.23.13
Nearest Privately-owned Residences Adjacent to the Primary Access Route

Landholder ID ¹	Abbreviated Name ¹	Distance to Road Centre	Landholder ID ¹	Abbreviated Name ¹	Distance to Road Centre
Jacks Road and Waukivory Road (east of Jacks Road)²					
99	Maurer & Kilipikoski	16m	21A.2	Robinson	86m
107A	Genoli	21m	43	Waller	90m
85	Elliott	23m	87	Yates & Moore	91m
88	Heffernan	23m	76	Atkins	93m
77	Krestensen	23m	89	Roser	95m
78	Higgins	25m	75	Moore	100m
86	West	26m	38	Hornsby	115m
21A.1	Robinson	29m	36	Doherty	126m
90	Keyte	35m	40	Fallon	129m
107B	Genoli	37m	44	Mason	134m
108	Ballard	39m	203	Swilks	135m
42	Ellis & Buckman	40m	39	Ejea	138m
82	Mulhall	41m	83A	Jarvis & Relf	149m
81	Bradbury & Richardson	60m	200	Sweikert	154m
80	Schneider	63m	74	Perry	155m
24	Bardwell	66m	-	-	-
Note 1: Refer to NVBA - Appendix C2 for Residence Ownership Details.					
Note 2: There are no privately-owned residences adjacent to Waukivory Road (east of Jacks Road) along the primary access route.					

In relation to situations where exceedances of the road traffic noise assessment criteria are predicted, the NSW RNP relevantly provides:

Where existing traffic noise levels are above the noise assessment criteria, the primary objective is to reduce these through feasible and reasonable measures to meet the assessment criteria. A secondary objective is to protect against excessive decreases in amenity as the result of a project by applying the relative increase criteria.

In assessing feasible and reasonable mitigation measures, an increase of up to 2 dB represents a minor impact that is considered barely perceptible to the average person.

...For existing residences and other sensitive land uses affected by additional traffic on existing roads generated by land use developments, any increase in the total traffic noise level should be limited to 2 dB above that of the corresponding 'no build option'.

In practice, noise level increases of less than 2dB(A) are generally achieved when the percentage increase to the existing light and heavy traffic is no greater than 60%.

Existing and Projected Traffic Noise on Jacks Road in the Vicinity of the Site

Existing traffic noise levels were established in July 2010 and July 2011 based upon measurements taken at two locations set back from The Bucketts Way (south of Jacks Road) (Location 11) and Jacks Road and Waukivory Road (east of Jacks Road) (Location 2). The results of the road traffic noise monitoring are summarised in **Table 2.23.14** for Location 2 (July 2010).

Table 2.23.14
Unattended Road Traffic Noise Monitoring Results – Location 2 July 2010 (dB(A) re 20µPa)

Road Traffic Location	ID ¹	Offset Distance ²	Daytime $L_{eq}(15\text{hour})$	Night-time $L_{eq}(9\text{hour})$	Daytime Peak $L_{eq}(1\text{hour})$	Night-time Peak $L_{eq}(1\text{hour})$
Jacks Road and Waukivory Road (east of Jacks Road)	2	54m	46dB(A)	38dB(A)	51dB(A)	43dB(A)
Note 1: Road traffic noise monitoring Location 2 (refer NVBA Appendix G2).						
Note 2: Free field offset distance from centre of roadway to Location 2.						

The measured road traffic noise levels (**Table 2.23.14**) have been used to calculate the nominal minimum offset distances (**Table 2.23.15**) from the centre of the primary access route to the Mine Area (i.e. Jacks Road and Waukivory Road east of Jacks Road) to meet the daytime peak $L_{Aeq}(1\text{hour})$ and night-time peak $L_{Aeq}(1\text{hour})$ total traffic noise criteria identified in the RNP, based on the projected base Year 1 (2019) and Year 10 (2029) traffic flows as presented in **Table 2.23.16**.

Table 2.23.15
Projected Base Traffic Minimum Offset Distance to Meet Total Traffic Noise Criteria

Access Route to the Mine Area (as local road)	Projected Year 1 Base Offset Distance ^{1,2}		Projected Year 10 Base Offset Distance ^{1,2}	
	Daytime Peak ³ 55dB(A) $L_{eq}(1\text{hour})$	Night-time Peak ⁴ 50dB(A) $L_{eq}(1\text{hour})$	Daytime Peak ³ 55dB(A) $L_{eq}(1\text{hour})$	Night-time Peak ⁴ 50dB(A) $L_{eq}(1\text{hour})$
Jacks Road	90m	49m	122m	66m
Waukivory Road (east of Jacks Road)	47m	25m	63m	34m
Note 1: Total traffic noise level inclusive of 2.5dB(A) facade correction.				
Note 2: Offset distance from centre of roadway.				
Note 3: Daytime peak hour 4:00pm to 5:00pm.				
Note 4: Night-time peak hour 6:00am to 7:00am.				

Based on the projected traffic noise levels (in the absence of the amended Project) (as presented in **Table 2.23.16** during daytime peak hour 4:00pm to 5:00pm and night-time peak hour 6:00am to 7:00am), some residences adjacent to Jacks Road would be impacted by projected traffic noise in the absence of the amended Project as discussed below.

Table 2.23.16
Projected Base and Amended Project Traffic Flows – Jacks Road and Waukivory Road

Road Traffic Location and Time Period	Projected Base Year 1 ^{1,2}	Amended Project Year 1 ^{3,4}	Cumulative Year 1 (% increase)	Projected Base Year 10 ^{1,2}	Amended Project Year 10 ^{5,6}	Cumulative Year 10 (% increase)
Jacks Road						
Daytime 1 hour traffic	104	19	124 (18%)	141	44	185 (32%)
Night-time 1 hour traffic	43	19	62 (45%)	57	22	80 (39%)
24 hour traffic	548	90	638 (16%)	737	198	935 (27%)
Waukivory Road (east of Jacks Road)						
Daytime 1 hour traffic	54	28	82 (51%)	73	64	136 (87%)
Night-time 1 hour traffic	22	28	50 (125%)	30	32	62 (108%)
24 hour traffic	284	130	413 (45%)	381	284	664 (74%)
Note 1: Projected base daytime 1 hour (4:00pm to 5:00pm) traffic based on 22% of the 15 hour traffic. Note 2: Projected base night-time 1 hour (6:00am to 7:00am) traffic based on 52% of the 9 hour traffic. Note 3: Amended Project Year 1 daytime 1 hour (4:00pm to 5:00pm) traffic based on 43% of the 15 hour traffic. Note 4: Amended Project Year 1 night-time 1 hour (6:00am to 7:00am) traffic based on 43% of the 9 hour traffic. Note 5: Amended Project Year 10 daytime 1 hour (4:00pm to 5:00pm) traffic based on 45% of the 15 hour traffic. Note 6: Amended Project Year 10 night-time 1 hour (6:00am to 7:00am) traffic based on 23% of the 9 hour traffic.						
Source: Transport Assessment (Constructive Solutions Pty Ltd, 2016) ²⁶ – Table 7 and Table 8 and notes 1 to 6 above.						

In Year 1²⁷ (or 2019), seventeen residences would be located at distances of less than 90m (**Table 2.23.13**) from Jacks Road and therefore noise levels from these residences are predicted to be above the daytime peak LAeq(1hour) total traffic noise criteria of 55dB(A). Similarly, thirteen residences are located at distances of less than 49m (**Table 2.23.13**) from Jacks Road and therefore predicted to be above the night-time peak LAeq(1hour) total traffic noise criteria 50dB(A).

In Year 10²⁸ (or 2029) (in the absence of the amended Project), at least twenty three residences would be located at distances of less than 122m (**Table 2.23.13**) from Jacks Road and therefore traffic noise levels are predicted to be above the daytime peak LAeq(1hour) total traffic noise criteria of 55dB(A). Similarly, fifteen residences are located at distances of less than 66m (**Table 2.23.13**) from the Jacks Road and therefore traffic noise levels are predicted to be above the night-time peak LAeq(1hour) total traffic noise criteria 50dB(A).

It should be noted that both the daytime peak LAeq(1hour) total traffic noise criterion of 55dB(A) and the night-time peak LAeq(1hour) total traffic noise criterion of 50dB(A) are generally conservative and are currently exceeded commonly at dwellings adjacent to local roads in rural and regional settings.

There are no privately-owned residences adjacent to Waukivory Road (east of Jacks Road) along the primary access route.

²⁶ Constructive Solutions Pty Ltd (2016), *Amended Rocky Hill Coal Project Transport Assessment*, Part 9 of the *Specialist Consultant Studies Compendium*, Prepared on behalf of GRL

²⁷ Assuming no further residences are constructed

²⁸ Assuming no further residences are constructed

Amended Project Traffic Noise Impact Assessment on Jacks Road

The projected Year 1 (2019) and Year 10 (2029) base traffic flows together with the additional traffic from the amended Project on the primary access route to the Mine Area (i.e. Jacks Road and Waukivory Road, east of Jacks Road) are presented in **Table 2.23.16** with the relative percentage increase shown in parentheses.

Relative Increase Assessment

The maximum relative increase in peak hour traffic flow on Jacks Road due to the amended Project would be approximately 32% (Year 10 daytime) and approximately 45% (Year 1 night-time). This increase corresponds to a negligible 1.2dB(A) (Year 10 daytime) and negligible 1.6dB(A) (Year 1 night-time) increase relative to the projected base peak hour traffic noise levels.

Both the daytime and night-time relative increases in traffic noise on Jacks Road due to the amended Project are less than 2dB(A) and, in accordance with the RNP, represent a minor impact that is considered barely perceptible.

The maximum relative increase in peak hour traffic flow on Waukivory Road (east of Jacks Road) due to the amended Project is approximately 87% (Year 10 daytime) and approximately 125% (Year 1 night-time). This increase corresponds to a moderate 2.7dB(A) (Year 10 daytime) and moderate 3.5dB(A) (Year 1 night-time) increase relative to the projected base peak hour traffic noise levels. However, there are no privately-owned residences adjacent to Waukivory Road (east of Jacks Road) along the primary access route. Hence, such predicted exceedances are not relevant.

Total Traffic Noise Assessment

The relative increases arising from the amended Project traffic have been used to update the nominal minimum offset distances from the centre of the primary access route to the Mine Area required to meet the daytime and night-time total traffic noise criteria and are presented in **Table 2.23.17**. Further discussion is provided following the presentation of the predicted noise levels with respect to the acceptability of the predicted levels.

Table 2.23.17
Minimum Offset Distance to Meet Total Traffic Noise Criteria – Jacks Roads

Jacks Road	Projected Year 1 Base Offset Distance ^{1,2}		Projected Year 10 Base Offset Distance ^{1,2}	
	Daytime Peak ³ 55dB(A) L _{eq} (1hour)	Night-time Peak ⁴ 50dB(A) L _{eq} (1hour)	Daytime Peak ³ 55dB(A) L _{eq} (1hour)	Night-time Peak ⁴ 50dB(A) L _{eq} (1hour)
Projected Base Traffic	90m	49m	122m	66m
Cumulative Traffic	107m	71m	160m	92m
Offset Increase relative to base traffic	17m	22m	38m	26m
Note 1: Total traffic noise level inclusive of 2.5dB(A) facade correction.				
Note 2: Offset distance from centre of roadway.				
Note 3: Daytime peak hour 4:00pm to 5:00pm.				
Note 4: Night-time peak hour 6:00am to 7:00am.				

As discussed previously, based on the projected Year 1 (2019) and Year 10 (2029) traffic noise levels, some residences adjacent to Jacks Road would be impacted by projected traffic noise in the absence of the amended Project.

As a result of the amended Project in Year 1 (2019), an additional five residences (IDs 43, 87, 76, 89 and 75) would be located at a distance of less than 107m and therefore predicted to be above the daytime peak $L_{Aeq}(1hour)$ criteria of 55dB(A) criteria. Similarly, an additional three residences (IDs 81, 80 and 24) would be located at distances of less than 71m and therefore predicted to be above the night-time peak $L_{Aeq}(1hour)$ criteria of 50dB(A).

Further, as a result of the amended Project in Year 10 (2029), an additional eight residences (IDs 36, 40, 44, 203, 39, 83A, 200 and 74) would be located at a distance of less than 160m and therefore predicted to be above the daytime peak $L_{Aeq}(1hour)$ criteria of 55dB(A) criteria. Similarly, an additional four residences (IDs 24, 21A.2, 43 and 87) would be located at distances of less than 92m and therefore predicted to be above the night-time peak $L_{Aeq}(1hour)$ criteria of 50dB(A).

Whilst the predicted noise levels at some residences would exceed the total traffic noise criteria, the RNP also recognises that where the increase is less than 2dB(A) above the total traffic noise criteria, then the noise generated is considered acceptable.

The NVBA (Section 9) provided an assessment of road traffic noise along the primary access route to the Mine Area against the RNP's "principal haulage route" (i.e. sub-arterial) road criteria and concluded the following.

- The maximum relative increase in traffic flow on Jacks Road due to the amended Project occurs in Year 10 and is approximately 16% (daytime) and 90% (night-time). This increase corresponds to a negligible 0.6dB(A) (daytime) and marginal 2.8dB(A) (night-time) increase in the projected base traffic noise levels.
- The daytime relative increase in traffic noise due to the amended Project would be less than 2dB(A) and in accordance with the RNP represents a minor impact that is considered barely perceptible.
- During the night-time, the relative increase in traffic noise due to the amended Project would be 3dB(A) and noise mitigation measures would need to be considered if the total traffic noise criteria of $L_{Aeq}(9hour)$ 55dB(A) were also exceeded at the nearest residences adjacent to the primary access route to the Mine Area. However, all residences adjacent to the proposed primary access route to the Mine Area (i.e. Jacks Road) are located at distances 13m or greater from the road and therefore remain below the total traffic noise criteria of night-time $L_{Aeq}(9hour)$ 55dB(A).
- The maximum relative increase in traffic flow on Waukivory Road (east of Jacks Road) due to the amended Project would occur in Year 10 and is approximately 44% (daytime) and 248% (night-time). This increase corresponds to a negligible 1.6dB(A) (daytime) and moderate 5.4dB(A) (night-time) increase in the projected base traffic noise levels. However, there are no privately-owned residences adjacent to Waukivory Road (east of Jacks Road) along the primary access route. Hence, the predicted 5.4dB(A) exceedance is not relevant.

Conclusion

Noise generated by mine-related traffic travelling to and from the Mine Area during the life of the mine before 7:00am and after 10:00pm would be acceptable in that it satisfies both criteria

applicable to principal haulage route (i.e. sub-arterial road) or local road, irrespective of the classification assigned by Council.

Sleep Disturbance

The potential for sleep disturbance due to road traffic noise is discussed in the RNP – Section 5.4, where it states:

The disruption of a person's normal sleep patterns, or sleep disturbance, due to road traffic noise, has been the subject of numerous research studies conducted over the last 30 years. Despite intensive research, the triggers for and effects of sleep disturbance have not yet been conclusively determined.

...

From the research on sleep disturbance to date it can be concluded that:

- *maximum internal noise levels below 50–55dB(A) are unlikely to awaken people from sleep*
- *one or two noise events per night, with maximum internal noise levels of 65–70dB(A), are not likely to affect health and wellbeing significantly.*

Notwithstanding the uncertainty associated with the effects of road traffic noise on sleep disturbance, the maximum noise levels from the amended Project-related vehicles along the primary access route to the Mine Area are likely to generate similar maximum noise levels to vehicles currently utilising Jacks Road.

As shown in **Table 2.23.16**, in Year 1 the estimated night-time peak hour (6:00am to 7:00am) traffic flow would be approximately 62 vehicles, with 19 vehicles being amended Project related. Similarly in Year 10, the estimated night-time peak hour (6:00am to 7:00am) traffic flow would be approximately 80 vehicles, with 22 vehicles being amended Project related. As the maximum noise levels generated by both vehicles currently utilising Jacks Road and the amended Project-related vehicles along the primary access route to the Mine Area are likely to be similar, the potential for sleep disturbance is considered minimal.

2.23.10 Evening Activities

2.23.10.1 Representative Comment(s)

... mitigation measures proposed by the NVBA are not specific and may be difficult to regulate, e.g. 'use of low noise mobile equipment and fixed plant where possible' and 'restrict dozers to 1st gear operation dependant on the time and location of operation'. ... It is also noted that the NVBA consistently refers to evening operations as 'In-pit' and 'Out-of pit'.

To determine the full potential impact of evening operations, noise levels should be presented cumulatively. Evening operations should be assessed as a worst case scenario - noise emissions from all mobile and fixed plant that have the potential to be operating simultaneously both in the pit and out of the pit during the evening period must be assessed cumulatively.

Council recommends to the Department of Planning that the applicant provide further clarification/assessment of evening operations to ensure that cumulative evening emissions are adequately assessed.

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Response

Refer to the response in Section 2.23.4.1 of this document, with regard the proposed package of noise mitigation measures that GRL proposes to implement for the amended Project.

The NVBA (Section 5.2) describes the selected representative noise modelling scenarios as follows.

- *Year 0 - Daytime month 5 site establishment and construction stage (Appendix E);*
- *Year 0.5 - Daytime operations in the Avon Pit, with overburden production of 4.7Mbcm and ROM coal production of 0.2Mt, together with the out-of-pit development of the western and northern amenity barrier (Appendix I);*
- *Year 3 - Daytime operations in the Main Pit, with out-of-pit overburden placement at the southern section of the disturbance area, with overburden production of 4.7Mbcm and ROM coal production of 0.5 Mt (Appendix J);*
- *Year 4 - Daytime and evening mining operations in the Main Pit, with in-pit and out-of-pit overburden placement at the mid-section of the disturbance area, with the overburden production of 6.4Mbcm and ROM coal production of 1.1Mt (Appendix K1 to K3);*
- *Year 7 - Daytime and evening operations in the Main Pit, with in-pit and out-of-pit overburden placement at the northern section of the disturbance area, with the maximum overburden production of 9.8Mbcm and ROM coal production of 1.4Mt (Appendix L1 to L3); and*
- *Year 10 - Daytime and evening operations representative of the maximum equipment operating (in-pit) in the Main Pit with the overburden production of 9.8Mbcm and ROM coal production of 1.7Mt (Appendix M1 to M2).*

The Year 4 evening out-of-pit operations (NVBA – Appendix K2) and Year 7 evening out-of-pit operations (NVBA - Appendix L2) are representative of the worst case mine operations, with all mobile equipment and fixed plant operating simultaneously (i.e. cumulative out-of-pit operations together with the remaining in-pit operations).

In short, typical worst case mine operating configurations were undertaken for inclusion in the HVAS and assessed cumulatively with other mine operations where it was appropriate to do so.

With regard to the proposed mitigation measures, refer to the response in Section 2.23.4.1 of this document, with the key points again reiterated below in Section 2.23.10.2, noting that the proposed package of noise mitigation measures ‘a, b, c, d and e’ identified in Section 2.23.4.1 of this document represent current best industry practice in relation to the control and management of environmental noise emissions from mining operations.

2.23.10.2 Representative Comment(s)

The NVBA provides an assessment of predicted 'Evening Operational Intrusive Noise Levels' in the absence of mitigation measures at 5 residences only.

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Response

Refer to the response in Section 2.23.4.1 of this document, with the key points reiterated, as follows.

In accordance with the DGRs, all feasible noise mitigation measures were documented in the NVBA (Section 5.4) and those identified as reasonable would be implemented by GRL for the amended Project. The proposed package of noise mitigation measures aims to ensure that the daytime and evening PSNLs are met when assessed in accordance with the requirements of the INP. As presented in the NVBA (Table 24), the proposed package of noise mitigation measures is summarised as follows.

- Restricted mine operating hours to daytime and evening (i.e. no night-time mine operations).
- Noise Source Control – use of noise attenuated mobile fleet and fixed plant.
- Noise Propagation Path – installation of acoustic barriers (i.e. western and northern amenity barrier and interim amenity barriers).
- Operational Controls – rescheduling of intrusive activities to less sensitive times of the day.
- Operational Controls – noise and weather monitoring to identify appropriate plant and equipment shutdowns if required.

GRL accepts that equipment shutdowns are feasible, reasonable and necessary to achieve compliance with the PSNL of 35dB(A) (i.e. noise mitigation measure 'e'), with the extent of the equipment shutdowns dependent on the location and elevation of the equipment and the prevailing weather conditions. The five residences identified in NVBA (Table 25) are presented to provide example shutdown scenarios only.

Council's statement regarding "the absence of mitigation measures implies that the only noise mitigation measure is equipment shutdowns", is not the case. Equipment shutdowns are an additional noise mitigation measure ('e') required to achieve compliance with the relevant PSNLs during some weather conditions.

2.23.13 Noise Monitoring

2.23.13.1 Representative Comment(s)

The NVBA does not provide specific information in relation to the number or location of proposed noise monitors.

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Response

The EIS (Section 4.2.8), presents the proposed noise monitoring program identifying the location of the proposed real-time monitors, the general selection criteria and requisite capabilities of the monitors and the content of the proposed Operational Noise Management Plan, and states:

Permanent, continuous real-time noise monitors would be installed at a minimum of two locations, being representative of Forbesdale and Avon River Estates. Additional portable or permanent monitors may be utilised pending a review during preparation of the Noise Management Plan or during the life of the amended Project.

The noise monitoring system(s) selected would be capable of identifying noise from the amended Project, as distinct from extraneous noise such as traffic or other industrial sources, and provide real-time information to mine management in a simple, interpretable format.

The Operational Noise Management Plan for the amended Project would incorporate:

- the locations and protocols for noise monitoring;*
- operations that may only be performed under particular meteorological conditions and, where applicable, identify alternatives for that operation or plant;*
- a method for interfacing noise management with predictive meteorological systems;*
- a system for sampling A-weighted and C-weighted noise levels to establish the extent of any low frequency noise content.*
- the methods for monitoring the success of operational controls through continuous real-time noise monitoring, including the mechanism for feedback from such systems to influence operational decisions in the shortest timeframe practical; and*
- noise trigger levels that prompt certain predetermined operational modes or require that the mine operationally respond in some manner to manage noise emissions.*

Reliance would be placed upon monitoring externally at residences or receivers as preferred by the EPA. However, the Applicant would consider internal noise measurements for low frequency noise, as [previously] suggested by the BGSPA, in the event it is justified and supported by the respective landowner(s).

The Applicant would review and update the monitoring component of the Noise Management Plan on an annual basis to reflect the experience/results of the monitoring undertaken during the preceding 12 months.

The Operational Noise Management Plan for the amended Project would be prepared and implemented subject to the approval of the DPE in consultation with the EPA. GRL is keen to ensure the monitoring undertaken effectively demonstrates the noise levels experienced surrounding the Mine Area and the extent of compliance with all approvals and licences to both the regulators and the community.

2.24 PLANNING ISSUES

2.24.2 Planning Gloucester's Growth

2.24.2.1 Representative Comment(s)

2006 Housing Development Strategy

In 2006 the former Gloucester Shire Council completed a Housing Development Strategy. Among others, conclusions from this strategy were that the Gloucester Township had limited need for additional [l]and [sic] [land] releases until 2018. Beyond 2018, the Strategy included a residential land release map for the period 2005 – 2030+ which identified an area south of the golf course for release in the short term (2005 – 15; 123 lots); a second stage within the existing urban area; and significant long-term release east of the existing township and railway line. ... A Planning Proposal for the short-term release was received in 2013 and is currently on-going. This project has experienced difficulties' in progressing due to the only recently resolved conflicts between this proposed land release area and its proximity to Coal Seam Gas (CSG) buffers.

In the context of the [amended] Rocky Hill Project, if approved following Public Exhibition of the current EIS, and considering the preference of sourcing employment locally (EIS p. 2-68, s. 2.14.2) and the possible economic drivers from related industries, Council needs to ensure that long-term growth is not compromised in Gloucester by possible mining buffers and exclusion zones. If such existing land release areas identified in the 2006 Strategy are compromised by such restrictions, it will be necessary for Council to be provided with the resources to identify alternative release areas in order to supply the needs of land to future residents. In a Local Environmental Study prepared by consultants for Council in 2005, an argument was presented for an optimum population of 8,000 to 10,000 persons serviced by the town of Gloucester.... meaning ...an additional 3000 dwellings would be required in Gloucester and surrounds... with ...approximately 2300 of these dwellings in the urban area.

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MidCoast Council is generally concerned about the impact on existing and identified land release areas by the Rocky Hill Project and any possible state legislated buffer areas of residential exclusion (currently unknown) which may be placed as a result of the mining operations.

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Further development south of the existing town, towards the Rocky Hill Project site, is now severely compromised with the Rocky Hill Project, if approved, forming a barrier to residential areas growth.

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If approved, Council requests the proponent of the Rocky Hill Project to contribute and/pay the costs towards an additional land use and/or residential/housing study/strategy that will be used to identify further residential release areas in the vicinity of Gloucester to cater for population growth and expansion of the urban footprint. Such a study/strategy should compensate Council for the compromising of already identified residential release areas that will occur as a result of the Project and its buffers and residential exclusion zones.

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Response

In the 2005-2006 period, the then Gloucester Shire Council engaged a number of consultants who developed three strategies which formed the basis of planning and development expectations for the subsequent three decades. A commercial and land use strategy titled *Development Employment Land & Commercial/Retail Strategy: Business Study Gloucester CBD* (Ratio Consultants, 2006)²⁹, the Gloucester Housing Development Strategy (GSC 2006)³⁰ and the 2005 Gloucester Local Environment Plan provided a range of studies all of which appear to have been based on the population projections prepared and used by Ratio Consultants in 2006 which estimated a population of 7 080 within the Gloucester Statistical Local Area by 2031. **Table 2.24.1** presents the population growth estimates used by Ratio Consultants and includes the actual population growth recorded in Census data. **Table 2.24.2** shows the estimates provided by DIPNR (now Department of Planning and Environment (DPE)) in 2004 and the DPE population projections for 2014 and how they tend to conflict with Council's estimates and, with the passage of time, appear to be more accurate.

Table 2.24.1
Gloucester Statistical Local Area
Projected Total Dwelling Stock, Households and Resident Population (2001 - 2031)

Year ended 30 June	Total Dwelling Stock ¹	% Total Dwelling Stock Occupied ¹	Estimated No. Households ¹	Estimated Persons per Occupied Dwelling ¹	Estimated Resident Population ^{1*}	Actual resident Population ²
2001	2 273	82.7	1 879	2.576	4 840	4 680
2006	2 432	83.0	2 019	2.486	5 020	4 802
2011	2 607	85.0	2 216	2.396	5 310	4 877
2016	2 807	87.0	2 442	2.324	5 680	
2021	3 032	89.0	2 698	2.252	6 080	
2026	3 282	91.0	2 987	2.196	6 560	
2031	3 557	93.0	3 308	2.139	7 080	

Sourced from
1. *Development Employment Land & Commercial/Retail Strategy: Business Study Gloucester CBD*. - Table E2 ; and
2. *ABS Census Data – Gloucester Statistical Local Area* * Rounded to the nearest 10 units

Table 2.24.2
Projected and Actual Population for Gloucester

Reference	Estimated Resident Population (No of Persons)						
	2001	2006	2011	2016	2021	2026	2031
DIPNR*	4 930	4 980	4 980	4 990	5 010	5 040	5 050
DPE**	-	-	5 000	5 000	5 000	4 900	4 850
Ratio Consultants (Oct 05)	4 840	5 020	5 310	5 680	6 080	6 560	7 080
Actual Population (ABS)***	4 680	4 802	4 877				

* Department of Infrastructure, Planning and Natural Resources (New South Wales Statistical Local Area Population Projections 2001-2031, Transport and Population Data Centre, 2004)
** Department of Planning and Environment – LGA Population, Household and Dwelling Projections: 2014 Final
*** ABS Census Data – Gloucester Statistical Local Area

²⁹ Ratio Consulting (2006), *Development Employment Land & Commercial/Retail Strategy: Business Study Gloucester CBD*, Prepared for Gloucester Shire Council

³⁰ Gloucester Shire Council (2006), *Housing Development Strategy 2006*

The Housing Development Strategy proposed a range of different development opportunities to provide for the projected population growth (based on the higher population predictions of Ratio Consultants), with the proposed new land development on the eastern side of the railway line being one of those potential options. Although those parcels of land to the east of the railway line have been identified for future residential development, given that actual population growth between 2001 and 2011 was only 197 people (4.2%) and much lower than the predicted increase of 470 people (9.7%) (see **Table 2.24.1**), these lands are unlikely to be required now or in the future. The strategy also proposed other development opportunities including the following which could be pursued by Council as alternatives.

- Subdivision of existing larger lots in the existing residential area of town.
- A parcel of land proposed for development near the golf course.
- Expansion of development heading west towards Barrington.
- Development of an existing previously identified parcel near the cemetery in Cemetery Road.

Given the very small population growth volumes since 2001 and, as predicted by DPE, in the future, it could be expected the other land development strategies that have been and are being implemented (as outlined in the plan) will ensure these proposed development lands on the eastern side of the railway line will not be required before the mid 2040s, if they are required at all. Furthermore, with the proposed relinquishment of approximately 6km² of land within the existing EL 6523 to the north of Jacks Road/Waukivory Road (as described in Section 2.21.1 of this document and displayed in **Figure 2.21.1**), the need for buffer areas to the east of the North Coast Railway Line would be reduced. Once mining exploration rights are relinquished in the area to the east of the railway line, the area would become a more attractive option for residential land development when compared to the land available south of the existing town (in terms of access to infrastructure and the number of lots available).

The core reasons for this delayed potential land development are completely independent of the amended Project and are attributable to:

- lower than predicted population growth in the first 10 years of the plan cycle (to 2011);
- much slower residential growth than expected due to low population growth;
- changes in Council policy leading to new residential development opportunities that add to the existing residential land bank (at the southern entrance to Gloucester); and
- a considerable under-utilisation of an existing larger lots for subdivision in the town area for development, as identified in the Housing Development Strategy.

It should also be noted that there is still one parcel of land identified in the Housing Development Strategy on the western side of the railway line which is identified as providing for 245 residential lots. This land is still in private ownership and, although identified, has yet to be subdivided and developed. This parcel of land is close to existing infrastructure, and would, given current population growth and resultant housing development volumes, provide for an estimated 15 years growth.

Council's recent residential land development strategy has focused on lots which have access to existing infrastructure through subdivision and development of existing historical large residential lots in the older part of town. Given the current low volume of population growth and recent industry closures and employment losses, it is not expected that the establishment of the amended Project, even with 75% locally resident labour force, would increase the population to the extent that these sources would be exhausted during the life of the amended Project.

The core rationale for this expectation is as follows.

- Many of the mine employment roles could be expected to be filled by existing residents, including those who currently travel to the Hunter Valley and north-west to work in the industry, but who already reside with their families in the Gloucester area, and former mining industry employees (e.g. following a reduction in employment levels at the Stratford and Duralie Mines or employees made redundant due to the abandonment of the AGL Gloucester Gas Project).
- The coal mining support sector already has a strong presence in Gloucester because of the existing mines in the broader region. These businesses may grow but are already established with local employees.
- Because the overall scale of mining operations in the Gloucester Basin would still be quite small, some core industry support systems would still come from the Hunter and Newcastle areas.

Comparison of the projections used in the strategy documents and the actual population data (presented in **Table 2.24.1** and **Table 2.24.2**) reinforce GRL's assertion that growth in population is unlikely to drive land release and housing development in these proposed areas for at least 25 years given historical population growth.

It needs to be noted that Gloucester also has a very high volume of absentee landowners within the town boundaries as noted in the Gloucester Housing Development Strategy. Almost 20% of properties are not tenanted on a full time basis (as identified in ABS data) indicating that, as the cost of housing becomes more expensive based on an increase in demand, many of these under tenanted dwelling stocks may become available for sale, therefore reducing future land lot requirement volumes. The rationale of this demand driven land availability concept is also clearly spelt out by Gloucester Shire Council and Ratio Consultants in the Housing Development Strategy and the Development Employment Land & Commercial/Retail Strategy respectively.

In light of the above, the need for additional land release areas is unlikely to eventuate in the manner anticipated by Council during the life of the amended Project. Notwithstanding this, the development and operation of the mine would not result in exclusion zones or buffers impinging on the identified land release area east of the North Coast Railway Line. Notably, the Avon River and Thunderbolt Estates are both located between this proposed land release area and the Mine Area. Therefore, it is concluded that potential environmental impacts would be satisfactorily managed and there is no reason related to the amended Project that would exclude the development of that land.

Given that actual Gloucester population growth has remained quite static for almost 60 years, any further proposed development planning process to establish more housing development land in the medium term would appear to be wasteful. It would also appear that, given the

current residential land bank offers almost 300 undeveloped lots, it would be unlikely that significant additional land would be required in the next three decades. Furthermore, as Council has changed its position in relation to developing land west of The Bucketts Way south of Gloucester, on the edge of town where services already exist, it would appear unlikely that development will move to the east where costly infrastructure will be required before development can occur. In addition, from a housing site development perspective, the costs of each site will be higher because of the infrastructure costs and the topography of many of the sites.

GRL contends, that due to the very limited population growth and the actual currently available and potential residential land stocks, that any contribution by GRL for a further land development study would be unnecessary at this time. It would be hard for Council to demonstrate a nexus between the proposed charge and need for such a study, given the current and realistically projected situation.

2.25 PROXIMITY TO RESIDENCES, PEOPLE AND BARRINGTON TOPS

2.25.2 Distances to Residences

2.25.2.1 Representative Comment(s)

....I believe this coal mine proposal is simply in the wrong place.... This mining proposal is simply too close to residential areas.... In the case of the Rocky Hill Mine proposal there are substantial residential areas within a kilometre in one direction and in another direction within 1.8 kilometres, with the town of Gloucester five kilometres away.

Mid-Coast Council Administrator's Minute – Page 1

Response

An extract from EIS Figure 4.7, reproduced as **Figure 2.25.2**, displays the locations of properties and residences to the west of the Mine Area including those within the Forbesdale Estate.

Table 2.25.1 provides the distances (rounded to 10m) between the closest point of disturbance (i.e. western and northern amenity barrier) and the closest point on the western boundary of the westernmost open cut pit (the Main Pit) and the identified residences or vacant properties to the west of the Mine Area, including those within the Forbesdale Estate. Other residences identified in **Table 2.25.1** are shown on **Figure 2.25.3**. The distances were established using AutoCAD and geo-referenced aerial photography. **Table 2.25.1** shows that Residence 150 is closest to the limit of disturbance, at a distance of approximately 1 300m, with:

- four residences located at distances of 1 301m-1 400m;
- one residence located at a distance of 1 401m-1 500m;
- four residences located at distances of 1 501m-1 600m;
- three residences located at distances of 1 601m-1 700m;
- three residences located at distances of 1 701m-1 800m; and
- eight residences (>30%) located at distances of 1 801m-1 990m.

The boundary of the nearest open cut pit to each of these residences is located a further 450m to 550m away.

In the vicinity of the Avon River Estate, the closest privately-owned residence is approximately 1 980m from the proposed limit of disturbance and 2 210m from the closest open cut pit, with all other residences in the area of Avon River and Thunderbolt Estates located at distances of 2km to 3km from the limit of disturbance and 2.2km to 3.4km from the nearest boundary of the closest open cut pit.

Based on the above analysis, Council Administrator's statement that *"there are substantial residential areas within a kilometre in one direction and in another direction within 1.8km"* is incorrect.

GRL's consultation with some of the residents within the closest sections of Forbesdale Estate has established a level of support for the amended Project such as expressed in the following submission.

The former plans for the mine were much too big, (railway and washery), but I can live with the new plan even though we will be only about 1 to 1½km from the Site.

(Name withheld) of Gloucester, NSW (Submission No. 164292)

Given that the limit of disturbance is located at the toe of the western and northern amenity barrier, the distance to active mining areas would increase by the order of 450m to 550m during the construction of the barrier, with the closest activity beyond that time determined by the distance to the nearest point of the Main Pit.

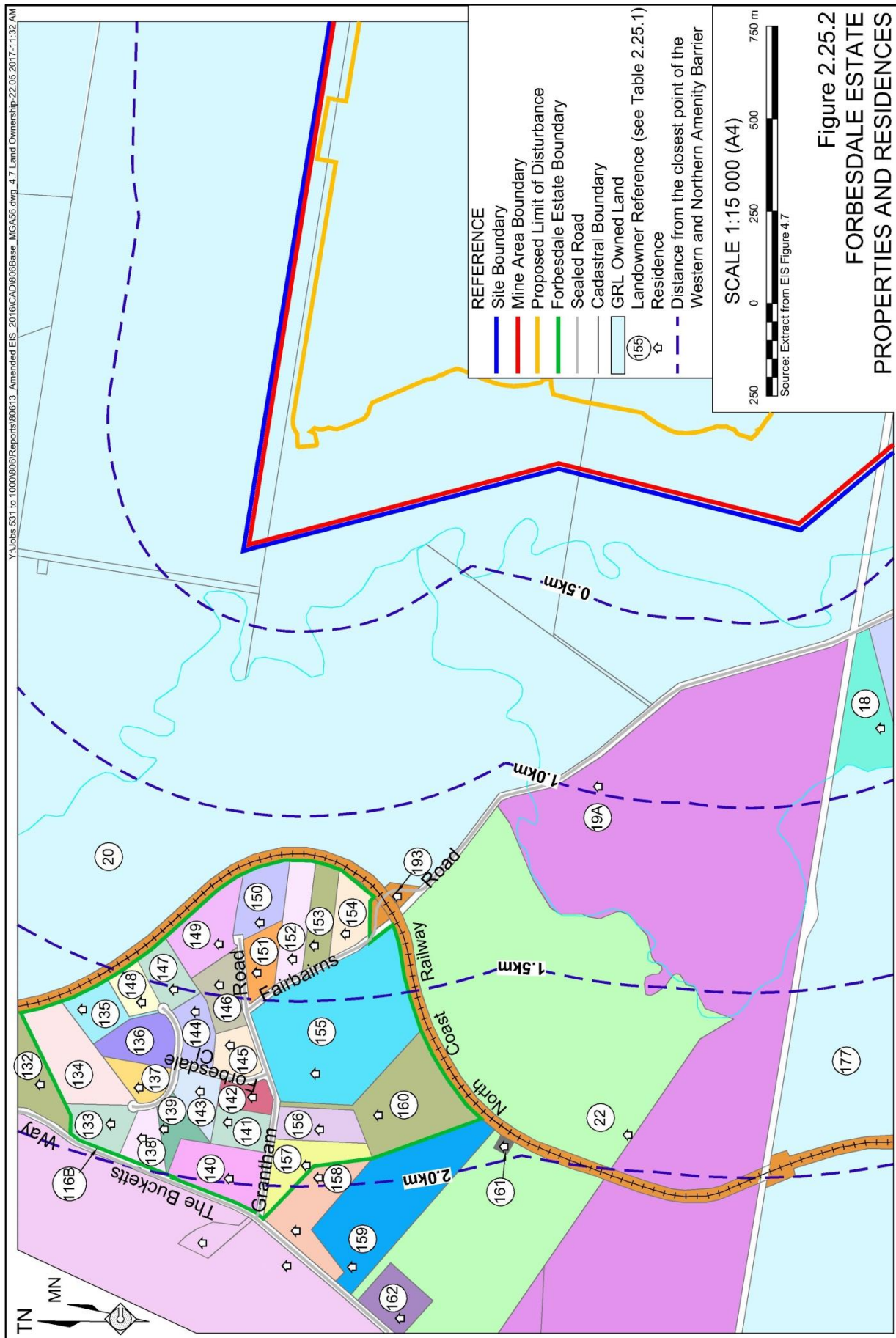


Figure 2.25.2
FORBESDALE ESTATE
PROPERTIES AND RESIDENCES

Table 2.25.1
Distances to Residences

Landowner Reference	Landowner	Limit of Disturbance	Open Cut Pit
Residences within the Forbesdale Estate¹			
133	J.M. Sutherland	1 900m	2 450m
134	No residence		
135	G.C. & P.J. Morris	1 630m	2 180m
136	No residence		
137	C.W. & B.N.E. Franklin	1 790m	2 330m
138	R. & R.L. Besier	1 920m	2 460m
139	M., C.I. & H.A.W. Bowman	1 880m	2 420m
140	M.J. & K.I. O'Brien	1 990m	2 520m
141	C.J. Parish	1 840m	2 370m
142	D.B. Hamilton	1 770m	2 290m
143	J.A. Spagnolo & C.A. Clarke	1 770m	2 300m
144	P.R. & P.G. Coote	1 560m	2 090m
145	H.J. & P.F. Cox	1 630m	2 160m
146	S.L. Ruse	1 540m	2 070m
147	B.J. & D. Gilbert	1 510m	2 050m
148	H.M. Evans	1 560m	2 110m
149	C.E. & P.M. Reynolds	1 360m	1 900m
150	B.J. & F.P. McKechnie	1 300m	1 820m
151	M.J. & R.A. Edwards	1 430m	1 960m
152	J.R. & L.M. Findlay	1 390m	1 900m
153	R.J. & R.A. West	1 350m	1 860m
154	I.A. & S. Jackson	1 320m	1 820m
155	P.E. & S.J. Hedditch	1 700m	2 210m
156	M.J. Wall	1 850m	2 360m
157	A.I. Ross	1 950m	2 460m
160	S. & U.L. Toth	1 820m	2 310m
Agricultural and Rural-Lifestyle Properties to the West of the Mine Area²			
18	J.D. Collins & M.I. Barrett	860m	1 290m
19A	A.K. & B.R. Boorer	980m	1 430m
22	G.H. Harris	1 900m	2 370m
159	N.A. & E.M. Rumbel	2 230m	2 730m
161	R.K. & B.J. Saunders	1 960m	2 395m
162	F.H. Beggs	2 370m	2 850m
193	Transport for NSW	1 240m	1 720m
Agricultural and Rural-Lifestyle Properties to the East of the Mine Area²			
6	R.B. & L.R. Campbell	365m	1 790m
11A	A.S. Berecny	1 400m	2 460m
11B	A.S. Berecny	1 800m	2 890m
23	S.J. & J.G. Yarnold	420m	1 850m
Note 1	See Figure 2.25.2 for location		
Note 2	see Appendix 3 for location (at back of document)		

Table 2.25.1 shows that on completion of the western and northern amenity barrier construction, the distance to the nearest activity over the following 15-16 years all occurring behind (to the east of the western and northern amenity barrier) would be 1 820m (from Residences 150 and 154), with the distance to 18 of the remaining 24 residences ranging from 2 050m to 2 520m.

GRL has held discussions with the closest landowners with residences surrounding the Mine Area.

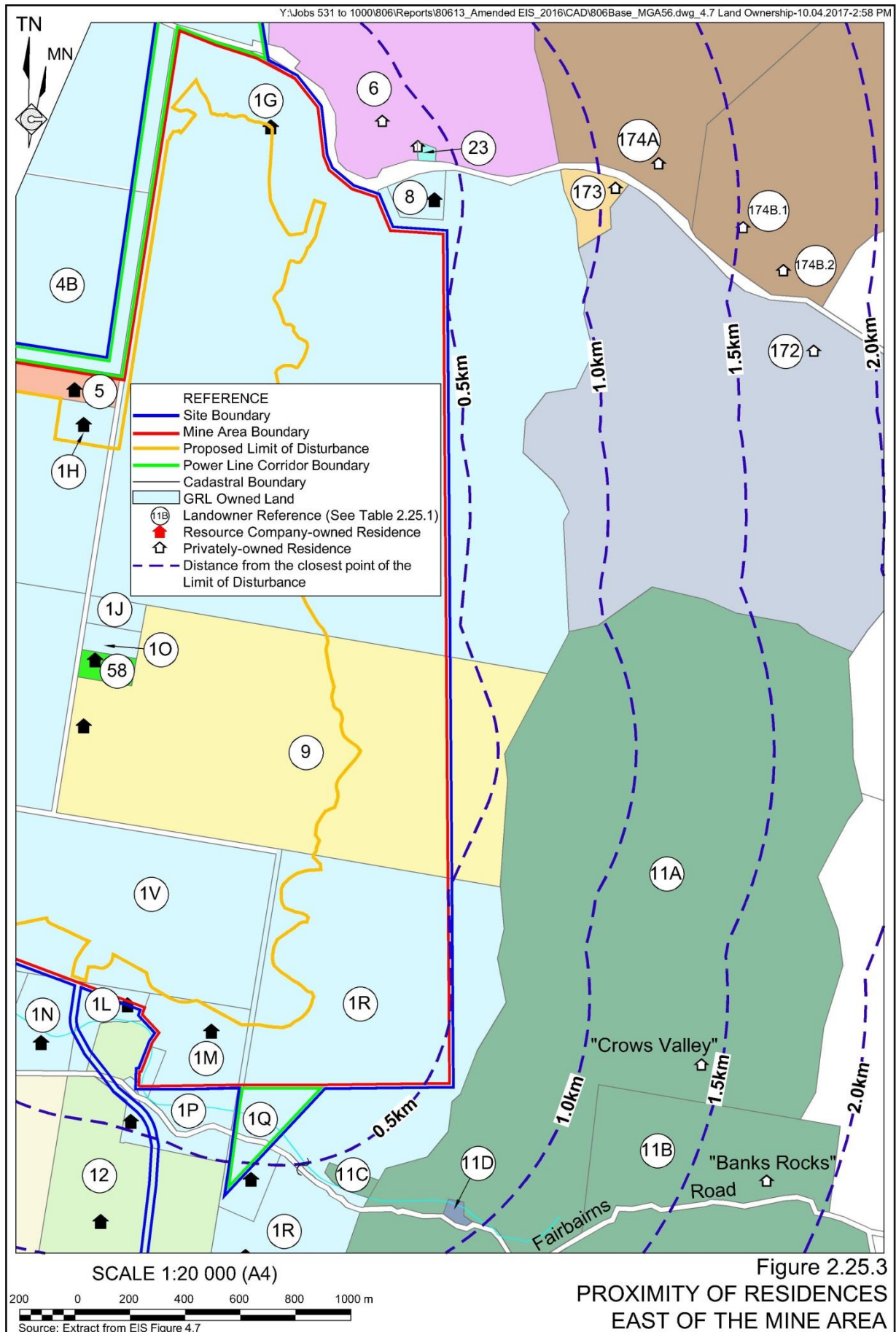
To the northeast of the Mine Area, the properties of R.B. & L.R. Campbell (Residence 6) and S.J. & J.G. Yarnold (Residence 23) are approximately 350m and 440m respectively from the proposed limit of disturbance (see **Figure 2.25.3**). It is noted, however, that this disturbance would be for the construction of a clean water diversion channel and the interim overburden emplacement, with the overburden emplacement in this location not planned to commence until Year 7 of operations. The Air Quality Assessment established that all air quality criteria would be satisfied at both residences whereas the Noise, Vibration and Blasting Assessment predicted exceedances of the evening noise criteria in Year 4 and Year 7 at Residence 6. All noise criteria would be satisfied at Residence 23.

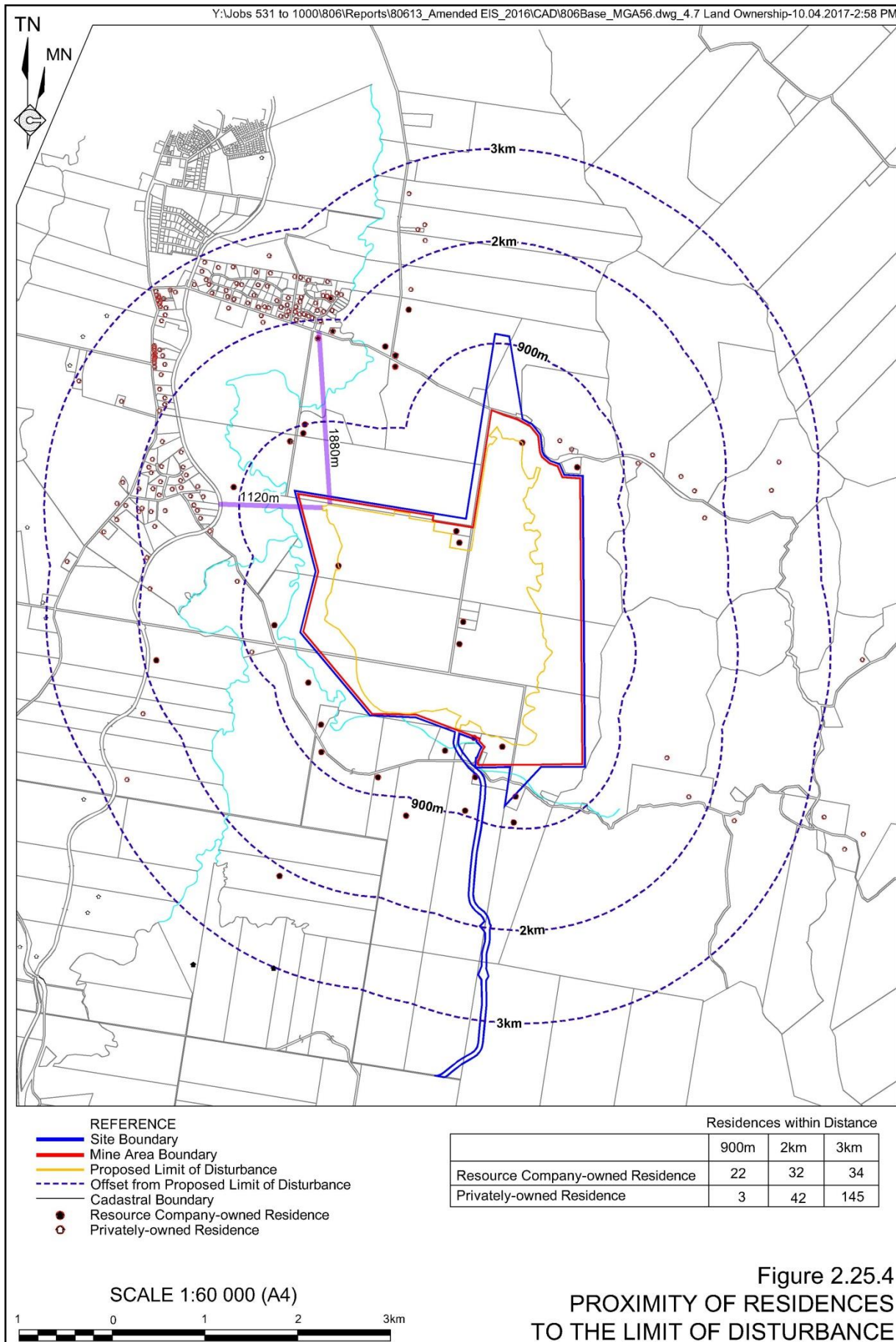
The privately-owned residence closest to the Main Pit is the residence of J.D. Collins and M.I. Barrett (Residence 18) which is 1 290m from the closest open cut pit and 860m from the proposed limit of disturbance. This residence is accessed from Fairbairns Road and is not within the Forbesdale Estate. GRL is in regular contact with the owners of this residence who are fully aware of the proposal to develop the amended Project and its possible implications. Both the Air Quality and Noise, Vibration and Blasting Assessments predicted compliance with all relevant criteria at this residence.

Figure 2.25.4 displays the proposed Site and offsets of 900m, 2km and 3km from the proposed limit of disturbance. The distance of 900m is identified given that this distance is repeatedly quoted in numerous submissions and form letters.

The assessment of State significant mining, petroleum and extractive industry developments relies on comprehensive technical assessment in accordance with relevant guidelines and non-discretionary development standards set out in legislation (Section 12B of the Mining SEPP) together with the subsequent assessment of the amended Project in terms of Section 79C of the EP&A Act. The rights of landowners in relation to the predicted impacts of State significant mining, petroleum and extractive industry development are described in the *Voluntary Land Acquisition and Mitigation Policy* (VLAMP) (NSW Government, 2014³¹). This policy specifies the noise and air quality criteria to be used to assess the need for negotiated agreements, voluntary mitigation or acquisition of property. The policy is triggered when the assessment criteria are predicted to be exceeded once all reasonable and feasible avoidance and/or mitigation measures have been adopted to minimise potential impacts of a development.

³¹ NSW Government (2014), *Voluntary Land Acquisition and Mitigation Policy for State Significant Mining, Petroleum and Extractive Industry Development*, NSW Government 15 December 2014, NSW Department of Planning and Environment





The criteria nominated in the VLAMP were applied in both the Noise, Vibration and Blasting Assessment (Section 4.5) and the Air Quality Assessment (Section 4.2.3) and both assessments of impacts. **Table 2.23.2** (Section 2.23.1.6 of this document) describes the predicted operational noise exceedances of Project-Specific Noise Levels at privately-owned residences and receivers in the vicinity of the Mine Area. The Air Quality Assessment predicts compliance with relevant criteria at all surrounding private residences. Therefore in all instances, it is predicted that the assessment criteria that would trigger property acquisition, as provided in the VLAMP, would not be exceeded. This outcome was a key objective of GRL when designing the entire amended Project.

However, as described in the response to the EPA submission in Section 2.23.12.1 of this document, GRL supports conditions on the development consent for the amended Project based on escalating noise assessment criteria that would trigger the provisions of the VLAMP if monitoring indicates higher than predicted results at any privately-owned residence.

The Visual Impacts Assessment concludes that at those residences with a direct view of the Site there would be no changes to the foreground or long distance views and the amended Project would not modify the horizon. There would, however, be a change to the middle distance view (that being the outlook from 1.3km to 3.0km) as mining activities would be visible for the first three years of operations while the western and northern amenity barrier is being constructed and progressively revegetated. Visual impacts would be mitigated throughout this period through a focus on progressive vegetation. It is intended that the landform of the western and northern amenity barrier would be completed by the start of Year 3, with minimal changes between Year 3 and Year 8 of operations, during which time views of the operating areas would be limited. Beyond Year 8 it is expected that the majority of visible areas of the Site would be at final landform (and revegetated) and therefore extraction and overburden management activities would not be directly visible. It is expected that areas that have been completed and revegetated would be visible from approximately Year 3 with more than half of the area to be disturbed rehabilitated and vegetated by the end of Year 8. A significant part of that area would be growing toward a future open woodland character by that time. Areas of temporary revegetation would be completed by the end of Year 8 and remain vegetated until mining operations are completed and final rehabilitation of the Site is commenced.

The Health Risk Assessment considered all residents within Gloucester (including the Forbesdale, Thunderbolt and Avon River Estates) and, as such, was not restricted to a specific distance from the Site. Residents were considered across the age spectrum as well as potential impacts at schools and hospitals. Section 2.17 of this document describes the specific health effects evaluated in the Health Risk Assessment. The Health Risk Assessment concluded that the potential health impacts arising from emissions from the amended Project would not be of concern when compared against relevant health criteria. This is discussed in detail in Section 4.4.10 of the EIS and Volume 1, Part 2B of the *Specialist Consultant Studies Compendium*.

In summary, the technical assessments undertaken for the EIS have considered potential impacts at residences within the Forbesdale, Thunderbolt and Avon River Estates and adjacent to The Bucketts Way as well as isolated properties in the vicinity of the Site. The results of these assessments have predicted that relevant environmental criteria would, in most cases, not be exceeded and that with the implementation of the proposed management and mitigation measures, the amended Project would not result in significant amenity impacts at those residences or properties nearby in the medium to long term.

2.27 ROADS AND TRAFFIC

2.27.2 Waukivory Road – North of Jacks Road

2.27.2.1 Representative Comment(s)

Waukivory Road's pavement has some sections in poor condition with deformation and the addition of heavy vehicles on this road during the construction phase will further deteriorate the pavement. The applicant should cover the costs of pavement restoration due to any damage done during the construction phase by the heavy vehicles using Waukivory Road. The determination of any restoration work will be done before and after by independent Dilapidation Reports.

The proposed level of light vehicle usage during the mine operations is not considered significant and there would be no requirement for any additional upgrading or action.

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Response

Waukivory Road (SR17) is a local road managed by Council. The approximately 5.2km section of Waukivory Road between The Bucketts Way (east of Gloucester) and McKinleys Lane comprises an approximately 6m wide sealed pavement with 1m unsealed shoulders. The existing seal quality is poor with general pavement deformation evident, particularly the section north of Jacks Road. Notably, between April 2012 and November 2014, this route was the only route available for heavy and light vehicles to access rural properties east of the Avon River and Jacks Road Bridge and, from November 2014 to date, remains the only permissible route to access rural properties east of the Avon River and Jacks Road for heavy vehicles with a gross vehicle mass >15t due to the load limit on the Jacks Road bridge. Measured existing average daily traffic usage in 2015/16 was a total of 245 vehicles of which 15.1% (37) were heavy vehicles. This is expected to increase to 276 vehicles, including 42 heavy vehicles, by 2019, even in the absence of the amended Project.

Based on the outcomes of the Transport Assessment, GRL has previously committed to making contributions to road maintenance for this section of road on a pro-rata basis for mine-related (heavy) vehicle movements during the site establishment and construction stage. However, given the existing poor standard of the road pavement, lack of appropriate maintenance, limited pavement life (previously identified in the 2013 RTS as having reached or passed its serviceable life), the existing levels of usage and the short duration and use by Project-related heavy vehicles during the site establishment and construction stage, GRL considers Council's expectation that GRL fund a before and after dilapidation survey to be unreasonable. However, as previously proposed, GRL would retain records of heavy vehicles utilising Waukivory Road during the construction stage, provide them to Council on a monthly basis, and enter into an arrangement for payment of a road maintenance contribution commensurate with the level of use.

Though GRL has committed to the payment of a road maintenance contribution to reflect the use of the road by Project-related (heavy) vehicles, GRL considers that Council's suggestion that *"The applicant should cover the costs of pavement restoration due to any damage during the construction phase by heavy vehicles using Waukivory Road."*, i.e. without consideration of ambient heavy (non Project-related) vehicle usage over that period, is unreasonable.

2.27.3 Waukivory Road – East of Jacks Road

2.27.3.1 Representative Comment(s)

Waukivory Road between Jacks Road and McKinleys Lane will become the main access road to the mine as the extension of Jacks Road. This section of Waukivory Road will be reconstructed to the same dimensions as Jacks Road and an asphalt concrete pavement designed to Council requirements. The pavement width will be two travel lanes of 3.5m width and sealed shoulders on each side of 1m width.

It will be important to monitor the traffic accessing the mine and their impact on the road network, especially should the traffic numbers and vehicle type not be consistent with the supplied traffic report. Therefore it is proposed that a traffic classifier counter be permanently installed on Waukivory Road east of Jacks Road for the life of the mine and the data from this counter be made available to Council.

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Response

In accordance with the recommendations in the Transport Assessment, GRL has committed to the upgrading of Jacks Road and Waukivory Road east of Jacks Road as well as contributing to the maintenance of these upgraded roads, with the quantum of the contribution commensurate with the traffic volume taking into consideration the road upgrades undertaken.

Although GRL spent considerable effort determining the range and number of vehicles likely to travel on Waukivory Road, east of Jacks Road and considers the traffic numbers used in the Transport Assessment to be accurate, it is acknowledged that some variability may occur and that some mechanism to quantify numbers and contributions is warranted. However, GRL does not consider the installation of a permanently installed traffic classifier counter on Waukivory Road is an appropriate mechanism for the following reasons.

- A counter on Waukivory Road east of Jacks Road would not only record Project-related vehicles. Waukivory Road is a public road with estimated 2015/2016 traffic count of 252 vehicles, of which 37 are heavy vehicles, a level which in the absence of any Project-related vehicles, would be expected to increase to 512 vehicles (including 74 heavy vehicles) over the expected life of the amended Project.
- The counter, as proposed, would not be able to differentiate between Project-related and non Project-related vehicles. Based on the data presented in the Transport Assessment, Project-related light and heavy vehicles would represent 50.2% to 83.5% and 17.0% to 23.5% respectively of total vehicles on Waukivory Road east over the life of the Project.
- An additional mechanism would still be required to determine Project-related vehicle numbers as opposed to total numbers.

As all vehicles entering the Mine Area from Waukivory Road during the operational stage would be required to travel via the Mine Area access road, and report to and sign in at the administration area, records of all heavy vehicles arriving and departing would be available. In order to satisfy Council as to routes used as a means of calculating road maintenance contributions, details recorded could include registration, load type, point of origin, sign-on and

sign-off time and access route. Installation of a classified counter on the Mine Area access road, though enabling the differentiation between light and heavy vehicles, would not enable the determination of routes.

Heavy vehicle records would be assembled daily and provided to Council monthly or as otherwise agreed.

2.27.4 Jacks Road

2.27.4.1 Representative Comment(s)

Jacks Road as proposed by the applicant will be reconstructed but should be increased in width to provide two travel lanes of 3.5m width and sealed shoulders on each side of 1m width (9m full constructed width). The road will be an asphalt concrete pavement designed to Council requirements.

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Response

The Transport Assessment reports that the existing 6m to 7m wide seal width along Jacks Road is considered to be narrow and at the lower end of the acceptable lane widths for a two lane road and, as a consequence, would be unsuitable for the increase in traffic that would result from the amended Project. However, it should be noted that the same situation would apply as a consequence of organic growth in traffic over the period to 2025 in the absence of the amended Project. As outlined in the EIS (Section 4.9.3), substantial upgrades of the Jacks Road pavement including widening to provide two 3.25m travel lanes plus 0.75m sealed shoulders on an 8m foundation, line marking, signage and bridge replacement are proposed which would accommodate the additional traffic travelling to and from the Mine Area.

This pavement design is consistent with AustRoads geometric design standards (Part 3 – Table 4.5) for roads with an AADT up to 1,000. Given that, with Mine-related traffic and a highly conservative increase in ambient traffic of 3%, this would not be reached until 2039 (i.e. at the end of the Mine life) when the ambient traffic reaches 990 movements and the project-related traffic is 43 movements (total 1033 movements), the proposed pavement design is considered adequate. In relation to pavement surfacing, Council's suggestion that asphalt is used is accepted, but only for the section of Jacks Road passing the Avon River and Thunderbolt Estates, given the benefits to both durability and providing a 'smooth' driving surface which reduces road noise and increases driver comfort. East of these estates, the upgrades to Jacks Road and Waukivory Road (east of Jacks Road) would utilise a granular / sprayed seal (consistent with AustRoads design standards).

2.27.5 Fairbairns Road

2.27.5.1 Representative Comment(s)

Fairbairns Road's pavement has some sections in poor condition with deformation and the addition of heavy vehicles on this road during the construction phase will further deteriorate the pavement. The applicant should cover the costs of pavement restoration due to any damage done during the construction phase by the heavy vehicles using Fairbairns Road. The

determination of any restoration work will be done by before and after independent Dilapidation Reports.

The biggest concern on this road is the bridges over Avon River not being able to support heavy vehicles. The original bridge is an old bridge of timber construction with a load limit of 10t. There is a temporary bridge constructed adjacent to the original which was constructed to enable a property owner to take his unladen logging trucks home for servicing with all materials being supplied by this owner. The temporary bridge does not have an unlimited load capacity as suggested in the applicant's traffic report, but is subject to engineering certification for loads exceeding 22.5 tonnes. It is noted that the timbers used in this temporary bridge have not been certified for use in this bridge.

These bridges do not provide unlimited heavy vehicle access to the remainder of the road, therefore should this road be used for construction of the underpass for the Haul Road as planned the access over the Avon ~~Road~~ (River) will need to be resolved. The existing temporary bridge will need to be assessed structurally to determine if it can cater for the proposed heavy vehicles and if not a new bridge is to be built to cater for the heavy construction vehicles.

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Response

There is currently no sign-posted load limit to the temporary bridge and, if a load limit applies as suggested, it is Council's obligation to inform all potential users by way of signposting. It is reasonable to assume that any legal load that is not either oversized or overmass is capable of using this structure. Further, it is understood that semi-trailers and other configurations currently use this bridge for hauling timber, livestock, farm supplies and equipment, many of which would exceed 22.5t.

Traffic count data from 2011/2012 recorded average daily traffic levels of 249 of which 9% (22) were heavy vehicles. Applying the growth rate of 3%, by 2019, ambient average daily traffic levels would be 278 of which 28 would be heavy vehicles. It is estimated that the amended Project would generate an additional 4 heavy vehicle movements per day over a 6 month period, equating to only a 14.3% increase in heavy vehicles for that period. Therefore, the need for a dilapidation report for the Fairbairns Road pavement as a result of the amended Project is considered not to be warranted.

GRL does not propose to use Fairbairns Road for overmass or oversized vehicles. However, as a safety measure, the Transport Assessment recommended that the Construction Transport Management Plan include an assessment of the structural capacity of the temporary bridge to determine its suitability for use by intended or likely heavy vehicle configurations where the load exceeds 22.5t.

Once a suitable load rating is determined (in consultation with Council), the planned deliveries proposed to enter the Site via Fairbairns Road would be adjusted accordingly or alternative delivery arrangements made.

Notwithstanding the low level and short duration of usage, GRL would adopt a similar approach to contributing to the maintenance of Fairbairns Road as is proposed for Waukivory Road, north of Jacks Road (see Section 2.27.2.1 of this document).

2.27.5.2 Representative Comment(s)

The proposed crossing of Fairbairns Road by the Haul Road will need to be approved by Council and a Short Term Lease created under the Roads Act (Part 10 Division 2 – Sections 153 to 157) between the Applicant and Council.

Mid-Coast Council Report – Page 27

Response

GRL would seek the necessary approvals under the *Roads Act 1993* and enter into appropriate lease or licence agreements to enable the construction and operation of the Fairbairns Road crossing.

2.27.5.3 Representative Comment(s)

The railway level crossing on Fairbairns Road should be reviewed by ARTC to ensure the crossing is meeting their standards and any upgrading that may be required to ensure safety during the construction phase.

Mid-Coast Council Report – Page 27

Response

ARTC was previously consulted regarding this rail crossing. The following response was received from Mr Peter Hodgson of ARTC via email on 15 August 2012.

1. Impacts on Safety

“To determine the incremental impacts on safety as a result of increased train operations in theory would need a risk assessment. To do that for a level crossing risk assessment you would need the two interfacing parties present i.e. rail infrastructure maintainer (RIM) and road manager. The risk being at its highest level a function of Likelihood x Consequence. (LxC) The only change here would be the increase in L based on more of the same trains, but that assumes more trains means more collisions. Given that trains do not need to give way to road vehicles, the most likely outcome of a risk assessment would be no demonstrable issues. Looking at it from another angle, do the seasonal changes on rail volumes such as grain trains result in more incidents? I suggest there is no data to support this. The same could be argued for road volumes.”

Notwithstanding the above statement, the *Construction Transport Management Plan* would consider the Fairbairns Road Rail Crossing and recommend specific risk management strategies (such as additional advanced warning, duplication of signs, and potentially traffic control), if the need arises.

2.27.6 McKinleys Lane

2.27.6.1 Representative Comment(s)

McKinleys Lane south of Waukivory Road will become an internal private road (similar to a driveway) within the development as an access to the Mine administration and workshops. The current McKinleys Lane would need to be de-gazetted as a public road and purchased from Council to become privately owned land by the Applicant.

The replacement road would need to meet Council standards for internal roads and driveways for a development site.

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Response

As outlined within the EIS (Section 2.4.4), long-term access to the Mine Area from the public road network would be provided via an approximately 50m long section of McKinleys Lane and the new Mine Area access road to be constructed immediately to the east of, and generally parallel to, the retained section of McKinleys Lane. An application would be made to close the section of McKinleys Lane south of the Mine Area entrance.

Council's Draft Development Control Plan 2010 does not provide specific design standards for mining development. However, given that the private Mine Area access road would be sealed and designed for mine-related traffic, it is considered that the road would meet relevant Council standards.

2.27.7 The Bucketts Way – Jacks Road to Pacific Highway

2.27.7.1 Representative Comment(s)

The Bucketts Way between Jacks Road and Pacific Highway will be the main access to the Rocky Hill Mine for the construction phase and operational stage of the mine. The Bucketts Way has some sections in poor condition with deformation and the addition of heavy vehicles on this road during the construction phase will further deteriorate the pavement. The applicant should cover the costs of pavement restoration due to any damage done during the construction phase by the heavy vehicles using this road. The determination of any restoration work will be done by before and after independent Dilapidation Reports.

The use of The Bucketts Way for access to this mine during operations will have detrimental effect to the road and especially its pavement. The Applicant should make an ongoing contribution to the maintenance of the road each year to ensure the road's safe condition. This amount should be based on the number of vehicles and their size that are accessing the mine site.

There are limited overtaking locations along this section of The Bucketts Way and the increase of heavy vehicles using this road due to this mine will frustrate drivers that may result in them making poor decisions in overtaking these additional heavy vehicles. The Applicant should make a contribution to the construction of overtaking lanes along The Bucketts Way.

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Response

The Bucketts Way (MR 90) is classified by RMS as a regional road and is managed by Council, although funding is provided by RMS for the maintenance of the road. In the vicinity of the Site, The Bucketts Way comprises two lanes of one way traffic each 3.25m wide and 0.25m wide sealed shoulders and average to poor pavement condition. Notably, it was identified as part of the 2014 RTS that a significant proportion of the road has already exceeded the pavement design life.

The Transport Assessment (Table 2, Page 9-45) provides a summary of the measured and forecast ambient traffic volumes on The Bucketts Way north and south of Jacks Road and elsewhere, while Appendix D provides a detailed breakdown of predicted construction and operational traffic levels arising as a consequence of the amended Project. During the ten month construction stage, there would be an average of 11 heavy vehicle movements per day on The Bucketts Way south of Jacks Road (incorporating vehicles accessing Fairbairns and Wenham Cox Roads) which, when compared to the 2019 ambient heavy vehicle numbers (413 per day) would equate to an increase of approximately 2.7%. The peak heavy vehicle movements on The Bucketts Way south of Jacks Road of approximately 20 to 21 movements (incorporating vehicles accessing Fairbairns and Wenham Cox Roads) per day would occur between construction months 3 and 6 which equates to an increase of approximately 4.8% to 5.1% over the predicted ambient levels. During operations, the increase in heavy vehicles equates to only approximately 1% above the ambient heavy vehicle traffic levels. Consequently, the contribution from mine traffic to pavement dilapidation compared to the ambient traffic would be minimal.

As outlined within the EIS (Section 4.9.3), GRL proposes to pay an annual contribution towards the maintenance of The Bucketts Way with the contribution calculation method consistent with that in Development Consent SSD 4966 for the Stratford Extension Project. This contribution calculation was set by the Planning Assessment Commission and is considered a fair and reasonable basis for determining an annual contribution to maintenance costs.

Given the small (approximately 1%) increase in heavy vehicles on The Bucketts Way south of Gloucester during operations, and the projected organic growth of 3% as nominated by Council for use in the preparation of the Transport Assessment, GRL refutes the claim by Council and others that the increase in heavy vehicles arising as a consequence of the amended Project would frustrate drivers causing poor overtaking decisions. Similarly, the suggestion that the increase in heavy vehicles associated with the Project would result in constant heavy vehicle traffic and the road becoming a danger to all is disputed, noting that the maximum average projected increase in heavy vehicles associated with the amended Project would equate to less than 6 months organic growth in the absence of the amended Project. Similarly, the pavement condition would also continue to deteriorate and require restoration works in the absence of the amended Project with the mine's contribution to the rate of deterioration being minimal.

Although, in the main, heavy vehicle traffic associated with the amended Project would be no different from the existing heavy vehicle traffic using the road, GRL acknowledges that periodically there would be a requirement for oversize/over mass loads to travel along The Bucketts Way to the Stratford Mining Complex entrance which would require escorts. However, this is no different from the current situation on this road or any other arterial or regional road in NSW as a consequence of the delivery of large plant and equipment for construction, mining, industrial or agricultural ventures.

Deficiencies in the design of The Bucketts Way, including the need for additional passing lanes, are a matter for the RMS and Council and form part of their upgrade plans.

2.27.8 Heavy Vehicle Bypass through Gloucester Township

2.27.8.1 Representative Comment(s)

Jacks Road during the construction phase will not be available for heavy vehicles until the new bridge is completed by the end of the eighth month. During this period heavy vehicles coming from the south will need to travel through the Gloucester township then use Waukivory Road to access the mine site. The applicant should cover the costs of pavement restoration due to any damage done during the construction phase by the heavy vehicles using this road. The determination of any restoration work will be done by before and after independent Dilapidation Reports.

The route of the Heavy Vehicle Bypass through the Gloucester township is to be approved by Council. The roads within the Gloucester township are not suitable for Over Size and Over Mass (OSOM) vehicles and Council will not approve any OSOM vehicles through the town of Gloucester.

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Response

During the site establishment and construction stage, the heavy vehicle movements originating from The Bucketts Way south of Jacks Road and accessing the Mine Area or construction areas external to the Site and therefore utilising the heavy vehicle bypass would average 5 movements per day, peaking at approximately 10 to 13.5 movements per day between months 3 and 6 (excluding heavy vehicles accessing Fairbairns and Wenham Cox Road which are assumed to originate from south of Gloucester). This equates to an increase in heavy vehicle movements of only approximately 2.0% to 2.8% for the peak period. As the route of the bypass is already specifically identified on maps and sign-posted as a nominated heavy vehicle bypass for all vehicles >3t GVM, and the increase in heavy vehicles would be both minor and short term, GRL considers that the potential impacts would be minimal. Use of dilapidation reports is therefore unwarranted and potentially problematic given the large number of other non-mine related heavy vehicles routinely using the bypass.

Taking into account the proposed road upgrades as well as maintenance contributions for both The Bucketts Way and other local roads, it is considered inappropriate to provide additional maintenance funding for the minor and short term use of the heavy vehicle bypass.

GRL has not proposed and does not propose to use roads within the Gloucester township for the movement of any OSOM vehicles.

2.27.9 Intersections

2.27.9.1 Representative Comment(s)

The applicant has proposed an intersection upgrade on The Bucketts Way at Jacks Road with a channelised right turn bay (CHR) and auxiliary left turn lane (AUL). This is considered

acceptable for the proposed traffic volumes and turning movements. The right turn bay should be able to hold two 30m B-Double trucks as the RMS have requested that designs should cater for the larger B-double for commercial developments. The intersection should be designed using AustRoads "Guide to Road Design" and approved by the RMS and Mid-Coast Council.

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Response

Although the SIDRA analysis undertaken for The Bucketts Way/Jacks Road intersection identified that the existing intersection operates far below its capacity, with a low degree of saturation and the highest level of service for all turning manoeuvres, GRL has committed to the provision of channelised right and ancillary left lanes at that intersection to improve safety and ensure the intersection has capacity to accommodate significant other traffic over the life of the amended Project. As outlined in the Transport Assessment (Section 6.1.1), the proposed intersection would meet the Austroad's *Guide to Road Design* requirements and standards, be completed prior to commencement of mining operations, and be undertaken at no cost to RMS or Council. The Austroad's design standards would provide for a turning lane of >60m and therefore would meet Council's preference to "hold two 30m B-Doubles".

Notwithstanding this, it is noted that The Bucketts Way south of Gloucester is only approved for 19m B-doubles, i.e. not approved for use by 23m or 25/26m B-doubles, Jacks Road is not an approved B-double route, and the Austroads roads design requirements do not make any differentiation between a 'commercial' and 'non-commercial' development.

2.27.9.2 Representative Comment(s)

The intersections on The Bucketts Way at Waukivory Road and Fairbairns Road have important roles during the construction phase, however afterwards in the operational phase they will only have light traffic or no traffic respectively. Therefore, there is no requirement of these intersections to be upgraded and the previously listed dilapidation reports for these roads will cover any damage that may occur at the intersections during the construction phase.

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Response

The number of heavy vehicles accessing Fairbairns Road during the site establishment and construction would be comparatively small (averaging 4 movements per day over a 6 month period). As discussed in Section 2.27.5.1 of this document, in comparison, by 2019, ambient average daily traffic levels would be 278 of which 28 would be heavy vehicles. Therefore the resulting short term increase in heavy vehicles as a result of the amended Project equates to approximately 14.3%. GRL does not propose to use Fairbairns Road for overmass (or oversize) vehicles. Therefore, a dilapidation report as a result of the amended Project is considered not to be warranted.

Notwithstanding this, as stated in Section 2.27.5 of this document, GRL would adopt a similar approach to contributing to the maintenance of Fairbairns Road as is proposed for Waukivory Road, north of Jacks Road. Such contributions would similarly apply to the maintenance of the intersection.

2.27.10 Private Haul Road

2.27.10.1 Representative Comment(s)

The internal Haul Road between Rocky Hill Mine and Stratford Mine should be designed to AustRoads' "Guide for Road Design" (including the grade separated intersection at Fairbairns Road) and be surfaced with asphalt concrete to ensure long term pavement integrity with the heavy vehicle usage it will be required to handle. There should not be permanent lighting along this Haul Road as the road will not be used past 10:00pm.

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Response

The private haul road would be located on private land, not accessible to the public, be maintained by GRL and designed with guidance from AustRoads. As outlined in the EIS (Section 2.5.3), the private haul road would be comparable in design to a public road with a sealed surface at least 7m wide, 1.5m wide unsealed shoulders and roadside drainage³². The road has also been designed with a vertical and horizontal alignment to enable vehicles to safely travel at 80kph, although truck speeds along the road would be restricted to a maximum of 60kph.

GRL confirms that permanent lighting would not be installed along the haul road.

2.27.11 Pedestrians

2.27.11.1 Representative Comment(s)

Jacks Road as proposed by the applicant will be reconstructed but should be increased in width to provide two travel lanes of 3.5m width and sealed shoulders on each side of 1m width (9m full constructed width). The road will be an asphalt concrete pavement designed to Council requirements. This pavement width will provide safe traffic lanes (3.5m width) for heavy vehicles to adequately pass other heavy vehicles and general traffic. The one metre wide shoulders on each side are to cater for cyclists and pedestrians to travel along this road safely. It is known that this road is used by individuals and schools for both recreation and training cycling.

The bridge to be replaced over the Avon River by the applicant will have matching 3.5m traffic lanes as the rest of the road with safe edge spacing to the bridge sides/rails. The footpath for this bridge will be located on the north side of the vehicular section with a safety barrier between the vehicular lane and footpath. The footpath will be a shared pathway of 2.5m in width to cater for pedestrians and cyclists.

Mid-Coast Council Report – Page 26-27

Response

GRL acknowledges that the Jacks Road reserve and pavement is used on occasions for pedestrian and cycling activity. However, based on observations by GRL personnel over the

³² The section of the private haul road between the southern end of the Site and the proposed Wenham Cox Road intersection would be constructed to a similar standard to the road within the Site.

past six years, anecdotal evidence from nearby residents and regular travellers on that road and observations by Constructive Solutions during their inspections whilst preparing the Transport Assessments for the 2013 EIS and the amended Project, the frequency of pedestrian use of the existing bridge and beyond the Avon River is limited. The limited pedestrian activity along Jacks Road generally involves pedestrians walking along the edge of the road pavement or shoulder or on the grass verge. Jacks Road is used periodically by Gloucester-based cyclists who include Jacks Road as part of a cycle circuit.

Assuming mining operations commence in 2019, the proportional increase in traffic levels as a result of the mine, compared to the forecast ambient traffic levels, ranges from approximately 16% in 2019 to 27% in 2029. Whilst the contribution is not insignificant, given the low ambient traffic levels, it is considered that the increase would not change the 'character' of the road. As discussed in Section 2.27.4.2 of this document, the traffic noise levels predicted as a result of the increased traffic meet relevant road noise criteria and the increase in exhaust fumes is considered not to be significant.

Though traffic levels on Jacks Road would increase, with the proposed upgrade of the Jacks Road pavement to incorporate two 3.25m travel lanes and 0.75m sealed shoulders, as opposed to the current configuration (see Transport Assessment Section 5.2), the replacement of the single lane Jacks Road bridge with a dual lane structure with associated alignment improvements on the bridge approaches, and the incorporation of a pedestrian pathway, any potential hazard for cyclists, or pedestrians would decrease. The incorporation of sealed shoulders would also eliminate the need for cyclists to travel on the actual road.

Given the current infrequent and low level of usage of Jacks Road (and Waukivory Road) by cyclists and occasional pedestrians, Council's suggestion that a 2.5m wide shared pathway form part of the Jacks Road bridge, is considered excessive: the current pedestrian crossing over the existing Jacks Road bridge is only 0.8m wide. It is also noted that the cyclists that currently cross the Avon River at that location travel across the existing bridge rather than use the pathway and similarly are likely to use the lanes on the new bridge rather than the proposed footpath.

Additionally, as discussed in Section 2.27.4.1 of this document, GRL's proposed pavement design for Jacks Road consists of 3.25m lanes and 0.75m sealed shoulders which is consistent with AustRoads geometric design standards (Part 3 – Table 4.5) for roads with an AADT up to 1,000. The proposed lane and shoulder widths would be adequate to allow heavy vehicles to pass safely. The proposed upgrades that would occur as a result of the amended Project would provide a significant improvement to the existing condition of Jacks Road which currently has an AADT of 69 heavy vehicles which, in the absence of the amended Project, is still predicted to increase to 104 heavy vehicles by 2029.

2.28 SOCIAL AMENITY

2.28.4 Community Grants Program

2.28.4.1 Representative Comment(s)

The primary mitigation measure, as stated by the proponent, is through the Community Grants Program. The Grant Program, will be funding a large number of projects from social cohesion and social equity issues, housing stress, social infrastructure to education and training. The Measures nominated have not been costed and the amount of \$400,000 annually is unlikely to cover these issues adequately.

Mid-Coast Council Report – Page 16

Response

The production-related donation of 50 cents per tonne of product coal, averaging approximately \$400,000 per annum over the life of the amended Project (and totalling an expected \$6.5 million), is only one component of the Community Grants Program nominated by GRL. Section 4.17.5 of the EIS states:

“One of the key management measures previously announced to the local community by the Applicant relates to a Community Grants Program designed to provide both direct and indirect benefits to the local community during and beyond the life of the amended Project. The Community Grants Program comprises:

- an annual donation at a rate of 50 cents per tonne of product coal sold;*
- sponsorship of up to three tertiary education scholarships annually in fields such as mining, engineering, agriculture and environmental science;*
- assistance in the provision of enhanced medical services and facilities to the local area, with details of this assistance package to be determined in consultation with local health professionals;*
- provision of trade apprenticeships for local youth at the Rocky Hill Coal Project;*
- provision of competency training and certification on mining-related equipment to assist local men and women gain employment in mining or other related fields; and*
- provision of local training and employment for local people through the Applicant’s farming enterprises or on farming enterprises on the Applicant’s land.”*

GRL is not replacing Council’s responsibility to fund services. Rather, they are contributing to the improvement of social capital by funding community driven projects. The community would help decide priority need areas and the trustees would determine monetary allocations according to identified need and project sustainability and in accordance with the trust deed.

The donation, which is generous by industry standards, would allow the community to reap the benefits from the presence of the amended Project beyond employment, training, economic growth and infrastructure improvements, and provide an opportunity to sponsor a range of

community projects that would enhance the amenity of the town, support local cultural and sporting events, attract tourism and businesses, and provide important social infrastructure.

Section 4.17.5 of the EIS also identifies that the production-related donation would be managed through either a new or existing charitable trust, with a board of trustees comprising a highly respected local leader as the chairperson, community representatives with requisite knowledge and skills together with a representative from each of Council and GRL.

The SIA identifies priority areas which would be reflected in the formulation of the policy and guidelines for the investment and distribution of the funds, with the actual distribution in any years determined by the trustees.

2.28.4.2 Representative Comment(s)

Whilst the Community Grants Program is supported, it is considered that a Voluntary Planning Agreement (VPA) is the proper legal mechanism to ensure and administer the program. The VPA would be entered into between Mid-Coast Council and the applicant. Under an agreement, the applicant would agree to fund a range of community projects. The Department of Planning and Environment in their Wind Energy: Assessment Policy (Draft for Consultation August 2016) states that the preferred means of administering community enhancement funds is under a VPA with the relevant local Council and applicants for State Significant Development.

More significantly, in mid to late 2015, the Department of Environment and Planning invited submissions on draft guidelines for Planning Agreements associated with mining. It is clear that the Department's preferred position is for VPA's to be used to deliver community enhancements to offset the impacts of mines.

Also, the Council is a democratically elected body working on behalf of the community with robust reporting mechanism processes.

The holding and allocation of community funds by a Trust has none of these robust mechanisms which ensure transparency and ethical expenditure of funds. The applicant has nominated a very narrow range of criteria for the funds.

Mid-Coast Council Report – Page 16

The contribution of \$400,000.00 annually to the local community through the Community Grants Programme may be inadequate given the high social and environmental risk to the community.

Mid-Coast Council Report – Page 47

Response

GRL does not agree that a VPA is the appropriate legal mechanism for the administration of the Community Grants Program as a whole or the production-related donation for the following reasons.

As noted in Section 2.28.4.1 of this document, the Community Grants Program committed to by GRL is a multi-faceted program designed to provide both direct and indirect benefits to the local community throughout the life of the amended Project. The Grants Program comprises: a donation of 50 cents per tonne of product coal sold; tertiary education scholarships; assistance with the provision of enhanced medical services and facilities in the local (Gloucester) areas;

together with trade apprenticeships, competency training and certification and agricultural training and employment. The only aspect potentially suitable for management through a VPA would be the production-related donation.

With respect to the 50 cents per tonne production-related donation, GRL notes that during the planning for the original (2013) Rocky Hill Coal Project, it was made abundantly clear that many in the community did not have confidence in the then Gloucester Shire Council's ability to manage or appropriately or transparently expend the donated monies on projects which were of benefit to the broader community and reflective of the outcomes of the SIA. Consequently, GRL committed to the donation of these monies to a charitable trust which they believe would be a more dynamic mechanism for the distribution of community funds based on the needs of the community at the time for stated charitable purposes (rather than a VPA which tends to be more prescriptive and less responsive in a timely manner). Though the former Gloucester Shire Council is now part of the newly formed Mid-Coast Council LGA, this sentiment remains, as demonstrated by the following quotations from submissions received from members of the local community.

Advance Gloucester is adamant that any financial contributions forthcoming as a result of this proposal, be dealt with and administered via a mechanism completely independent of Council.

Advance Gloucester – Page 5

I...recommend... contributions received due and from the project be totally managed by representatives from the Gloucester area and the funds be used for educational and long term infrastructure activities.

Doug Gordon of Gloucester, NSW (Submission No. 165064)

In fact, the incorporation of Gloucester into the much larger LGA reinforces the importance of a mechanism for the allocation and expenditure of the production-related donation independent of Council to ensure that the monies are spent to the benefit of the community in the area of the amended Rocky Hill Coal Project and reflective of the SIA recommendations regarding local community needs. An independent trust with a respected chair is a mechanism which has been successful in many communities delivering outcomes in an efficient way. It is noted that Section 6.2.2 of the SIA suggests Council, along with GRL, would have a representative on the trust and have input into the formulation of the guidelines and in the distribution of funds.

In addition to the benefits identified above, the structure of the charitable trust would exhibit a number of advantages, including:

- being eligible for income tax exemption in relation to any income derived from the investment of funds held, something which would not be available if the monies were administered by Council;
- having the flexibility that contributions can be received from the public at large or government or other persons;
- ensuring the funds are held and distributed for appropriate purposes;
- provide a level of assurance to all, including the community, as to the bona fides of GRL and as to the appropriateness of how funds held by the trust are applied, both during and beyond the life of the amended Project.

To claim that a charitable trust does not have the robust mechanisms for the transparent and ethical expenditure of funds and reporting, is not correct. Legislative compliance with the *Trustee Act 1925* and the *Charitable Trusts Act 1993* would be required with the requirement for annual reporting and minimum governance and accounting standards similar to those requested of public company limited by guarantee. A trustee also has a fiduciary duty to act honestly, in good faith and with due diligence, and to ensure that the objects of a charitable trust are complied with and that the trust funds are applied for the trust's purposes.

2.28.5 Section 94A Contribution Plan

2.28.5.1 Representative Comment(s)

It should be noted that the former Gloucester Shire Council adopted a Section 94A Contributions Plan on 15 July 2015 that applies to all land within the Gloucester Shire Council local government area and therefore applies to this proposal.

The purpose of the Plan is to authorise Council, or the consent authority, to impose, as a condition of development consent, a requirement that the applicant pay to Council a levy determined in accordance with the Plan.

A consent authority may impose, as a condition of development consent, a requirement that the applicant pay a levy of the percentage, authorised by the Plan, of the proposed cost of carrying out the development.

Money required to be paid by a condition imposed in the Plan is to be applied towards the provision, extension or augmentation of public amenities or public services (or towards recouping the cost of their provision, extension or augmentation).

The development cost levy amount for the proposal is calculated at 1% of the cost of the development. The capital investment value nominated in the EIS is \$90,300,000.00. Therefore, the contribution to Council would amount to \$903,000.00. The cost of carrying out the development is also to be indexed before payment between the date the proposed cost was determined by the Council and the date the levy is required to be paid.

Section 20 of the Plan states that 'Council may accept an offer by the applicant to provide an "in-kind" contribution (i.e. the applicant completes part or all of work/s identified in the plan) or through provision of another material public benefit in lieu of the applicant satisfying its obligations under this plan. Council may accept such alternatives in the following circumstances:

- a) The value of the works to be undertaken is at least equal to the value of the contribution that would otherwise be required under this plan; and*
- b) The standard of the works is to Council's full satisfaction; and*
- c) The provision of the material public benefit will not prejudice the timing or the manner of the provision of public facilities included in the works program; and*
- d) Other as appropriate in the circumstances'.*

The Community Grants Program nominated by the applicant is an annual donation at a rate of 50 cents per tonne of product coal sold. This would equate to a contribution to the community of approximately \$6.5 million over the life of the amended project at an average of

approximately \$400,000.00 per annum. This contribution would greatly exceed the contribution levy determined under the Section 94A Contributions Plan 2015.

Mid-Coast Council Report – Page 16-17

Response

As noted in Section 2.28.4 of this document, GRL has nominated an extensive multi-faceted Community Grants Program which is additional to expenditure on upgrading road infrastructure such as the intersections of Jacks Road and The Bucketts Way and Jacks Road and Waukivory Road, pavement widening and improvement along Jacks Road and Waukivory Road east of Jacks Road which Council has previously identified as having exceeded pavement life, and the installation of a new, two-lane bridge over the Avon River on Jacks Road to replace the existing single-laned load limited structure. Each of these improvements would benefit the local community both throughout and beyond the life of the amended Project at no cost to Council or rate payers and involve estimated expenditure well in excess of the 1% cost of the development.

2.29 SURFACE WATER

2.29.3 Downstream Water Quality

2.29.3.1 Representative Comment(s)

EIS does not consider nutrient loading to stream associated with mine site rehabilitation and associated intensive agriculture use of the Gloucester Resource property facilitated by provision of treated water from the saline zone.

Mid-Coast Council Report – Page 42

Response

The treated water for irrigation would not contain nutrients at concentrations which would increase nutrient loads being discharged to local watercourses. Water captured in coal mines typically has minimal nutrient (Nitrogen or Phosphorous) content, and would be treated to a suitable irrigation standard and in accordance with any relevant conditions of the environment protection licence for the Site.

Depending on the nature of the final land use for a particular area and the steps required over time to achieve such land uses, fertilisers (and/or soil ameliorants) may be applied to rehabilitation areas to facilitate the establishment of vegetation and notify identified nutrient or other issues identified as impacting the growth of vegetation and/or existing agricultural productivity of the land during the detailed soil analyses presented in Appendix 1 of the Agricultural Impact Statement or identified during further analyses over the life of the amended Project. GRL would ensure fertilisers are not applied excessively to the rehabilitation areas during the establishment of vegetation. The application of fertiliser on irrigated pastures would be consistent with best practice agricultural practices in the region as currently adopted by the lessee and, as is the case now, being informed by a soil testing regime. It is noted that the application of fertiliser is not restricted to GRL properties but adopted on all properties as a means of increasing or maintaining agricultural productivity.

2.29.7 Surface Water Controls

2.29.7.1 Representative Comment(s)

Potential for river bank erosion due to increased flows in Oaky Creek as a result of clean water diversion.

The EIS indicates that the change in hydraulic condition is small and would only occur in floods during mining phase when diversion channel is operational. Post mining the diversion channel is substantially removed. Some bank erosion currently occurs in lower section of Oaky Creek. Riparian conditions are generally poor. Bank erosion predicted to occur during flood events. Flood events will occur during the life of the mine. Predicted increased storm intensity warrants preventative action to ensure stream banks are naturally resilient.

Mid-Coast Council – Page 42

Response

Contrary to the statement by DPI-Water, there is no reference to the construction of a dam or any other form of energy dissipation on Oaky Creek in the EIS for the amended Project. The EIS text and figures and the SWA (Section 3.2) identify that, where the diversion channels cross deep gullies, small embankments would be constructed to maintain the slopes of the channels, thereby creating a series of detention structures or dissipation dams that would assist in reducing flow velocities within the channels at the downstream ends of both channels. Where the channels extend into steep watercourses draining to Oaky and Waukivory Creeks, they would be rock lined and incorporate energy dissipation. With respect to the impact of the diversion channel discharges on the geomorphic stability of Oaky Creek, the SWA (page 5-155) states:

The impacts of the amended Project on key hydraulic parameters affecting geomorphic stability are presented in Figure 4.29. The figure shows the results of hydraulic analysis of the Oaky Creek channel in a 1 in 10 AEP flood event (which is close to bank-full flow) using the HEC-RAS software (see Figure 4.30). The figure indicates the magnitude of the impact of the amended Project on section-averaged parameters along the length of the channel. The increase is reasonably uniform along the channel, with the median increase in velocity, stream power and shear stress being 5%, 14% and 8% respectively.

Under existing conditions, 10% of cross-sections have parameter values, exceeding the following:

- Channel Velocity 2.7m/s;
- Channel Stream Power 181N/m²;
- Channel Shear Stress 482N/m².

These high energy zones are identified in Figure 4.30, and are generally associated with a locally steep channel profile eroded into bedrock (see Photographs in Appendix A). Figure 4.31 shows the flood velocity impact predicted by the TUFLOW hydraulic model.

While the small increase in energy resulting from the clean water diversion will result in a potential increased erosion risk along the channel, the resultant parameters are within the envelope of currently occurring values. It should also be noted that these conditions would be expected to occur naturally in a flood of

a slightly larger magnitude (the design discharge of the 1 in 10 AEP flood is increased to that of the pre-mine 1 in 20 AEP flood).

As the potential change in hydraulic conditions is small, and would only occur in floods during the relatively short period of mine operations, it is likely the amended Project would have no significant impact on the geomorphic stability of Oaky Creek.

Notwithstanding, detailed baseline and post flow event stability monitoring should be undertaken along the affected reaches of Oaky Creek. The monitoring should include documenting all reaches through photographs ground survey and written descriptions so that changes to channel morphology attributable to the increase in streamflow can be identified through comparisons with the baseline channel survey, and appropriate erosion control measures implemented if necessary.

GRL would also be prepared to undertake preventative revegetation works within those 'riparian' sections of Oaky Creek downstream of the diversion outlet that may be susceptible to increased rates of erosion, subject to the agreement with the landowner³³ and receipt of any requisite approvals from the relevant regulatory authorities, if required.

The impact of the diversion channels on flood behaviour in Oaky Creek has been assessed for a range of flood flows up to the 1 in 100 AEP design flood event (refer Appendix C – Section 4.5.2 of the SWA). The 1 in 10 AEP design flood event was used as the focus of the geomorphic stability analysis of Oaky Creek as this generally represents bank full flow along the length of the Oaky Creek channel.

Further details of the basis of the conclusion that the amended Project would have no significant impact on the geomorphic stability of Oaky Creek are provided below.

It is generally recognised that flows close to the bankfull discharge are the dominant conditions responsible for the shaping of river morphology (Parsons et. al., (2009)³⁴) and National Water Commission – Waterlines, 2008³⁵). Bank full flow is the flow that fills the channel from bank to bank before excess flow spills into the adjacent floodplain and is generally considered the channel forming flow or dominant discharge (Leopold et. al., 1964³⁶). For this reason, and given the very low probability of occurrence during the life of the amended Project, it is not considered appropriate to assess the risk of increased flow volumes and velocities on stream bank and channel stability, up to the Maximum Probable Flood. During extreme floods, significant erosion of the Oaky Creek channel can be expected with or without the amended Project in place.

³³ GRL owns the land across which most of Oaky Creek flows downstream from the northern diversion outlet. A 300m section of Oaky Creek is located on land owned by R.B. and L.R. Campbell.

³⁴ Parsons M., Thomas M., Capon T., Capon S. and Reid M. (2009), *Resilience and thresholds in river ecosystems*, Waterlines Report Series No. 21, Australian Government National Water Commission, September 2009

³⁵ Parsons M., Thomas M., Capon T., Capon S., Reid M. (2009), *Resilience and thresholds in river ecosystems*, Waterlines report, National Water Commission, Canberra
http://content.webarchive.nla.gov.au/gov/wayback/20091002011152/http://www.nwc.gov.au/resources/documents/Waterlines_Resilience_exec_summary.pdf

³⁶ Leopold L.B., Wolman M.G., and Miller J.P. (1964), *Fluvial Processes in Geomorphology*, W.H. Freeman, San Francisco, California

The applicability of this concept to streams within and adjacent to the Mine Area is supported by the fluvial geomorphological assessment for the Stratford Extension Project EIS undertaken by Fluvial Systems Pty. Ltd (Gippel, 2012³⁷). That study assessed the impact of an existing diversion on the geomorphological character of an unnamed tributary of Avondale Creek. The diversion was constructed over 10 years ago and increased the catchment area of the unnamed tributary by 318%.

The assessment found there were no indications of major change in channel form, with the resilience of the channel attributed to the dense vegetation cover, high channel roughness and the relatively low absolute catchment area. Oaky Creek shares similar geomorphological characteristics to the unnamed tributary of Avondale Creek, including dense vegetation and high channel roughness. On the evidence of the channel conditions observed during field investigations, there has not been significant erosion in Oaky Creek in recent years, despite significant flows occurring over this period. Oaky Creek is therefore also likely to be relatively resilient to frequently occurring and minor increases in streamflows.

A commonly used measure of the potential for morphological change is stream power. Stream power varies significantly along Oaky Creek (refer Appendix C – Section 4.5.2 of the SWA). Hydraulic modelling showed there would be increases in stream power resulting from the clean water diversion. However, with the exception of conditions at a number of “nick points”, the resultant stream power is well within the envelope of currently occurring values, and would be unlikely to cause significant erosion in a well vegetated stream with a cobble bedload.

The increase in stream power would increase the risk of channel change in those areas where stream power is greatest. However, the increase would be temporary, and could be expected to eventually occur anyway during larger flood events (the design discharge of the 1 in 10 AEP flood is increased to that of the pre-mine 1 in 20 AEP flood). In the event that any damage to the banks of the creek are confirmed to be attributed to the additional runoff from the Mine Area, GRL would be investigate and implement relevant mitigation measures.

Finally, it is worth noting that the projected increase in catchment area in Oaky Creek attributable to the amended Rocky Hill Coal Project would be up to 13.3%, i.e. well below the 318% referred to in the study by Gippel (2012).

The maximum predicted decrease in flow in the 4.4 km reach of Waukivory adjacent to the site is 2.1%. The impact of this short-term, minor reduction in streamflow on the risk of stream erosion, morphology or ecology of Waukivory Creek would be minimal.

³⁷ Gippel C.J. (2012), *Fluvial geomorphological assessment for Stratford Extension Project EIS*, Fluvial Systems Pty Ltd, Stockton, Stratford Coal Pty Ltd, May 2012

3. RESPONSE TO PROPOSED CONDITIONS OF CONSENT

3.5 MID-COAST COUNCIL

3.5.1 Conditions

This section provides GRL's response to conditions recommended by Mid-Coast Council. It is noted that GRL does not accept a number of the conditions as they are inconsistent with the approach taken by GRL in its design and proposed operation of the amended Project. Further, a number of the conditions relate to matters that are administered by a range of Stage Government Agencies who, together with the DPE have developed standard conditions to be imposed on coal mine developments in NSW.

3.5.1.1 Management and Mitigation and Contingency Measures

1. *Compliance with the Management and Mitigation and Contingency Measures referred to in the EIS subject to the following amendments:*

- *Recommendation 1 - Establish a Rocky Hill Coal Project Community Consultative Committee - be amended to require two (2) representatives of Council; and*
- *Recommendation 4 – Establish a Trust (or contribute to an existing Trust) to administer the Funds Provided under the Community Grants Programme with clearly defined application and eligibility criteria – be amended and substituted with a Voluntary Planning Agreement (VPA) to be entered into between Mid-Coast Council and the applicant. Under the agreement, the applicant would agree to fund a range of community projects in accordance with the Community Grants Programme.*

Response

In relation to Recommendation 1, GRL would seek to establish the CCC in accordance with the 2016 Guideline – which nominates only one Council representative on the committee. GRL does not accept Recommendation 4 above for the reasons explained in Response 2.28.4.2 within this document.

3.5.2 Strategic Planning

2. *The proponent of the Rocky Hill Project to contribute and/pay the costs towards an additional land use and/or residential/housing study/strategy that will be used to identify further residential release areas in the vicinity of Gloucester to cater for population growth and expansion of the urban footprint. Such a study/strategy should compensate Council for the compromising of already identified residential release areas that will occur as a result of the Project and its buffers and residential exclusion zones.*

Response

Discussion relevant to this issue is provided in Section 2.24.2 of this document.

3.5.3 Blasting and Vibration

3. *A Blast Management Plan (BMP) must be prepared for each individual proposed blast. Each BMP must be independently reviewed to ensure that any modifications or changes are adequately accounted for. The BMP must be designed to ensure that all prescriptive criteria will be met and there are no adverse impacts at any privately owned residence.*

Response

Reliance should be placed upon the standard condition imposed by DPE and/or EPA. Reference to a plan being prepared for each individual proposed blast is not appropriate or practical.

4. *The BMP must take into consideration the health of occupants and structural impacts of any blast on privately owned and Resource Company owned residencies and modify the BMP accordingly.*

Response

Reliance should be placed upon the standard condition imposed by EPA and/or DPE.

5. *In the event that a blast event does not comply with the BMP or any other condition/licensing agreement, a report must be prepared and submitted to the NSW EPA, outlining where the BMP failed and must list any proposed actions to be undertaken to ensure that future non-compliance does not re-occur. Any alterations or modifications must be supported by an independent suitably qualified consultant.*

Response

Reliance should be placed upon the standard condition imposed by EPA and/or DPE.

6. *The provision of material safety data sheets relative to the types of products being used should be made readily available to all persons involved in the blasting process.*

Response

This requirement would be covered through the administration of *Explosives Act 2003* and *Explosives Regulation 2005*.

7. *Any blast within 1,274m of 18 Collins & Barrett must restrict the MIC to a maximum of 575kg.*

Response

Reliance should be placed upon the standard condition imposed by EPA and/or DPE.

8. *Any blast within 1,399m of 19A Boorer must restrict the MIC to a maximum of 760kg.*

Response

Reliance should be placed upon the standard condition imposed by EPA and/or DPE.

-
9. *Air blast Overpressure - The maximum level for air blast overpressure is 115dB (Lin Peak). The level of 115dB may be exceeded on up to 5% of the total number of blasts over a 12 month period.*

Response

Reliance should be placed upon the standard condition imposed by EPA and/or DPE. This recommended condition duplicates EPA's recommended Condition 44.

-
10. *Ground Vibration - The maximum level for ground vibration is 5mm/s PVS (Peak Vector Sum). The PVS level of 5mm/s may be exceeded up to 5% of the total number of blasts over a 12 month period.*

Response

This recommended condition duplicates EPA's recommended Condition 46.

-
11. *Blast and vibration monitoring sites shall be established in appropriate locations to the satisfaction of Department of Planning and Environment to ensure that no privately owned residence is impacted upon. The location of the monitoring sites shall be determined by a suitably qualified independent consultant.*

Response

Reliance should be placed upon the standard condition imposed by EPA and/or DPE.

3.5.4 Traffic and Transport

-
12. *No heavy vehicles shall enter the site or leave the site outside of the hours of 7:00am - 8:00pm weekdays and Saturdays; and 8:00am - 7:00pm Sundays and Public Holidays.*

Response

The imposition of this condition is unwarranted given other heavy vehicles are able to travel on the local and regional road network at any time of the day or night.

3.5.4.1 Waukivory Road - North of Jacks Road

-
13. *Waukivory Road between Jacks Road and The Bucketts Way (including intersections) must have Dilapidation reports* undertaken before the construction phase commences and at the completion of the construction phase. The reports will be used to determine any damage and deterioration of the road during this construction phase and the applicant will*

make a contribution to Council to cover the costs of any damage and deterioration established in the reports.

** All Dilapidation reports are to be provided by suitably qualified road inspectors.*

Response

Discussion relevant to this issue is provided in Sections 2.27.1.1 and 2.27.2.1 of this document.

3.5.4.2 Waukivory Road – East of Jacks Road

14. *Waukivory Road between Jacks Road and McKinleys Lane to be reconstructed to the same dimensions as Jacks Road and an asphalt concrete pavement designed to Council requirements. The pavement width will be two travel lanes of 3.5m width and sealed shoulders on each side of 1m width. The road to be designed to AustRoads' "Guide for Road Design" and approved by Council.*

A permanent traffic classifier, for the life of the mine, to be installed in this section of Waukivory Road using inductive loops within the pavement including a permanent secure housing for the classifier at no cost to Council. Council to have unrestricted access to the data from this classifier at any time.

Response

Discussion relevant to this issue is provided in Section 2.27.3 of this document.

3.5.4.3 Jacks Road

15. *Jacks Road between The Bucketts Way and Waukivory Road to be reconstructed to have two travel lanes of 3.5m width and sealed shoulders on each side of 1m width (9m full constructed width). The road to be an asphalt concrete pavement designed to Council requirements. The road to be designed to AustRoads' "Guide for Road Design" and approved by Council.*

The bridge to be replaced over the Avon River will have 3.5m traffic lanes as the rest of the road with safe edge spacing to the bridge sides/rails. The footpath on the bridge will be located on the north side of the vehicular section with a safety barrier between the vehicular lane and footpath. The footpath will be a shared pathway of 2.5m in width to cater for pedestrians and cyclists. The bridge will be constructed in concrete designed to Council requirements.

Australian Rail Track Corporation (ARTC) to be requested to review the safety and operation of the railway level crossing on Jacks Road and recommend any safety improvements to be undertaken by the applicant.

Response

Discussion relevant to this issue is provided in Section 2.27.4 of this document.

3.5.4.4 Fairbairns Road

16. *The proposed crossing of Fairbairns Road by the Haul Road will have a Short Term lease under the Roads Act (Part 10 Division 2 – Sections 153 to 157) between the Applicant and Council. The proposed design of the grade separated intersection of Fairbairns Road and the Haul Road to be designed to AustRoads’ “Guide for Road Design” and approved by Council including the Short Term Lease.*

The existing bridges on Fairbairns Road that cross the Avon River are not suitable for the heavy vehicles to be used in the construction of the Haul Road underpass. The existing temporary bridge is to be assessed by an independent structural bridge consultant to determine if it can cater for the proposed heavy vehicles and, if not, a new bridge is to be built to cater for the heavy construction vehicles or another option agreed to by Council.

Fairbairns Road between The Bucketts Way and new Haul Road (including intersections) must have Dilapidation reports undertaken before the construction phase commences and at the completion of the construction phase. The reports will be used to determine any damage and deterioration of the road during this construction phase and the applicant will make a contribution to Council to cover the costs of any damage and deterioration established in the reports.

ARTC to be requested to review the safety and operation of the railway level crossing on Fairbairns Road and recommend any safety improvements to be undertaken by the applicant.

Response

Discussion relevant to this issue is provided in Section 2.27.5 of this document.

3.5.4.5 McKinleys Lane

17. *McKinleys Lane south of Waukivory Road will need to be closed as a public road and purchased from Council to become privately owned land by the Applicant. The new access road will be required to meet with Council standards for internal roads and driveways.*

Response

GRL would support the closure of the section of the road beyond the entrance to the Mine Area. It is noted that GRL has no need to own the subject land, however, its possible purchase would be discussed with Council following the closure of the road.

3.5.4.6 The Bucketts Way – Jacks Road to Pacific Highway

18. *During the construction phase of the mine, the applicant shall make a contribution to Mid-coast Council in the amount of \$83,485.50 for impacts of mine-generated heavy vehicle traffic over the 70km length of the Bucketts Way from the border of Port Stephens Council to the mine site.*

The contribution is based on the following details. Construction phase - 12 months as per GR LTD Part 9 Transport Assessment Section 5.9.1. - 13 heavy vehicle movements per day.

Previous agreements with Stratford Coal Pty Ltd provided for a 19.25km section of The Bucketts Way previously agreed with the former Gloucester Shire Council with a contribution rate of \$1,175.03 per km. (2014 dollars). The dollar values are subject to annual indexation in accordance with the CPI. Therefore, 70km x \$1,192.65 (2015 dollars) = \$83,485.50

Response

Section 2.27.1 and 2.27.7 provides the background to GRL's proposed approach to funding road maintenance. The EIS (Section 4.9.3) records that "Payment of an annual contribution towards the maintenance of The Bucketts Way with the contribution calculation method consistent with that in Development Consent SSD4966 for the Stratford Extension Project."

19. *The applicant shall make an ongoing contribution during the operational phase to Midcoast Council for maintenance of The Bucketts Way each year to ensure the road's safe condition. This amount should be based on the number of heavy vehicles that are accessing the mine site. Determination of the number of heavy vehicles shall be obtained from the traffic counter placed in Jacks Road. Determination of the contribution will be based on the former Great Lakes Council Section 94 Contribution - Road Haulage rates assuming an average of 20 tonne per heavy vehicle over a distance of 75 kilometres.*

Response

Section 2.27.1 and 2.27.7 provides the background to GRL's proposed approach to funding road maintenance. The EIS (Section 4.9.3) records that "Payment of an annual contribution towards the maintenance of The Bucketts Way with the contribution calculation method consistent with that in Development Consent SSD4966 for the Stratford Extension Project."

3.5.4.7 Heavy Vehicle Bypass through Gloucester Township

20. *The route of the Heavy Vehicle Bypass through the Gloucester Township is to be approved by Council.*

The applicant shall cover the costs of pavement restoration due to any damage done during the construction phase by the heavy vehicles travelling through the Gloucester township approved bypass. The determination of any restoration work will be done before and after independent Dilapidation reports. The reports will be used to determine any damage and deterioration of the road during this construction phase and the applicant will make a contribution to Council to cover the costs of any damage and deterioration established in the reports.*

Council will not be approving any Over Size and Over Mass (OSOM) vehicles through the town of Gloucester including the approved Heavy Vehicle Bypass as the roads within the township are unsuitable for OSOM vehicles. All OSOM vehicles are to arrive on-site from the south via The Pacific Highway and The Bucketts Way.

A dilapidation report must be prepared by an independent and qualified road inspection consultant and submitted to Council. The required dilapidation report must document and

provide photographs that clearly depict any existing damage to the road, kerb, gutter, footpath, piped culverts, driveways, water supply, sewer works, street trees, street signs and any other Council assets in the vicinity of the assessed area. These reports will be used by Council to determine the extent of damage arising from the works undertaken at the mine. Any damage not shown in the Dilapidation reports submitted to and approved by Council prior to the works commencing, will be assumed to have been caused as a result of the mine works undertaken with respect to the mine and must be rectified at the applicants expense.

Response

Discussion relevant to this issue is provided in Section 2.27.8 of this document.

3.5.5 Intersections

3.5.5.1 The Bucketts Way and Jacks Road

21. The Bucketts Way at Jacks Road intersection be upgraded with a channelised right turn bay (CHR) and auxiliary left turn lane (AUL) as proposed in the applicant's traffic report. The right turn bay on The Bucketts Way be designed to hold two 30m B-Double trucks. The intersection to be designed using AustRoads "Guide to Road Design" and approved by RMS and Mid-Coast Council.

The applicant to request the RMS to move the change to the 60km/h speed limit from 700m north of Jacks Road to south of the intersection before the construction phase starts.

Response

GRL would accept this recommended condition.

3.5.5.2 Jacks Road and Waukivory Road

22. Jacks Road at Waukivory Road intersection be upgraded with an auxiliary right turn on Jacks Road as proposed in the applicant's traffic report. The intersection to be designed using AustRoads "Guide to Road Design" and approved by Council.

Response

GRL would accept this recommended condition.

3.5.5.3 Waukivory Road and McKinleys Lane

23. Waukivory Road at McKinleys Lane intersection be upgraded with an auxiliary right turn on Waukivory Road as proposed in the applicant's traffic report. The intersection to be designed using AustRoads "Guide to Road Design" and approved by Council.

Response

GRL would accept this recommended condition.

3.5.5.4 Haul Road

24. *The private Haul Road between Rocky Hill Mine and Stratford Mine will be designed to ~~generally in accordance with~~ AustRoads' "Guide for Road Design" and be surfaced with ~~asphalt concrete~~ bituminous seal.*

There will not be permanent lighting along this Haul Road.

Extent of construction to be to the boundary of the Stratford Mining Complex.

Response

GRL would accept this recommended condition with the suggested tracked amendment. The surfacing of the private haul road with asphaltic concrete is unwarranted.

3.5.5.5 Traffic Management Plans (TMP) and Traffic Control Plans (TCP)

25. *Traffic Management Plans and Traffic Control Plans for all construction work on the road network are to be done by RMS accredited persons and approved by Council.*

Response

GRL would accept this recommended condition.

3.5.6 Air Quality

26. *The Applicant shall prepare and implement an Air Quality Management Plan prior to the commencement of works for the development to the satisfaction of the Secretary. This plan must:*

- (a) be prepared in consultation with the EPA, and submitted to the Secretary for approval prior to 31 December 2017, unless otherwise agreed by the Secretary;*
- (b) describe the measures that would be implemented to ensure compliance with the relevant air quality criteria and operating conditions of this consent;*
- (c) describe the proposed air quality management system; and*
- (d) include an air quality monitoring program that:*
 - uses a combination of real-time monitors and supplementary monitors to evaluate the performance of the development against the air quality criteria in this consent;*
 - adequately supports the proactive and reactive air quality management system;*
 - evaluates and reports on:*
 - the effectiveness of the air quality management system; and*
 - compliance with the air quality operating conditions; and*

- defines what constitutes an air quality incident, and includes a protocol for identifying and notifying the Department and relevant stakeholders of any air quality incidents.

Response

Reliance should be placed upon the standard condition imposed by EPA and/or DPE.

27. The Applicant shall ensure that all reasonable and feasible avoidance and mitigation measures are employed so that particulate matter emissions generated by the development do not cause exceedances of the criteria in the table below at any residence on privately-owned land.

Pollutant	Averaging Period	^c Criterion
Particulate Matter <10µg/m ³ (PM ₁₀)	Annual	30µg/m ³
Particulate Matter <10µg/m ³ (PM ₁₀)	24 Hour	50µg/m ³
Particulate Matter <2.5µg/m ³ (PM _{2.5})	Annual	7µg/m ³
Particulate Matter <2.5µg/m ³ (PM _{2.5})	24 Hour	20µg/m ³
Total Suspended Particulates (TSP)	Annual	90µg/m ³
Deposited Dust	Annual	^a 2g/m ² /month ^b 4g/m ² /month

Notes:

- a Maximum increase in deposited dust level.
- b Maximum total deposited dust level.
- c Any change to national air quality criteria during shall be taken to replace listed criterion as maximum standards.

Response

Reliance should be placed upon the standard condition imposed by EPA and/or DPE.

28. If the development causes an exceedance of the National Environment Protection (Ambient Air Quality) Measure or NSW Environment Protection Authority criteria, the Applicant shall, upon receiving a written request for air quality mitigation measures from the landowner of any affected property, undertake air quality mitigation measures directed towards reducing the potential human health and amenity impacts of the development at a privately-owned residence. These measures may include (for example):

- (a) air conditioning, including heating;
- (b) insulation;
- (c) first flush water systems;
- (d) installation and regular replacement of water filters;
- (e) cleaning of rainwater tanks;
- (f) clothes dryers; and

- (g) regular cleaning of any privately-owned residence and its related amenities, such as barbeque areas and swimming pools.

If within 3 months of receiving this request from the owner, the Applicant and the owner cannot agree on the measures to be implemented, or there is a dispute about the implementation of these measures, then either party may refer the matter to the Secretary for resolution.

Response

Reliance should be placed upon the standard condition imposed by EPA and/or DPE.

-
29. *For the life of the development, the Applicant shall ensure that there is a meteorological station in the vicinity of the site that:*

- (a) complies with the requirements in the Approved Methods for Sampling of Air Pollutants in New South Wales guideline and the NSW Industrial Noise Policy; and*
- (b) is capable of continuous real-time measurement of temperature lapse rate data that are able to be transformed accurately and repeatedly, and no more favourably, to those that would be obtained by the use of a 60m tower, to the satisfaction of the EPA.*

Response

Reliance should be placed upon the standard condition imposed by EPA and/or DPE.

-
30. *All trafficable areas, coal storage areas and vehicle manoeuvring areas in or on the premises must be maintained at all times in a condition that will minimise the generation or emission of wind-blown or traffic generated dust.*

Response

Reliance should be placed upon the standard condition imposed by EPA and/or DPE.

-
31. *Minimisation of Dust*

Activities occurring in or on the premises must be carried out in a manner that will minimise the generation, or emission of traffic generated or wind-blown dust.

Response

Reliance should be placed upon the standard condition imposed by EPA and/or DPE.

-
32. *Covering of Haul Trucks*

The trailers of laden haul trucks travelling on the private haul road must be covered.

Response

Discussion relevant to this issue is provided in Section 2.4.16.1 of this document.

3.5.7 Noise

33. *A Construction Noise Management Plan that includes all feasible and reasonable mitigation measures to minimise noise impacts at residential premises must be developed and be submitted to the NSW Environment Protection Authority for comment prior to the commencement of any construction or site establishment works.*

Response

Reliance should be placed upon the standard condition imposed by EPA and/or DPE.

34. *The Applicant shall prepare and implement a Noise Management Plan for the development to the satisfaction of the Secretary. This plan must:*

- (a) be prepared in consultation with the EPA, and submitted to the Secretary for approval prior to 31 December 2017, unless otherwise agreed by the Secretary;*
- (b) describe the measures that would be implemented to ensure:*
 - compliance with the noise criteria and operating conditions of this consent; and*
 - the noise impacts of the project are minimised during meteorological conditions when the noise limits of this consent do not apply;*
- (c) describe the proposed noise management system in detail;*
- (d) include a monitoring program that:*
 - includes monitoring of inversion strength at an appropriate sampling rate to determine compliance with noise limits;*
 - provides for the biennial validation of the noise model for the project.*
 - evaluates and reports on:*
 - the effectiveness of the on-site noise management system;*
 - compliance against the noise criteria in this consent; and*
 - compliance with the noise operating conditions;*
 - includes a program to calibrate and validate real-time noise monitoring results with attended monitoring results over time (so the real-time noise monitoring program can be used as a better indicator of compliance with the noise criteria and as a trigger for further attended monitoring); and*
 - defines what constitutes a noise incident, and includes a protocol for identifying and notifying the Department and relevant stakeholders of any noise incidents.*

Response

Reliance should be placed upon the standard condition imposed by EPA and/or DPE.

35. Received noise levels at any premise must not exceed those listed in Table 19 of the Noise Vibration and Blasting Assessment prepared by SLR Consulting Australia Pty Ltd, Report No. 806/14, dated July 2016.

Noise generated by the development is to be measured in accordance with the relevant requirements of the NSW Industrial Noise Policy. Appendix 6 sets out the meteorological conditions under which these criteria apply and the requirements for evaluating compliance with these criteria.

However, these criteria do not apply if the Applicant has a negotiated agreement with the owner/s of the relevant privately-owned residence or land to generate higher noise levels, and the Applicant has advised the Department in writing of the terms of this agreement.

Response

Reliance should be placed upon the standard condition imposed by EPA and/or DPE.

36. Hours of Operation

Activity	Days*	Hours
Mining (Year 1 to 3)	Monday - Saturday	7:00am - 6:00pm
Mining (Year 4 onwards)	Monday – Saturday	7:00am - 10:00pm
Breaker Station Operations	Monday - Saturday**	7:00am - 6:00pm
Coal Haulage (via Private Haul Road)	Monday - Saturday**	7:00am - 6:00pm
Maintenance	Monday - Saturday Sunday Monday - Sunday	7:00am - 6:00pm 8:00am - 10:00pm All other hours***
* Public Holidays excluded **Operations only permitted to occur on a Saturday in the event protracted operational time is lost during week days. ***Activities only permitted if not audible at privately-owned residences / receivers.		

Response

Reliance should be placed upon the standard condition imposed by EPA and/or DPE.

37. Upon receiving a written request from the owner of Property ID 6 - Campbell, the Applicant shall implement additional noise mitigation measures (such as double glazing, insulation, and/or air conditioning) at the residence in consultation with the owner. These measures must be reasonable and feasible and directed towards reducing the noise impacts of the development on the residence. If within 3 months of receiving this request from the owner, the Applicant and the owner cannot agree on the measures to be implemented, or there is a dispute about the implementation of these measures, then either party may refer the matter to the Secretary for resolution.

This noise mitigation request must also apply to any additional property where noise levels are consistently shown to exceed project specific noise levels during the life of the project.

Response

Reliance should be placed upon the standard condition imposed by EPA and/or DPE.

38. *Site establishment and construction activities shall only be permitted to be undertaken between the hours of 7:00am to 6:00pm Monday to Friday and 8:00am to 1:00pm on Saturdays. No work is permitted on Sundays or public holidays.*

Response

Reliance should be placed upon the standard condition imposed by EPA and/or DPE.

3.5.8 Building Works

39. *All building work must be carried out in accordance with the requirements of the Building Code of Australia as in force on the date the application for the relevant construction certificate or complying development certificate was made.*

Response

Reliance should be placed upon the standard condition imposed by DPE.

40. *Prior to the commencement of any building construction work (including excavation), a construction certificate must be issued by a certifying authority.*

Enquiries regarding the issue of a construction certificate can be made to Council's Customer Service Centre on 6591 7222.

Response

Reliance should be placed upon the standard condition imposed by DPE.

41. *Prior to the commencement of any building construction work (including excavation), the person having the benefit of the development consent must appoint a principal certifying authority and give at least two (2) days' notice to Council, in writing, of the persons intention to commence construction work.*

Response

Reliance should be placed upon the standard condition imposed by DPE.

42. *Prior to the commencement of work, toilet facilities must be provided at or in the vicinity of the work site at the rate of one toilet for every 20 persons or part of 20 persons employed at the site. Each toilet provided must be a toilet connected to an accredited sewage management system approved by the Council.*

Response

GRL would accept this recommended condition.

43. *Prior to the commencement of work, a sign or signs must be erected in a prominent position at the frontage to the site.*

- a) showing the name, address and telephone number of the principal certifying authority for the work, and*
- b) showing the name of the principal contractor (if any) for any building work and a telephone number on which that person may be contacted outside working hours, and*
- c) stating that unauthorised entry to the work site is prohibited.*

The sign is to be maintained while the building work, subdivision work or demolition work is being carried out, but must be removed when the work has been completed.

Response

Reliance should be placed upon the standard condition imposed by DPE.

3.5.9 Biodiversity Management Plan

44. *The Applicant shall prepare and implement a Biodiversity Management Plan for the development to the satisfaction of the Secretary. This plan must:*

- (a) be prepared in consultation with OEH and MidCoast Council;*
- (b) be submitted to the Secretary for approval within 3-months of the date of this approval;*
- (c) describe how this strategy and its implementation will be integrated with other relevant biodiversity and rehabilitation strategies;*
- (d) include a description of the vegetation communities and values of the site and the biodiversity offset area, including as habitat for threatened fauna species that have been recorded in the approved disturbance area;*
- (e) include consideration of local and sub-regional connectivity values of the site and the biodiversity offset area;*
- (f) describe the short, medium and long-term measures (including staging/timing) that would be implemented to:*
 - manage the remnant vegetation and habitat on the site;*
 - maintain and enhance biodiversity values in the biodiversity offset area to offset the loss of biodiversity values in the approved disturbance area; and*
 - deliver the biodiversity offset strategy*
- (g) include detailed performance and completion criteria for evaluating the performance of the biodiversity offset strategy, and triggering remedial action (if necessary);*

(h) include a detailed description of the measures (and their timing and inclusive of any details relating to the engagement of contractors) that would be implemented for:

- creating a single conservation lot for the biodiversity offset area*
- encouraging the adoption of an E2 zone over the area of the biodiversity offset area through consultation with MidCoast Council;*
- enhancing the quality of existing vegetation and fauna habitat on the site and in the biodiversity offset area;*
- establishing native vegetation and fauna habitat in the biodiversity offset area and final landform through assisted natural regeneration, targeted vegetation establishment and the introduction of naturally scarce fauna habitat features (where necessary);*
- prescribing the active revegetation of derived grasslands of the biodiversity offset area as functional indigenous native vegetation types, including the active expansion of areas of Dry Rainforest;*
- enhancing the landscaping of the site and along public roads to minimise visual and lighting impacts;*
- protecting vegetation and soil outside the approved disturbance area;*
- maximising the salvage of resources within the approved disturbance area - including logs, mulched felled vegetation and top-soil – for beneficial reuse in the biodiversity offset area;*
- introducing hollow-bearing habitat features to the biodiversity offset area;*
- collecting and propagating seed;*
- minimising the impacts to fauna on site;*
- undertaking pre-clearance surveys and relocations of threatened biodiversity;*
- managing any potential conflicts between the proposed restoration works in the biodiversity offset area and any Aboriginal heritage values (both cultural and archaeological);*
- managing salinity;*
- protecting the biodiversity offset area from light spill from approved mine and disturbance areas;*
- erecting protective fencing;*
- erecting signage;*
- controlling access;*
- controlling weeds;*
- controlling feral pests;*
- controlling erosion;*

- *controlling vehicular access to minimise the potential for vehicle strike of native fauna;*
 - *managing grazing and agriculture (including the provision to exclude grazing from riparian areas of the site and from within the biodiversity offset area);*
 - *controlling access;*
 - *controlling bushfire and implementing ecologically-appropriate bushfire regimes to the biodiversity offset area; and*
 - *managing bushfire risk;*
- (i) *include a Vegetation Clearance Plan including:*
- *clear delineation of disturbance areas and restriction of clearing to the minimum area necessary to undertake the approved activities;*
 - *a methodology for recording the approximate size and number of hollow-bearing trees to be removed, their relocation to the biodiversity offset area after felling (as ground habitat) and the replacement with the same number of nesting boxes of appropriate sizing within the biodiversity offset area;*
 - *a methodology for the management of hollow-bearing trees during vegetation clearing to minimise impacts on hollow-dependent fauna which may be present;*
 - *provision for a suitably trained or qualified person to the satisfaction of the Director-General to be present during the felling of identified hollow-bearing trees to provide assistance with the care of any injured fauna;*
 - *provision for the annual inspection of the nesting boxes for the life of the mine, including the preparation and publication of an inspection report annually to be submitted to OEH and MidCoast Council; and*
 - *provisions for the checking of vegetation to be cleared for threatened fauna species.*
- (j) *include a program to monitor and report on the effectiveness of these measures and progress against the detailed performance and completion criteria every three-years for the life of the mine including independent auditing;*
- (k) *identify the potential risks to the successful implementation of the biodiversity offset strategy, and include a description of the contingency measures that would be implemented to mitigate against these risks; and*
- (l) *include details of who would be responsible for monitoring, reviewing, and implementing the plan.*

Note: The Biodiversity Management Plan and Rehabilitation Management Plan need to be substantially integrated for achieving biodiversity objectives for the rehabilitated mine-site.

Response

Reliance should be placed upon the standard condition imposed by DPE.

3.5.9.1 Operating Conditions

45. *The Applicant must:*

- (a) not destroy, damage, remove or harm any native flora or fauna in the biodiversity offset area; or*
- (b) not carry out in the biodiversity offset area or the vicinity of the biodiversity offset area any activity that may cause, or is likely to result in, or will or might threaten the viability of, native flora or fauna in the biodiversity offset area, or threaten the success of the biodiversity offset strategy; and*
- (c) ensure that its agents, contractors, licensees and invitees (and use best endeavours to ensure that any other persons) also comply with this Condition.*

Response

Reliance should be placed upon the standard condition imposed by DPE.

3.5.9.2 McKinleys Lane significant roadside area

46. *The Applicant shall ~~construct a new mine access road off Waukivory Road to the east of the existing McKinleys Lane and shall rip, remove gravel, revegetate and conserve the existing McKinleys Lane reserve as part of the biodiversity offset area. The new mine access road shall form the new McKinleys Lane following the closure of the mine.~~*

Response

GRL does not accept this condition as provided, although it is recognised that it is appropriate to retain the text relating to the works within the existing McKinleys Lane road reserve north of the proposed administration area. GRL does not support the McKinleys Land road reserve being included in the Biodiversity Offset Area – see Section 2.6.2.9 of this document.

3.5.9.3 Protection of Woodlands, Tree Belts and Corridors on the final landform

47. *The Applicant must establish permanent conservation mechanism(s) to the satisfaction of the Secretary to ensure the in-perpetuity conservation and management of certain elements of the finished landform. The mechanisms shall be progressively adopted as the mine and its rehabilitation progresses, and shall include protection of the following areas of the finished landform:*

- (a) Woodlands*
- (b) Tree belts*
- (c) Corridors*

Response

Reliance should be placed upon the standard condition imposed by DPE.

3.5.9.4 Riparian and Watercourse Management Plan

48. *The Applicant shall prepare and implement to the satisfaction of the Secretary a Riparian and Watercourse Management Plan for the site and GRL holdings. This plan shall be prepared within 6-months of the date of this approval and include:*
- (a) details of all third order and higher watercourses on the site and the GRL holdings;*
 - (b) details of the measures that would be implemented for protection fencing, stock exclusion, revegetation (with natural vegetation communities including River Oak Riparian Forest), erosion control, weed control, feral pest animal control and aquatic habitat enhancement of all third order and higher streams;*
 - (c) details of performance and completion criteria for evaluating the performance of the plan, and triggering remedial action (if necessary);*
 - (d) include a program to monitor, independently audit and report on the effectiveness of the measures and progress against the detailed performance and completion criteria; and*
 - (e) build to the maximum extent practicable on the other management plans required under this consent.*

Response

Reliance should be placed upon the standard condition imposed by DPE.

3.5.9.5 Rehabilitation

Progressive Rehabilitation

49. *The Applicant shall progressively rehabilitate the site as soon as reasonably practicable following disturbance. All reasonable and feasible measures must be taken to minimise the total area exposed for dust generation at any time. Interim rehabilitation strategies must be employed where areas prone to dust generation are not subject to active mining operations but cannot yet be permanently established.*

Response

Reliance should be placed upon the standard condition imposed by DRG and/or DPE.

Rehabilitation Management Plan

50. *The Applicant shall prepare and implement a Rehabilitation Management Plan for the development to the satisfaction of the Secretary. This plan must:*
- (a) be prepared in consultation with the Department, NSW Office of Water, NSW Office of Environment and Heritage and MidCoast Council;*
 - (b) be submitted to the Secretary for approval at least 3-months prior to the commencement of mining operations;*
 - (c) be prepared in accordance with any relevant Department guidelines;*

- (d) describe how the rehabilitation of the site would be integrated with the implementation of the biodiversity offset strategy;
- (e) include detailed performance and completion criteria for evaluating the performance of the rehabilitation of the site, and triggering remedial action (if necessary);
- (f) describe the measures that would be implemented to ensure compliance with the relevant conditions of this consent, and address all aspects of rehabilitation including mine closure, final landform and final land use;
- (g) include interim rehabilitation where necessary to minimise the area exposed for dust generation;
- (h) include a program to monitor, independently audit and report on the effectiveness of the rehabilitation measures and progress against the detailed performance and completion criteria; and
- (i) build to the maximum extent practicable on the other management plans required under this consent.

Note: The Biodiversity Management Plan and Rehabilitation Management Plan need to be substantially integrated for achieving biodiversity objectives for the rehabilitated mine-site.

Response

Reliance should be placed upon the standard condition imposed by DRG and/or DPE.

NOTE

Long-term Security of Offset

Details of any Condition(s) of Consent relating to Long-term Security of the Offset should be deferred until such time as further surveys, assessments and consultation have been undertaken.

Habitat for Threatened Fauna Species

Details of any Condition(s) of Consent relating to the protection, conservation and/or restoration of threatened fauna species habitat should be deferred until such time as further surveys, assessments and consultation have been undertaken.

Management Plans for Squirrel Gliders, Brush-tailed Phascogales and Grey-crowned Babbler

Details of any Condition(s) of Consent relating to threatened species management plans should be deferred until such time as further surveys, assessments and consultation have been undertaken.

Conservation Bond

Details of any Condition(s) of Consent relating to a conservation bond should be deferred until such time as further surveys, assessments and consultation have been undertaken.

Rehabilitation Objectives

Details of any Condition(s) of Consent relating to rehabilitation objectives should be deferred until such time as further surveys, assessments and consultation have been undertaken.



Response

Reliance should be placed upon the standard condition imposed by DPE. GRL believes it has completed all necessary surveys, assessment and consultation for conditions of consent to be imposed that relate to the above matters.

3.5.9.6 Riparian management

51. *Undertake a pre-mining assessment of the riparian and geomorphologic condition of the Oaky Creek, Waukivory Creek and Avon River. In addition undertake aquatic macroinvertebrate assessment using the NSW AusRivAS methodology for all streams within and adjacent to the proposed mine area plus suitable reference sites. Surveys are to be repeated annually for the life of the mine.*

Response

GRL is committed to a realistic aquatic ecological monitoring program as discussed in EIS Section 4.13.7. The approach to ongoing monitoring would be set out in the Aquatic Flora and Fauna Management Plan.

52. *Restore riparian zones within the Rocky Hill project site and maintain to provide water quality improvements and effective riparian buffer.*

Response

Reliance should be placed upon the standard condition imposed by DPE.

53. *Agriculture use of the rehabilitated areas and Gloucester Resources property associated with use of treated excess saline water is to adopt best practice with continuous improvement measured by way of an environmental management system to ensure the intensive use of the land does not degrade receiving waters.*

Response

Reliance should be placed upon the standard condition imposed by DPE.

3.5.10 Sediment and Erosion Management

54. *A Soil and Water Management Plan (SWMP) is to be prepared based on:*

- *criteria in excess of Blue book requirements in recognition of the location of the Rocky Hill proposal within a sensitive catchment;*
- *projected storm frequency and intensity changes for the region associated with climate change.*

Response

Reliance should be placed upon the standard condition imposed by EPA and/or DPE.

54. *The implementation of the SWMP and accompanying Erosion and Sediment Control Plan (ESC) are to be independently audited by a soil conservationist every 6 months for the life of the mine. Audit reports are to be made publically available and the SWMP and ESC revised immediately as required by audit reports.*

Response

Reliance should be placed upon the standard condition imposed by EPA and/or DPE. Furthermore, it is considered that 6 monthly audits are neither practical nor warranted.

55. *The Erosion and Sediment Control Plan (ESC) must ensure that sediment and erosion structures are inspected and repaired before and after predicted peak rainfall events so that any potential and actual failures are quickly detected.*

Response

Reliance should be placed upon the standard condition imposed by EPA and/or DPE.