Review of EIS by BioLogic Incorporated, dated November 20, 2018.

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Reviewed by R. Doyle, A. Duarte, and I. Whiteside

Theme 1 – Characterization of the Provincially Significant Wetland present to the east, north, and west of the site.

The EIS highlights that the proposed development will be located within a pocket of land bordering the Powell Drain wetland (a unit of the Arva Moraine PSW Complex); the wetland boundary is 32m from the properties northwest corner, 95m from the west property line, and 60m from the northeast corner. As this PSW is located outside of the Subject Lands, a formal evaluation of the wetland's ecological function was not included in this report.

Additionally:

- Figure 3 of the report provides future land uses of the adjacent properties. Land surrounding the PSW has been designated either Low Density Residential or Multi-Family, Medium Density Residential.
- The PSW is likely fed via surface water flow predominately from regions to its north and south. The EIS notes that groundwater was found 41m bgs (pg. 7) and that there were no seeps or springs observed on the subject lands; given the groundwater depth, it is unlikely that groundwater would constitute a water source to the PSW.
- The EIS states that there are no species at risk or species of provincial interest listed by NHIC within 1 km of the site. However, this assertion was not based on field work in or around the PSW and a more thorough evaluation may find otherwise.
- Lastly, the EIS indicates that the PSW has not been evaluated (e.g. pg. 13 the report notes that the "functions of the wetland will require further consideration").

Our concern is that future developments in the area will also exclude any evaluation of the PSW as the wetland will be, of course, outside any area being developed. This piecemeal, site-by-site approach could result in degradation of the wetland as the individual impact of any one development may be minor, but the cumulative impact may indeed be consequential. Given the lands adjacent to the development will likely be developed in the future, EEPAC agrees with the EIS and considers it important to characterize the existing ecological functions of the wetland now, before these potential developments occur, in order to develop an overall strategy to protect the wetland's ecological integrity.

Recommendations:

1. Characterize the ecological functions PSW before any of the lands zoned for future development have been developed, including the parcel under consideration.
2. Conduct a water balance assessment in order to understand water flow into and out of the wetland.
3. Develop an area strategy for future developments that protects water flow into and out of wetland from both a quantity and quality perspective, as well as any additional measures necessary to protect the ecological heath of the PSW.

Theme 2 – Site water balance assessment

The report discussed that the northwest corner of the site slopes to the north and that the northeast quadrant of the site is flat with evidence of sheet flow to the east of the site, which in turn presumably drains to the PSW. Sheet flow to the east may also feed the unevaluated wetland patch identified 35m east of the site through air photo interpretation. (N.b. the size of the wetland is estimated at less than 100 m^2.) Furthermore, Figure 3 of the report appears to show a water channel from the northeast corner of the property, which the report seems to describe as "not a defined channel" but rather a "broad swale" dominated by terrestrial grasses (bottom of page 13). Regardless of whether it is a "swale" or a "channel", it is possible that this channel/swale provides flow to the PSW, especially during periods of higher precipitation.

The EIS does identify the importance of considering adjacent features and functions of the PSW; however, it does not quantify how the proposed site development will preserve the wetland's ecological heath.

Recommendations:

4. Conduct a water balance assessment to determine water flows pre and post development with a specific focus on water flows to the PSW. Based on this evaluation, propose specific mitigation

measures (if needed) to ensure that water quantity and quality objectives are met that ensure the PSW's existing functions are not impaired.
5. Reconsider wither the channel/swale from the east of the site should be included under section 15.4.15 "Other Drainage Features".

Theme 3 – Tree preservation/ replacement

The report states that investigations for Ecological Land Classification (ELC) were conducted on October 18, 2017, June 5, 2018 and June 20, 2018. These surveys found that the most densely treed section of the Subject Lands, classified as a Mineral Cultural Woodland Ecosite (CUW1), is concentrated in the southwest corner of the property. This community is dominated by Red Pine (*Pinus resinosa*), Norway Spruce (*Picea abies*) and Sugar Maple (*Acer saccharum*); however, near the south-central edge of the Subject Lands, a mature Tulip Tree (*Liriodendron tulipifera*) was found.

Following a site investigation for potential bat maternity roost habitat (April 25, 2018), 10 trees were identified as potential Species At Risk bat maternity roost habitat. Seven trees located on the Subject Lands have been deemed hazardous and marked for removal. It was recognized in the EIS that three of these trees are candidate bat roosting trees. To mitigate the removal of these trees, the report states that six bat boxes will be installed. In Table 7 (Net Effects Table), however, the report mentions that 17 residential yard lights will also be installed. Although the presence of light fixtures can result in increased foraging opportunities for some bats, these fixtures can negatively impact bats that are emerging, roosting and breeding. Specifically, artificial light can result in delayed emergence from roosts, roost abandonment or avoidance, reduced reproductive success and increased arousal from hibernation (Stone et al., 2015). Thus, light fixtures should be positioned in such a way that light is directed towards the townhouses and away from the surrounding trees.

Although seven trees have been explicitly marked for removal in the RKLA Tree Report, drawing T-1 (Drawing Preservation Plan) shows that several additional trees will be removed. Information about the total number of trees marked for removal should be provided so that the impact of their removal can be adequately assessed. In addition, the ecosystem services being provided by the trees, such as refuge to wildlife, will be lost due to the removal of some trees and the disturbance occurring around the remaining ones; thus, compensation for such loss should be provided.

<u>Recommendations:</u>
6. Light fixtures are positioned in such a way that light is directed towards the townhouse dwelling units and away from the surrounding trees and bat boxes. Alternatively, bat boxes could be positioned in areas where light pollution is minimized, and/or light intensity could be minimized.
7. Considering that the trees marked for removal are broad-leaf deciduous species, at least double as many trees of the same Functional Type should be planted in the surround of the construction area.