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**Re: Amendments to the Tahmoor South Project**

Dear Charlie,

Tahmoor Coal Pty Ltd (Tahmoor Coal) has made changes to the Tahmoor South Project to further reduce potential environmental impacts, particularly potential subsidence and biodiversity impacts. These amendments include: the removal of two longwalls, LW107B and LW108B, further changes to the Reject Emplacement Area (REA) design and small amendments to the layout of the proposed ventilation shafts.

Niche Environment and Heritage Pty Ltd (Niche) have been requested to assess associated changes to risks to the environment as a result of the Project in light of these amendments. This report addresses the risk to aquatic biodiversity in consideration of these changes.

# 1. Introduction

## 1.1 Background

Tahmoor Coal Pty Ltd (Tahmoor Coal) owns and operates the Tahmoor Mine, an existing underground coal mine approximately 80 kilometres (km) south-west of Sydney in the Southern Coalfields of New South Wales (NSW). The mine has been operating since 1979 when product coal was first produced.

Currently, up to three million tonnes (Mt) of run-of-mine (ROM) coal is extracted annually from the mine. Product coal is primarily transported via rail to Port Kembla Coal Terminal, or to Newcastle Port Waratah from time to time, for shipment to both Australian and international markets.

Tahmoor Mine employs close to 400 people.

Mining within the existing Tahmoor North mining area is scheduled for completion by approximately 2022, depending on geological and mining conditions. Without access to a new extraction area by this time, Tahmoor Mine would commence closure of the mine resulting in cessation of the extraction of the coking coal resource. Accordingly, Tahmoor Coal is seeking approval for the Tahmoor South Project, being an extension of underground coal mining at Tahmoor Mine, to the south of Tahmoor Coal's existing mining area (the Project).

Given its significance to the State, the Project is deemed to be State significant development (SSD) under the provisions of the NSW Environmental Planning and Assessment Act 1979 (EP&A Act). Under these provisions, the NSW Minister for Planning and Public Spaces, or delegate, is the consent authority for the Project. Approval for the Project is also required from the Commonwealth Minister for the Environment under the provisions of the Commonwealth Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act).

Following the receipt of updated Secretary's Environmental Assessment Requirements (SEARs) in June 2018, a comprehensive environmental impact statement (EIS) was prepared by AECOM Australia Pty Limited (AECOM 2018) for the Project. The EIS was publicly exhibited between 23 January and 5 March 2019 by the NSW Department of Planning, Industry and Environment (DPIE). In response, 91 submissions were received from the community and community organisations, and 15 responses were received from government agencies and councils.

On 20 February 2020, a submissions report (AECOM 2020a) was lodged with DPIE which responded to all submissions made during exhibition of the EIS. At the same time (ie 20 February 2020) a project amendment report (AECOM 2020b) was lodged with DPIE to document amendments made to the Project in response to the submissions and to reduce potential environmental impacts of the Project.

The amendments documented in the project amendment report included, among other things, changes to the mine plan and the REA. The changes to the mine plan included the removal of a longwall in the northern part of the mine (LW109), reconfiguration of the longwall layouts to comprise two series of shorter longwall panels, the reduction of the width of the longwalls, and a reduction in the height of extraction within the longwalls. The changes to the REA included a reduction in the proposed extension area by increasing the height of the REA.

## 1.2 Amendments to Project

Tahmoor Coal has now made the decision to make further changes to the Project to further reduce potential environmental impacts, particularly potential subsidence and biodiversity impacts. These amendments include the removal of two longwalls, LW107B and LW108B, further changes to the REA design and small amendments to the layout of the ventilation shafts.

With the removal of LW107B and LW108B the life of mining will be reduced from about 2035 as described in the project amendment report (AECOM 2020b) to about 2032 (i.e. reduction of about three years).

All other aspects of the Project remain the same as those documented in the project amendment report (AECOM 2020b).

Further details on the proposed amendments to the Project are described in Section 2.

## 1.3 Purpose of this report

This report has been prepared by Niche Environment and Heritage Pty Ltd (Niche) to consider the current changes to the Project in relation to Aquatic Ecology. This report will be used to support a second project amendment report being prepared by EMM Consulting Pty Ltd on behalf of Tahmoor Coal.

## 2. Amendments to Project

As previously stated, changes to the Project are proposed to further reduce potential environmental impacts, particularly potential subsidence and biodiversity impacts. These amendments include:

- the removal of two longwalls in the southern part of the mine (LW107B and LW108B)
- the containment of the REA within the bounds of the currently approved disturbance footprint
- changes to the layout of the ventilation shafts and associated transmission line easements.

The removal of LW107B and LW108B will reduce the estimated production volume of the Project from about:

- 43 million tonnes (Mt) of ROM coal considered in the project amendment report (AECOM 2020b) to 33 Mt
- 30 Mt of coking coal considered in AECOM 2020b to 23 Mt
- 2 Mt of thermal coal considered in AECOM 2020b to 1.4 Mt.

The removal of LW107B and LW108B will also lead to a reduction in the volume of rejects from about 11.6 Mt to 9.7 Mt.

With the removal of LW107B and LW108B the life of the mining will be reduced from about 2035 as described in the project amendment report (AECOM 2020b) to about 2032 (i.e. reduction of about three years). Some surface works, rehabilitation and mine closure would be undertaken after the completion of mining activities.

The containment of the REA within the currently approved disturbance footprint will ensure that no native vegetation, particularly the Shale Sandstone Transition Forest (SSTF) endangered ecological community, will be required to be cleared for the REA. However, to accommodate the reduced footprint, the height of the REA will be increased by 10 metres from a top of reduced level (RL) 310 metres that was proposed in the project amendment report (AECOM 2020b) to a top of RL 320 metres.

The changes to the layout of the ventilation shafts and associated transmission line easements are aimed at reducing clearing of the SSTF during their construction.

All other aspects of the Project remain the same as those documented in the project amendment report (AECOM 2020b).

# 3. Assessment of amendments to Project in relation to aquatic ecology

The Tahmoor South Project Aquatic Ecology Impact Assessment of the Amended Project (Niche 2019) identified two mechanisms that had the potential to impact aquatic biodiversity:

- Subsidence
- Mine water discharge.

The proposed amendments to the Project include three components:

- Removal of Longwalls LW107A and LW108B
- Reduction in size of REA
- Changes to layout of the ventilation shafts and associated transmission line easements.

Of these changes, removal of the longwalls is the only component considered likely to lead to changes in risks to aquatic habitat and ecology. The changes to the REA and ventilation shaft will not affect aquatic ecology as there is no aquatic habitat in the vicinity of these areas and the nature of the amendment impacts will not significantly affect the receiving environment.

The removal of the two longwalls from the Project will reduce the mine life by three years and therefore reduce the duration of the groundwater take and induced surface water take by the same amount of time. This will lead to a reduction in the quantity of mine water required to be discharged and also reduce the risk of subsidence related impacts near waterways that would have been associated with the construction and operation of the longwalls. This will result in reduced ecological risk to the aquatic environment from mine water discharge into the Bargo River as well as reduced risk of subsidence impacts to Hornes Creek and Dog Trap Creek tributaries.

Details regarding changes to Project and its potential impact on aquatic ecology are provided in Table 1.

## 3.1 Subsidence

The type of subsidence impacts that may occur will not change as a result of the proposed amendments. However the removal of the two longwalls from the Project will result in a reduction in the extent of potential subsidence -related impacts associated with construction and operation of the longwalls; and as such the risk of impact to streams located above or near LW107B and LW 108B will be reduced accordingly. Areas above these longwalls include reaches of 1$^{st}$ order tributaries of Dog Trap Creek (Table 1). The removal of longwalls from these areas will reduce the risk of subsidence impacting these sections of streams. Also, with the removal of the longwalls, cumulative impacts associated LW1077B and LW108B with previously mined longwalls adjacent (e.g. LW105B and LW106B) are also likely to be reduced.

Hornes Creek was not previously proposed to be directly mined beneath as part of the Project, and as such the previous assessment (Niche 2019) found that there was a low risk of subsidence related impacts occurring to Hornes Creek. The removal of the longwalls from the Project will further reduce this risk as the stream is more than double the distance away from the closest longwall compared to the previous longwall layout.

**Table 1: Risk of subsidence impact of the Amended Project (2020) in comparison to previous longwall layout**

| Location | Strahler Stream Order | Previous longwall layout (2019) | Amended Project 2020 | Discussion of impact |
|---|---|---|---|---|
| Dog Trap Creek and tributaries | 1st Order | Sections of 1st Order Dog Trap Creek and tributaries are the only waterways located directly above Longwall 107B and 108B | Longwalls 107B and 108B will not directly mine beneath sections of Dog Trap Creek and tributaries. | Longwalls 107B and 108B will not directly mine beneath 1st order sections of Dog Trap Creek or its tributaries and therefore there will be a reduced risk of subsidence related impacts in these areas. There is also likely to be a reduction in cumulative impacts associated with longwalls adjacent to LW107B.<br>HEC (2020) concluded that the removal of LW107B and LW108B is unlikely to lead to changes in subsidence related subsurface flow and pool holding capacity, as there are no mapped pools in the area. The aquatic habitat provided by these sections of stream are limited (consisting of small drainage lines/swales) and any potential change in risk is minimal.<br>However, given the removal of the longwalls and the potential source of impact, it is considered likely that the risk to any aquatic habitat present within these sections of waterways (whether marginal or temporary) will be reduced.<br>HydroSimulations (2020b) concluded it likely that the baseflow losses and surface cracking in the headwaters of Dog Trap Creek will be reduced due to the removal of underlying panels 107B and 108B however this reduction in impact in this area would be localised. As a result, given that the lower parts of Dog Trap Creek will still be undermined by other panels, it was concluded that there will be no change to the downstream flow in Dog Trap Creek due to the amendments to the Project (HydroSimulations 2020b). Therefore, while the amendments may result in a localised reduced risk of impacts to aquatic ecology, there is no change to potential aquatic ecological impact due to groundwater losses on downstream flow as a result of the amendments. |
| Hornes Creek | 4th Order | Not directly mined beneath, located 540 m south-west of LW108B at its closest point to mining. | Not directly mined beneath, located 1,180m west of LW 106B at its closest mining point. | Previous assessment on subsidence related impacts in this creek (MSEC 2019) found that the risk of impacts is likely to be low based on the distance from the creek to the longwalls. This risk is reduced further with the removal of LW 107B and 108B. Thus, loss of water in pools and changes to water quality associated with subsidence related impacts are unlikely to impact the aquatic habitat in Hornes Creek. Baseflow losses in Hornes Creek were predicted to be very minor in the Groundwater Assessment (HydroSimulations 2020a). These are now predicted to be negligible (HydroSimulations, 2020b) with the further amendments removing Longwalls 107B and 108B, of which 108B was to be the closest of all the proposed longwalls. As such the risk of potential impacts to aquatic ecology (albeit minor) will also be reduced. |
| Cow Creek | 3rd Order | Not directly mine beneath -outside of 20mm subsidence contour. | Not directly mine beneath outside of 20mm subsidence contour. | HydroSimulations (2020) stated that 'the predicted reduction in surface water flow in Cow Creek (and the associated WaterNSW Special Area) is likely to be smaller than outlined in the Amended Project Report'. This represents a further reduction in potential impact to Cow Creek.<br>In 2019 Niche concluded that the small changes in baseflow will have negligible effect on aquatic ecology. This assessment is still applicable to the Project. |

### 3.2 Mine water discharge

The mine water discharge is likely to differ to the previous assessment conducted in 2019 with the removal of LW107B and LW108B. The removal of these longwalls will result in less water required to be discharged over the life of the mine. However, the management of the mine water will not change.

Previous assessment (Niche 2019) concluded:

- It is expected that no further impacts to aquatic ecology will occur as a result of mine water discharge from the Tahmoor South Project, as hydrology is not expected to differ significantly from the current regime, and water quality is expected to improve with the implementation of the Waste Water Treatment Plant (WWTP) (PRP 22- Stage 3).
- It is expected that reductions in salinity concentrations will improve aquatic ecology downstream of the mine water discharge as a result of the implementation of the WWTP.
- The results of predictive modelling of the water management system over the remaining mine life indicate that release to Licence Discharge Point 1 (LDP1) is unlikely to increase above the EPL 1389 volume limits. On this basis, it is expected that the Amended Project would not result in adverse water quality impacts due to releases and overflows from the site water management system (HEC 2019).

As the management of mine water will not change as a result of the Project amendments, the assessment and conclusion reached in the previous assessment (Niche 2019) still stand and are relevant to the proposed amendments.

## 4. Conclusion

The Amended Project will reduce the risk of potential impacts to aquatic ecology as a result of the Project.

The removal of LW107B and LW108B will reduce the risk of impact to 1$^{st}$ order tributaries that are located directly above the longwalls as well as the cumulative impacts associated with previously mined adjacent longwalls. This will reduce this risk of impact to some 1$^{st}$ order sections of Dog Trap Creek and its tributaries. The risk of impacts to Hornes Creek, which previously had a low risk of being impacted by mining, will be reduced even further as it will be located even further from the nearest longwall (1,180 metres). Similarly, the minor risk of impact to Cow Creek will also be reduced as a result of these additional amendments.

The quantity of mine water discharge will likely be reduced over the life of the mine due to the Amended Project. Management of the mine water discharge will be the same as discussed in the previous assessment (Niche 2019) where it was determined that impacts to aquatic ecology as a result of potential changes to water quality and quantity as a result of the Project would be unlikely.

The Amended Project is considered to have resulted in a reduction in risk of potential impacts to aquatic ecology and habitat in the Project Area.

## References

AECOM (2018). Tahmoor South Project - Environmental Impact Statement, prepared for Tahmoor Coal Pty Ltd by AECOM Australia Pty Ltd.

AECOM (2020a). Tahmoor South Project - Response to Submissions, prepared for Tahmoor Coal Pty Ltd by AECOM Australia Pty Ltd.

AECOM (2020b). Tahmoor South Project - Project Amendment Report, prepared for Tahmoor Coal Pty Ltd by AECOM Australia Pty Ltd.

HEC (2019). Tahmoor South Project: Surface Water Impact Assessment. Prepared by Hydro and Engineering Consulting for Tahmoor Coal Pty Ltd.

HydroSimulations (2020a). Tahmoor South Amended Project Report: Groundwater Assessment. Doc ref. HS2019/42 (665.10010), Nov 2019.

HydroSimulations (2020b). Tahmoor South Project – Second Amended Project Report: Groundwater Assessment. SLR/HydroSimulations 665.10010.00005. July 2020.

MSEC (2019). Tahmoor South Project Subsidence Constraints Assessment: Assessment of potential constraints on the proposed Tahmoor South Project due to surface subsidence impacts resulting from the proposed longwall mining. Prepared by Mine Subsidence Engineering Consultants for Tahmoor Coal.

Niche (2019). Tahmoor South Amended Aquatic Ecology Report. Prepared for Tahmoor Coal Pty Ltd.