NSW EPA

Our reference: DOC14/501, EF13/2758
Contact: Ross Brylynsky, (02) 4908 6809
Electronic correspondence to: hunter.region@epa.nsw.gov.au

Department of Planning and Infrastructure
GPO Box 39
SYDNEY NSW 2001

Attention: Ms Sophie Butcher

Dear Ms Butcher

MANDALONG SOUTHERN EXTENSION PROJECT (SSD 5144)

Reference is made to your email to the Environment Protection Authority (EPA) on 28 October 2013 requesting comments and Recommended Conditions of Approval in respect of the proposed Mandalong Southern Extension Project (the Project) for Centennial Mandalong Pty Limited's (Centennial) Mandalong Mine. Centennial is the holder of Environment Protection Licence (EPL) 365 under the *Protection of the Environment Operations Act 1997* (POEO Act) for activities conducted at Mandalong Mine.

The EPA understands that Centennial is seeking approval to modify development consent to extend Mandalong Mine's existing underground coal mining operations to the south, and construct and utilise new surface infrastructure for coal delivery, handling and transport.

The EPA has assessed the document titled: "*Mandalong Southern Extension Project, Environmental Impact Statement, September 2013*" (the EIS), and provides the following comments.

WATER

Management of LDP001 & LDP002

Appendix P of the EIS states:

> *The water management at the Cooranbong Entry Site is to be considered as part of Centennial's Northern Coal Services, Coal Logistics Project with all aspects to be detailed within the relevant water assessments.*

It is noted that all water that is discharged from licensed discharge point LDP001 comes from either the existing Mandalong Mine operations or the proposed Southern Extension of Mandalong Mine. In addition, Centennial's Northern Coal Services, Coal Logistics Project is yet to be finalised and it is not clear whether this separate project will also contribute to the proposed discharges via LDP001.

The existing impact of discharges from LDP001 on the receiving environment is not clearly separated from that associated with the proposal. For example, there is no detailed understanding of the existing impacts

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on Muddy Lake, its water exchange with Lake Macquarie or the differences between the upper freshwater and lower estuarine sections of the wetland. The EIS is considered deficient in this regard, particularly since the EIS is proposing a four-fold increase in average daily discharge of a highly saline mine effluent to a natural creek and downstream wetland.

Assumptions Underlying Discharge Requirements for LDP001 and Potential for Connective Fracturing of the Overburden

The EIS states that the current discharge average of 1.59 megalitres per day (ML/day) is proposed to increase to an average of approximately 7.1 ML/day by the end of mining in 2036. However, in modelling the groundwater behaviour for the Mandalong Mine extension, and hence groundwater make, the groundwater report notes:

> *The thickness of Layer 4, and hence the height of the modelled fractured zone,* ***has been set at 140 m*** *and corresponds with the* ***average*** *height of fracturing (both continuous and discontinuous) observed above existing longwalls at Mandalong Mine.*

It should be noted that an **average** fracture zone and not a maximum has been used in the groundwater modelling. Should connective fracturing occur to the surface or near surface then groundwater make into the mine could be significantly under-estimated and the discharge volumes at LDP001 could be much higher than those suggested in the EIS. For these reasons, a detailed independent review of the potential for surface to seam (or GDE aquifer to seam) fracturing and complete groundwater drainage is considered essential prior to any approval of the current mine plan.

LDP001 Water Quality

There is considerable inconsistency in the reporting and water quality constituents analysed in the EIS. There is no reporting of maximum concentrations or standard deviations for the data, and there is a focus on the reporting of either averages or medians (and occasionally 80th percentiles or 95th percentiles). While time series data are presented for water quality in some of the creeks, no time series for water quality in LDP001 discharges are provided. This makes the environmental impact assessment of the discharge concentrations and loads difficult to quantify and assess.

Only limited estimates of dilution have been provided for the receiving environment and it is unlikely that much dilution is achieved under dry weather conditions until the effluent reaches Muddy Lake.

Overall, the ecological assessment of the discharge is extremely limited (in terms of toxicity assessment [one time only] or macroinvertebrate community structure [6 sites at one time]). Further ecotoxicity testing is required for the discharge to confirm acute and chronic toxicity; and, where the discharge is found to be toxic, no discharge to the environment should occur unless there is adequate dilution. This is only likely to occur after significant rainfall in the catchment. Further macroinvertebrate monitoring of the effects of the discharge on the stream ecology is also required.

Increased Contaminant Loads for LDP001

If the proposed increase in average discharge volume from 1.59 ML/day to approximately 7.1 ML/day is accepted, this represents a considerable increase in the load of contaminants to the receiving environment. Appendix P of the EIS suggests that these flows equate to an increase from an existing condition of 582.3 ML/yr to a proposed discharge of 2,608.3 ML/yr. If these annual estimates together with measured contaminant loads in the discharge waters are used to calculate loads, then the proposed increase in discharge will lead to the following loadings on the downstream system:

- An additional input of 5,000 tonnes of salt per year (approximately)
- An additional input of 400 tonnes of sulphate per year (approximately)
- An additional input of 2 tonnes of Total Nitrogen per year (approximately)
- An additional input of 2 tonnes of Total Phosphorus per year (approximately)

- An additional input of 0.5 tonnes of Dissolved Boron per year (approximately)
- An additional input of 0.3 tonnes of Dissolved Iron per year (approximately)
- An additional input of 0.6 tonnes of Dissolved Barium per year (approximately)

It is noted that modelling of average discharges at LPD001 (1.59ML/day current and 7.1 ML/day proposed) only allowed for average increases in depth and volume in Muddy Lake (the i.e. the downstream receiving water body) to be predicted. Historic discharge data show much larger maximum discharge volumes occurring (e.g. >10ML/day). These high volumes should have been included in the modelling: otherwise the volumes delivered to Muddy Lake will actually be underestimated. Modelling peak flows and volumes would have provided a better understanding of the maximum volume and depth increases expected in Muddy Lake. Ecological assessments for the quoted "swampy" conditions of Muddy Lake, and the impact on the geomorphology need to be predicted for the maximum expected rise in water volumes and levels.

It is likely that most of the calculated contaminant load above will be passed directly to the Muddy Lake wetland with limited dilution. Muddy Lake is a SEPP14 wetland system that maintains a balance between estuarine/tidal influences from the east and freshwater influence/influx from the west. It supports both estuarine (mangrove) and freshwater (Swamp Forest) communities on an east to west gradient. The latter, which are also threatened ecological communities, may be sensitive to elevated levels of salinity, potentially causing decline in the extent and changes in the species composition of freshwater dependent ecosystems. The EIS is considered deficient in that it does not adequately consider the impact of existing contaminant loads or the projected increase in contaminant loads on this wetland ecosystem.

Discharge of Contaminants Not Covered by an Environment Protection Licence

Under section 120 of the *Protection of the Environment Operations Act 1997* (POEO Act) it is an offence to pollute waters. However, a defence to this offence is available if it is established that the pollution of waters was regulated by an EPL and the conditions of the EPL relating to the pollution of waters were not contravened. In the context of LDP001, the EPL authorises the pollution of waters by those pollutants specified in licence Condition L2.

To understand the full range of pollutants contained in the discharge from the premises, the licensee should fully characterise the discharge. The EIS provides some characterisation of the discharge, however, it is noted that only oil and grease, pH and suspended solids are included on the Mandalong Mine EPL. There are a number of other contaminants in the mine water discharge which could have a **non-trivial impact** on the environment and these need further assessment and consideration for management. The proposed management regime of continuing to and significantly increasing (by four-fold) the discharge of such contaminants to the environment without any consideration of further treatment is not supported.

For the abovementioned reasons, the EPA is unable to provide Recommended Conditions of Approval in respect of Water.

NOISE

It is noted that the impacts predicted in the EIS (Noise Impact Assessment (NIA, SLR 2013)) are below the Project Specific Noise Levels (PSNL). Consequently, the EPA expects to be able to provide Recommended Conditions of Approval in respect of Noise once the proponent:

1. Clarifies whether the exploratory drilling forms part of the Project for which approval is being sought, and if so, provides the intended locations for exploratory drilling and demonstrates that the proposed drilling will comply with derived PSNL (by including the drilling in the operational noise model);
2. Confirms that the proposal can meet a $L_{A1(1min)}$ sleep disturbance criterion of 45 dBA, or proposes an alternate sleep disturbance limit supported by an adequate impact assessment; and
3. Clarifies whether blasting is intended to take place as part of the proposal, and if so demonstrates the acceptability of the potential impacts of any such blasting by reference to the ANZECC criteria.

Although the impacts of temperature inversions were predicted in the NIA by referring to inversion strength as a temperature lapse rate, the EPA proposes requiring the proponent to monitor for the presence of inversion conditions using the sigma-theta method, and limits will therefore apply up to and including F class inversions rather than the modelled 3°C/100m lapse rate (as in EPL No. 3652). If this is not acceptable to the proponent, the EPA may consider alternative approaches such as direct measurement of temperature lapse rate.

AIR

The EPA has determined that it can provide Recommended Conditions of Approval in respect of Air, and these are included in Attachment 1. Specific details of air discharge and monitoring points and locations have not been provided in the EIS, and should be provided to the EPA if project approval is granted.

Please contact Ross Brylynsky on (02) 4908 6809 if you require any further information regarding this matter.

Yours sincerely

6/1/204

HAMISH RUTHERFORD
A/Head Regional Operations Unit - Hunter
Environment Protection Authority

Encl: Attachment 1 – EPA's Recommended Conditions of Approval – Mandalong Southern Extension Project (SSD 5144)

ATTACHMENT 1

MANDALONG SOUTHERN EXTENSION PROJECT (SSD 5144)

RECOMMENDED CONDITIONS OF APPROVAL

Note: These recommended conditions are in addition to the existing conditions for Environment Protection Licence 365 issued to Centennial Mandalong Pty Limited.

AIR QUALITY MANAGEMENT PLAN

1. The proponent must prepare and maintain an updated Air Quality Management Plan for the site. The Plan must include the following information, as a minimum, for all emission sources, including: dust generating activities, ventilation emissions, power generation units, and flares, at the site:
   - *Key performance indicator(s);*
   - *Monitoring method(s);*
   - *Location, frequency and duration of monitoring;*
   - *Record keeping;*
   - *Response mechanisms; and*
   - *Compliance reporting.*

2. The Air Quality Management Plan must be submitted to the Environment Protection Authority (EPA) in conjunction with the application to vary the Environment Protection Licence under the *Protection of the Environment Operations Act 1997* for the Project.

3. The Air Quality Management Plan must be implemented prior to the commencement of any dust generating, ventilation, flaring or power generating activities that area associated with the Project.

FLARE-RELATED CONDITIONS

2 Discharges to air and water and applications to land

P1 Location of monitoring/discharge points and areas

P1.1 The following points referred to in the table below are identified in this licence for the purposes of monitoring and/or the setting of limits for the emission of pollutants to the air from the point.

Air

EPA Identification No.	Type of monitoring point	Type of discharge point	Description of location
X...	Air emissions monitoring	Discharge to air	Enclosed Ground Level Flare – location/s To Be Advised

LY Combustion Parameters

LY.1 The flare must be designed, maintained and operated so as to prevent or minimise air pollution.

LY.2 The flare must be operated in such a way that a flame is present at all times while air impurities are required to be treated.

LY.3 The flare must have no visible emission other than for a total period of no more than 5 minutes in any 2 hours.

LY.4 For each monitoring/discharge point or utilisation area specified in the table/s below (by point number), the parameter must be greater than the limit specified for that parameter in the table:

POINT X...

Parameter	Units of measure	Lower Limit	Averaging Period
Residence time	Seconds	0.6	Hourly rolling
Temperature	°C	760	Hourly rolling

POWER GENERATION-RELATED CONDITIONS

2 Discharges to air and water and applications to land

P1 Location of monitoring/discharge points and areas

P1.1 The following points referred to in the table below are identified in this licence for the purposes of monitoring and/or the setting of limits for the emission of pollutants to the air from the point.

Air

EPA Identification No.	Type of monitoring point	Type of discharge point	Description of location
Z...	Air emissions monitoring	Discharge to air	Stack serving xMW power generation unit – location to Be Advised

3 Limit Conditions

L3 Air Concentration Limits

LY.1 For each monitoring/discharge point or utilisation area specified below (by point number), the parameter must be equal to or greater than the limit specified for that parameter in the table:

POINT Z...

Pollutant	Units of measure	100 percentile concentration limit	Reference conditions	Oxygen correction	Averaging Period
Nitrogen Oxides	milligrams per cubic metre	450	Dry, 273 K, 101.3 kPa	3 percent	1 hour block
Volatile organic compounds (VOCs), as n-propane	milligrams per cubic metre	40 mg/m^3 VOCs or 125 mg/m^3 CO	Dry, 273 K, 101.3 kPa	3 percent	1 hour rolling

M2 Monitoring and Recording Conditions

M2.2 Air Monitoring Requirements

M2.1 For each monitoring/discharge point or utilisation area specified below (by a point number), the licensee must monitor (by sampling and obtaining results by analysis) the concentration of each pollutant specified in Column 1. The licensee must use the sampling method, units of measure, and sample at the frequency, specified opposite in the other columns:

POINTS X, Z

Pollutant	Units of measure	Frequency	Sampling method
Nitrogen Oxides	milligrams per cubic metre	Continuous	CEM-2
Volatile organic compounds (VOCs), as n-propane	milligrams per cubic metre	Yearly	TM-34

NSW EPA

Your reference:
Our reference: DOC14/65159-01, File No.EF13/2758
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Dear Mr Freeman

MANDALONG SOUTHERN EXTENSION PROJECT - CENTENNIAL COAL
RESPONSE TO SUBMISSIONS - EPA COMMENTS

I refer to the Department of Planning and Environment's enquiry regarding comments from the Environment Protection Authority (EPA) to the document titled "*Mandalong Southern Extension Project, Response to Submissions, March 2014*".

The EPA has assessed the document titled: "*Mandalong Southern Extension Project, Environmental Impact Statement, September 2013*" (the EIS) and provided recommended conditions of approval to the Department of Planning and Environment on 6 January 2014. The EPA has now considered the response to submissions document and provides the following comments.

Based on the applicant's comments, the EPA does not recommend any changes to Attachment 1 – Recommended Conditions of Approval dated 6 January 2014 sent to the Department of Planning and Infrastructure for this project.

If you require any further information regarding this matter please contact Genevieve Lorang in our Newcastle office on (02) 4908 6823.

Yours sincerely

11 JUN 2014

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Environment Protection Authority

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