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Attention: [Colin.phillips@planning.nsw.gov.au](mailto:Colin.phillips@planning.nsw.gov.au)

Dear Mr Phillips

**Centennial Coal Northern Coal Logistics Project SSD-5145  
Review of Response to Submissions**

I refer to your email dated 16 February 2015 requesting comments on Centennial Coals response to submissions in regard to the Northern Coal Logistics Project. I apologise for the delay in the Environment Protection Authority's (EPA) response.

The EPA has reviewed the document titled "*Northern Coal Logistics Project Response to Submissions*" dated 4 February 2015 (RTS). In particular the revised Air Quality Impact Assessment, Revised Clean Water Plant Ecotoxicological Assessment, Aquatic Monitoring and Ecotoxicological Assessment Summary Report and the "*Northern Coal Logistics Project Environmental Impact Statement, Appendix J – Water Impact Assessment dated*" April 2014 (EIS).

On review of the additional information provided by Centennial Northern Coal Services Pty Limited (Centennial) the EPA's revised Recommended Conditions of Approval on water treatment and dust have been provided to DPE. These conditions replace the previous recommendations provided to DPE in the letter dated 10 December 2014 in relation to water treatment and dust.

The EPA has not provided any revised recommendations with regard to noise and has not reviewed the RTS with respect to noise issues. EPA's previous Recommended Conditions of Approval provided to DPE in the letter dated 10 December 2014 in relation to noise, air quality monitoring, water discharges and mandatory EPL conditions remain unchanged.

**Revised Recommended Conditions of Approval**

Further discussion regarding the EPA's review of the RTS is provided at Attachment 1 and Revised Recommended Conditions of Approval are also provided in Attachment 1.

EPA recommend DPE consider the revised Recommended Conditions of Approval (Attachment 1) in conjunction with the previous Recommended Conditions of Approval provided in correspondence to DPE from EPA dated 10 December 2014 in any decision regarding this proposal. In the event that the development is modified either by the applicant prior to the granting of consent or as a result of a condition proposed to be attached to the consent, it will be necessary to consult with the EPA about the changes. This will enable the EPA to determine whether the recommended condition of approval needs to be modified in the light of the changes.

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If you wish to discuss this matter further please contact Natasha Ryan on 02 4908 6833.

Yours sincerely



26 MAR 2015

**MARK HARTWELL**  
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## **ATTACHMENT 1**

### **ENVIRONMENT PROTECTION AUTHORITY REVIEW OF RESPONSE TO SUBMISSIONS – SSD 5145 NORTHERN COAL LOGISTICS PROJECT**

The Environment Protection Authority (EPA) has undertaken a review of the document titled "*Northern Coal Logistics Project Response to Submissions*" dated 4 February 2015 (RTS). In particular the revised Air Quality Impact Assessment (AQIA), Revised Clean Water Plant Ecotoxicological Assessment, Aquatic Monitoring and Ecotoxicological Assessment Summary Report and the "*Northern Coal Logistics Project Environmental Impact Statement, Appendix J – Water Impact Assessment* dated" April 2014.

The following comments are provided to Department of Planning and Environment (DPE) in regards to the RTS in determination of the project.

#### **REVISED RECOMMENDED CONDITIONS OF APPROVAL**

##### ***Water Treatment***

The EPA emphasise to DPE that variation of the Environment Protection Licences (EPL) or issue of an EPL to increase pollutant loads discharged in dewatered groundwater is contrary to the objects of the *Protection of the Environment Operations Act 1997* (POEO Act) and section 45 of the POEO Act.

Any increase in the volume of groundwater discharged from the project, above the current EPL volumetric limits must be treated with a reverse osmosis (RO) or an equivalent level of treatment that treats water such that it removes salinity (salts), total and dissolved metals to achieve the ANZECC guidelines for fresh and marine waters. Furthermore that Centennial should implement a staged approach over the next ten years to treat all dewatered and discharged groundwaters with a reverse osmosis (RO) or an equivalent level of treatment that treats water such that it removes salinity (salts), total and dissolved metals to achieve the ANZECC guidelines for fresh and marine waters to reduce the salinity and metal loading to the receiving waters and enable rehabilitation of the receiving waters and environment during the lifetime of the mine. This should be undertaken regardless of when or if current EPL volumetric discharges are exceeded.

##### ***Dust Management***

EPA advise DPE that a condition of approval of the project and handling greater volumes of ROM coal at Newstan Colliery should include implementation of dust mitigation measures once production of ROM coal exceeds the current capacity of 4 Mtpa and that Centennial must implement best practice for minimising emissions from rail loading and transport of coal.

The EPA provides the following additional comments to DPE in determination of the project and in relation to the RTS.

##### **Air Quality Impact Assessment**

EPA advise DPE that further information is needed from Centennial to establish 2010 as a suitable representative year for modelling air quality impacts, that Centennial have not provided adequate explanation in the RTS.

Centennial has satisfactorily addressed EPA's submission in relation to the presentation of modelling results.

Centennial has partially addressed EPA's request to include rail transport of coal as an emissions source. Centennial provided evidence that this is a relatively small source. They detailed their approach to minimising emissions, but fail to implement current best practice.

Since the previous letter provided to DPE by the EPA dated 10 December 2014 in regard to Recommended Conditions of Approval with regard to Air, EPA has become aware that Centennial Newstan Pty Limited's current development approval includes a commitment within the Environmental Impact Statement to automate coal handling and loading processes at the premises once ROM coal handling exceeded 3 Mtpa.

Centennial has documented best practice approaches to be used to minimise emissions once operations exceed current capacity. However they propose to implement automation of coal loading at Newstan Colliery once production reaches 6 Mtpa and automate coal transfer once production reaches 8 Mtpa. Centennial has partially addressed EPA's comments regarding best practice for minimising emissions. In regard to the AQIA EPA reiterates that meeting air quality criteria requires mitigation once ROM Coal processing and handling exceeds the current limit of 4 Mtpa. The EPA views best practice as unrelated to criteria chosen to assess impacts on the air environment. This is consistent with section 128(2) of the POEO Act to minimise emissions.

The revised recommendation takes into consideration the previous commitments identified in the current consent EIS and EPA considers this an adequate compromise between that and the AQIA.

### **Licensing Requirements (section 3.1.6)**

In its RTS Centennial has explained that it wishes to apply for a new Environment Protection Licence (EPL) to cover the three existing water discharges at Newstan and two existing water discharges at Cooranbong entry site and Hawkmount Quarry, coal handling and processing and coal tailings emplacement for the scheduled activity of coal works.

The EPA advise DPE that this is possible if Centennial maintain a physical connection of land. In the past various pit top areas (coal works) have been physically connected through the EPL via the underground workings (mining for coal) via drifts to surface activities. For the project to be licensed by the EPA Centennial must be able to provide a plan of the premises with physical connection. This may be via conveyors that would be included within the EPL premises description or private haul roads which would be included in the premises. If haul roads not owned by Centennial are to be included in the premises, Centennial must be able to demonstrate to the EPA they have a lease arrangement with the owner of the land. If connectivity cannot be demonstrated the premises must apply to the EPA for individual premises based EPLs. This may mean that the scheduled activity of 'Waste Disposal – application to land' may be triggered and that premises would be managed as a waste facility and the movement of coal tailings between premises and then emplacement of coal tailings may be subject to the Protection of the Environment Operations (Waste) Regulation 2005 levy. Centennial may be able to apply for an exemption from the waste levy.

### **Water Quality (section 3.1.11)**

Centennial have provided some of the requested shortfall of information to the EPA in the RTS. However the data provided in many instances has failed to provide the EPA with any further evidence or support that the additional water discharges requested would not have a detrimental impact on the environment. This is in relation to increased salinity impacts in Muddy Lake and increased metal loads into LT Creek, Stony Creek, Muddy Lake, Lake Eraring and Lake Macquarie. Centennial have not provided the mixing model for the unnamed tributary entering Muddy Lake or demonstrated that site specific trigger factors can be met at the edge of the mixing zone in both the unnamed tributary entering Muddy Lake and the bywash dam which enters LT Creek.

### **Pollutant Loads**

Centennial have provided additional information in relation to potential loads of metals that may be generated. Table 7 provides an analysis based on 50<sup>th</sup> percentile pollutant concentrations. The EPA assumes the loads are for the life of the project rather than annual loads but there is little information about these figures. The EPA needs to understand the impacts of the worst case scenario as concentration limits and volumetric limits are set as a maximum within the EPL, not as averages. The EPA does not set 50<sup>th</sup>

percentile limits. These loads have only been reported and have not been included in any environmental impact assessment or modelling of the fate of these loads on the receiving environment. Furthermore Centennial have not adequately addressed how impacts will be mitigated.

### **Ecotoxicological Assessment**

Centennial have presented additional information in the RTS with respect to ecotoxicological assessment that was undertaken in November 2014 for Centennial Newstan. This assessment included 7 day reproductive impairment test using freshwater cladoceran (water flea) *Ceriodaphnia dubia*, 10 day embryonic development using the freshwater eastern rainbow fish *Melanotaenia splendida splendida* and 10 day survival test using the freshwater shrimp *Paratya australiensis*. Centennial also stated that the post hatch survival test for eastern rainbow fish was undertaken. However the results and data appear to have not been reported in the RTS.

The results indicate that treated discharge was not acutely toxic to shrimp. Early results of the May 2014 identified that chronic toxicity was observed in water fleas, but not observed in November 2014 samples. The EPA is concerned that the November 2014 seems to have low statistical power as there was a 37% reduction in reproductive ability in water fleas which is biologically significant. EPA would need to review the eastern rainbow fish post-hatch survival toxicity test, which EPA believe has not been provided in the RTS, to ascertain whether there is any chronic toxicity to the fish from the current discharge at Newstan.

Centennial have not presented any data for the ecotoxicological component of the aquatic assessment and ecotoxicological study at Cooranbong that was undertaken by GHD 2014. EPA require clarification whether this is the case or whether the study referred to in the EIS was in fact the September 2012 ecotoxicological study. Studies undertaken in September 2012 reported chronic toxicity to the water fleas and acute toxicity to rainbow fish. A no observable effect concentration (NOEC) of 50% was reported which indicated there were also acute effects on shrimp from undiluted discharge waters from Cooranbong.

### **Macroinvertebrate Assessment**

Centennial stated that they have updated the Clean Water Plant Commissioning report to include more recent macroinvertebrate monitoring assessments undertaken for LT Creek, Stony Creek (Newstan) and the unnamed tributary of Muddy Lake (Cooranbong Entry Site).

It is noted that this report has been revised and includes 'reference sites' not present in the in the original EIS. However EPA is of the opinion that in most cases these 'reference sites' are also impacted by nutrients, suspended sediment and metals, and not suitable as 'reference sites'. As a result the reference sites cannot be reliably used to provide context to the condition of other impacted sites and used to verify that no impact would occur as a result of increased discharges from Newstan and Cooranbong. Additionally the reports identified that many observed differences of macroinvertebrate community assemblage was more likely a result from habitat differences between sites. This is particularly important if trying to compare impact in an ephemeral creek against impact in a pond environment or wetland.

The choice of 'reference' and 'control sites' compared to impacted sites and the replication of sites is an important factor to being able to accurately and statistically compare impacted sites and to determine if an impact has occurred. As a result the EPA advise DPE that it is difficult for Centennial to conclude that there is no effect of the discharge on macroinvertebrate health and that increasing discharge will not have a detrimental effect on macroinvertebrate community downstream due to a lack of appropriate data.

No assessment of macroinvertebrate community assemblage was undertaken downstream of the proposed Hawkmount Quarry. EPA notes that Centennial propose a discharge point from the premises, but have not adequately addressed the potential impacts downstream by describing the current ecosystem.

## Water Treatment

Centennial was concerned about toxicity resulting from removal of salts and therefore buffering ability. EPA advise DPE that a Reverse Osmosis (RO) plant would remove dissolved metals along with bicarbonate and hence remove overall toxicities. Therefore removal of magnesium and calcium is unlikely to have any negative impact upon the receiving environment.

The mangrove limit of LT Creek suggests that the creek should be fresh near the Newstan discharge site and for a couple of kilometers downstream. Centennial state that past continuous discharge has modified the system from its natural environment as a result of the salinity. EPA believe that the philosophy of continuing historical pollution to avoid change is contrary to the ANZECC Guidelines for Fresh and Marine Waters. Centennial are concerned about changes to ionic balance if water was treated with an RO plant. Furthermore Centennial state on page 63 that *"Hunter Water Australia (HWA) were engaged by Centennial in 2011 to undertake a high level review of the use of an RO treatment system at Newstan Colliery Surface Site for the mine water treatment. HWA identified brine management as a key reason for considering alternate treatment options to RO, especially when a low cost and environmental sound disposal option is not available. HWA concluded that the installation of an RO plant requires a strong understanding of the technical and complexity and challenges and capital and operating costs. Water treatment is not the core business of Centennial and therefore HWA (2011) advised that any treatment facility needs to be low complexity, robust, easily operated and easily maintained without heavy reliance on a third party."*

*HWA noted that discharging RO permeate directly into the environment is not advisable as the water is very unstable with no alkalinity (pH buffering capacity) or mineral content. This was supported by Dr Graeme Batley of the Commonwealth Scientific and Industrial Research Organisation who advised that the discharge of low ionic strength water to the low salinity creek (ie: LT creek) would most likely affect the salt-adapted species that inhabit this system. In consideration of the advice provided by HWA and CSIRO the use of RO as a treatment system has been determined by Centennial to have a lower benefit as a means of treating water destined to be discharged to the environment. On this basis the use of RO was not considered further for the management of water quality being discharged as a result of the project."*

EPA advise DPE that there are many third party agreements and operators of water treatment plants within New South Wales that operate water treatment plants very successfully on behalf of clients. Not understanding treatment is not a valid reason for not implementing a technology.

EPA also advise DPE that clarification was sought from Dr Batley regarding the comments he made above. EPA report that Dr Batley is of the view that due to the complexity of the situation, his words may have been misinterpreted. Dr Batley stated that *"I was commenting on a report by Jill Woodworth, GHD on observed toxicity of discharge water to cladocerans that toxicity may have been due to low salinity given organisms are usually at higher salinities. On consulting with Rick Krassoi he advised that the cladocerans have a wide salinity tolerance so it was something else that caused the toxicity"*. Dr Batley further stated that the benefits of RO treatment outweigh any perceived toxicities to salt dependent organisms as it would pave the way for rehabilitation back to a more freshwater environment. He added that the RO permeate could be diluted with surface waters if required, prior to discharge.

The EPA advise DPE that installation of a RO plant to treat any waters discharged above current EPL limits would enable shandying of water, and that a ten year staged implementation program of increasing the volume of water treated by RO would enable gradual rehabilitation of the receiving waters during the lifetime of the mine such that at mine closure the environment would need only respond and assimilate to a decreased flow rather than a decreased flow and change in water quality (salinity and metals).

Centennial acknowledge that the current clean water treatment plant was designed to accommodate an RO plant.

### **Site Specific Trigger Values**

The derivation of site specific trigger values (SSTV) for electrical conductivity is flawed and not consistent with ANZECC guidelines for fresh and marine waters. Appropriate control and or reference site information should have been used in determining a SSTV. This would be in the order of 200-300  $\mu\text{s}/\text{cm}$  not 2200 $\mu\text{s}/\text{cm}$  as has been suggested by Centennial. The derivation of SSTVs for mercury, selenium, arsenic, nitrogen and phosphorus is also inconsistent with ANZECC guidelines for fresh and marine waters.

**Environment Protection Authority  
26 March 2015**

