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Attention: George Mobayed

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Our ref ER20743
Your ref 09_0155

Dear Mr Mobayed

Tomingley Gold Project (09_0155) – Exhibition of Environmental Assessment

I refer to your letter of 8 November 2011 requesting a review of the exhibited environmental assessment (EA) for the Tomingley Gold Project. The NSW Office of Water appreciates the opportunity to comment and initially refers to previous correspondence issued by the Office of Water dated 7 July 2011 for the adequacy assessment.

The NSW Office of Water provides this advice on the basis that the former legislative provisions under Part 3A of the *Environmental Planning and Assessment Act 1979* apply to this proposal. On review of the exhibited EA the Office of Water recommends further assessment of critical issues and consideration of key points prior to determining the project. Detailed comments are provided in **Attachment A** and recommended conditions of approval shown in **Attachment B**. The key points include:

- The flood assessment has inadequately addressed impacts both within the mine site and off-site. Spatial mapping of flood extent is provided only for the 1 in 2yr ARI event and assessment of potential off-site impacts has not been provided.
- Significant uncertainty is recognised in the groundwater modelling for the proposed underground and open-cut dewatering requirements. Although this is considered adequate for the groundwater environment and risks to be assessed for this project, it highlights the necessity for regular modelling reviews and accurate monitoring to inform the annual licence requirements and review of impacts.
- Office of Water recommends a buffer distance of 40m between Gundong Ck and the proposed bund to ensure consistency with Controlled Activity Guidelines for a third order or greater stream.
- Office of Water recommends review of the channel design and bank stabilisation methods for the Eastern Surface Water Diversion structure to ensure channel stability can be maintained.
- Office of Water recommends baseline monitoring comprise a comprehensive program to establish a thorough understanding of conditions prior to commencement of operations.
- Office of Water supports the commitment of surface water and groundwater monitoring and recommends development of a surface water and groundwater management plan to incorporate management, monitoring and mitigation requirements.

- Licences under the *Water Act 1912* are required for levee construction (Gundong Ck bund) and groundwater interception.

Should you have any further queries in relation to this submission please do not hesitate to contact Tim Baker on (02) 6841 7403.

Yours sincerely



Mark Mignanelli
Manager Major Projects, Mines and Assessment
16 December 2011

DETAILED COMMENTS

1. WATER SUPPLY

- The EA indicates the primary water supply for the project is via a pipeline which proposes to access groundwater from an existing irrigation property near Narromine. The Office of Water acknowledges the proponent has purchased a Water Access Licence (WAL20270) with 1000 shares of entitlement in the Lower Macquarie Groundwater Source (Zone 6). This represents a licence to extract 1000ML each year assuming allocations are 100% and no other restrictions are in place. The proposed site of extraction has had a hydrogeological assessment carried out which has been assessed by the Office of Water. This assessment has identified no hydrological impediment to the ability to extract the proposed volume from the site. However the Office of Water advises that the licence holder must comply with all restrictions and reductions of extraction rates declared or ordered to apply in a Local Impact Area (if declared) under the *Water Management Act 2000*. If this occurs this may represent a risk from accessing the required volume from the proposed extraction point.
- It is acknowledged that water sourced from dewatering activities and water captured within sediment basins is proposed to be used for dust suppression and revegetation when required.

2. GROUNDWATER ASSESSMENT

- The EA indicates the dewatering requirements of the proposal are expected to have a drawdown extent of 1700-5600m from the mine site, draining the McPhail historical workings located approximately 400m to the south. The large variability in the predicted drawdown extent is recognised to be partly due to the modelling method adopted and partly due to the limitations of modelling a fractured rock groundwater system.
- Limitations were also identified in the groundwater modelling due to uncertainty in the number of pits to be operating at any one time and hence the exact dewatering requirements on a year by year basis. This uncertainty extends to the recovery modelling of the voids.
- The modelling estimates groundwater inflow to the open cuts to range between 3 and 20L/s (94.6ML/yr-630.7ML/yr). This dewatering requirement if removed from the Wyoming underground would be sufficient to keep the open cuts free of water. The EA indicates evaporation is anticipated to be adequate in most instances to dewater the open cuts with average evaporation estimated to be 759.2ML/yr. This evaporation rate however is based on the surface area of each pit at the ground surface which will be limited in its applicability to groundwater storage in the pits during the mine life.
- The closest registered groundwater user of the deep fractured rock groundwater system is 7km from the mine site and is outside of the predicted drawdown zone. Potential dewatering of the alluvial aquifer adjacent to Gundong Creek is not predicted to propagate off the mine site hence although there are users of this aquifer they are not expected to be impacted. A comprehensive monitoring program will be required to ensure impacts to the shallow and deep aquifers are monitored during the mine life.
- Narromine Shire Council has a shallow bore that is used to extract groundwater from the alluvial aquifer for Town Water Supply north east of Tomingley. Further to this there are a number of shallow bores licensed for stock and domestic use within a 10km radius of the mine site accessing the shallow alluvium. The proponent must take all necessary steps to ensure that this shallow alluvium is not contaminated and any impacts to water availability are adequately identified and mitigated.
- Groundwater dependent ecosystems were not identified in the EA however mature trees present along Gundong ck were identified to potentially use groundwater from the shallow

alluvium. This is sufficient to constitute a GDE therefore monitoring of groundwater within the shallow alluvium combined with monitoring of the riparian vegetation is recommended.

- Office of Water supports the proposal to line the floor and wall of the Residue Storage Facility with compacted clay to a permeability of 1×10^{-9} m/s. This will aid in mitigating impacts to groundwater quality and the associated water users and the environment.

3. SURFACE WATER ASSESSMENT

- Appendix 6 of the Surface Water report provides spatial mapping of the flood extent created by the bund adjacent to Gundong Ck for a 1 in 2y ARI flow event. This map indicates the flood extent downstream of the mine site boundary extends beyond the 1 in 2y ARI flood extent, however there is no clear assessment of the potential impact to the downstream landholders. Office of Water recommends mapping be provided for the range of ARI flow events up to the 1 in 100yr ARI and adequate consideration of impacts to adjacent lands.
- The bund adjacent to Gundong Ck is proposed to be greater than 20m from the watercourse bank and the core riparian zone is to be managed within the biodiversity strategy. Whilst the concept of a buffer distance and riparian management is supported, the Office of Water recommends a 40m buffer distance between the top bank of Gundong Ck and the base of the proposed bund. This is due to the classification of Gundong Ck as a 5th order stream which represents a watercourse of significant value and to ensure consistency with the Office of Water's Controlled Activity Guidelines. The guidelines can be accessed at the following link: <http://www.water.nsw.gov.au/Water-Licensing/Approvals/Controlled-activities/default.aspx>
- The impacts to watercourses due to the proposed pipeline route are not clearly assessed in the EA. The Office of Water requests any temporary or permanent crossings for vehicle access be clearly identified and the impacts assessed. Confirmation is also requested as to whether all watercourses are to be underbored and whether all works are to be more than 40m from watercourses. Works within 40m of a watercourse (including the main access crossing over Gundong Creek) are to be consistent with Office of Water's Controlled Activity Guidelines.
- The proposal includes construction of 5 sediments basins around the site. These structures are excluded from a licence requirement under the *Water Management Act 2000* however it is recommended the design be in accordance with the guideline, *Managing Urban Stormwater: Soils and Construction* (Landcom 2004). It is also recommended that these structures are located a minimum of 40m from Gundong Ck where relevant.
- Surface water modelling indicates a reduction in mean annual flows from the mine site of 6% or 17ML/yr, which represents a potential flow decrease of 0.5% to downstream users. Office of Water supports the consultant's interpretation that this reduction would not represent a significant impact to downstream users, the natural environment or surface water conditions.
- The EA includes a statement of commitment to carry out additional flood modelling of the diversion bund to the north of the Caloma open cut. Office of Water recommends this impact assessment be carried out prior to determination of the project due to the potential to result in modifications to other surface water infrastructure and associated impacts.
- The proposed diversion of drainage line B around waste rock emplacement 3 represents a significant modification to the natural flow regime. This is due to concentration of flows within a confined channel and the re-direction of flow. Cross-section B-B in Figure 14 of the Surface Water Assessment indicates the proposed channel dimensions to be approximately 3.4m deep with a base of 6.5m. These dimensions are a significant variation from the gentle slopes that are currently under cultivation with no channel incision. The batter slopes of the proposed diversion channels range from 2 in 1 to 1 in 1 which is of significant concern from a stability perspective as it is generally understood that such angles cannot easily be stabilised by vegetation. The Office of Water requests further consideration is given to channel dimensions and bank stabilisation, and consideration of the proposed diversion from a safety perspective on the upstream side. It is recommended the proponent review the Office of Water's Controlled Activity Guidelines for general principles of watercourse design.

4. MONITORING AND MITIGATION

- Baseline monitoring is critical to provide a clear understanding of natural conditions prior to commencement of activities. The Office of Water supports the proponents intent to collect baseline data, however is concerned that the EA indicates baseline monitoring of groundwater is to occur only once prior to commencement. This would be considered inadequate to establish baseline conditions and recommends a minimum 12 months of monitoring with monthly sampling of water level and water quality.
- The development of a groundwater monitoring network including number of bores, sampling design and location etc. should be undertaken in consultation with the Office of Water. The deep and shallow aquifers will require monitoring.
- Additional monitoring bores will require licensing prior to installation.
- The Office of Water recommends the proponent prepare a water management plan to address the surface water and groundwater management, monitoring and mitigating requirements. Office of Water supports the concept of an impact response protocol detailed in the EA for surface and groundwater management and recommends this be included within the water management plan. The identification of a groundwater dependent ecosystem associated with Gundong Ck will also need to be incorporated into the monitoring plan.

5. WATER LICENSING

- The following activities identified within the EA require licensing under the *Water Act 1912* prior to construction or the activity occurring.
 - Bund adjacent to Gundong Creek (Part 8 licence).
 - Groundwater interception and/or dewatering of groundwater and the purchase of necessary entitlement (volume)(Part 5 licence).
 - Monitoring bores (Part 5 licence)
- Upon commencement of a Water Sharing Plan for groundwater and surface water the works identified in this section would need to be considered for approval requirements under the *Water Management Act 2000*. The relevant groundwater sharing plan is anticipated to commence in January 2012 and the surface water sharing plan in Mid 2012.
- Due to the significant uncertainty in groundwater modelling the Office of Water recommends the proponent obtain a licensed entitlement based on the maximum modelling scenario. The Office of Water advises that the appropriate licensed entitlement and license under the *Water Act 1912* must be obtained prior to groundwater interception and/or dewatering of groundwater occurring.
- The proponent will be required to retain licensed groundwater entitlement at the site post mining activity to licence the ongoing groundwater inflow during filling of the voids and replacement of water lost through evaporation after the level in the voids reach equilibrium.

**End of Attachment A
16 December 2011**



Recommended Conditions of Approval

- The proponent must ensure that it has sufficient water for all stages of the project to the satisfaction of the NSW Office of Water, and if necessary, adjust the scale of operations to match its licensed water entitlements.
- The proponent must prepare a Water Management Plan to address surface water and groundwater management, monitoring and mitigation requirements. This plan is to be prepared in consultation with and to the satisfaction of the NSW Office of Water prior to commencement of activities.
- The proponent must obtain relevant licences to the satisfaction of the NSW Office of Water under the *Water Act 1912* for the construction of levees prior to commencement of activities.
- The proponent must obtain relevant licenses to the satisfaction of the NSW Office of Water under the *Water Act 1912* for all activities which intercept or extract groundwater prior to commencement of these activities.

**End of Attachment B
16 December 2011**

George Mobayed - Tomingley Mine EA - amendment to recommended condition of approval

From: Tim Baker
To: George Mobayed
Date: 20/12/2011 2:54 PM
Subject: Tomingley Mine EA - amendment to recommended condition of approval
Attachments: TomingleyEAExhibited_FinalResponse.pdf

Hi George,

In addition to the response issued by Office of Water to the exhibited Final EA (response attached) I have the following amendment to the third recommended condition of approval in Attachment B. This is based on identifying a licence requirement for the proposed eastern surface water diversion. This also adds an additional licence requirement to Section 5 of the response.

"The proponent must obtain relevant licences to the satisfaction of the NSW Office of Water under the Water Act 1912 for the construction of levees and surface water diversions prior to commencement of activities"

If you need anything further please let me know. Please note I am on leave from the end of today until 16 January 2012.

Regards
Tim

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