

January 31, 2024

File: 102478.002 – Rev0

Innovative Planning Solutions
647 Welham Road, Unit 9A
Barrie, Ontario
L4N 0B7

Attention: Kyle Galvin, H.BDC, MCIP, RPP

**Re: High Groundwater Level – Desktop Review
Proposed Redevelopment of 12 Ottawa Avenue
Barrie, Ontario**

BACKGROUND

It is understood that following initial redevelopment plan submission and subsequent correspondence, the City of Barrie (the City) has requested a desktop review (research report) of the groundwater information of the property located at 12 Ottawa Avenue in Barrie, Ontario to assess the potential high groundwater level in support of the site redevelopment. GEMTEC Consulting Engineers and Scientists Limited (GEMTEC) has been requested to undertake this review.

Based on correspondence from the City of Barrie, the desktop review is to include the following:

- Description of hydrostratigraphy / hydrogeology expected at the site, including:
 - Aquifer Properties based on available information (well records, source protection plans, etc.); the City's Groundwater Management Strategy to be used as reference;
 - Expected Groundwater Levels;
 - Groundwater flow direction; and,
 - Description of nearby surface water features and functions.

The review is to conclude whether the anticipated construction activities will be within the range of the high groundwater table.

GEMTEC has previously undertaken a geoenvironmental investigation of the property, provided in the report titled *"Geoenvironmental Investigation, Proposed Redevelopment of 12 Ottawa Avenue, Barrie, Ontario"*, GEMTEC File 102478.002 – Rev0, dated May 10, 2023.

It is understood that the plan for the property remains unchanged from the initial investigation, and the redevelopment is proposed to comprise of houses with typical slab-on-grade and shallow

spread footing construction, including attached garages. Basements are currently being considered, but are unconfirmed at this time. The residential water and sewer services will be connected to the existing City of Barrie infrastructure.

PREVIOUS FIELD WORK

During the geoenvironmental investigation undertaken by GEMTEC and referenced above, two test pits were excavated on April 18, 2023, down to a depth of approximately 3 m and groundwater was not observed in the open test pits during our site investigation. Further, the (limited) subsurface conditions observed did not indicate the potential presence of the groundwater table (i.e., groundwater table lower than 3 m depth).

In this regard, it is not anticipated that temporary construction dewatering (e.g., a dedicated well-point system) would be required for the proposed on-grade development, and in-excavation groundwater controls (i.e., localized sump pumping techniques) are anticipated to be sufficient to manage incidental precipitation and potential perched groundwater conditions. Following detailed design and finalization of construction plans for servicing and site redevelopment, the dewatering requirements for the site should be re-assessed and, if necessary, a formal discharge and monitoring plan developed.

It is noted that groundwater levels may be higher during wet periods of the year, such as the early spring or following periods of precipitation. Confirmation of the seasonally high groundwater level is recommended following the spring freshet. This will also assist with estimating the potential impact to groundwater levels at the site. It is understood that this will be completed during the detailed design stage (i.e., detailed geotechnical and hydrogeological investigation).

HIGH GROUNDWATER LEVEL DISCUSSION

The printout provided by the City as Appendix A – Hydrogeological Conditions, has a qualifying (i.e., limiting) statement that would require reliance being provided by the City for use in any analysis.

Publicly available reports containing groundwater levels in the vicinity of the site include qualifying statements (i.e., limitations) regarding the use of the reports; similar to the qualifying statement made by the City (refer to associated Comment Matrix Item 4 on page 2). In this regard, reliance of the factual data by the author of the report would be required in order to provide the letter/report the City is requesting.

GEMTEC reviewed publicly available Ministry of the Environment, Conservation, and Parks (MECP) Water Well Records (WWRs) in the vicinity of the site, and found records for monitoring wells installed at 20 Rose Street, about 150 m to 200 m southwest of the site. The monitoring wells there were installed from about 4.5 m to 12.2 m depth (screened at depth), however, do not appear to include any groundwater information. Another WWR (ID 5722284) was found

approximately 350 m southeast of the site that was installed to about 14 m depth in sand (screened at depth), and indicates the static water level is at about 4 m depth below ground surface (dated July 18, 1986). It should be noted that 12 Ottaway Avenue is estimated to be about 9 m to 10 m higher in elevation compared to the location of the wells as provided by MECP WWR based on Google Earth.

Given the above, the following options are provided:

1. As residential footings are typically constructed at about a 1.5 m depth below grade in the Barrie area, preliminary excavations should not extend beyond a 4 m depth below ground surface (1 m above the highest water level provided in the City's Appendix A – Hydrogeological Conditions). As previously recommended, once detailed design (including geotechnical and hydrogeological site investigation) and construction plans for servicing and site redevelopment have been finalized, the dewatering requirements should be re-assessed and, if necessary, additional investigations completed.
2. Installation of a monitoring well to a depth of about 4.5 m at the project site is recommended to permit groundwater level monitoring to confirm actual site conditions. It should be noted that this task may take up to a year to complete to establish the high groundwater level depending on the time of the well installation and reading; noting groundwater levels may be highest during the spring.

LIMITATIONS

This report was prepared for the exclusive use of Innovative Planning Solutions (IPS) and 2820485 Ontario Inc. (Client) by GEMTEC Consulting Engineers and Scientists Limited. This report may not be relied upon by any other person or entity without the express written consent of GEMTEC and the Client. Nothing in this report is intended to provide a legal opinion.

The investigation undertaken by GEMTEC with respect to this report and any conclusions or recommendations made in this report reflect the best judgements of GEMTEC based on the site conditions observed during the investigations undertaken at the date(s) identified in the report and on the information available at the time the report was prepared. This report has been prepared for the application noted and it is based, in part, on visual observations made at the site, subsurface investigations at discrete locations and depths and laboratory analyses of specific chemical parameters and material during a specific time interval, all as described in the report. Unless otherwise stated, the findings contained in this report cannot be extrapolated or extended to previous or future site conditions, portions of the site that were unavailable for direct investigation, subsurface locations on the site that were not investigated directly, or chemical parameters, materials or analysis which were not addressed. Chemical parameters other than those addressed by the investigation described in this report may exist in soil and groundwater elsewhere on the site, the chemical parameters addressed in the report may exist in soil and groundwater at other locations at the site that were not investigated, and concentrations of the

chemical parameters addressed which are different than those reported may exist at other locations on the site than those from where the samples were taken.

Should new information become available during future work, including excavations, borings or other studies, GEMTEC should be requested to review the information and, if necessary, re-assess the conclusions presented herein.

CLOSURE

We trust that this report is sufficient for your current needs. If you have any questions or require additional information, please contact the undersigned.

Regards,

GEMTEC Consulting Engineers and Scientists Limited



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