16 December 2008

Department of Planning NSW
22-33 Bridge Street
SYDNEY NSW 2000

Attention: Carl Dumpleton

Dear Carl,

Mandalong Environmental Assessment – Response to Submissions

1 INTRODUCTION

Centennial Mandalong (Centennial) submitted an Application for modification to Development Consent under Section 75W of the *Environment Planning & Assessment Act 1979* (EP&A Act) for the Mandalong Mine. The Application and supporting Environmental Assessment (EA) were submitted to the Department of Planning (DoP) for assessment on 20 August 2008. The Application and EA were placed on public exhibition by DoP from 13 October 2008 to 29 October 2008.

DoP received four submissions to the Application. No submissions from the public were received. Submissions from regulators were provided from DoP for the Department of Environment & Conservation (DECC) and the Department of Water & Energy (DWE) on 3 November 2008. A submission was received from DoP on 4 November 2008 from Lake Macquarie City Council (LMCC). A further submission was received via DoP from Department of Primary Industries - Mineral Resources (DPI – MR) 14 November 2008.

This report has been prepared by Hansen Bailey Environmental Consultants on behalf of Centennial Mandalong in response to the submissions noted above. Further consultation with DECC and DWE is being undertaken following which, an additional response will be provided to DoP.

Input into the report has been provided by the relevant specialists involved in the preparation of the EA and Centennial personnel where appropriate. Excerpts from the submissions are re-stated in italics, with a response to each excerpt following as normal text.

2 LAKE MACQUARIE CITY COUNCIL

Acid Sulfate Soils

Both development sites are located within Acid Sulfate Zones 4. Under Lake Macquarie Local environmental Plan 2004 and pursuant to clause 35, consent must not grant consent unless the consent authority has considered:

- *The adequacy of an acid Sulfate soils management plan prepared for the proposed development in accordance with the Acid Sulfate Soil Manual, and;*
- *The likelihood of the proposed development resulting in the discharge of acid water.*

In this regard, the Environmental Assessment should include an acid sulphate soil management plan.

Response

An Acid Sulphate Soils Investigation Program for Mandalong was approved by DoP on 12 March 2007 as a requirement of DA97/800 consent condition 69, which includes the management of the intersection of Potential Acid Sulphate Soils (PASS). Therefore there is no likelihood of the proposed development resulting in the discharge of acid water. No excavation works of virgin material are proposed for the development of the gas engines site and the ballast borehole will be steel cased as detailed in Section 3.1.3 of the EA to prevent interaction with PASS.

Acoustic Impacts

The development must ensure that site-specific project noise levels generated are not offensive or greater than amenity and intrusive criteria at the worst affected property or receiver, in accordance with the Industrial Noise Policy.

Response

Noted. A noise assessment was undertaken for the EA in accordance with the INP, which found that the modifications would comply with relevant criteria for all receivers (see Section 7.2 of the EA, p.49 - 57).

Fauna and Flora

The methodology is poorly documented and the amount of survey conducted is much less than the Lake Macquarie Flora and Fauna Guidelines require for disturbed sites (for example amphibian surveys on only 2 occasions).

It is not clear the extent to which the site was surveyed (i.e. where it was traversed) however, the presence of Carex appressa, Casuarina glauca and Eucalyptus tereticornis would suggest remnants of endangered ecological communities. It is acknowledged that the development sites are heavily disturbed and grassed however, without adequate documentation of where these species were found in relation to the development of their extent and an indication of proportion of native verses introduced species, it is difficult to be confident that the sites have been adequately surveyed.

The following is recommended:

- *hollow bearing trees are to be accurately located retained and protected;*
- *ponds and wet soaks be accurately located in relation to the development proposal and adequate buffers provided (Ballast Borehole site);*
- *adequate erosion and sediment control be installed and maintained to protect aquatic habitats;*
- *areas or points where native vegetation occurs should be mapped particularly Carex appressa, Casuarina glauca and Eucalyptus tereticornis. It may be desirable to modify the proposal or rehabilitate some compensatory area in another location;*
- *the wetland area that is located on the boundary of the gas engine site is to be mapped and protected from impacts during and after construction (this is likely to be an endangered ecological community) if possible adequate buffers should be provided to this; and,*
- *the previously approved management plan for the surface facilities site – this should be amended and updated to take into account the proposed development amendment (development consent conditions No 71, 72 and 74).*

Response

The survey covered 100% of the survey area (i.e. 5 hectares) (p.69 of the EA) hence the survey should be considered more than adequate in relation to the scope of the project. In relation to amphibian surveys, no ponds or permanent water bodies within the survey areas will be impacted by the project, hence the level of survey in this regard should again be considered more than adequate. It is noted that DECC has raised no issues in relation to survey methodology or scope of the flora and fauna assessment.

No hollow bearing trees are proposed to be disturbed as a result of the proposed minor modification to Mandalong Mine. In Appendix F of the EA (Section 5.2.1), it is identified that a limited number individual mature trees are located within the highly disturbed ballast borehole survey area. The disturbance required for the construction of the ballast borehole and its associated infrastructure will be located in such a way as to avoid the clearing of the mature trees identified in the flora and fauna assessment.

The flora and fauna field survey carried out for the Modification was undertaken in accordance with the DECC *Draft Guidelines for Threatened Species Assessment* (2004) and included a full assessment of all areas proposed for the gas engines and ballast borehole (4 ha and 1 ha respectively) consistent with the Director General's Requirements. As stated in Section 7.5.2 of the EA, the field survey:

> *'…assessed species and vegetation communities present in the survey areas including threatened species, populations and communities listed under State and Commonwealth legislation. Consideration was also given to the nature and condition of the flora assemblages and to the flora and fauna habitat values of the survey areas.'*

Section 7.5.3 (p71) of the EA states "*no threatened flora, Endangered Populations or Critical habitat identified*" in the borehole and the gas engines survey areas. The Cattle Egret (listed under the EPBC Act) (p72 of the EA) was identified near the pond in the ballast borehole survey area which will not be impacted by the modification. Additionally, "*a small area of wetland adjacent the eastern side of the survey area"* was identified adjacent the gas engines site (which is within the existing Mandalong Mine Access Site) which will not be disturbed by the modification.

As stated in Section 7.5.4 of the EA, a number of mitigation and management strategies will be implemented for the project. These measures shall include avoiding any disturbance to any aquatic habitat features in the ballast borehole or gas engines survey areas, installing appropriate sediment control structures and the revision of the existing approved Mandalong Mine Flora & Fauna Management Plan, as required.

Flooding

The ballast borehole and associated ballast storage area is proposed to be located in proximity to Morans Creek. The borehole and any associated infrastructure may be impacted by flooding and may affect flood levels in the vicinity.

It is recommended that no works or land disturbance should take place within 40 metres of Morans Creek. It is also recommended that a flood study be prepared to determine whether the borehole and storage are will increase flood levels along the creek. The proposal should be designed so that it does not increase flood levels anywhere on Morans Creek.

Response

Noted. The survey area for the ballast borehole as shown on Figure 15 of the EA is not located within 40 m of Morans Creek. Further, due to the minor nature of the works proposed in this area it is evident surface flows in the vicinity of the borehole site will not be altered to an extent that will have the potential to increase the flood levels on Moran's Creek or the surrounding flood plain.

Future Land uses

The development is to be located approximately one kilometre from land under Lake Macquarie Environmental Plan 2004, zoned 10 Investigation (Urban/Conservation). This land is currently being considered for rezoning by Council. In this regard, it is recommended that the Environmental Assessment consider the likelihood that this land may be rezoned for residential purposes and consider the likely impacts of the development under these circumstances.

Response

Figures 11 & 12 indicate the residences up to 2 km for which a noise assessment was undertaken in the EA. The impact assessments undertaken for the Modification stipulated amenity criteria "*based on the high traffic category for M3 and on the rural category for all other receivers*" (p51 of the EA) which would provide a conservative estimate for any future rezoning of land for council.

The EA demonstrated and concluded "*that predicted noise levels are to be within adopted noise criteria at all residences*". In addition, subsidence (Section 7.1 of the EA) and air quality impacts (Section 7.3 of the EA) to local receivers would remain within the relevant criteria.

Greenhouse Gas Emissions and Climate Change

The Environmental Assessment (EA) requirements specify that greenhouse gas emissions needs to be considered as a key issue. Council considers that the level of detail provided on greenhouse gas is inadequate for the purposes of making an assessment on the likely impacts of the proposal, as detailed below:

- *Appendix E (Table 7) identifies that an additional 4,292,440t of CO2e will be emitted as scope 3 emissions related to downstream coal combustion (raising the total scope 3 emissions for the mine to over 12.8 million t CO2e per annum). However, other parts of the document do not include these (scope 3) emissions and indicates that an additional 6,810t of CO2e will be emitted as a result of the extraction of an additional 2mtpa of coal. Other figures are also quoted in other sections of the document, which appear to contradict this. This disparity in emissions (up to 630% difference) may lead to confusion and should be further clarified and assessed;*

- *This documentation is confusing in the way it calculates the impact of the methane gas engines. It is unclear what the overall impact of methane emissions from the proposal are;*

  Council is concerned over the calculation methodology which appears to claim reduced greenhouse emissions from burning some of the methane released due to mining (due to its significantly lower greenhouse potential once burnt), but does not clearly identify the impacts of un-burnt methane emissions. It also appears to claim a reduced greenhouse impact (as compared to coal-fired power generation), but does not clearly identify the greenhouse emissions produced from burning additional coal mined by the proposal.

- *The EA fails to consider overall greenhouse impact of the proposed modification, and identify how the proposal will assist (or detract) from the achievement of international, national, state, and local greenhouse targets. It also fails to identify what (if any) offset strategies will be implemented to mitigate against these impacts; and,*

  The document also claims that total greenhouse gas emissions will not change over the life of Mandalong Mine with extraction occurring within the same defined resource and same period as the previously approved. As all relevant greenhouse targets work on the basis of annual emissions, the proposal represents a significant increase (50%) in coal production and it is the impact of this increase which should be adequately documented and assessed in the EA document.

- *The EA is not considered to adequately detail consideration of the principles of ecological sustainable development and meet the EA requirements, inclusive of concise comment on the associated impact of the development and the resulting anthropocentric impacts of climate change.*

Response

A discussion of the greenhouse gas impacts from the gas engines is provided in Section 7.3.2 of the EA. This section was completed in accordance with the Director-General's requirements and states that:

> *'The annual emission of Carbon Dioxide from the gas engines will be 24,183 t/year compared with 184,674 t/year if the methane is not burnt and released into the atmosphere (conservatively assuming 40% of the methane is recovered and used to run the gas engines).*

> *Over and above these carbon dioxide savings, the gas engines are predicted to generate up to 12 Megawatts of electricity. If this was generated at a conventional coal fired power station then 103,018 t carbon dioxide would result per annum (i.e. the gas engines will result in 78,835 t reduction in carbon dioxide equivalent per annum over the rest of the life of Mandalong Mine).'*

Annual and total overall greenhouse gas impacts for the Modification are presented in Table 21 of the EA. The impacts of the gas engines as a mitigation measure for greenhouse gases are presented in Section 7.3.2 of the EA. A saving in emissions of "*up to 0.136 Mt*" CO2-e is predicted due to the operation of the gas engines when compared to the current case at Mandalong, where all methane is released unburnt into the atmosphere (p63 of the EA).

Heritage

Should the department countenance approval the recommendations of the supporting Aboriginal Archaeological and Cultural Heritage Impact Assessment are to be included as conditions of consent.

Response

The recommendations of the Aboriginal Archaeological and Cultural Heritage Impact Assessment will be incorporated as management procedures during any ground disturbance works required for the construction of the ballast borehole and gas engines to protect any heritage items discovered. These management recommendations have been committed to in Section 7.6.4 of the EA document (p.76) and as such are not required as a condition of consent.

Mine Subsidence

The subsidence of private properties as a result of mining operations is an issue of considerable concern to the Mandalong community. Council is concerned that the proposal will alter the timeframes for subsidence of affected properties. This may have significant social impacts on residents, particularly where owners have planned for a future subsidence outcome and timeframe (based on existing rates of mining) which may now be realised in a shorter time-period.

Council is aware that changes to flooding impacts due to mine subsidence are also an issue of concern for affected residents. Council is currently revising many of its flood studies in response to increased scientific information of climate change scenarios (including potential increased intensity and frequency of rainfall events and sea level rise impacts).

Council officers are concerned that the impacts on surface water flows (and associated ecology) as subsidence will occur in a more rapid timeframe than is currently approved. This potential increase in the annual area affected by subsidence impacts may lead to impacts on hydrology and ecology, as riparian communities may have less time to adjust to subsidence as compared with the current and previously observed circumstances.

Council objects to the proposed changes to the conditions relating to mine subsidence as detailed at Appendix A of the Environmental Assessment. Council's objection relates to conditions 28, 29 and 30, that impose time constraints on the reporting of mine subsidence.

Response

As discussed in the EA, Centennial Mandalong seeks to update the subsidence conditions of DA 97/800, including those related to stakeholder consultation and notifications, to ensure consistency with the DPI-MR's SMP process. Section 3.1.4 of the EA describes the process for landowner notifications:

> *'Under the process outlined in the development consent, landowners that may potentially be affected by underground mining subsidence are to be notified between 18 and 24 months prior to the commencement of underground operations (including development).'*

A Flood Study for Mandalong Mine approved by DoP on 24 December 2004 was undertaken in accordance with the NSW Public Works, *NSW Flood Plain Management Manual* (1997) which does not include a requirement to assess climate change scenarios. Modelling for this study was undertaken using a 1 in 100 year flood as a worst case scenario, which accounts for extreme rainfall events that are the major contributors to the increased catchment flows that characterise flood events.

It should also be noted that no concerns have been raised in submissions from the local Mandalong community during the EA process in response to the subsidence impacts discussed and the way that mine subsidence is proposed to be managed going forward.

Community consultation was undertaken for the Project which included:

- The distribution of two newsletters directly posted to immediate neighbours with an offer of individual briefings;
- Letters sent to relevant regulators with offer of briefing;
- The publication of two articles in local papers;
- Four presentations to the Mandalong Community Consultative Committee (CCC) since November 2007; and

- Notification of the exhibition period of the Mandalong CCC.

Statutory Requirements

The Environmental Assessment has not adequately considered the following legislation:

- *Hunter Regional Environmental Plan 1988-clauses 34, 41, 47 and 50;*
- *Environmental Planning and Assessment Act 1979 (as amended)- objects of the act, specially the consideration of the principles of ecological sustainable development;*
- *Lake Macquarie Local Environmental Plan 2004-clauses 2, 3, 12, 13, 14, 17, 31, 33, and 35;*
- *Rural Fires Act 1997; and,*
- *Lower Hunter Regional Strategy.*

Response

Consideration was given to the legislation (see Section 4, p29 of the EA) relevant to the Modification with comments included in the impact assessments undertaken for the EA as appropriate.

Coal Transport

Council is concerned that the proposed extension of the private haul road (to the Newstan rail loop) will result in additional coal haulage impacts as compared to the current coal transport arrangements (coal transported by conveyor to either Eraring or Vales Point power stations). These impacts include flora and fauna impacts (due to both construction and operation of the road), water quality impacts, noise and dust impacts, as well as an increased greenhouse footprint due to increases in transport.

Whilst Council is aware that this haul road extension is approved by the existing consent, Council officers are concerned that the proposed increased coal extraction will result in an increased demand for haulage via the proposed haul link road due to increased coal production at Mandalong Mine be assessed in the EA document.

Response

This Modification does not include any changes to the Mandalong Private coal haulage road or the 1.5 Mt of coal haulage assessed in the Cooranbong EIS (1997) and approved by DA97/800.

A description of the Modification activities for which approval is sought is provided in Section 1.2 of the EA.

Waste Management

The Environmental Assessment does not include a construction or operational waste management plan. In this regard, further detail is required to be submitted with the proposal.

Response

As per Table 5 of the EA Mandalong Mine has in place an approved Waste Management Plan. Due to the minor nature of the modifications sought to the operation of Mandalong mine it is unlikely that this will need to be modified however, it will be if required.

Proposed Modification – Increasing the rate of run-of-mine coal extraction from 4 to 6 million tonnes per annum

Upon resolving the matters raised above, should the department countenance the application, please consider the following:

Council is aware that Centennial Coal has previously highlighted its intent to build relationships with Local Government to provide benefits to the local community and environment. This intent has recently been demonstrated by Centennial Mannering Colliery through the provision of a two cents per tonne levy (based on the volume of coal production sold by Mannering Colliery) to be paid to local Councils for the use in delivering local environmental initiatives. This arrangement was carried out via a Voluntary Planning Agreement which was related to the Mannering Colliery Continuation of Mining consent.

A similar arrangement for the proposed modifications at Mandalong Mine may be an appropriate opportunity for Centennial Coal to further mitigate potential impacts as well as demonstrate its mission and value statement and help Council deliver its environmental initiatives and assist its response to climate change and sea level rise across the City.

Response

Noted. Centennial Mandalong is committed to mitigating impacts from its activities as well as community and environment enhancement programs. Any Development Control Plan proposed by Council would need to be open and transparent in relation to the process that Council would use to distribute the funds contributed by Centennial. The Council must have a documented and approved Community enhancement plan (or similar) that clearly demonstrates this.

Centennial Mandalong also notes that Voluntary Planning Agreement's are partnerships and as such, would require input into the process for fund distribution. We are committed to maintaining a working relationship within the communities within which we operate, and in the case of Mandalong, this is the Mandalong Valley community.

Any money contributed by Centennial Mandalong towards such a fund must be spent in the first instance in the Mandalong Community, perhaps through the Mandalong Progress Association.

Proposed Modification – Constructing and operating gas engines generating up to 12 megawatts of electricity fuelled by methane from existing mine methane gas drainage plant

Upon resolving the matters raised, should the department countenance the application the following conditions are recommended:

- *Prior to any works being undertaken a construction management plan (CMP) is to be approved by the Principle Certifying Authority (PCA) or the Director-General of NSW Department of Planning, prior to any works on-site being undertaken. (see Ballast Borehole for minimum requirements of CMP also required for this component of the development);*

- *Prior to any works being undertaken, a lighting management plan shall be approved by the PCA of the Director-General of NSW Department of Planning, that demonstrates by way of light spill diagrams that the development is unlikely to adversely affect the amenity of adjoining development, residents of the city and the operation of nearby F3 Road Corridor;*

- *All structures associated with the gas engines, including the proposed stacks shall be coloured in natural green/grey tones to blend with the surrounding vegetation and soften the likely visual impact of the development to the public domain.*

Response

Mandalong will apply for the relevant approvals with LMCC prior to the construction of the gas engines and comply with any conditions of these approvals, as required.

The existing approved Landscape and Revegetation Management Plan shall be revised to the approval of DoP prior to any works being undertaken, as required. All infrastructure associated with the gas engines shall be coloured in such a way as to minimise any visual impacts to surrounding receivers as committed in Section 7.8.4 of the EA. Further, due consideration will be given to the impact of lighting from the gas engine plant.

Proposed Modification – Increasing employment from 230 to 305 full time equivalent employees

Council has no objection.

Response

Noted.

Proposed Modification – Relocating an approved, but not yet constructed, ballast borehole.

Upon resolving the matters raised above, should the department countenance the application, the following conditions are recommended:

- *Prior to any works being undertaken approval is gained from Lake Macquarie City Council for approval under Part 4 of the Environmental planning and Assessment Act 1979, for access to the development site and the subsequent connections to the local road network;*

- *Construction of the Borehole shall be undertaken as outlined with the EA. A construction management plan is to be approved by the Principle Certifying Authority, prior to any works on-site being undertaken. The Plan shall include, but not be limited to the following:*

  1. *Hours of work;*

  2. *Contact details of site manager;*

  3. *A traffic management plan detailing predicted traffic volumes, types and routes; ingress and egress of vehicles to the site; traffic management methods and details of any traffic diversions during construction;*

  4. *Noise and vibration management;*

  5. *Waste and odour management;*

  6. *A dust suppression management plan;*

  7. *Erosion and sediment control;*

  8. *Construction timetabling;*

  9. *Complaint handling and resolution procedures and notification procedures for construction activities that are likely to affect the amenity of neighbours through noise and vibration; and,*

  10. *Contingency plans to be implemented in the event of non compliance and/or noise complaints.*

- *At the street interface, it is recommended that the existing farm boundary fencing be retained and reinstated. For access it is recommended that farm style gating and fencing also be maintained in the farm boundary vernacular treatment that is characteristic of the area. No other fencing type such as chain wire fencing around the development shall not be positioned any closer than 20 metres to the street, in order to soften the likely visual impact of the development. Furthermore, between the street boundary permitter fencing and internal fencing landscape mounding and native vegetation, shall be planted in order to provide visual screening of the development from adjoining development of the roadway. In this regard, prior to works being undertaken a Landscape Management and Rehabilitation/Revegetation Plan shall be approved by PCA or the Director-General of NSW Department of Planning, demonstrating how the facility shall be judiciously landscaped to maintain the visual amenity of the locality, particularly the visual interface with any adjoining residential development and the adjoining road Corridor;*

- *Any structures to be built on-site in connection with the operation of the borehole are to be no higher than 4.5 metres and are coloured in natural green/grey tones in order to soften the visual impact of the development on the locality;*

- *An operation plan of the development shall be approved prior to use. The plan is to detail how the borehole shall be managed on a day to day basis to reduce dust and acoustic impacts on the receiving environment. All contractors and users of the borehole are to be trained and be conversant with the operating plan; and,*

- *Prior to any works being undertaken an infrastructure servicing plan shall be approved by the PCA or the Director-General of NSW Department of Planning, detailing how services such as water, electricity and telecommunications shall be delivered to the site without adversely affecting the amenity of the surrounding land.*

Response

Mandalong will apply for the relevant approvals from LMCC prior to the construction of the ballast borehole and comply with any conditions of these approvals, as required.

Proposed Modification – Revising subsidence conditions to ensure consistency with the Department of Primary Industries' Subsidence Management process.

See comment under the section 'Mine Subsidence'

Response

Noted. See comments on 'Mine Subsidence'.

3 DEPARTMENT OF PRIMARY INDUSTRIES – MINERAL RESOURCES

The EA does not address rehabilitation. DPI requires the EA nominate a final use for the area affected by the proposed modification which is consistent with existing approvals. A discussion regarding the methods of rehabilitation of the new ballast borehole location and the eventual decommissioning/rehabilitation of gas engines needs to be included. Some conceptual rehabilitation completion criteria should also be included. A conceptual final landform plan showing the integrated final landform (including existing approvals) and the current proposal is also required.

Response

The final landuse for the Mandalong Services Site was included in the Cooranbong EIS (page 32) which stated "*end use of the Mine Access Site has not been determined at this time however it is considered likely that due to the proximity of the site to the Morisset Industrial Area, that the site will be used for a compatible end land use*". The Modification does not seek to alter this previous commitment.

Methods of rehabilitation of the borehole site and gas engines sites will be conducted consistent with (and at the same time as) all other infrastructure at the Mandalong Mine Access site and Mandalong Mine Services Site. Specific details in relation to completion criteria and conceptual final landform will be provided in the Mining Operations Plan (MOP) and Subsidence Management Plan (SMP) within 5 years of the proposed decommissioning of the infrastructure, consistent with the existing operational commitments.

DPI is unable to provide detailed advice on subsidence issues at this time. However, as the current proposal does not contain any significant changes to the current method of longwall extraction it is considered that all subsidence issues can be addressed during the Subsidence Management Plan (SMP) process.

Response

Noted.

4 DEPARTMENT OF WATER & ENERGY

The Centennial Mandalong underground operation is licensed for incidental groundwater extraction under Part 5 of the Water Act 1912 (WA). DWE notes the modification will result in an increase in incidental groundwater make into underground workings. Several different figures are provided to account for incidental groundwater inflows to the mining operation under current and future increased production rates. DWE requests review of predicted groundwater make and verification of predicted against actual inflows to the mine workings, and within limits imposed under licence 20BL169424.

Response

Centennial holds incidental groundwater licence 20BL169424 which permits the extraction of up to 365 ML per annum.

Page 67 of the EA predicts an annual rate of around 16 Mega Litres (ML) and 10 ML of ground water inflow at the Mandalong Services Site (where groundwater is intercepted from mining activities) and Delta Site respectively, for the approved case of 4 Million tonnes per annum (Mtpa) (i.e. 2007). Approximately 252 ML per annum of surface water is currently pumped underground for use as mine process water.

Page 68 provides a prediction that with increasing production to 6 Mtpa, groundwater ingress could increase to 23 ML and 15 ML per annum from the Mandalong Services Site and Delta Site respectively. Approximately 378 ML per annum of surface water is predicted to be required to be pumped underground for use as mine process water.

Mandalong Mine's Annual Environmental Management Report (AEMR) will continue to include a review against predicted groundwater make and verification of predicted against actual inflows. In the absence of a very substantial unpredicted change in groundwater make this will remain well within the limits imposed under licence 20BL169424.

The modification includes further longwall extraction to the south of the existing area, with widening of longwall panels. Detailed assessment of the potential for the wider panels (LWP 15-18) to influence surficial or shallow groundwaters above the longwall operation must be undertaken. DWE requires protection to surficial and shallow groundwaters, which are critical to maintaining minimum baseflows in Stockton and Morans Creeks, and groundwater dependent ecosystems.

Response

Mandalong Mine is operated generally in accordance with the *Cooranbong Colliery Life Extension Environmental Impact Statement* (Cooranbong EIS) (Umwelt, 1997) which provides approval for up to 250 m longwall mining panels within ML 1443 and ML 1543 (page 5, EA). The original mine subsidence and environmental impact assessment was conducted on this basis where it was determined by scientific assessment and accepted by Government that there would be an acceptable level of impact on the surficial and shallow groundwaters, which are critical to maintaining minimum base flows in Stockton and Morans Creeks and groundwater dependent ecosystems.

The EA states that "Longwall mining ….. have occurred within Area 1 (Figure 1, EA) and consists of a series of longwall blocks up to 160 m (but may be developed up to 250 m) in void width …" (page 6, EA).

It further states that "Centennial Mandalong is seeking an increase in run of mine coal extraction from 4 Mtpa to 6 Mtpa. Gaining this flexibility will not require an increase in the approved underground mining area (for either Area 1 or Area 2) as shown on Figure 1 and approved in the Cooranbong EIS)" (Page 21, EA).

As discussed in the EA, Centennial is neither seeking approval to mine any area outside that currently approved nor does it seek to increase panel widths from that currently approved in the Cooranbong EIS and Development Consent.

5 DEPARTMENT OF ENVIRONMENT & CLIMATE CHANGE

Water

1. *DECC notes from Tables 22 and 23 of the EA that water flows from the Services Site will increase from 490 ML per annum to approximately 618 ML per annum. This increase in wastewater discharge may be significant. The environmental impact of this increase in flow has not been assessed in the EA. It is not sufficient to outline that the daily flows will remain within the 5 ML per day limit under condition L4.1 of the Environmental Protection Licence 365 (EPL).*

   Given the extent of any increase in flows the anticipated impacts on receiving waters need to be assessed and any necessary ameliorative measures proposed. Impacts from pollutants like salinity and turbidity need also be assessed. The Director-General's Requirements outlined the technical and policy guidelines that should be referenced in regard to water quality. DECC has adopted the Australian and New Zealand Guidelines for Fresh and Marine Water Quality (ANZECC 2000) as a guide for the assessment of environmental impacts on aquatic ecosystems.

   Response

   EPL365 provides for the discharge of up to 5 ML per day. Monitoring for Total Suspended Solids (TSS) and Electrical Conductivity (EC) are also required as a condition of licence. Discharges from Mandalong Mine will remain within the approved levels of discharge with monitoring for TSS and EC ensuring that discharges remain within the currently approved levels. Therefore, no additional environmental impact above that which is currently approved is anticipated as a result of the modification.

2. *Draft soil and water management guidelines have recently been developed specifically for mines and quarries. In accordance with the new guideline, DECC proposes to suggest a condition to DoP requiring that a stormwater management system is implemented at the borehole site to capture and treat all runoff from potentially contaminated areas for all rainfall events up to and including a five day duration 95th percentile rainfall event.*

Response

Mandalong Mine's Erosion & Sediment Control Management Plan and Water Management Plans will be revised to include activities associated with constructing the ballast borehole. DECC's and all other relevant guidelines will be utilised in this review, as required. As such, a development consent condition as proposed above is not required.

3. *Other similar gas collection and combustion systems in operation in NSW produce a condensate. The EA needs to explain the likely quality and quantity of this liquid and its proposed management option. Conditions on EPL are likely to address this condensate.*

Response

Noted. The existing Mandalong Mine EPL will be revised to address any emissions from the proposed gas engines, as required.

Noise

4. *DECC is concerned that the proponent has not followed the requirements of the NSW Industrial Noise Policy (INP), as it appears the existing noise from the premises (Mine Access Site and Services Site) has not been excluded during the determination of rating background noise levels.*

From the consultant's report DECC notes that noise from the premises was on some occasions inaudible at the monitoring sites shown in Figures 10 and 12 of the EA. From the information presented it would appear that noise from the Services Site was noticeable during the attended surveys. DECC require an assessment as to what impact, if any, noise from the premises had on the background noise levels and also require advice as to what the background noise levels were for each site in the absence of noise from the premises.

Once DECC is in receipt of this information a determination on the appropriate noise criterion for the sites can be made. It is our intention to recommend conditions of consent which will become Project Specific Noise Levels (PSNL) as limits on the EPL.

Response

Section 2.3 of the Noise Impact Assessment (NIA) (Appendix D of the EA) explains that mining and insect noise sources were excluded from the adopted background noise levels at each monitoring location. The conservative analysis procedures described in that section varied with each monitoring location.

Location M1 – The ballast borehole would operate during the day so only the daytime background noise level is relevant. The noise survey showed daytime levels were primarily influenced by freeway traffic noise with no significant contribution from mining sources or insects so no adjustment to the daytime measured levels was required. While not required for the assessment, the evening background level was reduced to the daytime level while the night level was reduced by 3 dBA to remove the observed influence of insect noise. Mine related sources were not audible for this location.

Location M2 – the freeway was the dominant source during the day and evening so no adjustments were made for these time periods. Insect noise during the night was quantified by frequency analysis and removed from the adopted background level, as recommended in the INP. Mine related sources were not audible for this location.

Location M3 – the freeway was the dominant source of background noise during the day and evening. Insect noise was quantified by frequency analysis and subtracted from the measured night background level. Mine related sources can occasionally be audible at night but at levels way below the background noise level so no corrections for mine noise are required.

Location M4 – Mining noise was not audible during the day and evening. Daytime background noise levels are influenced by both traffic and natural sources and the measured levels were therefore adopted with no corrections. Evening background levels were reduced to the daytime level. The night background level was subjected to detailed frequency analysis to remove the influence of insects and a further reduction to remove any influence from mine related sources, as recommended in the INP.

Given the detailed and comprehensive analysis of background noise levels, including removal of any existing mining noise component it is our view that the adopted background noise levels and noise criteria as presented in the EA are appropriate.

5. With reference to the assessment on weather conditions it is noted in the EA:

> *"An analysis of temperature inversions concluded an occurrence in this area for up to 23 % of the time and therefore (inversions) are not required to be assessed, as the INP only requires inversions to be assessed when they occur for over 30 % of the time."*

The INP refers to a 30 % threshold for inversions determined from the total night-time during winter (June, July and August) and if this 30 % threshold is exceeded then inversion effects are considered significant and should be taken into account in the noise assessment. DECC note from the noise consultant's report that the 23 % figure for inversions was based on wind analysis during the night in all seasons. Based on this incorrect assessment for inversions DECC further note that noise modelling from the premises did not include any vertical temperature gradient (inversions) in the important evening and night period. Inversions can have a significant impact on noise levels at receiver locations.

Based on this incorrect application of the INP DECC are unable to determine if predicted noise from the premises will be acceptable. DECC require an assessment of inversions during winter and if inversions are a feature of this area then they must be considered when conducting modelling to predict the noise impacts of the engines.

Response

Table 7 of the NIA considers winds in each season and time period. Section 4.1.3 commented that potential drainage flows occurred for "up to 23% of the time during the night in all seasons". Reference to Table 7 shows potential drainage flows occur for 23% of the time in summer, 22% of the time in autumn, 23% of the time in winter and 22% of the time in spring.

An analysis of all available meteorological data, has confirmed that temperature inversions do not significantly occur in the area and as such, are not required to be assessed.

6. DECC generally concur with the consultant's methodology for determining PSNL for location M3 due to the impacts of traffic noise at this location. DECC agrees that such a methodology is appropriate for determining noise impacts for residents who back onto the Freeway. For residences located further away from the freeway, in an easterly direction, a PSNL will also need to be determined and a "borderline" proposed so that all concerned know which noise limit applies. For example, west of Gimberts Road "x" limit applies and east of Gimberts Road "y" limit applies.

Response

The noise survey concentrated on the closest residences to the mine, on the basis that any audible noise from the mine during an occasional break in freeway traffic would be louder at these residences. Background and ambient noise levels have not been measured at more distant residences east of the freeway.

Monitoring location M2 is approximately 660 m west of the centre of the freeway. Assuming measured noise levels are the same on both sides of the freeway, measured background noise levels at M2 would also apply 660 m east of the freeway. Background levels and consequent intrusive noise criteria at various residences east of the freeway can therefore be estimated by interpolating between known locations 130 m from the freeway (M3) and 660 m from the freeway (M2).

The following table shows interpolated noise criteria and predicted noise levels at these residences and should be read in conjunction with Figure 3 & 4 and Table 3 from the EA.

Residence	Distance from freeway	Interpolated Criteria, LAeq,period			Predicted Level, LAeq,period		
		Day	Evening	Night	Day	Evening	Night
57	380	52	47	44	<30	<30	31
59	490	51	46	42	<30	<30	30
66	270	53	47	45	34	31	35
67	430	52	46	43	30	<30	32
72	180	54	48	46	37	34	38
73	300	53	47	45	33	30	35
74	580	51	45	41	<30	<30	30
85	120	54	48	47	37	34	38
86	200	53	48	46	34	31	36
87	250	53	47	45	32	<30	34
89	170	54	48	46	34	31	36

Predicted noise levels are, in all cases, at least 5 dBA below relevant criteria.

7. DECC proposes to suggest conditions requiring noise compliance monitoring, to confirm PSNL are being met, once the engines are in operation.

Response

Centennial will submit to DECC a request to vary the existing EPL to incorporate the gas engines and any resultant monitoring requirements prior to their construction.

Air

8. The EA has not detailed the emission concentrations in mg/m^3 from the engines for each of the main pollutants, in accordance with the Approved Methods for the modelling and Assessment of Air Pollutants in NSW, therefore DECC has not been able to compare predicted emission concentrations to the minimum requirements detailed in the Protection of the Environmental Operation (Clean Air) Regulation 2002 (the Regulation). This information needs to be provided for DECC to complete the assessment.

Response

This information is not available as the detailed design has not yet been completed and agreed with the supplier. However, we note that from the information provided in the air quality assessment report (See Appendix E of the EA, Table 4) it is possible to calculate the in-stack concentration of NOx (as NO_2). The value is 288 mg/Nm^3 [{3.14 x $(0.36 m/2)^2$ x 35 m/s x (273 oK / 482 oK)}-1 x 0.58 g/s]. We understand that the DECC NO_2 regulation for new plant is 350 mg/Nm^3. Thus the proposal would comply with the Regulations provided the actual engines are consistent with those from which the data is drawn.

However until the actual engine is selected, Centennial proposes that a condition of Development Consent be included that specifies that upon applying for a variation to its EPL (and prior to constructing the gas engines) a supporting Assessment will be undertaken to determine the emission concentrations from the engines for each of the main pollutants to enable DECC to appropriately license the activity.

9. We note that modelling based on a worst case scenario of 6 x 2 MW engines predicted NO_2 levels of 245 $\mu g/m^3$ south of the premises, very close to the freeway. The National Environment Protection Council goal for NO_2 is 246 µg. Given that the modelling is predicting that NO_2 levels will approach the relevant criteria in proximity of the freeway, DECC needs to have confidence that the modelling is conservative. DECC request advice on how the modelling has been conservative.

Response

The air quality study assumes that the assessment is conservative because the worst-case assumption about the arrangement of the engines was taken as the basis of the assessment. For example, Figure 5 of the air quality assessment shows how the predicted concentrations would vary if the project employed 2 x 6 MW engines rather than 6 x 2 MW engines assumed. The 2 x 6 MW engines results in lower concentrations than the case used to assess the impact. Licensing would be best done when the actual

engine type and manufacturer has been decided on. The assessment could be revisited at that time to support an EPL Variation, if required. Whatever the case, Centennial accepts that would need to comply with the Regulation and with the ambient air quality assessment criteria.

10. Also as noted above, the EA has not provided details of emission concentrations for various parameters. DECC need to be provided with information on what levels were used by Holmes Air Sciences for modelling purposes. If the levels used for modelling are less than the Regulation limits it is likely DECC would need to require that these levels not be exceeded via EPL limit conditions so that we can have confidence that health impacts from the proposal will not eventuate.

Response

See response to 8.

11. DECC note from Figure 6 of the EA that at least 2 extra future engines may be proposed some time in the future. Given that the modelling is predicted (with 6 engines) that NO_2 levels will approach the relevant criteria, DECC suggest that these two extra units may not be possible unless emission concentrations or release characteristics (e.g. height of stack) are also changed.

Response

Figure 6 in the EA is 'conceptual' in nature. The EA assessed a maximum of 6 x 2 MW engines. Any further engines would require further assessment and a modification to the Development Consent with supporting documentation.

12. DECC propose to suggest conditions on the EPL requiring air emissions compliance monitoring.

Response

Noted.

Yours faithfully
HANSEN BAILEY

Dianne Munro
Principal