



Department of Primary Industries

OUT15/14756

Dr Oliver Holm
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Dear Dr Holm

Drayton South Coal Project (MP11_0060) Response to exhibition of Environmental Impact Statement

I refer to your email dated 15 May 2015 to the Department of Primary Industries in respect of the above matter.

We have been advised that the Office of Agricultural Sustainability & Food Security will be providing their comments to you directly (ref: OUT15/14973).

Comment by NSW Office of Water


The NSW Office of Water has reviewed the exhibited Environmental Impact Statement (EIS) for the proposed Drayton South Coal Project. Key comments are provided below and detailed comments provided in Attachment A for consideration in final determination of the project. Recommended conditions of approval are provided in Attachment B.

- The water management system modelling predicts there is a 99% chance that water demands can be sourced from on-site supplies for the first 5 years of the project. For the remaining 10 years there is a 90% chance that off-site supplies would not be required. During very dry periods which represent 1% of the time, water would need to be sourced from current licences held by the proponent on the Hunter River and/or from water sharing arrangements with neighbours which are yet to be established.
- Clarification is requested on the annual maximum water demand for industrial use for the project due to variations between Table 7-32 (1232ML) of the Main EIS and Table 5.5 (1628ML) of Appendix Q.
- The revised groundwater model has indicated the impacts will meet the Level 1 minimal impact considerations of the NSW Aquifer Interference Policy. This impact is considered acceptable.

- The maximum water take from the Jerrys Water Source during operations is predicted in the EIS to comprise 114ML/yr due to capture of runoff from a third order watercourse and 94ML/yr due to reduced flow to the Saddlers Creek alluvium (total 208ML). Post mining the maximum water take from the Jerrys Water Source is predicted to comprise 134ML from the Saddlers Creek alluvium and 8ML from the Hunter River alluvium (total 142ML). The proponent will be required to obtain the necessary entitlement prior to the take occurring and continued consultation with the NSW Office of Water is requested to consider this process.
- Clarification is requested to quantify the reduced volume of runoff to Saddlers Creek and the Hunter River during and post mining. This is important to understand and determine the necessary water entitlements for the project.
- The EIS indicates the maximum water take from the Permian Coal Measures of 175ML/yr will require licensing under the *Water Act 1912*. This requires the proponent to amend a current application with the NSW Office of Water.
- The proposed reconstructed watercourses are a critical element to the final landform functioning and will require significant assessment and design to ensure long term stability and mitigation of downstream impacts.
- The Office of Water supports the proposed review of management plans for the Drayton Project to reflect the proposed project activities. The proposed groundwater monitoring plan and development of impact assessment criteria and trigger levels is critical, in addition to the ongoing validation of the OPSIM water balance model based on monitoring data.

For further information please contact Mr Tim Baker, Senior Water Regulation Officer on (02) 6841 7403 or at Tim.Baker@dpi.nsw.gov.au.

Yours sincerely



Kristian Holz
Director Policy, Legislation and Innovation

Attachment A

Drayton South Coal Project (MP11_0060) Request for comment on the exhibition of EIS Additional comments / Comment by NSW Office of Water

1. Project Activities

- Key differences from the previous Drayton South coal project include:
 - Reduction in resource to be extracted from 119 Million Tonnes to 73.5Mt.
 - Life of mine reduced from 27 to 15 years.
 - Disturbance footprint reduced from 1928ha to 1441ha.
- Key activities of current project include:
 - Additional mining of 1.4Mt at the existing Drayton Mine with extensions of the East Pit, North Pit and South Pit by 20ha, 9ha and 7ha respectively.
 - Open cut mining in the Drayton South area with mining of the Whynot Pit and Blakefield Pit to extract 73.5Mt.
 - One new water storage dam (Transfer Dam – 225ML) at Drayton South.
 - Installation of new mining and water management infrastructure at Drayton South, in addition to utilisation of existing infrastructure at Drayton Mine.
 - Rehabilitation of the Drayton Mine and Drayton South Mine.
 - Realignment of Edderton Road which is to include installation of culverts at watercourse crossings.

2. Water Demands and Sources

- Water supply is to be provided via a range of sources depending on availability. These include:
 - Drayton Mine pit inflows (936ML/yr – Table 5.6 Appendix Q)
 - Drayton South pit inflows (Max. 427ML/yr in Yr 8 – Table 13 Appendix R)
 - Outflows from the processing plant and tailings storage facility.
 - Rainfall runoff within disturbed areas and captured in sediment dams and pits (average 3100-3900ML/yr Table 5.9 Appendix Q).
 - Rainfall directly on to water storages.
 - Hunter River regulated river water source (198 unit shares) via new pipeline and pump.
 - Potable water from Muswellbrook Shire Council.
- Table 7-32 of the Main EIS indicates make up water demands for the project reach a maximum in Year 6 with a total of 3012 ML/yr. This is made up of 1780ML for dust suppression and 1232ML for industrial use. Table 5.5 of Appendix Q indicates the maximum make up water for the processing plant of 1628ML/yr in Yr 9 hence clarification of the maximum industrial demand is required and clarification if this will impact or vary the water demand modelling. Based on Table 5.5 this may increase the maximum water demand from 3012ML/yr to 3408ML/yr.
- Table 5.9 of Appendix Q presents an average annual water balance for the Drayton Mine and Drayton South over the 15 year project life. This indicates the rainfall runoff

within the mine water management system provides the largest inflow for the project and the largest outflow is water entrained within the tailings. Significant variation in outflow and inflows is evident over the project life, hence modelling of the wet and dry periods are critical to understand the impacts for water availability (dry periods) and on-site water management (wet periods).

- Based on the OPSIM model used to assess the water management system over the life of the project the following key results were evident:
 - From Yr 7 onwards there is a 1% chance that out of pit storages will be at or above their combined limit which would require alternate management measures which may impact on mining. The EIS indicates adequate storage is available to prevent impacts downstream.
 - 99% chance that water demands can be sourced from on-site supplies for the first 5 years of the project and a 90% chance that from years 5-15 no off-site supplies would be required.
 - 1% chance during very dry conditions of need for off-site water requirements (of at least 860-1000ML from Yr 8-14) which would need to be obtained via temporary trading on the Hunter River or through water sharing arrangements with neighbours.

3. Groundwater Impacts

- The groundwater modelling predicts a maximum drawdown of 1 to 2m in the Saddlers Creek alluvium along a 4km section. This drawdown will result in a maximum reduction in leakage from the Permian coal measures to the alluvium of 94ML/yr in Yr 15 and a resultant reduction in baseflow to Saddlers Creek of 76ML/yr. Post mining the maximum impact on the alluvium will be 30yrs after mining with 134ML/yr reduction in leakage, and 50yrs after mining for the creek baseflow with a 130ML/yr reduction.
- The groundwater drawdown is not predicted to impact on the Hunter River alluvium or the Hunter River during mining. Post mining the impact on the Hunter River alluvium is predicted to commence 6 years after mining and reach a maximum reduction of 8ML/yr 245yrs post mining. This reduction is predicted to reduce to 2ML/yr 800yrs post mining. Impacts on baseflow to the Hunter River post mining are predicted to be a maximum of 10ML/yr 300yrs after mining. This reduction is to reduce to 3ML/yr 900 yrs after mining.

4. Groundwater Licensing

- Table 4-1 indicates the requirement for an Aquifer Interference Approval under the *Water Management Act 2000*. This approval requirement is yet to be enacted which requires the activity to be considered under Part 5 of the *Water Act 1912* or by obtaining the necessary entitlement in a Water Access Licence under the *Water Management Act 2000*.
- Table 5.6 of Appendix Q indicates pumpable seepage of 936ML/yr at the Drayton Mine voids (North, South East) based on a groundwater assessment in 2006 (AGE 2006). Table 13 of Appendix R indicates maximum pumpable seepage at Drayton South (Blakefield and Whynot) is predicted in Year 8 with 427ML/yr. Seepage is understood to include both groundwater inflows from the coal measures and spoil seepage derived from rainfall infiltration. Table 13 of Appendix R further clarifies the groundwater inflow component at Drayton South which indicates the Yr 8 seepage

total of 427ML/yr comprises 163ML from the coal measures and 264ML from the spoil.

- Table 27 of Appendix R indicates water take from the Saddlers Creek alluvium to range from a minimum of 34ML/yr at commencement of mining to 94ML/yr in Yr 15. This is to increase to 134ML/yr post mining. Water take from the Hunter River alluvium is zero during mining and reaches a maximum of 8ML/yr 245 yrs post mining. Sufficient entitlement will need to be held in the Jerrys Water Source of the Water Sharing Plan for the Hunter Unregulated and Alluvial Water Sources to account for this take.
- Table 30 of Appendix R indicates the groundwater inflow that requires licensing from the Permian Coal Measures ranges from a minimum of 43ML/yr in Yr 1 to a maximum of 175ML/yr in Yr 9. Currently this requires licensing under the *Water Act 1912*.

5. Groundwater Modelling

- The current Drayton South Project presents an updated groundwater assessment of having reduced the mine footprint in order to accommodate the increased setbacks required by the Planning Assessment Commission. As per the IESC recommendations the groundwater model has been updated to incorporate more recent observation data and to refine the project impacts with the change in mine footprint.
- The groundwater assessment is supported by a calibrated groundwater model that has been independently assessed by Hydro Simulations. (25 April 2015). The model is classified according to the NWC (2012) Groundwater Modelling Guidelines as a Class 2 model suitable for the "prediction of impacts of proposed developments in medium value aquifers" and for "providing estimates of dewatering requirements for mines and excavations and associated impacts". The independent assessment concludes that the groundwater model is "fit for purpose" for addressing the potential environmental impacts from the proposed open cut mining operations and estimating indicative dewatering rates.

6. Aquifer Interference Policy

- Section 18 of Appendix R provides an assessment of the project against the Minimal Impact Considerations of the NSW Aquifer Interference Policy. This indicates the project impacts are within the Level 1 impact thresholds and is therefore acceptable.

7. Surface Water Impacts

- The project will reduce catchment runoff to Saddlers Creek by a maximum of 520ha in Year 12. This represents 5% of the catchment area. At mine completion the final void will reduce the catchment area by 305ha (3%) which will be a permanent loss of runoff to Saddlers Creek. During mining this represents a maximum reduction of 0.04% catchment loss to the Hunter River at Liddell and 0.02% post mining. Whilst the loss of catchment area has been predicted, it is not clear in the EIS what this equates to in terms of reduced runoff to Saddlers Creek and the Hunter River.
- No additional catchment of Saltwater Creek is to be impacted by the project.
- The EIS indicates no additional impact to the surface water catchment of the existing Drayton Mine with the proposed pit extensions.

- The existing watercourses within the disturbance footprint of Drayton South are to be completely removed during mining and a reconstructed drainage network is to be created on the final landform. Figure 4.4 of Appendix Q indicates the number of tributaries to be created which represents a significant scope of works. The design of the watercourses is to be based on a program called Geofluv. It is expected an extensive understanding of geomorphological and hydrological processes will be required to ensure long term stability and rehabilitation is achieved. Consultation with the NSW Office of Water is requested to ensure consistency with relevant guidelines, policy and legislative requirements.
- Section 3.3 of Appendix Q proposes the separation of clean and dirty water runoff and design of the sediment and erosion control measures based on the relevant guidelines from "Managing Urban Stormwater: Soils and Construction (Landcom 2004, DECC 2008)". This is supported by the NSW Office of Water.

8. Surface Water Licensing

- Table 2-1 of the Main EIS refers to a number of groundwater licences for which the Office of Water recommends additional information be included. This includes for the 5 licences listed 4 of these are test bores with the exclusion of 20BL171958. 20BL171958 is a licence for dewatering with an entitlement of 985ML which is currently subject to renewal by NSW Office of Water.
- Table 2-2 of the Main EIS contains information which requires amendment in terms of water licensing. This includes the following:

Table 2-2 Reference	Amendment
20AL201488	Is WAL 10666 which has a share component of 99ML and is linked to a combined approval for the purpose of irrigation (Hunter Reg River)
20AL200073	Is cancelled WAL491 (Hunter Reg River) and replaced with WAL31439 (30 unit shares) and WAL31440 (9 unit shares) in the Hunter Reg River water source
20BL173110, 20BL172869, 20BL172867, 20BL172866, 20BL172533, 20BL172532	20BL173109, 20BL172868, 20BL172865, 20BL172864, All monitoring bores
20BL106334	Stock bore

- Section 6.5.1 of Appendix Q indicates a maximum of 114ML of entitlement is required to account for the capture of water on a third order watercourse by the proposed Drayton South pits. This is based on estimating the total runoff generated from the disturbed catchment. This entitlement needs to be held in the Jerrys Water Source of the Water sharing Plan for the Hunter Unregulated and Alluvial Water Source.
- The final landform based on a catchment area of 264ha is estimated to result in licensing requirements of 185ML. This volume can be considered within the Harvestable Right Dam Capacity for the property at the time of mine closure. The proponent has estimated the MHRDC as 334ML, however all other dams on the

property within the harvestable right zone will need to be assessed to ensure sufficient MHRDC is available.

- Water take is predicted to occur to the Hunter River post mining to a maximum of 10ML/yr. This can be accounted for by the proponents current Water Access Licences (WAL1066, WAL31439 and WAL31440) which total 198 unit shares in the Hunter River Regulated River Water Source.
- The proposed 225ML Transfer Dam will be required to be a turkey's nest dam and maintain clean water flows from upstream to downstream to not require consideration for water licensing.

9. Void Characteristics and Management

- Three voids are to be created in the final landform at Drayton Mine (North, East and South). Under the proponents preferred scenario (Scenario two) in Section 16 of Appendix R the South and East voids are to be used for a combination of tailings and reject emplacements followed by capping and rehabilitation. The South void however is to be a water storage for the life of the project and will require a further commercial agreement with AGL Macquarie to enable Drayton Mine's continued use after 1 January 2023.
- Under Scenario Two, the East (North) void and the South void are proposed to be void lakes which will be groundwater sinks. Ongoing water take through groundwater inflow from the Permian coal measures is expected to replace water lost through evaporation.
- At Drayton South the Blakefield pit is to be rehabilitated with no final void lake, however a void is to be created in the Whynot Pit. Water level in the final void is predicted to reach an equilibrium 800 years after mining. This level will provide a freeboard of 17m before a spill event could occur. At equilibrium the evaporative loss is estimated at 401ML/yr which is to comprise approximately 188ML/yr from the newly created groundwater table.
- Saturation of the spoil around the Whynot Pit is predicted to take 245 yrs assumed at a constant rate of approximately 347ML/yr. From 245yrs post mining, water is predicted to accumulate in the final void and establish a void lake. The water quality in the final void is to progressively increase to an equilibrium level 500yrs post mining of about 6773mg/L.
- After 350 years post mining a flow through system is predicted between the final void lake and the surrounding spoil at a rate of 100ML/yr. This is predicted to result in an increase in the salinity of the Permian coal measures down gradient of the void from the current average of 3500mg/L up to 6812mg/L 500 yrs post mining.
- No increase in salinity in the Saddlers Creek alluvium is predicted during or post mining. The worst case impact on the Hunter River alluvium is an increase of 9mg/L (1.6%) between 350 and 500yrs post mining and an increase of 25mg/L (4.3%) between 500 and 1000yrs post mining. Further information is requested in relation to total salt flux.

10. Monitoring and Management

- The Office of Water supports the proposed groundwater monitoring and development of impact assessment criteria and trigger levels as part of development of the Water

Management Plan. Consultation with Office of Water during this plan development is requested.

- Table 8-1 of the Main EIS indicates a commitment to revise a range of existing management plans. Consultation with Office of Water is requested during this process, specifically in terms of the Water Management Plan, Rehabilitation and Offset Management Plan, Final Void Management Plan and the Tailings Management Plan.
- The Office of Water supports proposed commitment 27 to update and validate the OPSIM water balance model based on monitoring data. In the event the impacts are greater than initially assessed it is recommended further assessment be carried out to consider impacts on existing water users and the environment.
- In reference to commitment 29 the NSW Office of Water advises that any dealing under 71T of the Water Management Act 2000 to transfer shares from a major utility licence to any other category is currently prohibited.
- It is recommended the restoration of Saddlers Creek and the new Edderton Road crossing of Saddlers Creek be done in accordance with the NSW Office of Water's "*Guidelines for Controlled Activities on Waterfront Land*".

End of Attachment A

Attachment B

Drayton South Coal Project (MP11_0060)
Request for comment on the exhibition of EIS
Additional comments / Comment by NSW Office of Water

RECOMMENDED CONDITIONS OF APPROVAL

- The proponent is required to obtain the necessary water licenses for the project under the *Water Act 1912* or *Water Management Act 2000* prior to commencement of activities.
- The Proponent shall review the Water Management Plan for the project. This Plan must be developed in consultation with the Office of Water and include:
 - details of water use, metering and water management on site,
 - details of water licence requirements,
 - Surface Water Management Plan, and
 - Groundwater Management Plan.
- The Surface Water Management Plan must include:
 - a program to monitor:
 - surface water flows and quality,
 - surface water storage and use, and
 - sediment basin operation,
 - sediment and erosion control plans,
 - surface water impact assessment criteria, including trigger levels for investigating any potentially adverse surface water impacts, and
 - a protocol for the investigation and mitigation of identified exceedances of the surface water impact assessment criteria.
- The Groundwater Management Plan must include:
 - baseline data on groundwater levels and quality,
 - a program to monitor groundwater levels and quality,
 - groundwater impact assessment criteria, including trigger levels for investigating any potentially adverse groundwater impacts,
 - a protocol for the investigation and mitigation of identified exceedances of the groundwater impact assessment criteria.
 - a protocol for periodic review of groundwater model calibration and verification of groundwater take predictions and groundwater impacts.

End of Attachment B