



OUT15/30074

Ms Swati Sharma  
Resource Assessments  
NSW Department of Planning and Environment  
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SYDNEY NSW 2001

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Dear Ms Sharma,

**Roberts Road Quarry Modification 2 (DA 267-11-99 Mod 2)  
Response to exhibition of Environmental Impact Statement**

I refer to your email dated 1 October 2015 requesting advice from the Department of Primary Industries (DPI) in respect to the above matter.

In short, the key issue for DPI is that the groundwater information provided is deficient, and even with the information provided, it appears that existing and proposed extraction is within the required 2 metre buffer to the groundwater level.

Comment by DPI Water

DPI Water has reviewed the Environmental Assessment for the Modification 2 proposal and provides the following comments and detailed comments at Attachment A.

The Modification 2 proposal provides insufficient information for DPI Water to assess the overall impacts. Additional information is listed below with detailed comments in Attachment A. Should the Modification 2 proposal proceed to approval, recommended conditions of consent are outlined in Attachment A.

Information Requests

- All groundwater elevation measurement data from the commencement of monitoring (prior to January 1999) until present in tabular and graphical format and an assessment of this data to determine the extent of the current and proposed impacts of the quarry in accordance with the requirements of the NSW Aquifer Interference Policy.
- All records of the required regular surveying program of all extraction areas and other site features to identify the up to date depth of extraction.

- A map of the quarry site illustrating the high wet weather groundwater level across the proposed extraction areas based on surveyed elevation data from all previous and current monitoring bores and the central pond (such mapping as described by the June 2005 audit report).
- A commitment from the proponent to update the monitoring program to adequately monitor the hydrogeological conditions of the site and the development of quantifiable triggers and response actions. A minimum six monitoring bores would be recommended for groundwater monitoring at the site.

For further information please contact Janne Grose, Water Regulation Officer (Parramatta Office) on 8838 7505 or at [janne.grose@dpi.nsw.gov.au](mailto:janne.grose@dpi.nsw.gov.au).

Comment by DPI Agriculture

DPI Agriculture has reviewed the Environmental Assessment for Modification 2 and supports rehabilitation of the land to enable opportunities for agriculture investment post the sand extraction.

For further information please contact Andrew Docking, Resource Management Officer (Richmond office) on 4588 2128, or: [andrew.docking@dpi.nsw.gov.au](mailto:andrew.docking@dpi.nsw.gov.au).

DPI Fisheries advise no issues.

Yours sincerely



Mitchell Isaacs  
**Director, Planning Policy & Assessment Advice**  
**30/10/2015**

## Attachment A

### Roberts Road Quarry Modification 2 (DA 267-11-99 Mod 2) Response to exhibition of EIS Detailed comments - DPI Water

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#### **Groundwater**

Given that the quarry is located within the mapped limits of the Maroota Sand deposit, and overlies Hawkesbury Sandstone, excavation at the site that maintains a 2m freeboard above the highest wet weather groundwater level (within the sands in accordance with The Hills DCP and existing modified consent) would not be expected to penetrate deep enough to intersect hard sandstone layers.

The Groundwater Assessment Report (Appendix 16) prepared by AGT identifies the results of a recent survey of the property with the deepest extraction point being 183.70 mAHD (page 3), corresponding to a substantial clay layer. It appears from the photograph included in the report (page 6) that this elevation is at the base of a current or recently completed extraction cell.

The current status of groundwater monitoring reported by AGT appears limited to one on-site monitoring bore (PT84MW-6, likely to be GW114972 installed under licence 10BL605696) drilled as a replacement for a pre-existing monitoring bore (PT84MW-3, probably GW114209 installed under licence 10BL158808). Monitoring bore GW114972 was installed in January 2015 and has one recorded groundwater level elevation reported (at 183.10m AHD on 3 March 2015). It appears that the single measurement of groundwater level is the same data point referred to in the Modification 3 application. Despite the operator advising that additional monitoring would be undertaken, it is apparent that no other groundwater level measurements have been made in the meantime (i.e. since March 2015 when the measurement was taken or since June 2015 when the previous modification application was made).

Of note, the AGT report suggests that the clay layer at the base of the existing quarry acts as a confining layer preventing “*inflow from the underlying water table*” (p.21). However the thickness of the clay is not reported and the single groundwater level measurement (183.10m AHD) is well below the top of the supposed confining layer (183.70m AHD), suggesting that confined conditions are unlikely to exist. The significance of this has yet to be determined.

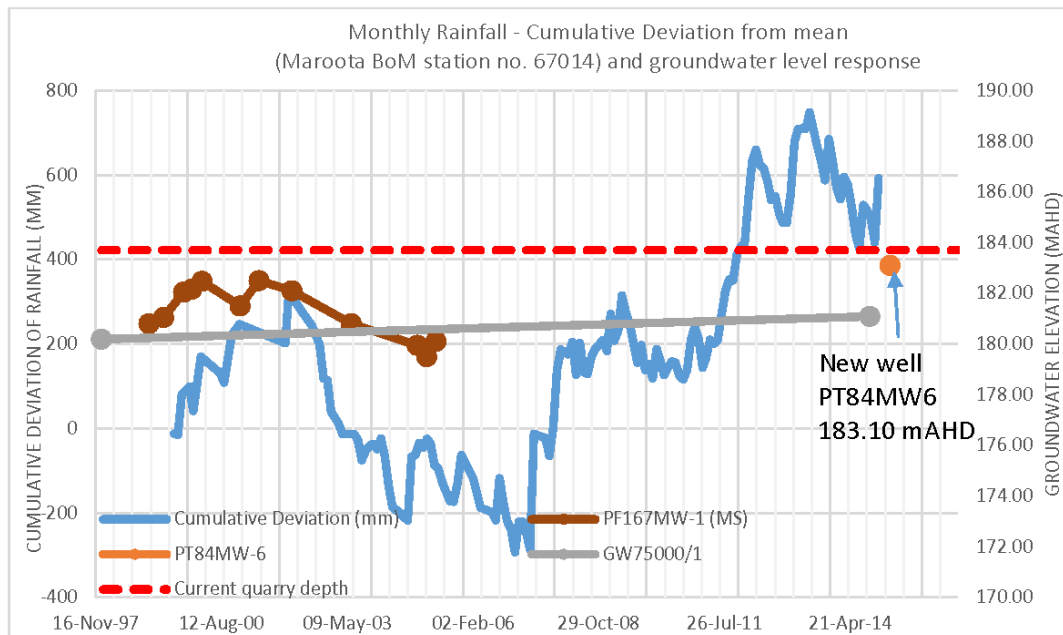
A hydrograph provided in the AGT report (p.16) illustrates the data considered in the assessment (Figure 2).

- 12 measurements of groundwater level from an off-site bore (PF167MW-1, located 750m to the southwest) all recorded prior to May 2005.
- 2 measurements of groundwater level from a NSW Government monitoring bore (GW075000/1, located 1,300m to the southwest) in around November 1997 and around April 2014.
- 1 measurement from the single on-site monitoring bore (PT84MW-6, installed as a replacement for PT84MW-3) on 3 March 2015.

That hydrograph highlights the encroachment of extraction on the water table, as the identified current quarry depth is considerably less than 2m above the groundwater level measured in March. This is illustrated by a cross section in the AGT report (p.18), which is reproduced below (Figure 3).

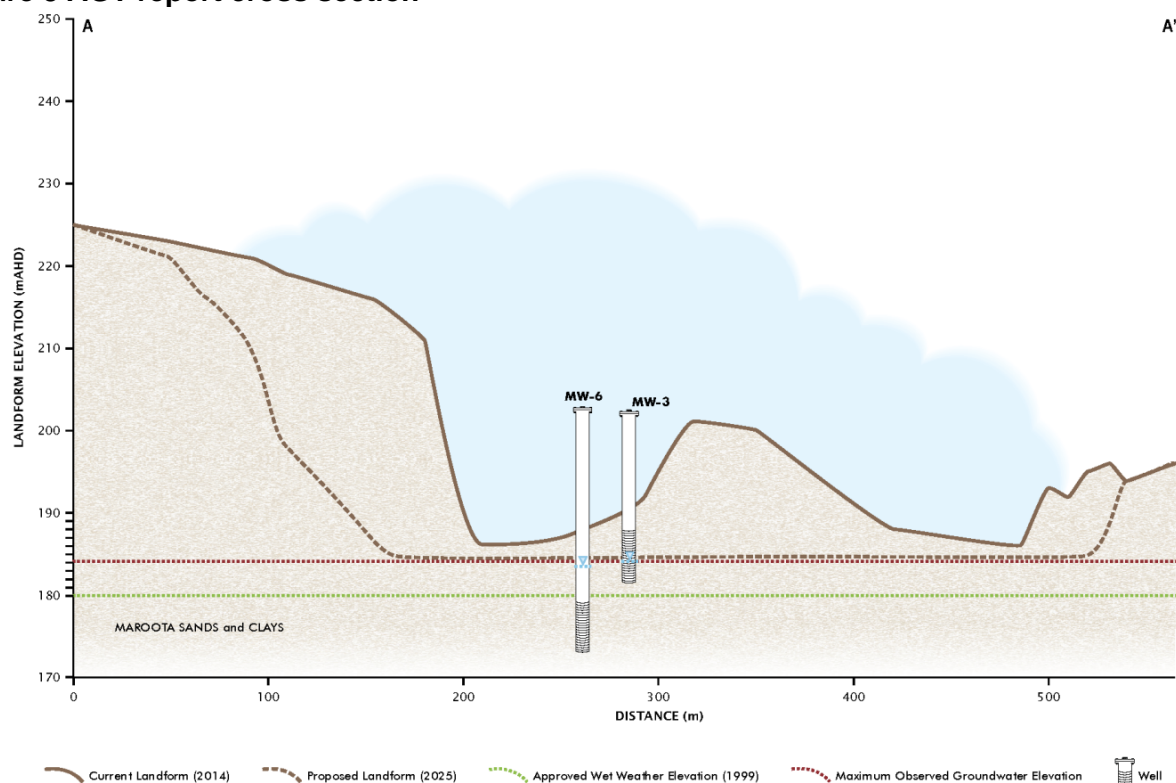
- It is of concern that current excavation cells with base elevations of less than 186.08m AHD are less than 2m from the water table. There is no documentation about filling over excavated areas with Natural Excavated Materials (NEM) or Virgin Excavated Natural Materials (VENM)—in accordance with EPA Guidelines—to achieve the elevation requirement.

**Figure 2 AGT report hydrograph**



**Figure 5: Groundwater hydrographs and cumulative deviation from the mean of monthly rainfall.**

**Figure 3 AGT report cross section**



**Figure 6 | Representative Cross Section (for section line see Figure 2)**

Whilst the AGT report provides an assessment of the activity against the requirements of the *NSW Aquifer Interference Policy*, the analysis is not supported by the results of a reasonable period of on-site monitoring and is therefore questionable. The proposed monitoring program remains limited to the single on-site bore for all triggers, which does not appear sufficient to establish a sound understanding of the hydrogeology of the site, nor to detect the occurrence of

groundwater behaviour that would exceed the minimal impact thresholds. The impacts and mitigation measures are poorly defined and require significantly greater rigour in providing quantifiable triggers and response actions.

In summary further information is requested in order to clarify the 'high wet weather groundwater level' and therefore the extraction depths for the operation. Data from several on-site monitoring bores over the last ten years would provide an appropriate record, however only minimal information is provided in the report.

### **Water licenses and Water Balance Modelling**

The Revised Soil and Water Management Plan (RSWMP) for the modified development indicates the site holds a number of licences issued under the *Water Management Act 2000* for the operation of groundwater bores and dams (Section 2.3.3 page 12, Appendix 19). Table 1 in the RSWMP lists the licenses held at the site but the table is confusing, especially the information provided in the bore status column. Table 1 indicates:

- one monitoring bore (Bore no. PT84MW1) is in use for water sampling. The table needs to include the licence number details for this bore.
- one new monitoring bore (Bore No. PT84MW5 – licence 10BL158808) was installed in March 2013 but the proponent needs to provide DPI Water with details.
- three monitoring bores have been destroyed.
- one bore for industrial – sand and gravel/irrigation purposes (licence 10BL1597595). It indicates the licence expired on 14/6/2015 but the licence has been converted into an access licence – the licence has not expired - approval has been extended and it has an allocation of 6 ML.
- one bore for industrial – sand and gravel purposes (licence 10BL159748). It indicates it expired on 14/6/2015 and the bore has been destroyed. While the bore may have been destroyed the licence has been converted with a water access licence and the proponent has an allocation of 45 unit shares.

The RSWMP notes the location of the bores and dams are shown on Figure 2 (Section 2.3.3). Figure 2 shows two monitoring bores (PT84MW1 and PT84MW5) occur on the site. Neither Table 1, nor Figure 2 refers to the monitoring bore (10BL605696) which was installed on 13/1/2015. The proponent needs to provide DPI Water with construction details of the bores on the site.

The Mod 2 EA includes an extract from the EIS which accompanied the original application on water balance modelling and it notes there is no change to the modelled water balance as a result of the proposed modification (page 3.32). The extract notes the applicant installed two bores into the Hawkesbury Sandstone aquifer which are generating 1.9 L/sec and 1.3 L/sec respectively (Section 2.2, page 2.5) and indicates an alternative water supply source would be required to supplement the process water dam during extended periods of low or no rainfall and that two bores have a combined capacity of 3.2 L/sec (page 2.6). As noted above, the site has two groundwater access licences and these have a combined allocation of 51 ML/year. It is suggested the Mod 2 proposal clarifies that an alternative groundwater water supply source is still required to supplement the process water dam during extended dry periods, as Table 1 in the RSWMP implies the groundwater supply licences have expired.

### **Transfer of Water Offsite**

Section 5.4 of Appendix 19 indicates excess surface water is to be transferred from the site to the neighbouring land owned by Mr Tony Portelli and is to be used for stock water and irrigation (pages 39 and 40). Details are requested on the source of the surface water that is proposed to be transferred from the site and whether the water is proposed to be transferred from Dam 1.

## **Rehabilitation of site**

The Rehabilitation Report (October 2014) indicates that at the completion of specified rehabilitation works, the vegetated areas shall be subject to a minimum landscape works period of 12 months and the maintenance shall include watering and weed control. It is recommended the minimum maintenance period is longer than 12 months to ensure that the vegetation is established and the bund walls and the site are adequately stabilised with vegetation to protect the downstream environment from sediment and erosion impacts, the spread of weeds from the site etc.

## **Recommended Conditions of Consent**

Based on the current information to review the following conditions of consent are recommended should this application be approved.

- Restriction on the absolute depth of extraction to 186.08m AHD for the entire period of quarry operation (regardless of any future extension to the consent) unless higher wet weather groundwater levels become apparent.
- Continuous groundwater level monitoring (as required under existing consents) must be established by the operator immediately in at least six locations across the site (excluding the central pond) where the water table within the Maroota Sand can be measured throughout the proposed period of future sand extraction operations.
- Establishment of a network of monitoring bores distributed across the site purpose-built to monitor groundwater levels in the Maroota Sand and at locations chosen in agreeance with DPI Water.
- Quarterly groundwater quality monitoring for a suite of analytes determined in consultation with DPI Water.
- Six monthly survey mapping of the quarry site with specific delineation of excavation cell elevations and highest measured groundwater elevations.
- Revision of the operations plan to recognise the raised limit of excavation and to incorporate mitigation actions, notification triggers and reporting requirements consistent with the *NSW Aquifer Interference Policy*.
- Development and implementation of a Groundwater Monitoring and Management Plan for the site in consultation with DPI Water.
- Annual environmental reporting that must include groundwater related data and reports, and be reported online.

**End Attachment A**