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October 9, 2012

Via: Email (spersaud@tiny.ca) & Original Mailed

Shawn Persaud, BA, MCIP, RPP
Manager of Planning & Development
Township of Tiny
130 Balm Beach Road West
Tiny, ON L0L 2J0

Dear Shawn:

**Re: Township of Tiny
K.J. Beamish Pit License Expansion Peer Review
Official Plan and Zoning Amendments
12/D09 and 12/D14 Roll #1-029-00
File No. 300031221**

We have reviewed the response letter and attachments received July 16, 2012, for the proposed K.J. Beamish Construction Company Limited Aggregate Pit Expansion, located at 2 Darby Road (North Part Lot 80, Concession 1 Old Survey), north of Waverly in the Township of Tiny.

The following document was included in the submission:

- AES Hydrogeological Assessment Response Letter, dated July 12, 2012, prepared by Alpha Environmental Services Inc.

Responses have not been received to our peer review comments for the Acoustic Assessment Report and the Site Plan Drawings.

Our comments follow the numbering provided in our letter of May 30, 2012. We have included our original comments in italics and cross-referenced these to the numbering in the AES response letter. We have the following comments:

Hydrogeological Assessment Report

The AES report indicates "to assist in understanding the location of the water table of the site, one well (MW1-09) was constructed on site in the overburden at the location shown in Figure 3. The locations of wells on the adjacent properties (MW1, MW4 and 16440) are shown in Figure 3. Well 16440 was drilled as a test well and was decommissioned shortly after construction because it was dry".

2. *One of the wells (16440) is reportedly dry, yet the bottom of the well appears to be used as the water table elevation in Figure 3.*

(AES Response #3) The response is satisfactory. Using the bottom of the dry well as the assumed water table elevation at that location is conservative.

3. *Three of the wells (MW1, MW4 and 16440) are south of the site and MW1-09 is located at the western property boundary. There is no information on the northern portion of the site. In addition, there is no discussion on how the water levels in the pond on the property to the south compare to water levels in MW1.*

(AES Response #4) The response indicates that the pond water level is not a significant consideration in determining the water table level due to wash water pumping and fine sediment build up. There is insufficient information provided by AES to allow Burnside to support the conclusion that the pond is not a water table feature, however this is not critical to determining the water table elevation, given the additional data provided.

The AES report states "Based on the location of the water table in MW1-09, 16440, MW1 and MW4, the water table is estimated to vary from 236.0 masl in the west portion of the site to 254.8 masl in the center to 252.2 masl in the east portion of the site as shown in Figure 3".

4. *There is no indication of how many times water levels were measured. There appear to be significant topographic variations across the site, but the wells are predominantly located along the southern portion of the site and as a result, the water table variations with topography are not considered.*

(AES Response #5) AES provides additional information that water levels have been measured at these locations on a frequent basis as a condition of the permit to take water for the wash water pond. AES has provided sufficient additional detail on how this more frequent water level data was used to establish the water table elevations for the proposed new pit.

(AES Response #6) Although the information from the two additional wells is helpful, they are both located along the property boundaries and as a result there is no additional information on water table conditions within the north central portion of the site. The elevation of the water table will need to be established in these areas before excavation can occur. This can be determined through adequate test pitting or monitoring wells after clearing and stripping of the area.

5. *Similarly, there is no discussion on how increased infiltration within the excavation area will impact the water table.*

(AES Response #7) Burnside agrees that the 1.5 m buffer will serve to protect the water table. As extraction proceeds, monitoring of changes in water table elevation (whether due to seasonal variations or changing infiltration rates) will be necessary to ensure that the 1.5m buffer is maintained.

6. *The stratigraphic information for MW1 (Figure 3) suggests the well may not be completed in the same material as the other wells and as a result, water levels from this well may not represent the water table in the sand and gravel.*

(AES Response #8) It appears that both wells referenced by AES are located more than 500 m from MW1 and as a result the water table in those wells could be quite different than that found at MW1. Similarly, the geology reported in well record 5725425 is similar to that at MW1 suggesting that clay is the predominant material.

The proponent may wish to consider this information in developing the extraction plans for the site.

7. *MOE well records and a door to door survey should be used to locate domestic wells in the vicinity of the site. These data should be used to develop an appropriate remediation plan.*

(AES Response #9) The response indicates that a significant amount of water level data has been collected for domestic wells in the vicinity of the site. Burnside is satisfied that this information will provide useful baseline data in the event that an interference claim is received.

Summary

There is insufficient data to allow for a reliable interpretation of water table elevations to be made. Given the topography of the site, it is likely that water table elevations will vary significantly across the site. As a result, Burnside recommends the following:

8. *Additional monitoring wells be drilled along the northern property boundary at a minimum of 3 Locations;*

(AES Response #10a) AES indicates that the proposed approach will be to excavate a minimum of three test pits after each lift of aggregate has been extracted. They indicate that this is a more accurate approach to identify the location of the water table as extraction on site proceeds as opposed to drilling three additional monitoring wells. We agree with AES that additional test pitting will be needed to more reliably establish the elevation of the water table as the pit proceeds. If monitoring wells are not established along the northern boundary the test pit approach will have to ensure that seasonal variations in the water table are identified to confirm that the 1.5m buffer is maintained.

9. *Detailed borehole logs be provided for all monitoring wells;*

(AES Response #10b) AES has provided logs summarizing a number of MOE water well records from the area.

10. *The domestic wells within 500 m of the site be identified so that baseline water level and water quality data can be obtained and a more detailed remediation plan developed;*

(AES Response #10c) It appears that the domestic wells within 500m of the site have been located and several have been equipped with data loggers. This data should be sufficient to allow for the resolution of any interference claims that may arise in the future.

11. *Water level monitoring be undertaken on a monthly basis and compared with precipitation so variations in the water table can be predicted.*

(AES Response #10d) Based on the hydrographs provided, we concur with AES that variations in the water table appear to be minimal. The proposed additional test pitting will help to more reliably establish the elevation of the water table as the pit proceeds.

We trust the above comments will be of assistance. Should you have any questions, please call our office.

Yours truly,

R.J. Burnside & Associates Limited



Ron Kerr, MPA, P.Eng.
RWK:sj

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