



Department of Primary Industries

OUT14/27859

Mr Carl Dumpleton
Mining Projects
NSW Department of Planning and Environment
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2 SEP 2014

Dear Mr Dumpleton,

**Tinda Creek Sand Quarry Expansion (SSD 4978)
Response to exhibition of Environmental Assessment**

I refer to your email dated 9 July 2014 requesting advice from the Department of Primary Industries (DPI) in respect to the above matter.

Comment by Fisheries NSW

Fisheries NSW advise no objections provided that sediment and water quality controls are conducted as proposed, to mitigate potential impacts to the nearby creek.

For further information please contact Carla Ganassin, Fisheries Conservation Manager, (Wollongong Office) on 4254 5527 or at carla.ganassin@dpi.nsw.gov.au.

Comment by NSW Office of Water

The NSW Office of Water (Office of Water) has reviewed the Environmental Impact Statement (EIS) and notes the following key issues with detailed comments at Attachment A.

1. Clarification is required on the volume of surface and groundwater that will be taken, volumes to be licensed, and baseflow losses.
2. Additional aquatic ecology work is recommended.
3. An assessment of the potential impacts of the expanded quarrying specifically on potential GDEs within the swampy area in the Tinda Ck valley west of Putty Road should be completed. If found to be groundwater dependent, more detailed protection and mitigation measures will need to be developed.

4. The analysis results for nitrate, ammonia and TPH for monitoring completed needs to be provided to the Office of Water for review.
5. Additional detail is required in relation to groundwater monitoring, along with consideration of an expanded groundwater monitoring network reflective of the expanded extent of the proposal.
6. Trigger and response planning will be required to ensure any unexpected impacts are detected and managed.
7. Further detail is requested in relation to the rehabilitation of watercourses and the final void.

For further information please contact Janne Grose, Planning and Assessment Coordinator (Penrith office) on 4729 8262 or at janne.grose@water.nsw.gov.au.

Yours sincerely



Kristian Holz
Policy, Legislation and Innovation

Attachment A

Tinda Creek Sand Quarry Expansion (SSD 4978) Response to exhibition of EIS Additional comments by NSW Office of Water

Groundwater

Water Use and Licences

Based on the information provided in the EIS, it is difficult to determine total annual current and proposed groundwater and surface water use. It is suggested a table is provided which clearly sets out the predicted volumes for surface water and groundwater take.

The EIS refers to water that is exported from the site in product sand and used on site for dust suppression. It indicates this water comprises surface runoff from the closed water management system and groundwater (page 3.14). Appendix 4 also notes the quarrying operations result in a reduction in groundwater contribution to base flows in Tinda Creek (see page 6.1).

Appendix 4 notes groundwater modelling indicates the proposed quarry operations will result in a total annual groundwater water demand of approximately 16 to 20 ML/year (page 6.1), which includes:

- 8 to 10 ML /year reduction in groundwater contribution to baseflows,
- 8 to 10 ML/year of groundwater for dust suppression.

The total annual groundwater demand estimate of 16 to 20 ML/year does not appear to include the loss of groundwater exported from the site in product sand.

In any future water impacts modelling, the volume of downstream baseflow losses should be reassessed to confirmed baseflow reduction volumes. If proven to be significant, this will need to be accounted for and licensed as part of the surface water "take" applying to the quarrying activities.

The EIS states at the proposed maximum production level, water exported from the site in product will increase to a maximum of approximately 24 ML/year making the total water usage for dust suppression and export in product up to approximately 34 ML/year (page 4.41). It is unclear if the 24 ML/year of water exported from the site in product sand consists of both groundwater and surface water, and if so what the groundwater component will be. The 34ML/year estimate does not appear to include the baseflow reduction volumes.

Section 4.9.2 of the EIS estimates the annual dust suppression needs is approximately 8 to 10 ML/year with the majority of this water drawn from the dredging operations and less than 0.3 ML/year of this being supplied from on-site groundwater bores (page 4.41). It appears the 0.3 ML/year is an error as Appendix 4 indicates groundwater modelling estimates the quarry uses approximately 8 to 10 ML/year of groundwater for dust suppression (see Section 6, page 6.1).

Groundwater Monitoring

Section 4.9.3.5 of the EIS indicates additional groundwater bores are to be established towards the western boundary of the site and in the north east corner of the site (page 4.49) but the draft Statement of Commitments (5.10.1) states "*Hy-Tec will continue to undertake monitoring of groundwater bores in accordance with existing licence conditions*" (page 5.4).

Details of expansion of groundwater monitoring to reflect the expanded quarrying activities needs to be described.

The analysis results for nitrate, ammonia and TPH for monitoring completed needs to be provided to the Office of Water for review.

Backfilling extraction voids with VENM/ENM

The Groundwater Assessment indicates potential impacts to groundwater levels in the surrounding area will be reduced through the proposed backfilling with ENM and VENM (page 6.1). The EIS notes VENM /ENM brought to site will comprise materials derived from sandstone, siltstone and clay shales from across the Sydney Basin and would have a similar particle size and hydrological properties to the sandy clay material that is being extracted from the site (see Section 2.3.8, page 2.10).

It is recommended this requirement for the VENM/ENM is included in the Statement of Commitments or as a condition of consent so that the impacted areas are restored to a state where groundwater flows are the same or similar to their pre-extraction state (page 2.11).

Groundwater Dependent Ecosystem

The Ecological Assessment (Appendix 7) notes Mellong Sandmass Swamp Woodland and Mellong Sandmass Sedgeland which occur in the project area are expected to be reliant on groundwater interaction during periods of low surface water flow (see Section 4.4, page 4.18).

Appendix 7 indicates an inspection of the GDEs potentially affected by drawdown of groundwater adjacent to the existing extraction areas was undertaken and the inspection found no apparent impacts from potential drawdown (see Section 5.7, page 5.12). It is suggested further details are provided, including a scaled plan which shows the area covered by the inspection, the approved extraction area and the proposed extraction areas.

An assessment of the potential impacts of the **expanded quarrying specifically on potential GDEs within the swampy area in the Tinda Creek valley west of Putty Road** should be completed. If found to be potentially groundwater dependent, more detailed planning of how these communities will be protected will need to be undertaken

If the project is approved, it is recommended long term monitoring is required to be undertaken to assess the on-going health/condition of the adjoining GDEs and ensure the GDEs are not being affected by potential groundwater drawdown.

Aquatic Habitat

Appendix 7 of the EIS indicates baseline ecological monitoring surveys of Tinda Creek were undertaken on 15 and 16 August 2007 to contribute to an assessment of whether the quarry was having an impact on the ecosystems of Tinda Creek (see Section 3.1, page 3.3). It indicates this survey demonstrated the quarry was not adversely impacting on the ecology of Tinda Creek (page 3.4). The aquatic habitat assessment included in Appendix 7, however is not considered adequate to demonstrate that the quarry is not having an adverse impact on the ecology of Tinda Creek.

It refers to eight monitoring sites established for undertaking aquatic habitat surveys. Macroinvertebrates were sampled at 4 sites (see Section 4.3, page 4.15). A map has not been provided which shows the location of these sites. It is requested a scaled plan is provided which shows the location of:

- the monitoring sites (including the four macroinvertebrate sample sites),
- the watercourses and diversion channels,
- the existing approved extraction area, and
- the proposed extraction areas.

It is noted the monitoring was undertaken shortly after a period of high precipitation and runoff following a storm event.

The survey design has a number of key weaknesses. There is no clearly identified reference or control sites/streams, sampling was only done adjacent to and downstream of the activity (compared with riparian vegetation assessment which has comparison sites). Given the quarry has been in operation for 30 years, the only logical way to determine an impact is to compare with other streams unaffected by the quarry.

The analyses are basic and inadequate (also poor design limits interpretation). The report uses SIGNAL scores, but it has not calculated them properly for each sample/site (i.e. weighted average SIGNAL score for each site/sample). AUSIRIVAS could also be used in conjunction with a better design.

Appendix 7 also refers to ecological monitoring of Tinda Creek which was undertaken for the Project in 2011 (page 3.3) but no details are provided on the 2011 surveys (for example the season, duration (number of days), dates, weather conditions etc that the survey was undertaken. It is unclear why Section 4.3 includes the August 2007 macroinvertebrate survey results (see Table 4.4, page 4.16) but not the 2011 survey results.

It is requested the baseline ecological monitoring surveys of Tinda Creek by Umwelt 2008 is provided for review and the 2011 survey results and an analysis/discussion of the 2011 results is also provided.

It is suggested additional baseline aquatic monitoring sites is undertaken over a range of seasons and weather conditions to obtain additional data. The results of the monitoring should be provided to the DP&E and the Office of Water.

If the quarry expansion is approved, it is recommended the ecological monitoring surveys continue during the quarry operations to assess any potential impacts on the aquatic ecology downstream of the site, particularly as Tinda Creek flows from the site into the Wollemi National Park downstream of the Putty Road.

Watercourses and Riparian Land

Figure 3.1 in the Groundwater Assessment report shows two northern tributaries of Tinda Creek flow from Yengo National Park into the site. The proposed expansion of extraction area 3 would remove these tributaries and Mellong Sandmass Swamp Woodland which occurs along a section of these watercourses. It is noted that the final alignment of Tinda Creek will follow the alignment of the Southern Diversion and then following the existing alignment of Tinda Creek (see Section 4.9.1, page 4.41 of the EIS) but it is unclear what is proposed in terms of the northern tributaries and whether it is proposed to rehabilitate these watercourses and the riparian corridors once the proposed quarrying is completed, or if the creeks are proposed to flow into the proposed north-eastern diversion as part of the final landform for the site (see Figure 4.3 a). Details need to be provided on this.

The proponent should be required to rehabilitate the watercourses on the site as natural systems which mimic the local area.

Draft Statement of Commitments

The following amendments (in italics) are recommended to the Statement of Commitments, or otherwise incorporated in conditions of consent:

5.3 Environmental Management, Monitoring and Reporting:

- 5.3.1 Within six months of the development consent, Hy-Tec will revise its existing Environmental Management Plan (EMP) as part of the implementation of the project. The EMP will include details of all the management and monitoring commitments outlined in the EIS (specifically those outlined in the Statement of Commitments. ***The Office of Water will be provided with a copy of the revised EMP to review.***

- 7.3.2 Hy-Tec will prepare an Annual Review of the environmental performance of the project and will make this available to the public, Hawkesbury City Council, **the Office of Water and other** relevant government agencies as required.

The Statement of Commitments or conditions of consent should clarify that the amendments to the Water Management Plan if the expanded quarry project is approved will include a review of the groundwater monitoring system. In particular, this review will need to consider;

- holistic monitoring of surface water and groundwater to ensure that downstream users and the environment are not being unexpectedly affected by quarrying activities.
- consideration of expansion of the groundwater analytical suite, e.g. to include phosphate, dissolved heavy metals (field filtered and appropriately preserved) and total dissolved and suspended solids.
- developing and setting thresholds for groundwater levels and quality indicators that would trigger further investigation levels, notification to authorities and mitigation as appropriate to address any unexpected impacts. The management plan thus requires a Trigger and Response section to clarify the purpose of the monitoring and what actions will ensue when triggers are exceeded.

5.4 Ecology:

- 5.4.8 Additional aquatic ecology baseline monitoring will be undertaken prior to quarry expansion operations commencing to assess the aquatic ecology. The results of the monitoring are to be provided to the DP&E and Office of Water.**
- 5.4.9 A long term monitoring program will be undertaken during the operation of the quarry to assess the on-going health/condition of groundwater dependent ecosystems that occur hydraulically down gradient of the proposed extraction areas. The results of the monitoring program are to be provided to the Office of Water**
- 5.4.10 An assessment of the potential impacts of the expanded quarrying specifically on potential GDEs within the swampy area in the Tinda Creek valley west of Putty Road will be completed prior to quarry expansion commencing. If found to be groundwater dependent, more detailed protection and mitigation measures will be developed. The results of the assessment are to be provided to the DP&E and Office of Water.**

5.10 Surface Water and Groundwater

It is suggested the draft Statement of Commitment 5.10.1 is amended as it states "Hy-Tec will continue to undertake monitoring of groundwater bores in accordance with existing licence conditions". Details of how groundwater monitoring would be expanded to monitor the expanded quarrying activities needs to be described.

This monitoring should particularly focus on groundwater levels and quality on the downstream, western edge of the quarry and within the swampy area west of Putty Road if access can be arranged, as this appears to be the area most at risk of unexpected impacts.

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- 5.10.2 All diversion drains will continue to be maintained in good condition *until such time as the quarrying operations allow for the rehabilitation of the watercourses on the site to mimic natural systems to the satisfaction of the Secretary.***

5.13 Rehabilitation and Closure:

- 5.13.4** *The diverted sections of Tinda Creek and tributaries will be rehabilitated to emulate stable natural watercourses that behave as, and have the appearance of stable natural stream systems of the local area.*
- 5.13.5** *Fully structured riparian zones will be established and maintained in and adjacent to the rehabilitated watercourses to emulate the relevant native vegetation community of the local area.*
- 5.13.6** *A Stream Rehabilitation and Vegetation Management Plan will be prepared that demonstrates the rehabilitation of Tinda Creek and tributaries and riparian zones at the site. The Office of Water is to be consulted on the preparation of the plan.*
- 5.13.7** *VENM /ENM imported to the site shall comprise similar particle size and hydrological properties to the sandy clay material that is being extracted from the site.*

End Attachment A