OUT20/8984

Tegan Cole
Senior Environmental Assessment Officer
NSW Department of Planning and Environment

tegan.cole@planning.nsw.gov.au

Dear Ms Cole

Stockton Sand Quarry (SSD 9490)
Request for Additional Information

I refer to your email of 22 July 2020 to the Department of Planning, Industry and Environment (DPIE) Water and the Natural Resources Access Regulator (NRAR) about the above matter.

In response to DPIE Water's submission on the EIS, a meeting between DPIE Water, NRAR and the proponent took place on 21 July 2020. DPIE Water's requirement for a complex modelling platform as described under the NSW Aquifer Interference Policy was a particular point of discussion. It was agreed that DPIE Water would provide further information to assist the proponent's understanding of the advice. This information can be found in **Attachment A** below.

Any further referrals to DPIE – Water & NRAR can be sent by email to: landuse.enquiries@dpi.nsw.gov.au.

Yours sincerely

Liz Rogers
Manager, Assessments
Water – Strategic Relations
20th August 2020

ATTACHMENT A

Stockton Sand Quarry (SSD 9490)
Request for Additional Information
Detailed Advice

Main Findings

The NSW Aquifer Interference Policy (AIP) requires proponents to consider the potential impacts to an aquifer's beneficial use and other negative consequences to Groundwater Dependent Ecosystems (GDE's). These impacts can be the result of water quality changes, waterlogging and/or a decline in the shallow water table.

Section 3.2.2 of the AIP states: "*Alternate disposal options might include reinjection to an aquifer, discharge to a river, on-selling to a nearby industry, agricultural development or potable water supply. Any adopted option will require treatment of discharges to an appropriate water quality standard such that they would have minimal impact on any proposed receiving waters and not affect their beneficial use category (if applicable)*"

Further, beneficial use categories form part of the AIP 'minimal impact considerations' and states "*Any change in the groundwater quality should not lower the beneficial use category of the groundwater source beyond 40m from the activity*". Beneficial use classes are defined in Section 4 of the NSW Groundwater Quality Policy Document (ref: : http://www.water.nsw.gov.au/__data/assets/pdf_file/0006/548286/nsw_state_groundwater_quality_policy.pdf). The categories applicable to the Stockton Groundwater Source are raw water for drinking water supply ' and 'ecosystem protection'.

Water quality risks that could lead to a change in the beneficial use category may result from a combination of activities relating to a dredge pond operation within a sand dunes environment. These risks include the oxidation of pyritic and organic rich material from either within the waste stream generated, or within and surrounding pond area.

Material rejected back to the pond will contain concentrated heavy metals waste product and organic sludge waste in the fines, and even potentially radioactive material. Chemical reactions within the extracted and returned material or within the oxygenated pond itself, has the potential to release soluble metals.

The accumulated fines will vary the porosity and permeability of the pond floor (at least) and hence potentially reduce the groundwater inflow and outflow regime (groundwater flux). The resultant change in groundwater quality and the flow regime around or from the proposed quarry pond has the potential to impact groundwater receptors.

Particular water dependent assets at risk include GDEs within the Worimi State Conservation Area and the water rights held by Hunter Water Corporation (HWC) under their 'Special Areas' (ref: https://www.legislation.nsw.gov.au/regulations/2015-499.pdf & https://www.legislation.nsw.gov.au/maps/5efde946-1816-450a-b44b-824cd9eb69a5/NorthStockton.pdf). Both these assets share a common boundary with the subject proposal.

The dredge pond will be an oxygenated environment creating potential exposure pathways for oxidation of any Potential Acid Sulphate Soil (PASS) and chemical reaction to take place. The Environmental Impact Statement categorised the PASS related risks as low, and investigations were limited to just 4 test holes. This is insufficient to rule out the interception of acid sulfate soil material and organic layers at depth across the 37 hectares.

Previous nearby experience

In a separate operation, sand dredging has occurred in the adjacent Tomago Water Source that included the implementation of various management practices to monitor and treat groundwater pH levels. These practices failed to prevent a change to the beneficial use of groundwater resource due to the dredging. Prior to development consent, water quality deterioration was

predicted by the proponent to be low risk, with only a short-term transient rise in metals resulting from the oxidation of pyritic and organic rich material. However, observed water quality impacts remain two decades post mining with a trajectory to continue for several more decades requiring ongoing monitoring and reporting without prospect of remediation. HWC has lost the use of several borelines as a consequence and these assets have not been reinstated to date.

Historical sand dredge mining within the nearby Tomago Sands demonstrates the long-term impact risk to water quality. DPIE Water has significant concerns that the proposed sand dredging operation for Stockton cannot be undertaken compliant with the Principles and Objects of the *Water Management Act 2000*. The risks are significant due to the existing beneficial use categories applicable to the Stockton Groundwater Source being 'raw water for drinking water supply ' and 'ecosystem protection', meaning very low concentrations for metals and other soluble salts.

The change in topographical landscape, the creation of an open water body and extraction (circulation) of large volumes of water can also alter groundwater flow dynamics. Changes in groundwater flow requires an assessment of impact to the water dependent assets of concern, these include GDEs within the Worimi State Conservation Area and the HWC 'Special Areas', both sharing a common boundary with the subject proposal. DPIE Water requires that the impact investigation be supported by use of a groundwater modelling platform to inform on resulting flow paths and risks resulting from the proposed dredging operation.

Conclusions

DPIE Water requires a comprehensive water quality, water level and aquifer parameter baseline dataset to be compiled in support of the Environmental Impact Statement. The level of risk should be demonstrated through geochemical and groundwater flow modelling. The baseline dataset is required to:

- provide performance measures to be established on and off-site should development consent be approved;
- input to a numerical groundwater model as required under the AIP considered necessary to advance:
    - the assessment of the impacts against the 'minimal impact considerations' of the AIP;
    - define licensable take.

END ATTACHMENT A