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RE: Sutton Forrest Sand Quarry Proposal EIS

As an engineer and corporate executive with extensive experience in the oil industry, and to a lesser extent, the coal industry, I wish to register my concerns with the EIS that has been submitted in support of the Sutton Forest Sand Quarry proposal. My wife and I have lived in the Southern Highlands for the past 17 years, for most of that time as small-scale farmers, fattening cattle and breeding Australian Stock Horses. I have been involved for the last 7 years with the groundwater issues involved with the much larger Hume Coal Project.

The EIS has serious deficiencies with a lack of information in certain areas and questionable analysis in others. If this proposal proceeds I believe it would pose a risk of serious damage to the environment and bio-diversity. It should be noted that the proposed site borders Long Swamp Creek which feeds the Long Swamp which is a recognized Groundwater Dependent Ecosystem. The proposal would also seriously affect the amenity of nearby landowners would be detrimental to the religious tourism activities at the adjacent 'Penrose Park'.

The EIS covers some complex issues, the implications are profound, and it is quite unreasonable that the community is given just 24 days to formulate its responses. In the paragraphs that follow I will make some comments on groundwater and surface water issues, the backfilling operation, noise and light pollution and the impact on bio-diversity.

However, I reserve the right to make additional comment as a more detailed study of the EIS is progressed.

Groundwater.

The groundwater model and related analysis was undertaken by Paul Tammetta of Coffey Geoscience and peer reviewed by Dr. Hans Kalf, who undertook similar work for the Hume Coal Project around the same time. The Hume EIS was submitted in March 2017, and the groundwater modelling was widely criticized in submissions. Almost 12 months later Hume has still not responded to these critical submissions and we understand that this delay has come about because a complete rework of the model was required which even included a change in the software utilized. This rework was required even after it had been declared by peer reviewers (Dr. Kalf and Dr. Merrick) to be '*fit for purpose'.*

Some of the failings of Hume work have been repeated in the quarry modelling, apparently related to efforts to minimize the volume of the groundwater take to be licensed. The following extract from the cover letter to the submission on the Hume EIS from the Dept. of Primary Industries makes it clear:

"The proponent should re-evaluate volumes required to be licenced based on maximum or worst-case conditions, not average conditions. The proponent should provide detailed confirmation of access to entitlement."

The modelling work in the Quarry EIS fails this requirement in a number of areas.

- An average rainfall of 902 mm for the area is used, based on data from locations closer to the escarpment. Properties in this location are more likely to experience an average around 750 mm, with a range from 400 to 1000 mm.
- From the lack of any sensitivity studies one might think that groundwater modelling is a precise science, whereas this is far from the case. The model should be reworked with a wide range of sandstone permeabilities.
- No analysis of the impact of the planned regular (6-12 times per year) blasting on the permeability of the sandstone around and below the pit has been provided. Increased fracturing and greater groundwater movement might be expected.
- A simplistic assumption for the permeability of the backfill has been included where the EIS clearly states that the backfill will consolidate over time under its own weight. Surely a variable permeability should apply here.

The EIS states that the 'average' groundwater interception will be 51 ML/year compared to their current 45 ML/year licence. However, the maximum groundwater interception according to the EIS calculations is 73 ML/year, and this is before dealing with the uncertainties in the modelling. In the worst case, as required by the DPI, cause the groundwater licence requirement to be a multiple of this.

The EIS makes no mention of the fact that the groundwater in the Water Management Area covering the proposed quarry, Nepean Area 1, is already fully allocated, with the Hume Coal Project well short of their licensing requirement. The DPI-Water (now Crown Lands and Water), require 'detailed confirmation of access to entitlement' and this is notably absent from this EIS.

Surface Water

The EIS indicates that 47 ha of the 174 ha within the site boundaries would be progressively excluded from local surface water catchments. After stage 1 of the project the extraction area would be internally draining. Concerns that arise are as follows:

- During stage 1, surface water from the working area will flow to Long Swamp Creek according to the EIS. This water will be contaminated with sediment and as such poses an operational risk to the environment.
- The EIS provides a surface water balance based on mean annual demands and mean annual outflows. Surely the water balance should also be evaluated under extreme conditions to test environmental rigor of the proposed arrangements.
- The same comment applies to the work on harvestable rights. The size of the pit ensures that the allowed harvestable rights will be exceeded by a factor of 2 or 3. The proponent relies upon evaporation and contribution

to base flow to achieve an acceptable result. In adverse weather conditions water management problems will probably occur.
- It must be remembered that this project is water short so the incidental harvesting of water in excess of available rights will be seen as a benefit not an imposition.

Noise, Dust and Light Pollution

The EIS is silent on light pollution, other than to say the proponent will come up with a lighting plan just prior to startup. Lighting is a major issue given the quarry position in a wildlife corridor, and the intention of the proponent to have a 24/7 operation. The attempt in the EIS to claim untouched areas around the pit as an 'on-site biodiversity offset' is laughable in the circumstances of the lighting and noise that will impact the fauna in this area.

The noise studies in EIS are unconvincing. It is extremely hard to accept that during peak operations 25 trucks per hour travelling within 60 metres of a residence would not infringe noise guidelines.

There is clearly some uncertainty as to the outcomes of the noise studies given the plan to monitor the impact on 'Penrose Park' for 6 months after startup and 'mitigate' any problems. After startup the horse has bolted and the ability of the Pauline Fathers to achieve an acceptable outcome will be greatly diminished.

Regarding dust, the EIS acknowledges potential problems but provides an assurance that stockpiles will be watered and an analysis that based on average wind strengths the problem is manageable. As all of us who live in the Highlands well know wind conditions can be extreme, particularly, but not exclusively from the W and SW.

In my view the EIS whitewashes the light, dust and noise pollution problems and the plan to have 24/7 operations will add insult to injury.

The Backfilling Operation

The backfilling operation is one of the more problematic aspects of this proposal. No information is provided on quality of the ENM/VENM proposed to be used as backfill, probably because the quality of this material can vary considerably. According to the EIS, the backfill will be allowed to consolidate under its own weight which will result in the properties of this material, particularly permeability, changing over time. The following issues are of concern.

- I understand that the backhauling of ENM/VENM is not feasible without truck cleaning prior to sand loading. On the basis that no truck washing facilities are included in the proposal, the backfill operation will require more truck movements than identified in the EIS.
- The process for certification of ENM/VENM requires chemical analysis and approval of the landowner prior to dumping. In this case, the

operators of the quarry are working on a long term lease, and the EIS is silent on the arrangements they have with have with the landowners. Presumably lease documents are available and given the risk to the environment posed by this operation, and particularly the backfilling activities, these documents should be made public.

- The sand mining proposal involves the removal of up to 60 vertical metres of sand and sandstone and its partial replacement with material of variable quality. Surface water will pass through the backfill and potentially leach out any contaminants in the backfill material which can then move through a relatively thin layer of sandstone and become part of the base flow into Long Swamp Creek. The EIS says nothing on this issue.
- The remaining issue is that of the final void. When mining finishes there will be several years of dumping backfill and rehabilitating some of the excavated area, but it seems clear from the EIS that a large final void will remain. With one of the proponents being in the waste disposal business there may be considerable attraction in making use of the void to dispose of materials other than ENM/VENM, the impact of which will not be seen until they are long gone.

  We can also be sure that 30 or 45 years from now the operator will have considerable incentive to minimize the rehab work as the cash flow from sand sales will have ended. The landowners (whoever that may be at the time) presumably has some rights at this time, but it is questionable whether they will have the appetite to test them in the courts.

Summary

This EIS generates more questions than it provides answers. The proposed sand mining operation poses significant risks to the environment and to the amenity of adjacent residents. The EIS whitewashes these issues by the use of averaged, and in some cases, inaccurate data to support their case. Regarding noise and dust, the community is entitled to be very skeptical regarding the data presented. On the issue of light pollution, the EIS simply says that a plan will be developed prior to startup. It effectively asks the DPE to approve the project and trust the proponent to fix any problems later. This trust has not been earned.

There has been insufficient time to review this EIS documentation and to conduct the necessary investigations to develop a complete view of the proposal. It is also a puzzle that just 5 km away, in Paddy's River, the Green Valley sand mining project is a similar size and was approved some time ago. It sits undeveloped and apparently on the market.

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