Toronto and Region Conservation for The Living City

October 5, 2017

CFN 58051

BY EMAIL: mary.nordstrom@caledon.ca

Ms. Mary Nordstrom, Senior Development Planner
Town of Caledon
6311 Old Church Road
Caledon, ON
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Dear Ms. Nordstrom

Re: Draft Plan of Subdivision – 21T-17004C
Official Plan Amendment & Zoning By-law Amendment – POPA 17-01 & RZ 17-06
15505 & 15717 Airport Road
Part Lots 18, 19 & 20, Concession 1 (ALB)
Town of Caledon
Triple Crown Line Developments (McLeod) (Agent: Design Plan Services Inc.)

This letter will acknowledge receipt of the above noted applications and your recent circulations received on July 6, 2017 and August 18, 2017. Thank you for the opportunity to review and provide comments on the above noted applications. As per the "Living City Policies for Planning and Development within the Watersheds of the Toronto and Region Conservation Authority (TRCA)" (LCP), staff provides the following comments as part of TRCA's commenting role under the under the *Planning Act*, the Authority's delegated responsibility of representing the provincial interest on natural hazards encompassed by Section 3.1 of the *Provincial Policy Statement*, 2005; TRCA's Regulatory Authority under Ontario Regulation 166/06, *Development, Interference with Wetlands and Alterations to Shorelines and Watercourses*; and our Memorandum of Understanding (MOU) with the Region of Peel, wherein we provide technical environmental advice.

Purpose of the Application

We understand the purpose of the above noted Draft Plan of Subdivision is to create 562 single detached residential lots with frontages ranging from 9.75 m (32 foot) to 22.8 m (75 foot). The Draft Plan also illustrates the potential development of an additional 63 residential lots on abutting lands to the northeast and south not currently owned by the applicant ("Additional Lands"). The Official Plan Amendment (OPA) applies to the subject lands and the "Additional Lands" and proposes to relocate the Neighbourhood Park to the central location, redesignate the northeast portion from Open Space Policy Area to Low Density Residential and increase the permitted net density from 16.6 units per hectare to 22.0 units per hectare. The Zoning By-law Amendment (ZBLA) proposes to rezone the lands from Agricultural (A1), Environmental Policy Area 2 (EPA-2) and Agricultural-ORM (A1-ORM) to site-specific Residential 1 (R1-X) and Residential 2 (R2-X) zones and an Open Space (OS) zone for the parks.

Recommendation

The applicant has not established the viability of this subdivision as of yet, and has not established that the proposed plan is consistent with the Oak Ridges Moraine Conservation Plan (ORMCP) and PPS. Fundamental feasibility questions remain with respect to the ability for the proposed subdivision, in its current configuration to be serviced in accordance with Town of Caledon, TRCA and Provincial standards. Further, it has not been established that all the Key Natural Heritage Features (KNHFs) and Hydrologically Sensitive Features (HSFs), and their associated Minimum Vegetation Protection Zones (MVPZ) are being adequately protected, in accordance with the ORMCP. In order for TRCA staff to be in position to make a recommendation on the subject applications, staff's comments attached in Appendix I, need to be address to TRCA's satisfaction. As such, final recommendations are **premature** until the comments are addressed to the satisfaction of TRCA staff.

For your assistance, the following points summarize TRCA staff's key comments:

- A significant portion of the development (i.e., SWM pond) is proposed outside of the Settlement Boundary;
- The stormwater management (SWM) pond is proposed on lands designated "Prime Agricultural Area" (Schedule B) and Protected Countryside of the Greenbelt Plan (Schedule D3) in the Region of Peel Official Plan (OP);
- The proposed SWM pond is located within a KNHF and potential HSF;
- Significant grading operations are required to support the proposed stormwater management scheme. Relocating the SWM pond to the lowest area of the site is recommended;
- Grading in the entire 10 m buffer is proposed for lands within Protected Countryside of the Greenbelt Plan and a significant portion of the 30 m buffer for lands on the Oak Ridges Moraine (ORM);
- A consolidated constraints map is required to verify limits of development;
- The draft plan identifies a portion of the site that is within the Natural Heritage System (NHS) as "Additional Lands in Which the Applicant Has an Interest". These lands are not developable and should be placed into public ownership;
- Completion of Feature-Based Water Balance assessments may be required for the nearby Provincially Significant Wetlands as per the TRCA Stormwater Management Criteria Document;
- An updated slope stability report is required.

Applicable Policies and Regulations

Ont. Reg. 166/06

TRCA regulates development within and adjacent to valley and stream corridors, wetlands and watercourses. As such, a significant portion of the subject lands are located within the Regulated Area of the Humber River Watershed and are subject to Ontario Regulation 166/06 (as amended), and TRCA's LCP. Based on our review, the proposed development is located within the Regulated Area of the Humber River Watershed. As such, a permit is required from this Authority prior to any works commencing on-site pursuant to Ontario Regulation 166/06. TRCA staff will discuss permit fees and requirements with the proponent at such time that the review and approvals have advanced and TRCA permits are required to facilitate the development.

Oak Ridges Moraine (ORM)

The eastern portion of the subject property is located on the ORM, and is subject to the provisions of the ORMCP. It appears the site is located within the Natural Core, Countryside Area and Settlement Area land use designations of the ORMCP.

Greenbelt Plan
The western portion of the property is designated Protected Countryside by the Greenbelt Plan. The Protected Countryside contains an Agricultural System, Settlement Areas, and a Natural System. As the subject lands are designated "Low Density Residential", "Open Space Policy Area", and are located within the "2021 Settlement Boundary" (Schedule D) as confirmed in the Town of Caledon OP, we understand the subject property is located within the boundaries of the Settlement Area of the Greenbelt Plan. The Natural System is comprised of the Natural Heritage System, Water Resource System, KNHFs and HSFs. Schedule 4 of the Greenbelt Plan identifies the boundaries of the Natural Heritage System. Based on our review, the site is located outside the boundary of the Natural Heritage System as defined by the Province. However, as confirmed in the Environmental Impact Study (EIS), there are a number of KNHFs and HSFs on the site.

Conclusion
We thank you for the opportunity to review the subject applications and provide our comments as per our commenting and regulatory role. Further, we trust these comments are of assistance. TRCA will continue to work closely with Town of Caledon staff, the applicant and their consultants to ensure that TRCA's expectations for meeting the attached comments are met. We look forward to reviewing the future submissions for our review. Should you have any questions or comments, please do not hesitate to contact the undersigned.

Yours truly,

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Senior Planner
Planning and Development
Extension 5244
/am

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Ali Shirazi, Senior Geotechnical Engineer, TRCA
Quentin Hanchard, Associate Director, TRCA

APPENDIX I: TRCA Comments

The following materials were received by the TRCA as part of the circulation received on July 6, 2017:

- Draft Plan, Drawing No. 1692-35, dated May 1, 2017, prepared by Design Plan Services Incorporated;
- Legal Survey, dated November 28, 2016, prepared by Holding Jones Vanderveen Incorporated;
- Draft Official Plan Amendment;
- Draft Zoning By-law Amendment;
- Planning Justification Report, dated May 2017, prepared by Design Plan Services Incorporated;
- Preliminary Environmental Impact Study (EIS), dated June 2017, prepared by Dillon Consulting;
- Functional Servicing Report (FSR), dated May 2017, prepared by Schaeffers Consulting Engineers;
- Preliminary Pre and Post-Development Site Water Balance Assessment, dated June 14, 2017, prepared by Exp Services Incorporated;
- Geotechnical Investigation, dated June 8, 2017, prepared by Exp Services Incorporated;
- Preliminary Hydrogeological Investigation, dated June 14, 2017, prepared by Exp Services Incorporated;
- Trail, Walkway & Pedestrian Plan, dated June 1, 2017, prepared by MBTW;
- Parks & Open Space Concept Plan, dated June 1, 2017, prepared by MBTW;
- Overall Grading Plan, Drawing No. GR-1, dated May 2017, prepared by Schaeffers Consulting Engineers;
- Grading Plan, Drawing No. GR-2, dated May 2017, prepared by Schaeffers Consulting Engineers;
- Grading Plan, Drawing No. GR-3, dated May 2017, prepared by Schaeffers Consulting Engineers;
- Grading Plan, Drawing No. GR-4, dated May 2017, prepared by Schaeffers Consulting Engineers;
- Grading Plan, Drawing No. GR-5, dated May 2017, prepared by Schaeffers Consulting Engineers;
- Phase 1 Environmental Site Assessment (ESA), dated September 20, 2017, prepared by Exp. Services Incorporated;
- Urban Design Brief, dated June 1, 2017, prepared by MBTW;
- Minimum Distance Separation (MDS) Report, dated June 5, 2017, prepared by Dillon Consulting.

The following materials were received by the TRCA as part of a subsequent circulation received on August 18, 2017:

- Slope Stability Analysis, dated July 25, 2017, prepared by Exp. Services Incorporated;
- Chemical Testing Report, dated July 25, 2017, prepared by Exp. Services Incorporated.

Please advise the applicant to address the following comments and resubmit revisions/additional information for additional technical review. To expedite the review of the resubmission, please advise the applicant to include a cover letter detailing how each of the concerns listed below have been addressed.

Planning and Development

1. The Planning Justification Report should be revised to address the updated provincial policy framework.

2. The EIS indicates that as per policy 3.4.2.1, the Greenbelt does not apply to lands within the boundaries of Settlement Area. Also, the EIS states that the Greenbelt Plan defers to the municipal OP for detailed delineation of settlement boundaries and to govern land use within these areas. Further, the Planning Justification Report concludes that this development respects the established settlement boundary for Caledon East. However, the SWM pond is proposed outside of the settlement boundary and within the Protected Countryside of the Greenbelt Plan. We understand a Town-initiated Regional Official Plan Amendment (ROPA) and subsequent Local Official Plan Amendment (LOPA) must be approved before any further modifications could be made to this boundary. Please relocate the SWM pond to an appropriate location within the existing settlement boundary.

3. The proposed SWM pond is located within lands designated "Prime Agricultural Area" as identified on both Schedule B of the Region's OP and Schedule A of the Town's OP. In our opinion, prime agricultural lands are not intended for non-agricultural uses associated with urban development. Although there may be exceptions for SWM ponds, it is also our position that the Greenbelt did not envision infrastructure to support urban development be exclusively outside lands designated for development.

4. The EIS identifies the limits of the valley corridor on Figures 4 and 5. These limits were staked by TRCA. However, the figures do not appear to reflect the entire length of the valley corridor staked by TRCA adjacent to Airport Road. The draft plan identifies the TRCA staked top of bank and confirms that the SWM pond is located within a KNHF and potential HSF, which is prohibited by the Greenbelt Plan.

5. TRCA's LCP requirements must also be addressed, which is some cases are more restrictive policies. As such, it is our position that the SWM pond must be located 10 m inland from the greater of the TRCA staked top of bank, long-term stable top of slope, Regulatory Floodplain and associated vegetated dripline.

6. The concept provided in the FSR locates the SWM pond within the Protected Countryside of the Greenbelt Plan, but also proposes to locate the SWM pond within the natural features and buffer. This is not supported by TRCA.

7. Based on the Draft Official Plan Amendment (OPA), it appears a significant portion of the existing "Open Space Policy Area" in the northeast portion of the site is proposed to be redesignated "Low Density Residential". While it is recognized that this is to accommodate the proposed relocation of the "Conceptual Neigbourhood Park Location" to the central portion of the site, the buffers associated with the "Environmental Policy Area" outside of the "2021 Settlement Boundary" as shown on Schedule A of the Town's OP have not been incorporated into the revised Schedule. Once the limits of development have been verified, please revise the Draft OPA to identify the buffer areas in an "Environmental Policy Area" designation.

8. Once the limits of development have been verified, it is our expectation that the implementing Zoning By-law will recognize all natural features and hazard lands, including their buffer, in an "Environmental Policy Area 1" (EPA1) zoning category which has the effect of prohibiting development and structural encroachment. Through the Town's broader zoning update in 2006, environmental features were uniformly placed into an EPA2 zone given that on-site field analysis and confirmation of the limits could not be completed for the entire municipality. As such, it has always been the intent to refine the boundary of EPA2 lands through the planning process and

rezone these areas to EPA1. This application provides the opportunity to implement this objective, which is supported by the Town's environmental policies.

9. As an element of this application, it is our expectation that the KNHFs and HSFs and their respective MVPZ will be placed into public ownership and gratuitously dedicated to the TRCA or Town of Caledon.

10. The draft plan identifies a portion of the land that is within the NHS as "Additional Lands in Which the Applicant Has an Interest". As these lands are entirely within the NHS, they are not developable and should be placed into public ownership to allow for consistent management of the NHS.

Limits of Development

11. As noted above, Figure 4 and 5 of the EIS does not illustrate all KNHF and HSF, natural hazards (i.e., Regulatory Floodplain, long-term stable top of slope, etc.) and the applicable buffer. To ensure that the proposed development is appropriately setback from all development constraints and the applicable MVPZ requirement is incorporated into the draft plan, please provide mapping that demonstrates what natural feature or hazard constraints is being buffered to determine the limit of development. Typically, this is done by showing the constraint line (i.e., TRCA staked top of bank, floodplain, dripline, etc.) as a wider line. The Ultimate Constraint line is then shown as a narrower line so it is clear what constraint is applied in all locations. For staked lines, please reference the survey and date the lines were staked. TRCA has concerns regarding the accuracy of some of the lines in the submitted documents. For example, the staked line on Figure 4 of the EIS abruptly stops and does not reflect the entire top of bank staked by TRCA.

12. The review of existing topographic information shows that there exist relatively steep slope segments along the valley corridor. Although a slope stability report has been submitted for our review, the study only provides an analysis on the proposed development conditions. It is required that a slope stability report be completed to delineate the location of the existing conditions long-term stable top of slope with a safety factor of 1.50 on the tableland and to verify the limits of development as shown on the draft plan. The long-term stable top of slope line also needs to be accurately plotted on the plan to compare the other constraints and ensure appropriate buffers have been incorporated.

Planning Ecology

13. Please provide Ecological Land Classification (ELC) for the various ecological communities on the subject property, especially the communities located within the valley corridor.

14. Further to above, the SWM pond is proposed below the top of bank staked by TRCA. TRCA staff is not supportive of the SWM pond being below top of bank within the valley corridor. Please relocate the proposed facility outside of the natural heritage system (NHS) and its associated buffer.

15. A Headwater Drainage Feature (HDF) Assessment has been conducted which concludes that there is no downstream connection. While this feature was not flowing at the time of TRCA's site visit, aerial photography from 2014 and earlier appears to indicate a more defined flow path that would appear to connect directly to Tributary A. If this were the case, it would appear to shift the management recommendation into the "Mitigation" category. Please provide additional discussion related to the apparent recent historical conditions. It should, however, be noted that features within valley corridors are not typically treated as an HDF. As mentioned previously, TRCA staked the limits of the valley corridor and it would appear that this HDF is located within the valley feature. As such, the management and protection strategies for the NHS should

reflect the presence of the valley corridor in this location as opposed to what would often be a more isolated tableland HDF.

16. The EIS does not include a discussion related to Tributary A and B. Please ensure that further analysis related to the ecological functions of Tributary A and B are provided in the next submission.

17. Grading encroachment of 10 m is proposed within the buffers for the purpose of grading. In some areas, the entire buffer (i.e., Greenbelt Plan lands) will be graded, often into a steepened slope. Additionally, given the significant change in elevations, retaining walls are proposed adjacent to the buffer. These retaining walls will require access for maintenance. The effectiveness of the buffers will be significantly reduced as a result of the grading encroachments. Please ensure that all grading is contained within the development envelope and that no grading occurs within the buffers. Please ensure that the use of retaining walls is minimized or removed entirely to avoid future impacts to the buffer as a result of maintenance access.

18. The EIS indicates that compensation plantings will be provided within the buffer. The buffer should be fully vegetated in an effort to help mitigate the impacts of the change in adjacent land use. This is the most common treatment of buffers for this purpose and helps to rationalize why the minimum buffer width is being implemented. As such, it is not possible to utilize a minimum 10 m buffer for both the full coverage with woody species to mitigate the adjacent development and provide compensatory plantings. Please identify alternative strategies for managing required compensation plantings that are not within the buffers.

19. The EIS includes a discussion on surface water flows (Section 8.1.3) but does not appear to discuss the impacts to the adjacent natural features in sufficient depth. It is unclear what impacts the changes in flow will have on the various natural features. The FSR appears to recommend significant changes to the existing drainage with significant increases in yearly runoff. Please provide a discussion within the EIS related to the impact of these changes related to the function of the adjacent natural features, in particular the wetland communities. Please also clarify how the removal of the drainage for the 4.73 ha of land west of Airport Road will impact Tributary A and the associated valley corridor.

20. The eastern SWM pond outfall at the top of bank appears to discharge into wooded areas associated with a wetland. Please provide an analysis of ecological impacts associated with this outfall including any changes in hydrology. A Features-Based Water Balance may be required. Please also demonstrate that erosion will not occur at or downstream of the outfall.

21. The southern SWM pond outfall discharges to a draw feature of Tributary A and the SWM pond outfall discharges directly to Tributary A. Please provide a discussion related to the impacts of these discharge locations on the ecological function of Tributary A. Please also clarify how erosion will be prevented as a result of the increased flows in Tributary A.

22. A trail has been proposed within the buffer areas and the NHS. The trail alignment should be refined as the process moves forward. However, the EIS should provide recommendations for the design and location that consider the ecological sensitivities of the NHS (i.e., the trail should be located within the buffer except where connections are required, should be as close to the development side of the buffer as possible, and the trail width should be minimized to the extent possible). Where connections are required within the NHS, the EIS should identify at a high level appropriate locations for those connections. Please provide a discussion related to the trails impacts and mitigation within the EIS.

Functional Servicing & Stormwater Management: Area 1 - Draining to the Stormwater Management Pond

23. Typically, SWM ponds are located at the lowest point of the development area. However, the proposed SWM pond is located at the southwest portion of the site, which will require significant grading operations to drain the site. TRCA strongly recommends that the proposed SWM facility be relocated to the lowest point of the development area.

24. It is noted that the visual Otthymo Modeling output table shows that the percentages of total (TIMP) and directly (XIMP) connected impervious areas for 43.73 ha of the site are 56% and 25% respectively. In our opinion, these values are low for the proposed land use. As such, please provide supporting calculations that show how these values are calculated.

25. It is noted that the visual Otthymo Modeling output table shows that CN value of 74 was used to run the model. Please submit supporting calculations that show how this number is calculated.

26. It is noted that 6 hour and 12 hour AES storms run to determine the storage requirements, but there is not a comparison table. Please include a table that shows the storage requirements for 6 hour and 12 hour AES storms.

Functional Servicing & Stormwater Management: Area 2 - Area Draining to the Superpipe Storage

27. TRCA staff will defer to Town staff if the proposed superpipe storage within the local road is acceptable.

28. Table 5-6: Required Active Storage Volumes and Release Rates of the FSR shows the calculated allowable release rates for the proposed superpipe storage and orifice control that will provide quantity control for 3.96 ha. Please note that the calculated allowable release rates are not in line with the Humber Unit Flow relations.

29. It is noted that the visual Otthymo Modeling output table shows that the percentages of total (TIMP) and directly (XIMP) connected impervious areas for 3.96 ha of the site are 56% and 17% respectively. It appears that these values seem low for the proposed land use. Please provide supporting calculations that show how this number is calculated.

30. It is noted that the visual Otthymo Modeling output shows that CN value of 74 was used to run the model. Please submit supporting calculations that show how this number is calculated.

31. It is noted that an oil/grit separator (OGS) is proposed to treat runoff from the 3.96 ha area not being directed towards the proposed stormwater management pond. Please note that an OGS as a stand-alone measure can only achieve up to 50% TSS removal. As such, TRCA requires an additional water quality treatment on top of the OGS.

32. It is noted that an erosion control criteria of detaining 25mm of rainfall for 24 hours. Please note that this criterion applies when there is insignificant change on the pre and post-development drainage pattern. According to Figure 5-1 – Pre-Development Drainage Plan, over 37 ha of the site drain to the west and southwest of the site and it is only 1.6 ha of land from the site drains to the south watercourse where the proposed pond will discharge. However, under proposed conditions, over 43 ha of the site will be discharged to the proposed SWM pond and the pond will release to the watercourse located south of the site. This configuration will introduce an additional large volume of water to the south watercourse and this additional large volume of runoff may cause significant erosion risk to the watercourse. Please conduct an erosion assessment to establish the erosion target for the receiving feature should the applicant continue to proposed the SWM pond in the currently proposed location.

Geotechnical Engineering

33. The slope stability analysis for delineating the long-term stable top of slope first needs to be conducted on the existing slope geometry for the entire site to evaluate if the existing slope is stable in the long-term. If not, the report must identify the appropriate setback (erosion allowance) to delineate the long-term stable top of slope. It was noted from the slope stability results (Figure 1 to 4) that the analysis is only for the post-development scenario with retaining walls. Please first evaluate the existing slope through its critical cross-sections along the site and determine the long-term stable top of slope throughout the site with a minimum factor of 1.50. Also, the slope stability report also needs to be completed for the proposed development to confirm that the proposed works also meet a minimum safety factor of 1.50 for the static condition and 1.10 for seismic condition.

34. The Borehole Location Plan should show the location of the cross-sections studied to enable verifying if the selected cross-sections are the critical cross-sections for the analysis. The slope stability report does not show the location of the cross-sections including those selected to conduct the slope stability analysis. Therefore, TRCA staff is unable to verify if the selected cross-sections are satisfactory or if supplementary cross-sections need to be analyzed for other critical slope segments.

35. Depending on the results of revised slope stability report to be submitted as part of the next submission, the limit of development and grading may need to be revised as per the position of the long-term stable top of slope. It is therefore required that the site grading plan be reviewed after the completion of the slope stability report and be revised to adjust to development limits and buffer, where required.

36. Drawing No. GR-3 and GR-5 shows significant grading into the buffer and in some segments below top of bank. Please specify the side slope of the proposed grading on the drawing. Also, the significant grading into the buffer may potentially act as a surcharge on the slope and aggravate the slope stability. Should the applicant continue to propose the grading, the revised slope stability report must confirm that the works do not further destabilize the valley slope and the slope still meet a minimum safety factor of 1.50 against slope instability considering the impact of the grading into the buffer in the proximity of the slope.

37. Drawing No. GR-3 shows a riprap pad in the proximity of Cross-Section 2, and Drawing No. GR-5 shows a riprap pad in the proximity of Cross-Section 5, which potentially drains and directs water towards the adjacent toe of the slope. This may trigger undercutting and further toe erosion, which can result in oversteepened slope and the initiation of slope instability and further erosion hazards. In the event that the slope stability report does not provide a discussion on this, please provide clarification and also evaluate how the toe of the slope in this area will be protected against undercutting and erosion caused by drainage from the riprap pad.

38. On Drawing No. GR-4 please specify the side slope for the proposed grading. Additionally, it appears that some grading encroaches into the buffer.

39. Drawing No. SEC-1, SEC-2 and SEC-3 of the FSR shows an armourstone retaining wall with an exposed height of approximately 3.5m, 4.3 m and 2.5 m respectively, where the toe of the retaining wall is located on sloped grading. There are concerns about the global stability of the armourstone retaining wall and the proposed grading. In the event that the retaining wall is undermined by global instability or deep-seated sliding by the significant grading, the areas within the buffer located at the toe of the retaining wall may also be impacted. Also, the failed retaining wall can impact the buffer area located immediately at the toe of the retaining wall. Therefore, grade differentials should be achieved without the need for retaining structures.

40. Swales are proposed behind the armourstone walls. Staff have concerns with the infiltration proposed behind the retaining wall, which can trigger failure of the retaining wall and cause subsequent adverse impacts to the surrounding area and the buffer within the immediate base of the wall. Please evaluate a solution for the drainage that does not include infiltration behind the retaining walls.

41. It is recommended that the proposed side slope of 5H:1V be extended to an additional 1 ft. above the 100-year water level.

42. The geotechnical report recommends a clay liner provide the native soil stratigraphy for the subject site. Please show the clay liner on Section 1-1 of the Drawing SWM-1.

Hydrogeology / Ground Water Resources

43. Based on our review, 63 boreholes were drilled on the site which includes 24 monitoring wells. Five (5) of the monitoring wells are nested where shallow and deeper monitors were installed. Single Well Response Tests (SWRT) were conducted on 11 monitoring wells. Groundwater quality was determined based on single water sampling from BH41. Native soils were intersected below the topsoil and fill and includes sand, silty sand, clayey silt, clayey silt till, and sandy silt till. Peat was observed in some boreholes. It appears that the native soil at shallow depth consist of Halton Till with sand lenses within the till. Groundwater monitoring has been conducted for a short duration (May 24, 2017 and May 26, 2017). From the limited groundwater level measurements, it appears that the downward gradient exists and groundwater is flowing towards Innis Lake in the southeastern part of the site. SWRTs indicates that hydraulic conductivity for the geologic formation screened is about 7.8×10^{-7} m/s. The water budget indicates a pre-development infiltration rate of 38,855 m^3 per annum whereas the FSR indicates the same at 62,659 m^3 per annum. For a 43.64 ha area the infiltration works at as 143 per annum. Although TRCA staff do not have significant hydrogeology related issues, we have concern with the water budget where it estimates pre-development infiltration rate at approximately 85 mm per annum and is considered lower level. This is due to the infiltration factor for the soil assumed as 0.1. This factor is usually used for tight impervious clay soils whereas silty infiltration rate at about 143 mm per annum. This infiltration rate matches TRCA's groundwater model output and is acceptable to staff. No further analysis is required if this infiltration rate is moved forward to the detailed design stage.

44. It is not clear which boreholes were completed at the proposed stormwater management pond location. Please indicate boreholes that may have been drilled at the proposed pond location. Based on geology at the pond location, additional comments can be provided at the detailed design stage.

45. Table 1: Summary of Groundwater Level Measurements in Section 3.2 of the Hydrogeology Report is not included. TRCA staff require one complete year of groundwater level monitoring. Please continue groundwater monitoring and provide a report at the end. Consideration should be given to install data loggers in selected monitoring wells, in consultation with TRCA staff. The one year of groundwater level monitoring and report are required prior to draft plan approval.

46. Section 4.1 of the Hydrogeology Report indicates that sewer and watermain invert levels are not yet available. Dewatering requirements were prepared in absence of the storm and sewer invert levels. However, the FSR does include invert levels for both the storm and sanitary sewers. We recommend that dewatering estimates be updated based on the available information.