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October 20, 2023

Hastings County
235 Pinnacle Street
Belleville, ON K8N 3A9

Attn: Jason Budd

Re: York River 1 Plan of Subdivision
Part of Lots 7 & 8, Concession 2, Municipality of Hastings Highlands, County of Hastings
File:12T-22-001
EcoVue Reference: 20-2032

Dear Mr. Budd,

Please accept this letter as our response to peer review comments received in regards to the above-noted application.

Specifically, this letter, and associated attachments, address:

1. Hydrogeological Peer Review Comments from Greer Galloway dated January 24, 2023
2. Geotechnical Peer Review comments from Greer Galloway dated February 10, 2023
3. Environmental Peer Review comments from Greer Galloway dated January 6, 2023
4. Stormwater and Draft Plan Peer Review comments from Greer Galloway dated February 6th, 2023

It is our understanding that the above noted comments are the only outstanding comments related to this application at this time.

PEER REVIEW COMMENTS

Peer Review Comment	Response
Hydrogeological Comments	
Guideline D-5-5 calls for a constant rate test. However, the Consultant varied the rate for TW-1 (which could not sustain the initial test rate) and for TW-3 (for which the test rate was increased during the test in order to achieve a meaningful drawdown). We note that D-5-5 is a guideline not a Standard and the Consultant's decision to vary the pumping rate was a reasonable one.	Please see attached response from Cambium Inc.
Detectable levels of total coliform bacteria were found in TW-1, TW-3, and TW-4 during the initial sampling round. Levels in TW-4 exceeded the 5 cfu/100 mL criterion referenced in Guideline D-5-5 while the other wells met D-5-5 requirements for bacteria. No total coliform bacteria were encountered in TW-2 during the initial sampling. The wells were disinfected and resampled in January/February 2022 at which time test results for total coliform were non-detectable for all but TW-2 which contained 12 cfu/100 mL total coliform. The consultant noted that the source of the total coliform was unknown and recommended that disinfection be provided for TW-2.	Please see attached response from Cambium Inc.
The Consultant carried out predictive modelling for nitrate as per MECP Guideline D-5-4. The Reviewer notes that shallow groundwater at the site will enter the York River and that nitrate is not the critical parameter under this scenario. Instead, phosphorous loading and its potential ecological effects should be considered along with a determination whether specific septic system designs should be required for the proposed subdivision.	Please see attached response from Cambium Inc.
The Consultant assessed nitrate loading in accordance	Please see attached response from Cambium Inc.

with Guideline D-5-4 but did not comment on the suitability of the site (soils and lot sizes) for the construction of conventional in-ground Class 4 systems and that the lots are sufficiently large to meet Ontario Building Code setbacks.	
We note that determining yield by multiplying a well's specific capacity by the available drawdown is only useful for the portion of the well bore above the main water producing zone(s). The Reviewer suggests that the Consultant revise the report to avoid wording that could lead non-expert readers to over-estimate the potential yield of their wells.	Please see attached response from Cambium Inc.
The Consultant notes that elevated turbidity (absent during the initial testing) was encountered during the January/February retesting of the wells. The Consultant attributes this turbidity to the high-volume pumping rate used during purging for the January/February re-testing and concludes that the measured turbidity is not representative of conditions under long-term use. The Reviewer agrees with this interpretation and notes that turbidity typically declines under regular pumping.	Please see attached response from Cambium Inc.
The Consultant notes elevated hardness in the wells and recommends water softening to reduce hardness. The Reviewer suggests that the recommendation be revised to note that hardness can be reduced using water softening systems but to remove the positive recommendation that such systems be installed (unless the Consultant believes such systems to be necessary).	Please see attached response from Cambium Inc.
Geotechnical Comments	
The Consultant has analyzed and provided bearing capacity and settlement results. Could the Consultant consider providing the soil strength parameters and soil densities that were used (e.g., unit weight and friction angle) and indicate how they were established (i.e., based on experience, inferred from testing in boreholes, or measured by laboratory testing)? Moreover, the Consultant has indicated that the geologic conditions within the subgrade were	Please see attached comments from Cambium Inc.

determined by extrapolating results from intermittent borehole sampling to 6 mbgs. These results indicate a loose to compact sandy silt to 1.6 mbgs, followed by a loose to compact sand to 3.0 m depth underlain by a dense to very dense sand to the final depth of investigation at 6.6 mbgs. Consequently, given the variable subgrade conditions, has the Consultant considered the merits of additional testing following excavation and before setting any footings to ensure that the subgrade soil has an adequate bearing capacity? For this purpose, various dynamic probe testing (DCPT/SPT) after compaction must be continuous to pick up possible weak layers if encountered.	
Within the past ten years, there has been significant flooding of the York River in late April (i.e., 2013 & 2019) in the Bancroft area due to heavy rains. Borehole groundwater observations were made in mid-December and the beginning of March. Could the Consultant consider monitoring groundwater table levels in the available drilled boreholes on-site during the peak of the wet spring season (i.e., late April)? High groundwater levels will significantly affect the bearing capacity and, thus, potential soil settlement. There is an approximate 50% reduction in bearing capacity when the water table rises to the ground surface relative to being well below the base of a foundation.	Please see attached comments from Cambium Inc.
Given the subgrade soils, has the Consultant considered ground susceptibility to liquefaction and post-settlement under either monotonic or cyclic loads? For instance, a monotonic load could be introduced by either: • A heavy vehicle located above any one of the proposed excavated embankments east of the gravel road; or • A loss in toe support due to erosion from floodwaters. Note five properties are located along the floodplain limit.	Please see attached comments from Cambium Inc.
We concur with the Consultant's comment that	Please see attached comments from Cambium Inc.

development will result in ‘an area of exposed native soils which have the potential to erode and contribute sediment to downstream receivers.’ Consequently, we agree that the Consultant should prepare a detailed erosion and sediment transport control plan. Could the Consultant also consider the impact this will have on slope stability, particularly for the proposed excavated embankments?	
Has the Consultant considered the possibility of mass flow or internal instability in the loose sand/silt subgrade under worst-case conditions (i.e., removal of trees/vegetation, heavy dynamic traffic loads during construction, hydrostatic loads due to seasonal/climatic fluctuations in groundwater level, and seismic loads)? When a soil mass becomes completely saturated with water, it loses strength as grains are pushed apart; consequently, it may flow, even on a gentle slope, during spring snowmelt or heavy rains. According to predictions related to climate change, the Bancroft area can expect an increase in the intensity of heavy rain episodes in the future. The Consultant may consider the advantages of an on-site and aerial image survey to determine any active or previous unstable areas.	Please see attached comments from Cambium Inc.
Environmental	
Clarification is required regarding the number of Blanding’s Turtle surveys performed, since only one reptile nesting survey was performed during the turtle nesting season (June 8) according to Table 1 included in the report.	Please see response from Cambium and updated Environmental Impact Study
Cambium mentioned road surveys for Blanding’s turtles; however, no detailed information of these surveys was provided in the report and the nesting survey was performed early afternoon and not in the morning or evening as mentioned by cambium methodology applied for roadway surveys.	Please see response from Cambium and updated Environmental Impact Study
Cambium recommended a 30 m setback for all the wetlands and the York River on the Site. We agree with	Please see response from Cambium and updated Environmental Impact Study

Cambium that a 30 m setback from the wetland boundary is appropriate to protect the wetland and the river and their ecological functions.	
The 30 m recommended for the river should be shown on the Concept Plan, specially in the north part of the property outside the wetland setback, to ensure any development is outside the recommended setback.	Please see response from Cambium and updated Environmental Impact Study
The flood line should be included in the final Concept Plan and showing the applicable setback from hazard areas as per Hastings County's Official Plan which indicates a setback of 30 m from the high water mark or provide justification for not applying the setback.	Please see response from Cambium and updated Environmental Impact Study
We strongly recommend removing the trail within the flooding area. High water will wash the surface material used on the trail, resulting in the material being deposited in the wetland and the requirement of constant maintenance of the trail surface.	Please see response from Cambium and updated Environmental Impact Study
Clarification is required regarding the location of the picnic tables and the recommendation of a trail on the land between York River and the wetland and the recommended setback picnic areas 15 m from the edge of the river. Based on the Concept Plan, the trail is proposed between the development and the wetland on the flooding area. Therefore, picnic tables are not possible in the area described in the report.	Please see response from Cambium and updated Environmental Impact Study
We agree with Cambium regarding the recommended 15 m setback applicable to the seeps. However, the concept plan included in the Preliminary Storm Management Report dated November 2022 shows one of the SWM ponds within the seep setback. A justification is needed and an evaluation of the impacts to the seep during the construction phases of the project is required to determine the effects that the pond will have in the seep's ecological functions.	Please see response from Cambium and updated Environmental Impact Study

An analysis of impacts that the effluent from the SWM ponds will have in the wetland, specially during the winter season should be provided, as well as mitigation measures to mitigate the impacts.	Please see response from Cambium and updated Environmental Impact Study
The impacts to deer wintering habitat should be reviewed as the Concept Plan included in the preliminary Storm Management Report shows one of the ponds in this area and presence of wintering habitat west of the mapped area as identified by the consultant during the site visits (Community 4)	Please see response from Cambium and updated Environmental Impact Study
A statement should be provided indicating that the information obtained from the site visits is sufficient to support that deer wintering habitat will not be affected or should confirm the need to perform a deer wintering habitat assessment to determine the use of the property by deer.	Please see response from Cambium and updated Environmental Impact Study
Clarification is required regarding the field work performed to determine breeding birds and birds of conservation concern, as according to Table 1 included in the report, none of the site visits were performed between the period describe in OBBA protocol (dawn and five (5) hours after dawn) which was applied by the consultant.	Please see response from Cambium and updated Environmental Impact Study
It is indicated in the report that no turtle nesting sites were confirmed on the Site. The statement should be reviewed, as according to the information provided in the report, only one nesting survey was performed, which it can be considered insufficient to support the consultant statement.	Please see response from Cambium and updated Environmental Impact Study
It is recommended a planting program be prepared as a restoration measure for open spaces and other natural areas directly and indirectly affected by the construction activities.	Please see response from Cambium and updated Environmental Impact Study

Any correspondence with the MNRF should be provided to support the consultant's statement that mapping of deer wintering habitat cannot be altered by a site-level study.	Please see response from Cambium and updated Environmental Impact Study
No mitigation measures were included for Monarch Butterflies. Measures to prevent and mitigate harm to the butterflies should be included in the report as there is high probability that the species can be present in the cultural meadow as common milkweed and other wildflowers present can provide food to the butterflies.	Please see response from Cambium and updated Environmental Impact Study
An assessment of significant woodlands was not included in the report. This should be provided.	Please see response from Cambium and updated Environmental Impact Study
Draft Plan	
The intersection of Block C and Woodcox Road does not include daylighting triangles. These are desirable particularly where lines of sight may be restricted. A site visit was not conducted but based on aerial imagery and available documentation there appears to be dense vegetation and notable grade changes in the area of the intersection that may well limit sight lines. Justification for the lack of daylighting triangles should be provided to the satisfaction of the road authority that will be responsible for the intersection's operation and maintenance.	Please see attached draft plan
The geometry of the proposed road right of way should be clearly illustrated, including but not limited to: - Width, understood to be 20m as noted on the preliminary grading plan, but including justification if less than 20m. - Curve centreline radii, including justification relative to anticipated posted speed limit; reasonable design vehicle access; and 11% road grade approaching one of the curves.	Please see attached draft plan

- Turnaround geometry, including justification based on applicable standard (OPSD 500.010; local standard or otherwise).	
Stormwater Management	
The IDF curve look up tool has applied the base year of 2010. Consideration of a 50 year horizon (2072) should also be evaluated to reflect potential climate change impacts for peak flows, conveyance channel sizing, and pond storage volumes.	Can be addressed at detailed design
It is requested that some clarification be provided on the CN and RC calculations, a markup of the page from the report is enclosed.	Can be addressed at detailed design
The modelling has been completed using a 6hr SCS storm distribution. It is recommended that some supporting rationale for the selection of this storm be provided.	Can be addressed at detailed design
Dry Pond A – it is noted in the report that the 0.2m freeboard will be evaluated further during detailed design. We agree with this statement and if achievable 0.3m would be preferred.	Can be addressed at detailed design
Dry Pond B – it is noted in the report that the 0.17m freeboard will be evaluated further during detailed design. We agree with this statement and if achievable 0.3m would be preferred.	Can be addressed at detailed design
Stormwater quality is recommended to be completed through a treatment train approach. This method appears suitable for the development however it is recommended that a cumulative treatment calculation be included in the report to support the expected Level 1 treatment. The designers may wish to apply the EPA Best Management Practices guidelines commonly used	Can be addressed at detailed design

for LEED's credits, a copy is enclosed for reference.	
The report has outlined some operation and maintenance guidelines. It is recommended that a standalone O&M manual be provided including inspection and maintenance record keeping forms which should be maintained from initial construction to municipal assumption and handed off at that time.	Can be addressed at detailed design
The report notes that a detailed sediment and erosion control plan will be prepared at detailed design. We agree with this sequencing and recommend a draft condition be included to this effect.	Can be addressed at detailed design

Given the above, it is our opinion that the peer review and public comments received for this application have been adequately addressed. If you have any questions please do not hesitate to contact the undersigned.

Yours sincerely,

A handwritten signature in black ink, appearing to read "Ashlyn Kennedy", is written over a faint, large tree graphic that serves as a background for the signature block.

Ashlyn Kennedy B.E.S
Planner