Lake Simcoe Region Conservation Authority Technical Review – Hydrogeology

Site Address: 181 Toronto St S	**Date:** April 15, 2024	**LSRCA File #:** SD-220826-071322	**Municipal Ref #:** SUB 2022-02
Application Type: Subdivision	**APID:** 220826	**Submission #:** SECOND	**Municipality:** Uxbridge

Documents Previously Reviewed (August 17, 2022):

- Preliminary Hydrogeological Investigation, Toronto Inspection Ltd., April 19, 2022
- Stormwater Management and Functional Servicing Report, Counterpoint Engineering, May 16, 2021
- Geotechnical Investigation, Toronto Inspection Ltd., May 11, 2021

Background Information:

- 0.3 ha site propsed for two 3-storey buildings

Comment #	Item	Section	Page #	1st LSRCA Comments on August 17, 2022	1st Applicant Response on March 7, 2024	2nd LSRCA Comments on April 15, 2024	2nd Applicant Response on Date
H1	Hydrogeological Investigation			Please update the Hydrogeological Investigation Report once the full monitoring program has been completed.	Please refer to the updated Hydrogeological Report R01 dated February 6, 2024.	Addressed.	
H2	Hydrogeological Investigation	Tables 4-2 and 4-3		Table 4-2 and 4-3 show groundwater monitoring results in metres below ground surface and metres above sea level but the monitoring dates are different between the 2 tables? Please confirm monitoring dates and correct as appropriate.	Please refer to the updated Hydrogeological Report R01 dated February 6, 2024.	Addressed. Dates revised. Seasonal high groundwater level at all onsite monitoring wells were recorded in April 2022 and range from 2.4 mbgs to 2.7 mbgs.	
H3	Stormwater management Report			We agree with the recommendation in the hydrogeological investigation that where possible long-term foundation drainage should be collected in the on-site infiltration facilities. Please provide more information on the discharge of foundation drainage.	Infiltration of long term dewatering may be possible. As per the Hydro G report – 1,800 L/day = 0.02 l/s. This flow could be infiltrated by the SC-310 chambers along with the roof infiltration. Please refer to the updated Hydrogeological Report R01 dated February 6, 2024.	**Partially addressed.** The long-term pumping rate in the TIL (2024) report is calculated as 2,100 L/day. It is unclear of the SC-310 chamber is sized to accommodate long-term dewatering volume and post-development infiltration deficit. Please provide calculations demonstrating that the proposed infiltration facility is sized as necessary.	The SC-310 chamber will only be used for water balance and volume control. The chamber has been sized to retain the 25mm event only and will overflow and drain overland if additional drainage is added to it. Therefore, it is more suitable to have a separate connection to the storm sewer dedicated for long-term dewatering.
H4	Stormwater Management Report			Please provide all supporting data and information used to calculate the pre- and post-development water balance assessment:	Additional information provided.	**Partially addressed.** • Please indicate the land area for pre- and post-development impervious surfaces (i.e., paved surfaces, buildings, waterbodies)	• Please land use area breakdown Figures **SWM-3** and **SWM-4** for pre and post-development provided in **Appendix E (pg 86 and 87)** of the SWM report.

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				• Precipitation data from a local climate station with an appropriate record period • Evapotranspiration calculations Detailed breakdown of infiltration calculations for both pre- and post-development conditions. Currently infiltration only accounts for 30% of surplus which is not typical for sandy soils. Please support using data obtained from the site.		and pervious surfaces (i.e., lawns, gardens, landscape, woodlot, etc.). • Please provide the SC-310 design to accommodate the proposed storm event (e.g., 25 mm). This should be based on the Toronto Wet Weather Flow Management Guideline. • Please update the run-off from impervious surface. Generally, a 10-20% loss of precipitation due to evaporation from impervious areas is applied. • Please note that infiltration credit is not provided for the infiltration of the foundation drain collectors • Please note that Section 4.0 of the LSRCA Water Balance Recharge Offsetting Policy (2023) requires the climate-based. Thornthwaite and Mather water balance be authored by a qualified person (i.e., P.Geo. or exempted P.Eng. as per *Professional Geoscientists Act (2000)*). It is preferred that the water balance assessment be completed as part of the Hydrogeological Assessment.	• The storage chambers have been designed to retain the 25mm event, a total of 19.30m3. Please see specifications of unit provided on **pg 45-50** in **Appendix B** of the SWM report. • A 15% loss was assumed an implemented in the water balance calculations. The WB calculations show 125mm/yr for evapotranspiration on impervious areas. 15% of total annual precipitation (831mm/yr) is equal to 125mm/yr. Please see WB calculations provided in **Appendix B (pg 36 of 87)** • Infiltration credit has not been provided by the foundation drain collectors.
H5	All			The site is located in area of high aquifer vulnerability and in close proximity to a municipal drinking water well. Therefore, it is recommended that salt best management practices be utilized on the site.	Acknowledged.	Addressed.	
H6	Geotechnical Investigation/Stormwater Management Report/ Hydrogeological Investigation			It appears preliminary infiltration testing has been completed on the site and documented within the Geotechnical Investigation. The preliminary testing locations do not correspond to the locations and	Please refer to the Infiltration Letter issued by Toronto Inspection Ltd. on August 25, 2023.	Addressed. In-situ infiltration was completed in the proposed LID location. Infiltration rates ranged from 61 mm/hr to 89 mm/hr and are functionally feasible.	

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				elevations of the proposed infiltration facilities and therefore additional testing is recommended. In addition, the results of from preliminary testing appear to be overly high (> 300 mm/hr.) even for sandy soils and should be confirmed to support the design of the proposed infiltration facilities. Please provide in-situ infiltration testing at the location and bottom elevation for both of the proposed infiltration facilities. Please refer to the Stormwater Management Criteria (CVC, 2012) for recommended testing methods.			
H7	Stormwater Management Report	App. B		Please provide all calculations demonstrating the storage volume will infiltrate with 24-48 hours based on in-situ infiltration testing rates.	Calculations provided in appendices.	**Partially addressed.** In-situ infiltration rates ranged from from 61 mm/hr to 89 mm/hr. The unfactored infiltration rate of 61 mm/hr should be considered for the LID features and calculate the drawdown time. Please note drawdown calculations should include the porosity of the stone bed aggregate material. Information can be found on the Sustainability Technologies Evaluation Program website for infiltration sizing and modeling.	Noted. See calculations provided on **pg 42,43 of 87** in **Appendix B** of the SWM report.
H8	C-2			The infiltration gallery detail shown on drawing C-2 has limited information. Please provide detailed cross sections of all infiltration facilities (including the Stormtech Chamber) that includes, elevations, materials, groundwater levels and dimensions. Please note that only storage below the perforated pipe (stone reservoir of	Additional detail for each chamber noted on the drawing as well as providing the stage storage charts.	**Partially addressed.** Please provide detailed cross-sections of all infiltration facilities (including the Stormtech Chamber) that includes, elevations, materials, groundwater levels and dimensions.	Please see detail provided in **Drawing C-2 (Servicing Plan)** provided in **Appendix E (pg 81 of 87)** of the SWM report. Details of dimensions are also provided in sizing documents provided on **pg 45-50** in **Appendix B.**

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				0.2 m) can be used to calculate infiltration achieved by the facility.			
H9							
H10							

Submission Resubmission Requirements:

1. A completed response matrix including detailed response outlining how each of the comments above have been addressed with reference to applicable reports and drawings.
2. The response matrix is to also include a summary of any additional changes to the design and/or analysis. This includes changes to reports, drawings, details, facility design and changes not identified in the detailed response to comments.
3. Reports and engineering drawings and details are to be signed and sealed by a Professional Engineer.
4. All submissions and reports are to include a digital copy of applicable models.
5. All submission and reports are to include applicable technical components which achieve the minimum requirements outlined in the Lake Simcoe Region Conservation Authority Technical Guidelines for Stormwater Management Submission, April 2022.

Important Notes and References:

1. Please contact the Lake Simcoe Region Conservation Authority (LSRCA) to scope any required Environmental Impact Study or Natural Heritage Evaluation.
2. The stormwater management submission is required to be prepared in accordance with LSRCA Technical Guidelines for Stormwater Management Submissions. Technical-Guidelines-for-Stormwater-Management-Submissions April 2022
3. Submissions are to be in accordance with the LSRCA Watershed Development Guidelines. Ontario Regulation 179/06 Implementation Guidelines
4. The hydrogeological analysis is required to be prepared in accordance with “Hydrological Assessment Submissions: Conservation Authority” Guidelines for Development Applications.” Hydrogeological Guidelines - Hydrological Assessment 2013
5. Where the LSPOP applies, submissions are to be in accordance with the LSPOP found here: Watershed Phosphorus Offsetting Policy July 2021
6. Low Impact Development Treatment Training tool can be found here: LID Treatment Training Tool April 2018
7. Lake Simcoe Region Conservation Authority Review Fees can be found here: Planning Application and Permit-fees January 2022.
8. Please note that the review fees cover two rounds of reviews; third and subsequent submissions will be subject to additional fees per the fee schedule.