



September 11, 2019

Via: Email

Timothy Leitch, P.Eng
Director of Public Works
Township of Tiny
130 Balm Street West
Tiny, ON N0L 2J0

Dear Mr. Leitch:

**Re: Teedon Pit Extension
CRH Canada Response to Township March 25, 2019 Letter of Objection
Hydrogeological Peer Review
Township of Tiny, County of Simcoe, Ontario
Project No.: 300031221.0000**

The Township of Tiny (Township) submitted a letter of objection to an application for a Category 3 License under the Aggregate Resources Act for the proposed expansion of the Teedon Pit located in North ½ of Lot 80, Concession 1.

R.J. Burnside & Associates Limited (Burnside) was retained by the Township to peer review the hydrogeological documentation included with the application.

Burnside's comments on the hydrogeological issues were provided to the Township in our letter of February 15, 2019. The February 15, 2019 Burnside comments and subsequent Township comments, which were provided to the Ministry of Natural Resources and Forestry and CRH Canada Group Inc. (CRH) by Township letter dated March 25, 2019.

CRH by letter dated June 20, 2019 provided a response to the Township and Burnside comments. The Burnside response to the June 20, 2019 GHD comments appear in italics.

HYDROGEOLOGICAL COMMENTS

1. Burnside Comment

The hydrogeological assessment completed by GHD does provide some additional information on the geology in the vicinity of the sump pond/wash pond, however there is no discussion on how water levels in the ponds relate to levels in the local aquitard, the Newmarket Till and the Upper Thorncliffe.

GHD Response

The sump and wash ponds are located on the adjacent Teedon Pit. Discussion on how the ponds relate to the geology is not related to the pit extension application. For reference, we have included an electronic copy of the report prepared by GHD for the

Teedon Pit titled “Category 1 Permit- to -take- Water Renewal Application – Supporting Hydrologic and Hydrogeologic Study”.

Burnside Response

GHD Response does not satisfactorily address Burnside Comment.

Although the wash ponds and sump are not located on the proposed new pit site, the wash ponds and sump will eventually be used to wash the aggregate extracted from the new pit. As result, the existing wash ponds and sump are integral to the operation at the proposed new pit. Therefore, their impact on groundwater and surface water resources in the area should be considered as part of the new pit application. The information presented in the PTTW renewal application documentation does not provide the necessary site- specific information to assess the impacts due to the on-going use of the wash pond and associated infrastructure to wash material from the proposed expansion. Burnside reviewed a January 8, 2019 GHD letter to CRH from GHD (Hydrogeological Assessment-Location of Water Table) which is available on <https://www.dufferinaggregates.com/resourcecentre/#tab-id-6>. The report provides Borehole logs for some of the holes drilled in 2018 and includes cross sections. This information should be presented in a stand- alone document that addresses impacts of the wash pond.

2. Burnside Comment

The addition of the new wells improves the understanding of the geology on the existing pit site and in the proposed pit extension area. The following additional information is required for Burnside to complete their peer review:

- A table showing the dates that the manual water level data was collected and hydrographs showing the results for each well;
- Borehole logs for the wells so that the geology can be seen at each location. Based on the cross sections, it appears that the sump pond/wash pond is effectively isolated from the underlying aquifer. The borehole logs would assist us with the interpretation of the extent of the silt and clay aquitard; and
- A “regional” cross section that includes the reported depths of the wells reportedly impacted by previous operations at the quarry.

GHD Response

Please refer to the GHD report mentioned above as it addresses the requested information.

Burnside Response

GHD Response does not satisfactorily address Burnside Comment.

The PTTW report does not include any information from the boreholes/monitoring wells drilled in 2018. Several of the boreholes/monitoring wells are in close proximity of the wash pond and would be helpful in confirming the presence of the silt/clay aquitard that may be present.

3. Burnside Comment

Burnside recommends that:

- The current condition of nearby domestic wells be established, including the well depth and condition of the casing/screen, the well yield and general water quality.

GHD Response

The proposed Teedon Pit extension is an above water pit. GHD concluded that there would be no impact to local wells. To date there have been three (3) domestic well surveys completed: the first in 2015 was completed by Alpha Environmental where 27 wells were included; the second in 2017, was conducted by GHD on behalf of CRH where five were included; and the third, in 2018 included 78 domestic well surveys which was also conducted by GHD on behalf of CRH. For your information we have also included this report titled "2018 Domestic Well Survey" electronically.

Burnside Response

GHD Response does not satisfactorily address Burnside Comment.

The majority of well concerns reported by residents were related to the presence of silt in their wells which many believed were the result of leakage from the wash pond. In their documentation of the domestic well survey GHD indicates the "the presence of the Local Aquitard would isolate the aggregate washing operations from the deeper aquifer". GHD should use the water level and geologic information from all the wells on the existing pit site and proposed expansion area to create cross sections that show the lateral and vertical extent of the Local Aquitard and how it relates to the domestic wells with reported siltation problems. Groundwater flow maps using the water level data from the site will be helpful in showing which domestic wells are downgradient of the existing and proposed site.

4. Burnside Comment

Burnside recommends that:

- Manual monitoring be done at least monthly and that Automatic Water level Recorders (AWLR's) be installed so that the peak spring water levels in 2019 can be captured and used to confirm that the proposed Teedon Pit Extension pit floor elevation is 1.5 m above the high-water table.

GHD Response

AWLR's have already been installed in all the monitoring wells at both the Teedon pit and the proposed extension lands. CRH commits to revising Note # 42 on the proposed Teedon Pit extension operations plan to reflect the Town's request to have AWLRs loggers installed and for the wells to be monitored monthly.

Burnside Response

The use of AWLRs will allow for peak water table levels at the site to be established. Once the Site Plan drawings have been amended to reflect the GHD Response, Burnside Comment will be satisfactorily addressed.

5. **Burnside Comment**

An additional monitoring well be installed between MW9-18 and MW8-18 to provide data on the water table as there are no other wells on the Teedon Pit Extension property that are completed in the sand aquifer. Similarly, an additional well should be installed along the eastern edge of the proposed extraction area. Wells on the Teedon Pit to the south should be included in the monitoring program.

GHD Response

CRH commits to revise the Teedon Pit extension site plans to include the additional following note:

“One year prior to extraction commencing, two additional monitoring wells shall be installed. One between MW9–18 and MW8–18 and the second shall be installed along the eastern edge of the extraction area”.

The additional monitoring wells referenced above to be added to Note # 42 and to the monitoring well schematic on the Teedon Pit extension operations plan.

Burnside Response

The addition of the two wells will improve the understanding of the hydrogeology of the site. GHD Response satisfactorily addresses Burnside Comment.

6. **Burnside Comment**

The Monitoring Program should include provisions to modify operations in the event the pit floor is less than 1.5 m above the water table.

GHD Response

The Teedon Pit extension operations plan Note# 44 already indicates that operations will be modified based on measured water levels. Note # 44 states: “Extraction shall remain 1.5 m above the established water table. In the event the water level data indicates the maximum depth of extraction is less than 1.5 m above the established water table, maximum depth of extraction shall be adjusted accordingly to maintain the 1.5 m depth”.

Burnside Response

GHD Response satisfactorily addresses Burnside Comment.

7. **Burnside Comment**

Additional data be collected using AWLR’s to confirm the water table elevation until the Teedon Pit Extension begins operations. Water level collection only began in June 2018 and may have missed peak spring water levels.

GHD Response

As noted in response to 3(b) and 3(c), the AWLR loggers have already been installed and Note# 42 on the Teedon Pit extension operations plan will be revised to reflect this, the requirement for monthly monitoring, as well as the addition of the 2 monitoring wells.

Burnside Response

GHD Response satisfactorily addresses Burnside Comment.

8. Burnside Comment

Testing be completed to evaluate the connection between the existing wash pond and the underlying aquifer. This may require the installation of additional shallow monitoring wells near the wash pond so that the water table can be monitored, and vertical gradients can be calculated. If it is found that the pond has the potential to impact groundwater water quality/quantity, then consideration should be given to the installation of a liner.

GHD Response

The testing and monitoring requirements of the wash pond are not related to the Teedon Pit extension and are subject to the PTT W application process. For reference “refer to the GHD report titled Category 1 Permit to take Water Renewal Application – Supporting Hydrologic and Hydrogeologic Study”.

Burnside Response

GHD Response does not satisfactorily address Burnside Comment.

The wash pond will be used to wash material from the proposed pit expansion and the comment above should be addressed.

Should you have any questions, please contact the undersigned.

Yours truly,

R.J. Burnside & Associates Limited



Dave Hopkins
Senior Hydrogeologist
DH:sgd

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