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Old Oak Properties
150 Dufferin Avenue, Suite 200
London, Ontario

**Reference: Executive Summary – Proposed Subdivision Development
 Geotechnical Investigation & Hydrogeological Assessment
 850 Highbury Avenue North, London**

LDS Consultants Inc. (LDS) has been retained by Old Oak Properties to conduct a Geotechnical Assessment for a proposed subdivision development located at Municipal Number (MN) 850 Highbury Avenue North, London. This executive summary has been prepared to accompany the Geotechnical Investigation and Hydrogeological Assessment Report prepared by LDS, for AODA compliance purposes.

Site Description

The site was formerly occupied by the London Psychiatric Hospital / Regional Mental Health Care London facility, and contains a cluster of buildings which were used (in part) in support of its 150+ year history of providing psychiatric health services. It is understood from the environmental work prepared by Pinchin, that many of the former supporting operations on-Site involved the use of chemicals and the storage of fuels within aboveground and underground storage tanks. It is understood that Pinchin has indicated that a Record of Site Condition is not required for the proposed residential development at the site. However, it is understood that some environmental clean-up work is planned for the site. In an effort not to mobilize contaminants which remain in the soil and shallow groundwater, recommendations are provided in the report for construction dewatering and for stormwater management with this in mind.

Proposed Development Plans

The proposed development is intended to be the predominately residential easterly half of the Oxford / Highbury Transit Village, which will transition to, and integrate the existing low density residential community to the east. The project will require the demolition and removal of existing site services and integration of heritage easement features across the campus. The development is expected to include a series of local roads and neighbourhood collector streets which will tie in to some of the existing road alignments around the existing buildings. The road network is expected to include connections to Oxford Street and Highbury Avenue.

Summarized Conditions

LDS carried out a field program consisting of a total of sixteen (16) boreholes, drilled on July 22, 23 and 26, 2021. The boreholes were advanced at the site by a local drilling-contractor, using a track-mounted drill-rig. The boreholes were advanced to depths ranging from 5.0 m to 8.1 m below existing grade (mbgs). In general, soils observed in the boreholes predominately consisted of topsoil/asphalt pavement structure and fill materials overlying silty clay till and clayey/silty/sandy soil deposits.

Groundwater is present in a perched shallow aquifer within the near-surface sandy soils and sandy/silty layers within the glacial till deposits. Monitoring wells were installed in five (5) of the boreholes (BH1, BH5, BH10, BH13 and BH14) to allow for monitoring the stabilized groundwater level at the site. Wells are comprised of a 50 mm diameter CPVC pipe, with a slotted and filtered screen.

Monthly water level measurements were taken at the site from the period between August 2021 and September 2022. Stabilized water levels are generally reported in the range of 1.6 to 4.8 m below ground surface, with the predominant groundwater flow in a south-southwesterly direction.

Though gradation analyses and single well response testing at select monitoring well locations, the natural water-bearing sandy soils have a saturated hydraulic conductivity in the range of 10^{-4} to 10^{-5} m/s while the natural glacial till deposits have a hydraulic conductivity in the range of 10^{-6} to 10^{-8} m/s.

Discussion and Recommendations

The report provides geotechnical comments and recommendations for the proposed development, including the following:

- Site preparation (including demolition of existing buildings, re-routing buried utilities, re-use of excavated materials as engineered fill, structural fill, and guidance for engineered fill placement). In addition, discussion includes the handling and disposal of excess soils, in accordance with the Excess Soils Regulation, O.Reg. 406/19.
- Excavations for the proposed buildings and site services are generally expected to extend into the fill materials and natural silty clay till and clayey/silty/sandy soil deposits, or possible engineered fill material. Excavation sidewalls must be inclined in accordance with OSHA Requirements, for Types 2 and 3 soils. Where Type 4 soils are encountered, or where insufficient space is available for sloped open cut excavations, excavation supports will be required.
- Groundwater control is generally expected to be handled with the use of pumping from properly constructed filtered sumps located within the excavations. However, more significant groundwater seepage may be expected from the sandy/silty soils when excavation extend below the groundwater level. If excavations are expected to encroach upon the stabilized groundwater table, it is recommended that at a minimum, that work should not proceed with open cut excavations without having an Environmental Activity Sector Registry (EASR) submission in place. A Construction Dewatering and Discharge Plan will be required for the EASR submission. The Discharge Plan will identify the discharge location for pumped water, including sediment and erosion control measures which will be utilized where water is contained onsite in surface water features, or where filtering of discharge water is planned, for water being outletted to municipal infrastructure.
- Preliminary foundation design recommendations, for foundations set on natural subgrade soils or approved engineered fill materials, including soil bearing capacity, subgrade preparation, potential settlements, backfilling, and damp-proofing. Concrete floors for new buildings may be constructed using conventional concrete poured slab techniques, following the review and approval of the subgrade soils.
- The Seismic Site Class for the proposed development is “D” as per Table 4.1.8.4.A, Site Classification for Seismic Site Response, OBC 2012. In the event that a higher Site Classification is being sought by the structural design engineer, additional boreholes and / or multichannel analysis of surface waves (MASW) testing would be required site servicing (including the re-use of onsite soils in service trenches, pipe bedding, and trench backfill),
- Pavement design (including pavement component thicknesses for parking lot and access roads and recommendations for concrete curbs and sidewalks within the site), in accordance with City of London design standards and OPSS design guidelines.
- Sediment and erosion control recommendations are provided for the perimeter of the site, and at catchbasin and manhole structures, to help limit and filter sediment-laden stormwater runoff from the site.

The subject site does not include any significant surface water features or significant natural heritage features (woodlots or wetlands) within the site limits. However, the hydrogeological discussion in the report includes a preliminary impact assessment, identifying the potential for and mitigation measures to manage potential risk of impact to shallow groundwater. The report discusses low impact development (LID) options and alternatives, based on the soil and shallow groundwater conditions at the site. Where low permeability soils are present (such as natural silty clay till, or imported silty/clayey soils), the use of infiltration-based features may not be effective. LID measures which extend the retention time for surface water run-off, provide increased evapotranspiration opportunities and to help moderate and potentially reduce run-off volumes, may be considered appropriate. When considering LID features at the site, consideration should be given to potential shallow groundwater contaminants which may be present in the area. Consultation with the geotechnical, hydrogeological and environmental consultants is recommended.

Closing

The Geotechnical Investigation and Hydrogeological Assessment Report supports the proposed development plans for the site. Additional boreholes and monitoring of stabilized groundwater conditions may be appropriate to supplement the information provided in the report, as detailed design proceeds for the site. Should subsurface conditions be encountered which vary materially from those observed in the boreholes, we recommend that LDS be consulted to review the additional information and verify if there are any changes to the geotechnical recommendations.

We trust this satisfies your present requirements. If you have any questions or require anything further, please feel free to contact our office.

Respectfully Submitted,

LDS CONSULTANTS INC.



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