BLOOMFIELD

MINING OPERATIONS (BLOOMFIELD)

Air Quality Monitoring Program

Ver	Date	Description	By	Chk	App
1	240210	Final Draft	KH	SD	SD
2	090811	Revised Final Draft - incorporating Project Area as approved by Section 75W Modification	KH	GL	SD
3	31/05/12	Revised Final – incorporating DP&I consultation	GL		SG
4	04/09/17	Revised and Updated	GL		BC
5	10/11/17	Revised Final – incorporating DPE consultation	GL		BC
6	20/12/17	Revised Final – incorporating DPE consultation	CK		BC
7	24/09/18	Revised Draft – incorporating Modification 4	GL		CK
8	17/03/20	Final Reviewed	GL		CK
9	15/05/20	Revised Final – incorporating DPI&E consultation	GL		CK
10	06/06/22	Final – Reviewed post IEA	GL		CK

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APPENDICES

INTRODUCTION

This air quality monitoring program (AQMP) has been prepared in response to Project Approval (Approval) 07_0087 granted under section 75J of the Environmental Planning and Assessment Act (EP&A) and modifications to the Approval granted in accordance with Section 75W of the Environmental Planning and Assessment Act 1979.

The air quality monitoring program takes into consideration the Environmental Management Strategy (EMS) for the site, commitments stated in the Part 3A Environmental Assessment (EA), and the various conditions outlined in schedules 2 to 5 of the Approval granted under Section 75 J of the Environmental Planning and Assessment Act 1979 on 3rd September 2009, and modifications issued under Section 75W of the Environmental Planning and Assessment Act 1979.

Condition 16 of Schedule 3 requires:

Requirement	AQMP Reference
The Proponent must prepare an Air Quality Monitoring Program for the project to the satisfaction of the Secretary. This Program must:	
(a) be prepared in consultation with EPA and be submitted to the Secretary for approval within 6 months of the date of this approval; and	Appendix A
(b) include: • a combination of high-volume samplers and dust deposition gauges to monitor the dust emissions of the project and provision for additional real time monitoring if required in response to monitoring results and/or complaints; and	Monitoring
• an air quality monitoring protocol for evaluating compliance with the air quality impact assessment criteria in the approval.	Monitoring
The proponent must implement the Air Quality Monitoring Program as approved by the Secretary	Appendix C

SCOPE

The Program applies to activities associated with Bloomfield's operations covered by the EA. The purpose of the AQMP is to ensure the relevant conditions of the Approval are addressed, commitments made within the EA are followed and the various legislative and guidelines are followed. The primary objective is to monitor air quality impacts from the project.

This AQMP takes into account issues raised during the EA and requirements of Office of Environment and Heritage (EPA) expressed throughout the environmental assessment process. This AQMP has been prepared in consultation with OEH (EPA). Evidence of consultation is provided in Appendix A.

RELATIONSHIP WITH OTHER PLANS

The EMS for the site establishes a frame work for environmental monitoring. The AQMP is an integral component of the EMS and supports the overall environmental objectives for the site.

ROLES AND RESPONSIBILITIES

The company directors are responsible for the overall environmental performance of Bloomfield Colliery. Senior operational managers have direct responsibility for their areas of control while the environmental officer provides direction and advice to ensure that site environmental conformance is maintained. The principal environmental and operational managers are shown in Table 1.

Table 1 OPERATIONAL SITE MANAGEMENT TEAM

Position	Name
CEO	Brett Lewis
Manager of Mining Development	Geoff Moore
Mine Manager	Brad Donoghoe
General Manager Technical Services	Simon Grassby
Environmental Advisor	Greg Lamb

METEOROLOGICAL MONITORING

In accordance with the Project Approval, a meteorological station was installed on site in September 2010. The station is located near the active mining areas adjacent to an existing communications tower. The meteorological station monitors:

- rainfall;
- temperature;
- relative humidity;
- wind speed; and
- wind direction.

Meteorological conditions are taken into account during activities on site that generate dust.

AIR QUALITY GOALS

The Approval provides air quality criteria for depositional dust, particulate matter and total suspended particulates. A summary of the relevant conditions of the Approval in relation to air quality monitoring is provided in Table 2 below. This includes the impact assessment criteria specified for the project in Schedule 3.

Table 2 RELEVANT PROJECT APPROVAL CONDITIONS (EXTRACT FROM SCHEDULE 3)

<table>
<tr><td>Condition</td><td>Requirements</td></tr>
<tr><td>15</td><td>The Proponent must ensure that dust emissions generated by the project do not cause additional exceedances of the criteria listed in Tables 4 at any residence on privately-owned land, or on more than 25 percent of any privately-owned land.

Table 4: Air Quality Criteria
<table>
<tr><th>Pollutant</th><th>Averaging Period</th><th colspan="2">Criterion</th></tr>
<tr><td>Particulate matter < 10 µm (PM_{10})</td><td>Annual</td><td colspan="2">[a,c] 25 µg/m^3</td></tr>
<tr><td>Particulate matter < 10 µm (PM_{10})</td><td>24 hour</td><td colspan="2">[b]50 µg/m^3</td></tr>
<tr><td>Particulate matter < 2.5 µm ($PM_{2.5}$)</td><td>Annual</td><td colspan="2">[a,c] 8 µg/m^3</td></tr>
<tr><td>Particulate matter < 2.5 µm ($PM_{2.5}$)</td><td>24 hour</td><td colspan="2">[b] 25 µg/m^3</td></tr>
<tr><td>Total suspended particulates (TSP)</td><td>Annual</td><td colspan="2">[a,c] 90 µg/m^3</td></tr>
<tr><td>Deposited dust</td><td>Annual</td><td>[b]2 g/m^2/month</td><td>[a]4 g/m^2/month</td></tr>
</table>
Notes:
a Total impact (i.e. incremental increase in concentrations due to the development plus background concentrations due to all other sources).
b Incremental impact (i.e. incremental increase in concentrations due to the project on its own).
c Excludes extraordinary events such as bushfires, prescribed burning, dust storms, fire incidents or any other activity agreed by the Secretary.
d Deposited dust is to be assessed as insoluble solids as defined by Standards Australia, AS/NZS 3580.10.1:2003: Methods for Sampling and Analysis of Ambient Air - Determination of Particulate Matter - Deposited Matter - Gravimetric Method.</td></tr>
</table>

EMISSION PREDICTIONS

The levels of dust emissions have been modeled as part of the Environmental Assessment. A summary of the emission modeling results for the closest affected receivers for incremental and cumulative impacts is contained in Appendix B.

The scenario chosen for assessment (Year 2021) nominally represents the highest level of proposed activity for the life of the mine with a target of 1.3 million tonnes of ROM coal extracted.

CONTROL MEASURES

Dust minimisation management measures to be utilised at Bloomfield Colliery include:

- ❑ The use of predictive meteorological modeling software program which incorporates regional weather station data and forecasts to predict daily weather events that may exacerbate dust impacts from planned operations;
- ❑ Utilisation of real-time on site weather station data to assist in planning decisions;
- ❑ Utilisation of real time "DustTrak" units for the continuous monitoring of PM10.
- ❑ Limiting speed limits of all vehicles on internal roads;
- ❑ Minimising drop heights from equipment for loading and dumping operations;
- ❑ Minimising overburden haul road haulage distances;
- ❑ Utilising water carts to minimise dust impacts on all active areas where equipment is in operation;
- ❑ Rehabilitating disturbed areas as soon as practical following completion of mining operations;
- ❑ Utilising in pit dumps during periods of high winds;and
- ❑ Respirable dust monitoring program for employees.

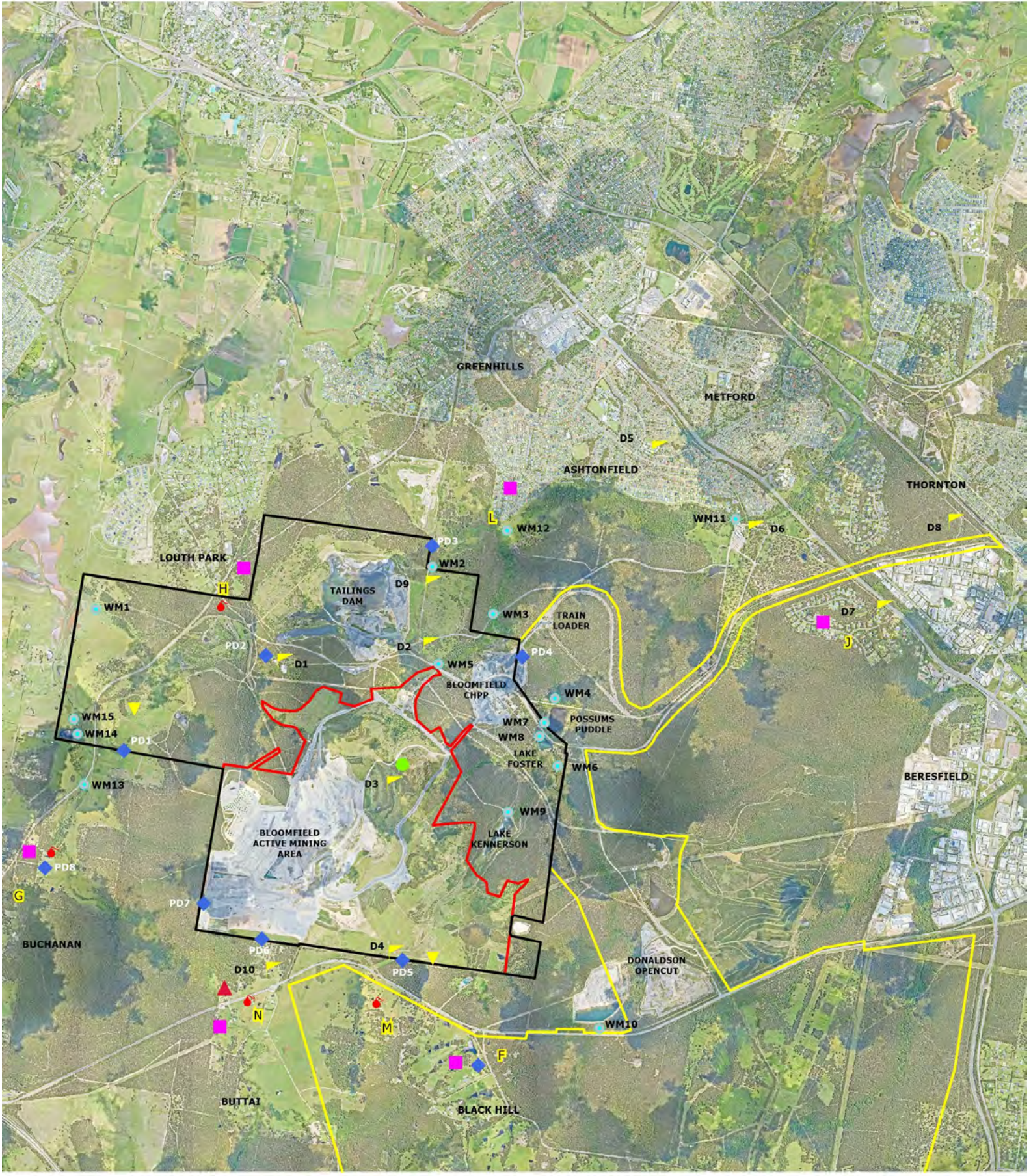
MONITORING

Bloomfield operates a network of dust deposition gauges, high volume air samplers and two DustTrak units to monitor air quality. The dust gauges are installed around the project area (as shown on Figure 1) and will continue to operate as part of this plan. In addition, high volume air samplers to monitor particulate matter ($PM_{2.5}$, PM_{10} and TSP) have been installed to the south of Project Area as shown on Figure 1. The air quality monitoring network also includes two dust track units to measure upstream and downstream particulate matter (PM_{10}) contributions from operations.

Table 3 MONITORING LOCATIONS

Location	Site Description	Site Location
On Lease	D1	Buttai Reservoir
	D2	Tails Dam
	D3	Weather Station
	D4	Lease Boundary – John Renshaw Drive
	D9	Shamrock Lane
	DT1	DustTrack- upwind
	DT2	DustTrak- downwind
Off Lease	D5	Ashtonfield
	D6	Four Mile Workshop
	D7	New England Hwy
	D8	Hunter Rail Line
	D10	John Renshaw Drive, Buttai
	HVOL	John Renshaw Drive, Buttai

The dust gauges have been installed and are managed generally in accordance with AS/NZS 3580.10.1 (2016). $PM_{2.5}$, PM_{10} and TSP monitoring is carried out in accordance with AS/NZS 3580.9.14 (2013), AS/NZS 3580.9.6 (2015) and AS/NZS 3580.9.3 (2015) respectively. The analysis is performed at an accredited National Association Testing Authority (NATA) laboratory. Samples will be tracked from field sampling to final analysis by the completion of field sheets and chain of custody documentation.



LEGEND

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N

- Bloomfield Project Area
- Abel Mine Project Area
- Bloomfield Mining Lease
- Weather Station
- Blast Monitor
- Dust Gauge
- High Volume Air Sampler
- Noise Monitor
- Peizometers
- Water Monitoring
- DustTrak

THE Bloomfield GROUP

Bloomfield Colliery

Air Quality Monitoring Program

Figure 1 Blommfield Coliiery Project Area

Scale: 1:33,333	Date: May 2022 Photo: 30 December 2021	Drawing: A3

Analysis of Results

The following protocol has been established to ensure the results of air quality is compared against the set criteria. The environmental officer reviews results and compares them against the approved criteria on a monthly basis. The environmental officer will ensure that corrective actions are taken where results or trends indicate non compliance or risk of future non compliance with the approved criteria.

The protocol to be followed in the event of an exceedance will be to conduct an assessment to determine:

- The date, time and location of the exceedance;
- Potential influences of non-mine dust sources;
- Climatic conditions at the time of the exceedance; and
- Mining operations at the time of the exceedance.

Based on the above, if the exceedance is determined to be due to Bloomfield operations appropriate management strategies will be implemented.

The monitoring results will be included in the Annual Review, as required under Condition 3 of Schedule 5 of the project approval. The Annual Review will include a summary of monitoring results for the twelve month period against the criteria and previous results, as well as analysis of results with predicted concentrations (App B).

Exceedance of Criteria

In the unlikely event that there is an exceedance of the criteria specified in Table 4 of Schedule 3, an investigation will be undertaken in accordance with Condition 6 of Schedule 5 of the project approval.

Investigation and Reporting of Exceedances

Upon determination of an exceedance and as soon as practicable, Bloomfield will notify the Department of Planning and Environment (DPE) of the exceedance. Within 7 days of the date of the incident, Bloomfield will provide DPE and any other relevant Government agencies a detailed report of the incident.

The report will:
(a) describe the date, time and nature of the exceedance/ incident;
(b) identify the cause (or likely cause) of the exceedance/ incident;
(c) describe what action has been taken to date; and
(d) describe the proposed measures to address the exceedance/incident.

Bloomfield will follow recommendations of the investigation in order to address possible future occurrences.

Community Complaints

Bloomfield's EMS details the procedures for addressing any complaints including air quality issues that may by raised the community. All complaints that are raised by the community and/or government agencies are recorded. Details for each are kept including:

- ❑ date and time of complaint;
- ❑ method by which the complaint was made;
- ❑ personal details of the complainant which were provided by the complainant or, if no such details were provided, a note to that effect;
- ❑ nature of the complaint;
- ❑ the action(s) taken in relation to the complaint, including any follow up contact with the complainant; and
- ❑ if no action was taken, the reason why no action was taken.

The complainant will be followed up to explain the outcome of the investigations. All complaints will be reported in the Annual Review.

SYSTEMS REVIEW AND IMPROVEMENT

The ongoing effectiveness and efficiency of this Management System is monitored as part of the operation's day-to-day management. Feedback from this and other more formal reviews and/ or following special occurrences, form the basis for System improvement and re-design.

General Conditions of Review

In general, Management Systems are reviewed and up-dated conditional as follows:

- ❑ Every three years; or
- ❑ Following any modification to the project approval; or whenever there is a significant change to relevant legislation; or
- ❑ If required to do so by the Regulations; or
- ❑ Whenever there is a significant change to the operations; or
- ❑ If required (in writing) to do so by a government department; or
- ❑ Whenever control measures are found to be ineffective either through:
  - ♦ changes to the working environment; or
  - ♦ changes to operating systems; or
  - ♦ subsequent risk assessments; or
  - ♦ the findings of an audit; or
  - ♦ following a fatality or dangerous incident that could reasonably have been expected to result in a fatality; or
  - ♦ following an assessment of a related safety alert.

Continual Improvement

Operational activities will be subject to regular review to ensure conformance with commitment made in the EMS and subordinate plans and strategies. The air quality monitoring program will be reviewed every three years or more frequently if required to identify areas that may require improvement.

The review process may include formalised procedures such as internal and external audits or feedback from consultation.

DOCUMENT MANAGEMENT

Copies of this document are managed under the Group Document Management, Management System. This document and other relevant documents are kept on site and are available to all employees and contractors (as appropriate).

APPENDIX A

CONSULTATION

s3 c4
OEH Consultation.

NSW GOVERNMENT | Environment, Climate Change & Water

Your reference: DECCW/001KH
Our reference: DOC10/15469, LIC09/250
Contact: Mitchell Bennett, 02 4908 6806

The Bloomfield Group
PO Box 4
EAST MAITLAND NSW 2323

23 APR 2010

Attention: Ms Keren Halliday

Dear Ms Halliday

Bloomfield Colliery
Noise Monitoring Program, Air Quality Monitoring Plan and Blast Monitoring Program

Thankyou for forwarding the above programs for our records. The Department of Environment, Climate Change and Water (DECCW) encourages the development of such programs to ensure that proponents have determined how they will meet their statutory obligations. However, DECCW does not review these documents as all DECCW monitoring requirements are specified in your Environment Protection Licence.

Should you have any questions please phone me on 02 4908 6806.

Yours sincerely

MITCHELL BENNETT
Head Regional Operations Unit – Hunter Region
Environment Protection and Regulation

APPENDIX B

EMISSION PREDICTIONS

(extract from 2017 EA (Mod4)

6.1 Predicted dust concentrations

Table 6-1 presents the predicted particulate dispersion modelling results at each of the assessed sensitive receptor locations. The predicted cumulative $PM_{2.5}$, PM_{10}, TSP and dust deposition levels due to the Project with the estimated background levels are presented in **Table 6-2**.

The results indicate the predicted levels would be below the relevant criteria at the assessed sensitive receptor locations.

Table 6-1: Dispersion modelling results for sensitive receptors – Incremental impact

Receptor ID	$PM_{2.5}$ (µg/m³)		PM_{10} (µg/m³)		TSP (µg/m³)	DD (g/m²/month)
	Incremental impact					
	24-hour average	Annual average	24-hour average	Annual average	Annual average	Annual average
	-	-	-	-	-	2
E	3	<1	17	2	3	<0.1
F	4	1	21	3	5	0.1
G	7	1	38	4	7	0.1
H	7	1	35	7	10	0.1
I	2	<1	9	1	2	<0.1
K	3	<1	16	1	2	<0.1
L	3	1	13	3	5	0.1
M	6	1	29	3	5	0.1
N	4	<1	18	2	4	<0.1

Table 6-2: Dispersion modelling results for sensitive receptors – Cumulative impact

Receptor ID	$PM_{2.5}$ (µg/m³)	PM_{10} (µg/m³)	TSP (µg/m³)	DD (g/m²/month)
	Cumulative impact			
	Annual average			
	8	25	90	4
E	6	16	32	1.5
F	6	17	34	1.6
G	6	18	36	1.6
H	7	21	39	1.6
I	6	15	31	1.5
K	6	15	31	1.5
L	6	17	34	1.6
M	6	17	34	1.6
N	6	16	33	1.5

APPENDIX C

APPROVAL CORRESPONDENCE

Greg Lamb
Environmental Advisor
Bloomfield Group
PO Box 4
EAST MAITLAND NSW 2323

13/07/2020

Dear Greg

Bloomfield Coal Project Name (PA07_0087)
Air Quality Monitoring Program

I refer to the Air Quality Monitoring Program submitted in accordance with Condition 16 of Schedule 3 of the Project Approval for the Bloomfield Coal Project (PA07_0087).

The Department has carefully reviewed the document and is generally satisfied it meets the requirements of the relevant Conditions of Consent.

Accordingly, the Planning Secretary has approved the Air Quality Monitoring Program (Version 9, dated 15 May 2020). Please ensure that the approved plan is placed on the project website at the earliest convenience.

If you wish to discuss the matter further, please contact Wayne Jones on 6575 3406.

Yours sincerely

Matthew Sprott
Director
Resource Assessments (Coal & Quarries)

As nominee of the Planning Secretary