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MEMORANDUM

To: **Valery (Chedoke Browlands) Developments Inc.**
% Laura Drennan, BA, CPT – Planning Technician (ldrennan@urbansolutions.info)
UrbanSolutions Planning & Land Development Consultant Inc.

Date: April 20, 2022
File No.: 18211

Subject: **Landtek Limited Response to City of Hamilton Comments**
File 25T-202008: Residential Development, 870 Scenic Drive and 828 Sanatorium Road, Hamilton

Further to your recent email request, Landtek Limited (herein "*Landtek*") has provided this memorandum in response to comments received from the Corporation of the City of Hamilton (herein "*City of Hamilton*") and the Niagara Escarpment Commission (herein "*NEC*") pertaining to the Draft Plan of Subdivision, Zoning By-Law Amendment and Official Plan Amendment Applications for the above development. Landtek completed a Geotechnical Investigation and Slope Assessment at the site and detailed the findings in the following reports:

- "*Geotechnical Investigation, Proposed Residential Development, 801, 820, 828, 855, 865 and 870 Scenic Drive, Hamilton, Ontario*" reference 18211 dated November 9, 2018; and,
- "*Slope Assessment, Proposed Residential Development, 801, 820, 828, 855, 865 and 870 Scenic Drive, Hamilton, Ontario*" reference 18211 dated September 4, 2020.

Landtek provides the following in response to those comments given below.

Comment 1:

"*Apparently based on one day of observation in June 2018, the report concludes that the slope of the Escarpment below the development site is stable due to the mature vegetation on the slope. Weather cycles that result in freeze/thaw conditions and significant storm events can contribute to instability in the face of the Escarpment over time. NEC staff is of the opinion that insufficient observation or testing of the Escarpment feature was undertaken to justify the report's conclusion. Furthermore there are inconsistencies between the various reports with respect to the method of construction which could impact the slope stability. It was suggested in the Cultural Heritage report that blasting might be used in construction and concern was expressed for the integrity of the heritage building. The geotechnical report indicated however that blasting would not be used to construct the below-grade portions of the buildings.*"

Landtek Response:

The slope of the escarpment was observed over one full day of observation and was completed in accordance with the Ministry of Natural Resources (herein "*MNR*") slope assessment policy. Their policy does not provide observation time lengths.

It is wholly incorrect to state that the report "…*concludes that the slope of the Escarpment below the development is stable due to the mature vegetation on the slope*". It is clearly stated in Section 5.2, pp8-9 of the report that, based on the fact that dolostone bedrock of the Lockport Formation subcrops at a very shallow depth beneath the site, and in accordance with MNR assessment policy requirements, the slope is deemed a "…s*table slope with no toe erosion [and] no evidence of past instability*…". In using the observations made during the field and a review of all historical aerial photography, there is also no noted evidence of any slope failure for nearly a century of records.

Freeze-thaw is one of two erosion processes to which the escarpment is exposed, the other being water movement through the fracture system, but how quickly is the escarpment eroding as a result remains unknown. The dolostone of the Lockport Formation is known for its resilience to both erosion and weathering, so significant rates of rock degradation are not expected. The scree slope at the base of the escarpment is variable in size based mostly on the levels of exposure to the elements, particularly where exposure is in full and with no vegetative protection. As the escarpment and scree slope areas are vegetated within the area in question, it is considered that such erosion processes are not as prominent in comparison to those exposed, bare slope areas elsewhere on the escarpment.

Given that the slope in question is the raised cliff of the former Lake Iroquois shoreline that existed some 13,000 years ago and continues to be a cliff-like, prominent feature of the Hamilton area, Landtek remains of the opinion that the slope is indeed stable in its current condition, and that the proposed development poses no risk of impact to the slope that would be of detriment to either the slope's condition or stability.

Comment 2:

"*As stated in the preceding paragraph, NEC staff noted that this report indicated that below grade construction could be undertaken without using blasting but there is no discussion with respect to possible impacts to the Escarpment as a result of construction. The authors of the report should be required to provide a professional opinion in this regard. The NEC stated in its comments on the previous development proposal for the site that blasting is not supported so it needs to be confirmed whether construction will require blasting and what monitoring or mitigation would be proposed to address unanticipated failure of the slope or brow of the Escarpment or negative impact to the heritage building.*"

Landtek Response:

It remains Landtek's recommendation that blasting not be adopted during excavation, and it is also noted that such methods will not be supported by either the NEC or City of Hamilton By-Laws. As detailed in Landtek's Geotechnical Investigation report, Section 9.0 pp14, "*Excavation into the dolostone bedrock will require the use of more unconventional, heavier excavation equipment such as a rock chisel/breaker or a rock-ripping (tiger teeth-fitted) excavator bucket, particularly as the competence of the limestone bedrock tends to improve very quickly with depth*."

To alleviate any concerns towards the potential for instability that may result from ground vibrations generated during excavation, consideration may be given to the implementation of a Ground Vibration Monitoring program during the excavation process, particularly focussing on excavations when they are at their closest point to the escarpment crest.

As requested, Landtek can confirm that the revisions to the proposed development plan do not influence the findings of the Slope Assessment given in the previously listed report such that they are to the detriment of the slope condition and stability

We hope that this is to your satisfaction, but please do not hesitate to contact our office if you have any queries or would like to discuss our responses in more detail.

Kind regards,

LANDTEK LIMITED

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