



OUT16/43396

Ms Lauren Evans
Resource Assessments
NSW Department of Planning and Environment
GPO Box 39
SYDNEY NSW 2001

Lauren.evans@planning.nsw.gov.au

Dear Ms Evans

**Haerses Road Sand Quarry Modification 1 (DA 165-7-2005 MOD 1)
Comment on the Environmental Assessment**

I refer to your email of 11 October 2016 to the Department of Primary Industries (DPI) in respect to the above matter. Comment has been sought from relevant divisions of DPI. Views were also sought from NSW Department of Industry - Lands that are now a division of the broader Department and no longer within NSW DPI. Any further referrals to DPI can be sent by email to landuse.enquiries@dpi.nsw.gov.au.

DPI has reviewed the Environmental Assessment and provides the following comments, recommendations and advice:

- There is significant uncertainty associated with aspects of the hydrogeology in the Proponents modification application. The uncertainty relates to:
 - hydraulic conductivity of the friable Hawkesbury Sandstone;
 - hydraulic connectivity between the Maroota Sands and the Hawkesbury Sandstone;
 - regional groundwater levels in the Hawkesbury Sandstone and Maroota Sands aquifers;
 - monitoring bore screen construction not consistent with identified water strikes and yields tested; and
 - insufficient number of proposed, clustered monitoring bores.
- While the EIS indicates that groundwater will not be encountered during excavation for the project, DPI does not consider that this has been adequately established. Due to the topography of the surrounding area, and the uncertainty surrounding the hydrogeology, there is a risk that if groundwater is encountered this could lead to leakage of groundwater from the Maroota Tertiary Aquifer with potential flow on effects to the environment and other land users.

- Conditions of consent should prohibit interception of groundwater, and require immediate cessation of operations if groundwater is encountered. Alternatively, the proponent should undertake additional investigations as outlined below.
- Prior to approval and in order to satisfy the AIP requirements for future development assessment the proponent should reduce hydrogeological uncertainty as outlined above by:
 - Expanding their proposed clustered monitoring bore network to better understand any hydraulic connections in addition to the two already proposed. Borehole logs for bores BH4 and BH 5 indicated that multiple, relatively high yielding water strikes were noted during drilling. Screens of the clustered monitoring bores should target the water yielding stratigraphy as indicated by water strikes encountered during drilling.
 - Drilling a minimum of two core holes into the Hawkesbury Sandstone Aquifer to obtain detailed information about stratigraphy and structural features that may be transmitting groundwater.
 - Locating additional clustered monitoring bores between the proposed development and:
 - Maroota Sands
 - Coastal Upland Swamps
 - Users to the north, west and south
 - Installing loggers at all clustered monitoring bores including monitoring bores within the Maroota Sands to ensure water level records between the different water sources can be compared.
 - Performing an aquifer pumping test of the Hawkesbury Sandstone Aquifer with nearby monitoring of all other aquifers.
 - Providing further detail on staged development with progressive quarrying of cells as proposed to include staging of depth of excavation. The intent being to monitor for the presence of groundwater at increasing depths of excavation. The Trigger Action Response Plan should provide for a cease mining condition, should groundwater be encountered and in consultation with DPI Water hydrogeologists.
- The proponent should provide further detail on staged development with progressive quarrying of cells as proposed to include staging of depth of excavation. The intent being to monitor for the presence of groundwater at increasing depths of excavation. The Trigger Action Response Plan should provide for a cease mining condition, should groundwater be encountered, with a requirement for consultation with DPI Water hydrogeologists before continuing work.
- The proponent should install water level monitoring loggers at all dams, both in the Maroota Tertiary Sands Groundwater Source and the Hawkesbury Sandstone Aquifer of the Sydney Central Basin Groundwater Source, in order to establish the extent (or absence) of connectivity with groundwater.
- The proponent should keep metered records of all water use on existing and proposed site and measure all inflows observed.

- The proponent should ensure all new monitoring bores are logged and that they are designed and constructed in accordance with the [Minimum Construction Requirements for Water Bores in Australia \(2012\)](#) as well as inspected by a licensed surveyor.
- The proponent should provide information on the bores that may be utilised in periods of water deficit to be identified in a table outlining licence numbers, locations (Lot and DP) and authorised works purpose.
- The proponent will be required to acquire appropriate Water Access Licences from the appropriate groundwater water sources.
- The proponent should consult with DPI Water Hydrogeologists, who will be available for a meeting to discuss the existing issues and recommendations.

Yours sincerely



Mitchell Isaacs

Director, Planning Policy & Assessment Advice

15 December 2016

DPI appreciates your help to improve our advice to you. Please complete this three minute survey about the advice we have provided to you, here:

<https://goo.gl/o8TXWz>