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Department of Planning and Environment
GPO BOX 39
SYDNEY NSW 2001

Attention: Melissa Anderson

By email: melissa.anderson@planning.nsw.gov.au

22 October 2018

Dear Ms Anderson

**Proposed Modification to Newstan Colliery Project, Development Consent (DA 73-11-98)
Modification 8 - Comments from the Environment Protection Authority**

I refer to your email to the Environment Protection Authority (EPA) received 3 October 2018, seeking comments in relation to the Centennial Newstan Colliery Project modification application. The modification is seeking to modify Development Consent for the project by extending the approval life of DA 73-11-98 for a further 12 months until 6 July 2021, and permitting extraction of up to 2 million tonnes per annum of run-of-mine coal, using first workings methods in the West Borehole Seam.

The EPA has reviewed *Centennial Coal Company Ltd – Newstan Colliery Development Consent Modification Environmental Assessment* dated September 2018 prepared by GHD (the EA) and provides the following comments.

1. Cumulative Impacts Need to be Assessed

Given the potential interactions of the proposed modification and the proposed Eraring Power Station Ash Dam Expansion (Mod 1 MP 07_2284) on the Awaba and Eraring seeps, the EPA considers that a cumulative expert assessment of potential impacts to groundwater hydrogeology be carried out. There is significant community concern about leachate from the ash dam entering mine workings and making its way to Lake Macquarie. It is important to understand how both projects may impact (adversely or beneficially) the existing Awaba and the Eraring seeps. A key concern is management at the surface of potentially acidic and saline mine water to prevent impacts to Lake Macquarie and impacts to power station infrastructure from changes to hydrology.

2. EPA Requires Further Information on Water Quality

The EPA requires the information listed below prior to deciding whether it can recommend conditions of approval for the proposed modification. Detailed justification of each of these information needs is listed in Appendix 1.

Water Treatment System Details

- Details of the design and operation of the treatment plant. The EA indicates that a water treatment plant operates at the Newstan Colliery Surface Site (NCSS).
- Clarification of whether transfers to and from other sites, such as Hawkmount Quarry and Cooranbong Entry Site, affect discharge quantity and quality at LDP001 and LDP017.

Information Related to Licensed Discharge Point (LDP001)

- Assessment of the potential impacts of discharges from LDP001 on LT Creek, including considering potential chronic and acute impacts associated with all pollutants present at non-trivial levels, with reference to:
 - the average annual discharge frequency and volume;
 - the discharge quality in terms of the typical and maximum concentrations;
 - the *Australian and New Zealand Guidelines for Fresh and Marine Water Quality* (2018) guideline values and, where relevant, any benchmark values for acute toxicity;
 - the characteristics of the receiving waterway (e.g. environmental values, flows; ambient water quality).
- where relevant, consider measures to mitigate impacts.
- confirmation that the limits of reporting are sensitive enough to detect pollutants at levels that allow comparison to relevant guideline values (where available), in the context of the available analysis methods and technology.
- review of the selenium results (as the reported median concentration is potentially less than the reported maximum).
- details of the sampling design to ensure the characterisation is representative of the full range of operational conditions.
- consideration of macroinvertebrate and ecotoxicological monitoring that is required by the EPA under condition E1 of Environment Protection Licence (EPL) 395 in relation to discharges from LDP001.
- clarification of the inconsistencies in the number of samples analysed for different pollutants. For example, EPL 395 requires the same monitoring frequency for electrical conductivity, pH and turbidity, however, Table 5-4 indicates these results are based on differing numbers of samples.

Information Related to Licensed Discharge Point (LDP017)

- Assessment of the potential impact of discharges from LDP017 on Stony Creek, with reference to:
 - the discharge frequency and volume;
 - the discharge quality in terms of the typical and maximum concentrations of all pollutants potentially present at concentrations that pose a risk of non-trivial harm to human health or the environment;
 - the *Australian and New Zealand Guidelines for Fresh and Marine Water Quality* (2018) guideline values and, where relevant, any benchmark values for acute toxicity;
 - the characteristics of the receiving waterway (e.g. environmental values, flows; ambient water quality);
- where relevant, consider measures to mitigate impacts.
- confirmation that the limits of reporting are sensitive enough to detect pollutants at levels that allow comparison to relevant guideline values (where available), in the context of the available analysis methods and technology.
- characterisation of the quality, and assessment of the potential impact of, discharges from LDP017.

Groundwater Impact Information

- further evidence to define the predicted negligible impacts to groundwater aquifer connectivity.
- a detailed cross section demonstrating the depths and elevations of all existing subsurface coal extraction workings, fracture zones, the local geology, and the overlying alluvial systems and Groundwater Dependant Ecosystems (GDE's).
- an accompanying plan view map of the proposed first working area, the Awaba Longwall panels, GDE's, creek lines and alluvial.
- schematic diagrams showing a cross section of the proposed workings, the existing overlying workings, and geological strata and formations, to support conceptualisation of the connective pathways (if any) across the project area.

Other Information Required

3. No Further Information Required on Air Quality

Air impacts of the proposed modification are not significantly different to that currently permitted in EPL 395 held by the proponent. Existing air quality mitigation and management measures required by the EPL and implemented at Newstan Colliery are adequate for the proposed modification.

4. No Further Information Required on Noise Impacts

Noise impacts have not been modelled in the EA, however based on the scope and scale of the modification, noise impacts are not considered to be significantly different to that currently permitted in EPL 395. Existing noise mitigation and management measures required by the EPL and implemented at Newstan Colliery are adequate for the proposed modification.

If you have any questions about this matter, please contact Genevieve Lorang on (02) 4908 6869.

Yours sincerely

MITCHELL BENNETT
Head- Strategic Planning Unit- Hunter
Environment Protection Authority

Encl. Appendix 1: Justification of EPA information requirements – Newstan Mod 8.

Appendix 1: Justification of EPA Information Requirements – Newstan Modification 8

Water Quality

Water Treatment System

The EA indicates that the modification will not affect the frequency of discharges from the existing licenced discharge points. The volumes and associated salt loads of discharges from LDP001 and LDP017 will increase slightly, while those from LDP002 are not expected to be affected by the modification. Note that the EA indicates that an additional discharge point, LDP003 is planned as part of the separate Northern Coal Logistics Project. The EA indicates the proposed modification is not expected to affect discharge volumes or salt loads from LDP003.

The EA indicates that a water treatment plant operates at the Newstan Colliery Surface Site (NCSS) and includes sedimentation and filtration, but details of the treatment plant design and operation are not provided. It is unclear how flows to and from other sites (Hawkmount Quarry and Cooranbong Entry Site) affect wastewater quantity and quality.

The EA provides an overview of the water management system, however, this is incomplete and lacks sufficient detail. It is unclear how flows to and from other sites (Hawkmount Quarry and Cooranbong Entry Site) affect wastewater quantity and quality. The EA indicates that a water treatment plant operates at the Newstan Colliery Surface Site (NCSS) and includes sedimentation and filtration, but details of the treatment plant design and operation are not provided.

Water Quality Assessment

The EA refers to the *Australian and New Zealand Guidelines for Fresh and Marine Water Quality* (ANZECC, 2000). It should be noted that ANZECC (2000) has been superseded by the revised *Australian and New Zealand Guidelines for Fresh and Marine Water Quality* (ANZG, 2018). The guideline values currently remain unchanged from ANZECC (2000) but the following guideline values are incorrectly cited in Table 5-4 of the *Water Resources Impact Assessment*:

- electrical conductivity – 300 µS/cm (coastal lowland rivers; not 2,200 µS/cm)
- total nitrogen – 350 µg/L (coastal lowland rivers; not 500 µg/L)
- total phosphorus – 25 µg/L (coastal lowland rivers; not 50 µg/L)
- mercury – 0.06 µg/L (99% species protection; not 0.6 µg/L – 95% species protection)
- selenium – 5 µg/L (99% species protection; not 11 µg/L – 95% species protection)
- silver – 0.05 µg/L (Table 5-4 suggests there is no guideline value)
- total suspended solids – n/a (The guidelines do not provide guideline values for TSS)

Table 5-4 includes the guideline value for ammonia as a toxicant but does not include the guideline value for ammonia as a stressor (20 µg/L).

Table 5-4 indicates there are no guideline values for a number of pollutants for which ANZG (2018) provides interim working levels, which should be considered:

- antimony – 9 µg/L
- beryllium – 0.13 µg/L
- cobalt – 1.4 µg/L
- iron – 300 µg/L
- molybdenum – 34 µg/L
- tin – 3 µg/L
- vanadium – 6 µg/L

References to ANZECC (2000) should be updated to ANZG (2018) and all relevant guideline values and interim working levels should be considered in the assessment.

Licensed Discharge Point 001

Table 5-4 of the *Water Resources Impact Assessment* presents monitoring results from licenced discharge point LDP001, which indicate concentrations of some pollutants are elevated at times, including EC, bicarbonate, pH, oxides of nitrogen and iron.

Discharges occur in 100% of years but the EA does not specify the average annual frequency of discharges.

The slight increases to discharge volumes and salt loads expected at LDP001 due to the modification (~0.2% and ~0.3% respectively) are unlikely to result in any additional risk to waters. However, the EA indicates existing discharges from LDP001 are potentially chronically toxic at times and have affected macroinvertebrate community composition in LT Creek, noting there is no evidence of decreased diversity or prevalence of sensitive taxa. The EA does not consider potential drivers of chronic impacts or mitigation measures to address these.

Maximum concentrations

The EA does not adequately consider the potential risk of acute impacts with reference to maximum discharge pollutant concentrations and acute toxicity benchmarks.

Limits of reporting

It is unclear whether concentrations of beryllium, silver or vanadium were elevated as the medians are reported as less than the limits of reporting (LOR's) and the LOR's are greater than the relevant guideline values. The LOR for selenium (10 µg/L) is also greater than the default guideline value (5 µg/L), however, the reported maximum concentration (1.3 µg/L) is lower than the LOR and the guideline value.

The EA indicates the LOR for cyanide is 4 µg/L, however, the minimum, median and maximum values are reported as <1,000 µg/L. Therefore, it is unclear whether cyanide concentrations are elevated relative to the ANZG (2018) default guideline value (7 µg/L).

The proponent should provide details of the sampling design used to characterise discharges, demonstrating the results are representative of the full range of operational conditions and water quality, including typical through to worst case scenarios.

It is noted that the EPA placed a special condition on the licence (Condition E1) requiring macroinvertebrate and ecotoxicological monitoring in relation to discharges from LDP001. The results of this should be used to inform the discharge impact assessment.

Sampling

There are inconsistencies in the number of samples analysed for different pollutants. For example, the licence requires the same monitoring frequency for electrical conductivity, pH and turbidity, however, Table 5-4 indicates these results are based on differing numbers of samples.

Licensed Discharge Point 017

The EA did not assess the potential impact of discharges from LDP017 and indicates that macroinvertebrate monitoring has not been completed for Stony Creek as it has been dry during most recent monitoring events.

Modelling indicates the modification will result in an increase in discharge volumes and salt loads at LDP017 (~4% and ~3% respectively). Discharges from LDP017 are expected to occur once in every 10 years on average and only after prolonged periods of wet weather. Given the low discharge frequency and the likelihood of increased capacity for dilution and dispersion in Stony Creek at these times, the increased salt load is unlikely to pose any additional risk to aquatic ecosystem health.

However, as the EA does not characterise the quality of the discharge, it is unclear whether other pollutants could potentially be present at levels that pose a risk to Stony Creek.

Groundwater Impacts

Existing extraction areas and geological sequence

Fracturing above the first workings extraction area were deemed as being negligible within the submitted environmental assessment. Little discussion is presented regarding the overlying historical workings (Awaba), that have already mined the shallow coal seam formations.

A detailed cross section demonstrating the depths and elevations of all existing subsurface coal extraction workings, fracture zones, the local geology, and the overlying alluvial systems and Groundwater Dependant Ecosystems (GDE's), as well as an accompanying plan view map of the proposed first working area, the Awaba Longwall panels, GDE's, creek lines and alluvial would also be beneficial.

Fracture Studies and Geotechnical reports

The proponent has provided evidence in their submitted EA supporting negligible connectivity between the first workings area and the Awaba workings, which have been flooded by groundwater inflows since production stopped.

Despite the evidence presented, little to no evidence has been presented regarding an induced effect of increased subsidising and fracturing to the goaf areas above the Awaba longwalls, and the subsequent potential for increased connectivity to the surface as a result of the proposed mining.

Increased connectivity has the potential to result in amplified groundwater storage losses in the alluvial aquifers, and a reduction in water availability to GDE's (Dry Sclerophyll Forests). Schematic diagrams showing a cross section of the proposed workings, the existing overlying workings, and geological strata and formations, would support a better conceptualisation of the connective pathways (if any) across the project area.