

Calga Sand Quarry MOD 3 - Additional Information

1. Clarification as to whether the quarry is currently operating at its maximum extraction rate of 400,000 tonnes per annum?

The 2004 EIS proposed an annual extraction rate between 370,000 and 500,000 tonnes of friable sandstone for the life of the operation. This extraction rate would yield between 300,000-400,000 tonnes per annum (tpa) of sand products for dispatch.

Condition 7 of Schedule 2 of DA 94-4-2004 allows Hanson to transport a maximum of 400,000 tpa from the site. The consent does not specify the rate of extraction. However, condition 2 (b) of Schedule 2 requires the Applicant to carry out the development in accordance with the 2004 EIS.

The quarry is currently transporting less than 400,000 tpa. The table below details the amount of transported product from the quarry over the last five years. This data was sourced from the site's Annual Environmental Management Reports.

Year	Tonnes dispatched
2016	387,258
2015	251,093
2014	248,494
2013	224,635
2012	238,947

2. Status of designation of the Women's Site and where is this up to in the nomination process and what, if any, position has been adopted by Government on this nomination?

The Aboriginal Place nomination is in its early stages. Following receipt of the nomination in 2010, OEH engaged an external consultant to do an assessment of the significance of the area under both the *National Parks and Wildlife Act 1974* and *Heritage Act 1977*. OEH is currently negotiating with key stakeholders including land owners and the Aboriginal community. Following these negotiations, OEH will present the nomination and associated information to the State Heritage Register Committee (SHRC). The SHRC will then consider whether to support and proceed with the nomination. As the SHRC has not yet considered the nomination, no position has been adopted by Government at this stage.

This information was obtained from Sonia Limeburner, a Senior Team Leader at OEH who has been involved with the nomination to date.

3. Clarification as to whether material from other quarries can be brought to the site for crushing under the current consent? We were told by the proponent that they could bring in product from other sites and it would be helpful to know what, if any limitations apply to this.

The scope of the EIS for DA 94-4-2004 included importing materials to blend with extracted sand. These materials included soils, fine aggregates and excavated sandstone.

The 2004 EIS predicted a maximum of 100 truck movements (in + out) Monday to Friday and 32 truck movements on Saturdays. These predicted movements related to materials being transported both to and from the quarry. Additionally, the EIS noted that the types of trucks entering and leaving the quarry would typically be single body tippers with trailers or semi-

trailers, with a 25t - 30t capacity. It should be noted that the 2004 EIS committed only to truck exiting the site to pass through the weighbridge.

There is no specific limit on the number of truck movements in the consent. However, condition 2 (b) of Schedule 2 requires the Applicant to carry out the development in accordance with the 2004 EIS.

4. Did the air quality analysis address both PM₁₀ and PM_{2.5}? Members of the public mentioned that modelling was utilised for a site in western Sydney, I am not sure of the accuracy of this and EPA seemed satisfied, however can you confirm that EPA was satisfied with the modelling and that all of EPA's recommended conditions from their letter of 7 March 2017 have been adopted in the modified consent?

The air quality assessment for this modification relied on the assessment undertaken for the Southern Extension Project. The Southern Extension Project proposed two crushing systems as well as additional extraction areas. Consequently, its utilisation for this modification provided a very conservative prediction of impacts from the crusher.

At the time of the Southern Extension Project, PM_{2.5} was an advisory reporting standard and not a part of the air quality impact assessment criteria. However, the assessment in the Southern Extension Project considered the distribution of PM_{2.5} particles in TSP. Based on the maximum cumulative annual average TSP emissions predicted (4 µg/m³) the PM_{2.5} derivative would be substantially less than the current criteria for annual average PM_{2.5} (8 µg/m³).

In relation to modelling, background data was assumed using a combination of elements, including:

- meteorological data from the nearby Peats Ridge Bureau of Meteorology site;
- monitoring results from three dust deposition gauges located in and around the Stage 3 area of the quarry between 2004 and 2006;
- PM₁₀ data collected over a 2-week period from 16 May to 1 June 2007 at a residence inside the Australian Walkabout Park facility;
- HVAS monitoring data collected from a location within the Stage 3 area;
- continuous monitoring data from the Richmond Monitoring Station (located approximately 50 km southwest of the quarry).

As there was no continuous data available for the Calga Quarry at that time, the data collected on site was compared with the continuous data recorded at the Richmond monitoring station. As the concentrations were similar between those data collected on site and the Richmond Monitoring Station, data from the Richmond monitoring station were considered when determining the background concentrations that would apply for the project. The EPA was satisfied with the air quality assessment undertaken for the Southern Extension Project, and the use of this assessment for the proposed modification.

For this modification, EPA recommended a series of conditions of consent that referenced conditions under the EPL. The Department's recommended conditions are consistent with the EPL but do not replicate all requirements of the EPL. Most of the EPA's recommended conditions regarding monitoring, assessing compliance, concentration limits, operational controls and processes will be addressed within the site's management plans. In accordance with condition 4 of Schedule 5, management plans must be updated within three months of the approval of a modification.

5. What assessments were carried out in relation to aquifer interference when the quarry was approved? Is there a depth below which quarrying is prohibited and if so how much deeper can quarrying go? Has this depth been determined in relation to the water table? If a depth limit has been established the Commission requests this limit be incorporated into a condition of consent to address community concerns.

The 2004 EIS included a Groundwater Impact Assessment (GIA). During the assessment of the proposal, the Department also engaged an independent expert to peer review the GIA.

In the 2004 EIS, an indicative depth of extraction ranging between 180-190m AHD was proposed by Rocla. This range reflected the availability of resource that could be extracted using the ripping methods proposed. The resource below these depths (Sandstone Unit 4) was considered unlikely to disaggregate into free sand grains. Thus, the extraction depth was determined by the depth of crushable ('friable') sandstone.

Rocla's drilling data indicated that the extraction depth would generally be between 180-190 m AHD (refer to Figures 3.2 and 3.3 below). Data from the 2004 EIS indicated a depth of the water table varying between 170 m AHD and 208 m AHD (an average depth of 195.9 m AHD). Thus, intersection of the groundwater table was predicted. The site's Water Management Plan predicts up to 49ML/year of groundwater inflows.

No specific AHD depth limit was proposed by the company in relation to Stage 3 nor was a condition of approval imposed for extraction depth. However, condition 2(b) of Schedule 2 of DA 94-4-2004, requires the company to carry out the development in accordance with the 2004 EIS (i.e. an indicative range of 180-190 m AHD).

Groundwater monitoring requirements were included as a requirement under the site's Water Management Plan. The site's groundwater monitoring network consists of a series of monitoring bores located within the quarry site and on neighbouring properties. The 2016 Annual Review reported that quarrying had minimal impact on the local groundwater system and water levels were consistent with trends observed in the past.

6. Condition Amendments (see highlighted text in the attached revised Consolidated Consent)
- a) The Commission requests that a dilapidation study of the Women's Site be undertaken ahead of installation and operation of the crusher and included as a condition of consent, this should be independently reviewed after 12 months and then per the normal independent auditing requirements.

Refer to conditions 41 and 43 of Schedule 3 in the attached revised draft consolidated consent. These proposed conditions recommend a 'Condition Report' be undertaken of the Women's Site, prior to the installation of the crusher and after twelve months of operating the crusher.

- b) The Commission requests that Condition 7A, 9A, 41 (Schedule 3) be amended to require the management plans to be prepared/amended prior to commencement of works to install the crusher – however there should be a provision to allow a short-term trial

The Department has proposed that Hanson must submit the Aboriginal Cultural Heritage Management Plan prior to the installation of the crusher (refer to condition 43 (c) of Schedule 3 of the attached revised draft Consolidated Consent).

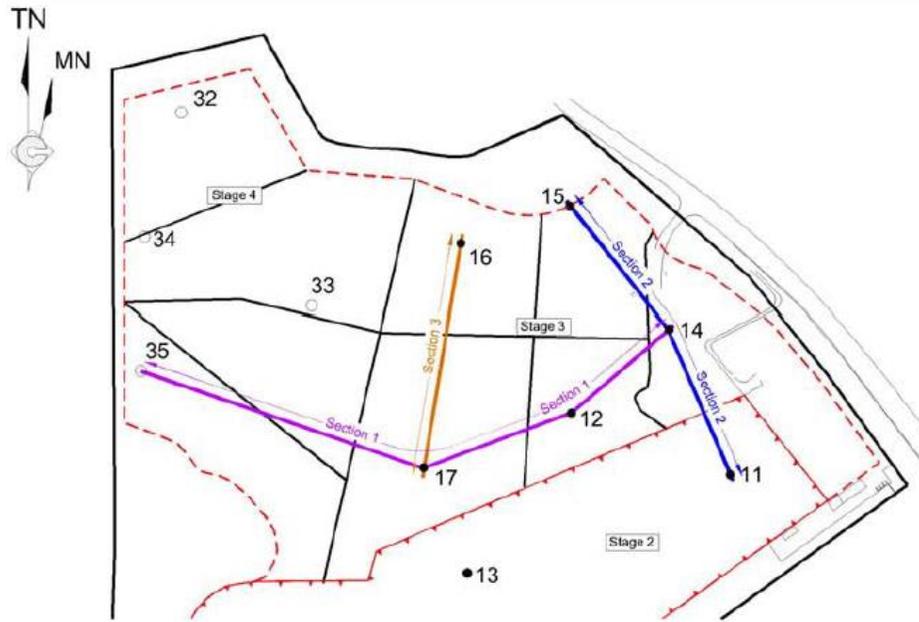
Condition 4 of Schedule 5 requires management plans to be resubmitted within three months of a modification. The Department expects that it will take approximately three months to

commission, prepare, review and approve the Condition Report. As the installation of the crusher cannot occur until the Condition Report is submitted, it is very likely that all other management plans the consent will be resubmitted before the installation of the crusher, in accordance with condition 4 of Schedule 5.

- c) Vibration impacts do not get applied within the consent and therefore are not subject to future auditing or adaptive management – can this be rectified. This is important in addressing community concerns

The crusher will be installed in a fixed location within the existing processing area on site. To ensure that vibration levels at the Women's Site are better understood and monitored, the Department proposes that, following the installation of the crusher, ground vibration levels be monitored at an appropriate location for twelve months to allow accurate predictions of vibration impacts at the Women's Site (refer to condition 42 of Schedule 3 of the draft Consolidated Consent). The Department has also proposed that the results of this monitoring and associated predictions be published on the company's website.

Additionally, the Department proposes a requirement for Hanson to describe the process for monitoring and predicting ground vibration levels within the Aboriginal Cultural Heritage Management Plan (refer to condition 44 (e) of Schedule 3 of the attached revised draft Consolidated Consent).



- REFERENCE**
- Project Site Boundary
 - - - Current Approved Extraction Limit
 - - - Proposed Extraction Limit
 - 35 2004 Drillhole
 - 17 2002 Drillhole
- SANDSTONE HARDNESS***
- Soft (Sandstone Unit 1)
 - Medium (Sandstone Unit 2)
 - Medium-hard (Sandstone Unit 3)
 - Hard (Sandstone Unit 4)
 - - - Indicative Depth Limit of Extraction
- * Note: Boundaries between zones of hardness are indicative only

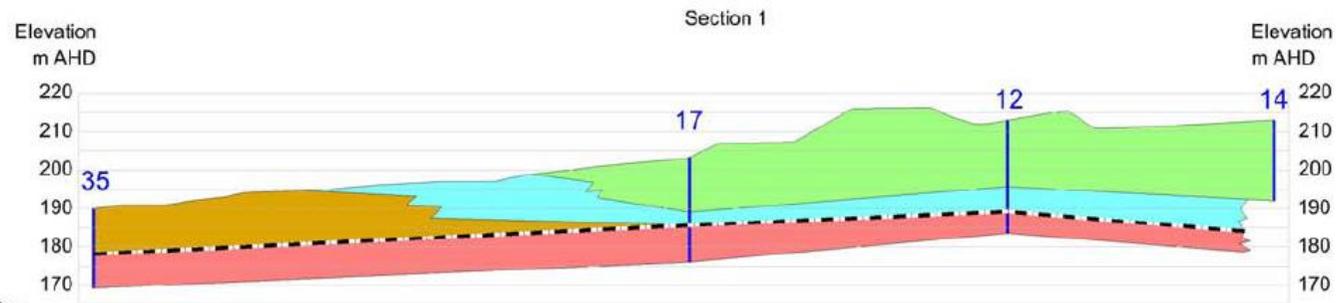
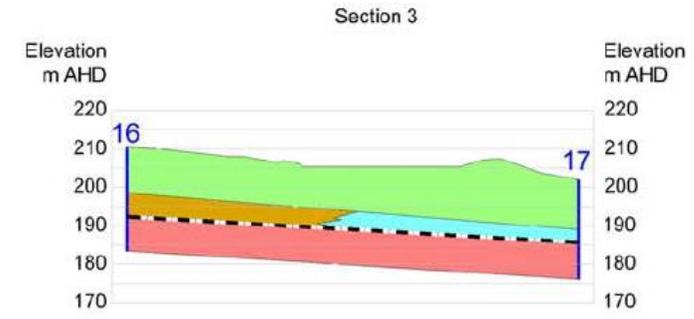
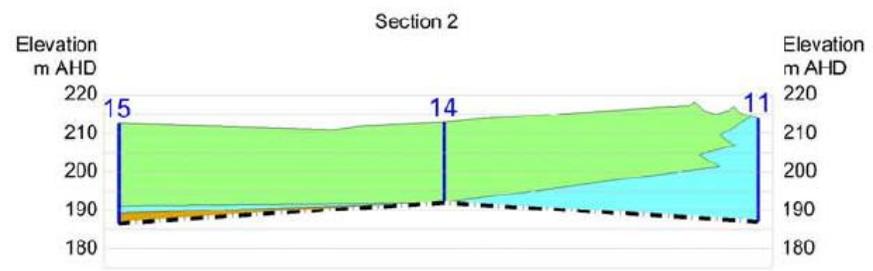
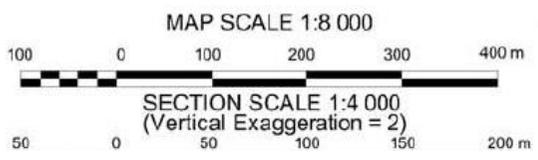
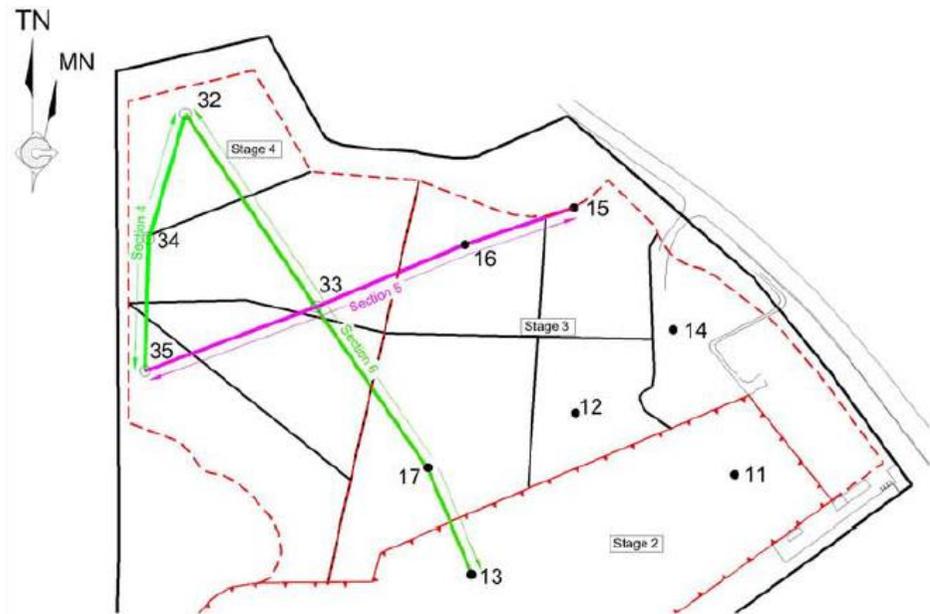


Figure 3.2
FRIABLE SANDSTONE RESOURCE



- REFERENCE**
- Project Site Boundary
 - - - Current Approved Extraction Limit
 - - - Proposed Extraction Limit
 - 35 2004 Drillhole
 - 17 2002 Drillhole
- SANDSTONE HARDNESS***
- Soft (Sandstone Unit 1)
 - Medium (Sandstone Unit 2)
 - Medium-hard (Sandstone Unit 3)
 - Hard (Sandstone Unit 4)
 - - - Indicative Depth Limit of Extraction
- * Note: Boundaries between zones of hardness are indicative only

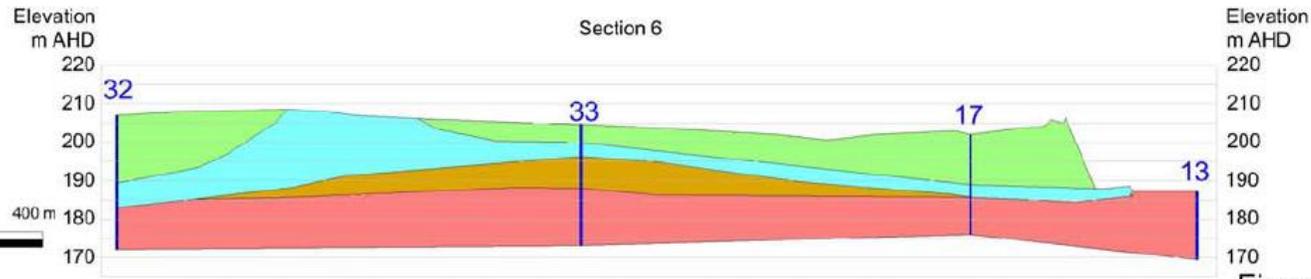
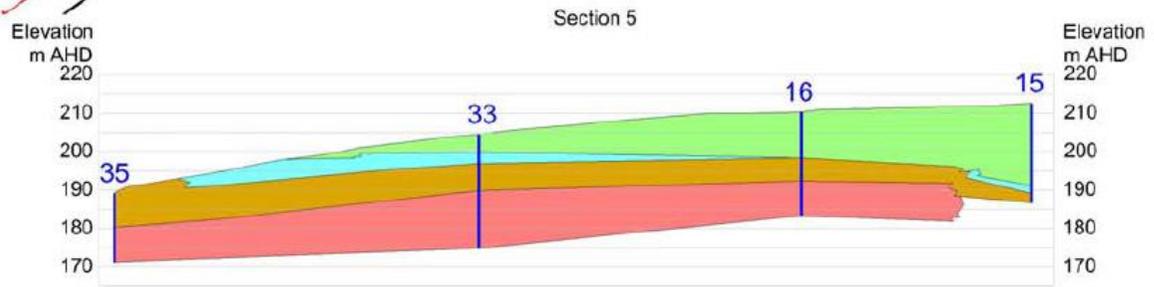
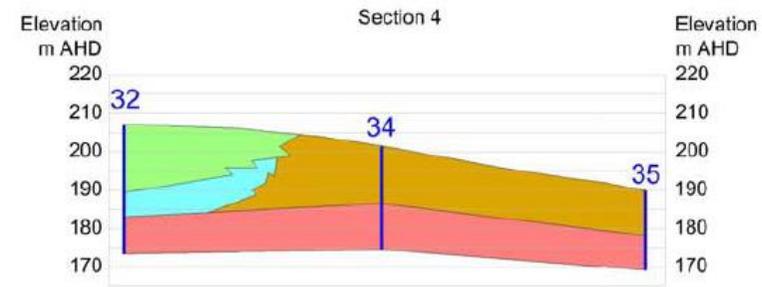
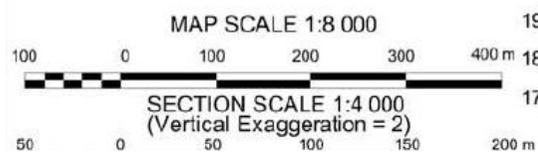


Figure 3.3

