PATERSON GROUP

memorandum

re: **Slope Stability Review**
Proposed Warehouse Building
96 Bill Leathem Drive, Ottawa

to: Prestige Design and Construction - **Mr. Enzo DiChiara** - enzo@prestigeottawa.com

date: March 7, 2024

file: PG6668-MEMO.01

Further to your request, Paterson Group (Paterson) completed a review of the slopes along the Clarke Bellinger SWM Facility on January 3, 2024. The following summarizes our findings.

Relevant photographs from our site visit are attached to this memorandum.

1.0 Site Conditions

Surface Conditions

The proposed two storey warehouse building at 96 Bill Leathem Drive is located directly north of the Clarke Bellinger Storm Water Management Pond (SWMP). The SWMP's slopes are located beyond the southern property line of the subject site. Based on our review of the latest Civil plans it is understood that the proposed building is located within the centre portion of the site and will be surrounded by paved asphalt parking lots. The proposed warehouse building was observed to be located approximately 15 to 25 m from the southern property line, varying from the eastern portion of the site to the western portion of the site. The proposed grade on site is relatively flat at an approximate geodetic elevation of 90.3 m, with a limited proposed grade raise.

Subsurface Conditions

The subsurface profile below the site, based on the geotechnical investigation completed by Paterson on May 17, 2023, is generally comprised of topsoil underlain by approximately 4 to 4.8 m thick hard to stiff consistency brown silty clay crust with some silty sand and interbedded silty sand seams, which was underlain by a firm to stiff grey silty clay.

Based on available geological mapping, the site is located in an area where the bedrock consists of interbedded sandstone and dolostone of the March formation with an overburden drift thickness ranging from 15 to 25 m.

Groundwater

Groundwater readings were measured through flexible pipe piezometer installed during the geotechnical investigation and based on our findings the long-term groundwater level is anticipated to be at a depth ranging between 4.0 to 5.0 m below the existing ground surface throughout the subject site. However, groundwater levels are subject to seasonal fluctuations and could vary during the time of construction.

2.0 Field Observations

Paterson completed a site visit on January 3, 2024, to review the condition of the slope and define the Limit of Hazard Lands, in order to determine if the proposed building is outside the defined Limit of Hazard lands.

During the time of our review, it was noted that a 1.5 m wide gravel walkway was located along the southern portion of the site approximately 1.5 to 3 m form the southern property line. The top of slope was located approximately 10.5 to 13 m southern property line. Based on our review of the slope along the subject site was observed to be approximately at 3H:1V or shallower. The slope was observed to be densely vegetated with grassed areas, shrubs and medium to mature trees. The average approximate grade along the top of the slope was between geodetic elevations of 89.3 to 89.7 m. Water was observed to be at a geodetic elevation of 83.9 m, at the time of our review. The bottom of the slope could not be determined during the time of our review.

3.0 Limit of Hazard Lands

Based on our findings, the existing slope along the Clarke Bellinger SWM facility is at an angle of 3H :1V or shallower and thus, as per the Natural Hazards Training Manual, Policy 3.1 of the Ministry of Natural Resources (MNR) guidelines, a quick setback review can setback review can be used for the site. Thus, considering the water feature is an engineered SWM pond and that the slope is vegetated with no significant signs of erosion, a stable slope allowance will not be required. However, a toe erosion allowance of 2 m in addition to an access allowance of 6 m will be applicable from the top of the slope.

It should be noted that based on the city of Ottawa slope stability guidelines, toe erosion allowance can be reduced if remedial work is implemented to prevent erosion activities at the toe of the given slope. Furthermore, existing vegetation on the slope face should not be removed as it contributes to the stability of the slope and reduces erosion. If the existing vegetation needs to be removed, it is recommended that a 100 to 150 mm of topsoil mixed with a hardy seed and/or an erosional control blanket be placed across the exposed slope face.

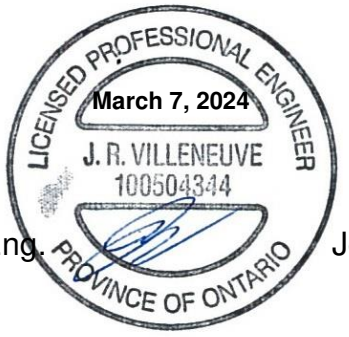
4.0 Conclusion

Based on our cursory review, the “Limit of Hazard Lands” (8 m from the top of slope) is outside the property limits of the subject site and as such no restriction to limit of hard lands are applicable within the site.

The recommendations provided in this letter report are in accordance with Paterson’s present understanding of the project. Should any conditions at the site be encountered which differ from our site observations, Paterson requests immediate notification to permit reassessment of the recommendations.

We trust that this information satisfies your requirements.

Paterson Group Inc.



Pratheep Thirumoolan, M.Eng. Joey R. Villeneuve, M.A.Sc., P.Eng., ing.

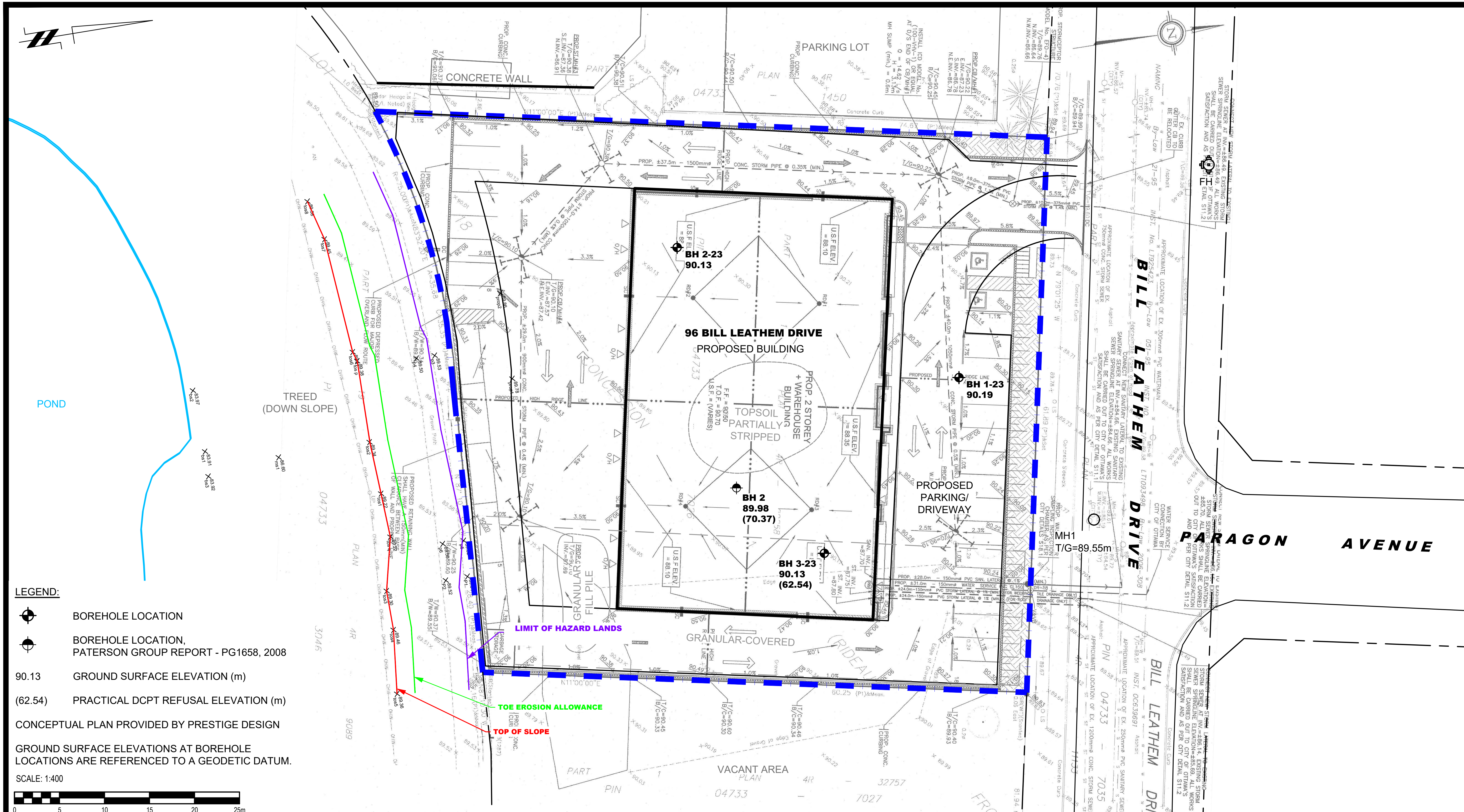
Photographs From Site Visit January 3, 2024

Photo 1: Photograph of the observed top of slope.

Photo 2: Photograph of the observed slope. The slope can be observed to be densely vegetated.

Photo 3: Photograph of the observed slope at the elevation of the pond.

Photo 4: Photograph of observed slope at the elevation of the pond.



LEGEND:

⌖	BOREHOLE LOCATION
⌖	BOREHOLE LOCATION, PATERSON GROUP REPORT - PG1658, 2008
90.13	GROUND SURFACE ELEVATION (m)
(62.54)	PRACTICAL DCPT REFUSAL ELEVATION (m)

CONCEPTUAL PLAN PROVIDED BY PRESTIGE DESIGN

GROUND SURFACE ELEVATIONS AT BOREHOLE LOCATIONS ARE REFERENCED TO A GEODETIC DATUM.

SCALE: 1:400

0 5 10 15 20 25m

PATERSON GROUP
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NO.	REVISIONS	DATE	INITIAL

PRESTIGE DESIGN & CONSTRUCTION LTD.

GEOTECHNICAL INVESTIGATION
PROPOSED DEVELOPMENT
96 BILL LEATHEM DRIVE

OTTAWA, ONTARIO

Title:

LIMIT OF HAZARD LANDS PLAN

Scale: 1:400	Date: 05/2023
Drawn by: NFRV	Report No.: PG6668-1
Checked by: PT	Dwg. No.: PG6668-2
Approved by: JV	Revision No.:

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