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BEL 219396

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**Re: Reply to Riverstone Environmental Solutions Inc. Response Letter (August 28, 2020) to Beacon Environmental Limited Peer Review of Natural Environment Report & Access Road Management/Ecological Enhancement Compensation Plan (April 29, 2020) Proposed Shantz Station Pit (Capital Paving), Township of Woolwich, Region of Waterloo**

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Dear Mr. Welwood:

Beacon Environmental Limited (Beacon) has completed our review of the Riverstone Environmental Solutions Inc. (Riverstone) Response to Beacon's April 29, 2020 Peer Review of the Level 1 & 2 Natural Environment Report (NER) and Access Road Management/Ecological Enhancement Compensation Plan for the Proposed Shantz Station Pit Township of Woolwich, Region of Waterloo.

Beacon would like to thank Riverstone for providing their responses. We also would like to thank the proponent and project team for undertaking the supplementary investigations to address certain concerns and for modifying the Site Plan package to incorporate many of our recommendations.

In addition to reviewing the information contained in the Riverstone Response Letter of August 28, 2020, Beacon has also reviewed the following supplementary materials in preparing our responses:

1. Access Road Analysis (September 2020);
2. Access Road Management / Ecological Enhancement Compensation Plan (Redlined Update - November 2020); and
3. Redlined Site Plan Package (September 2020) included in MHBC Response to EEAC Working Group Comments (Nov 22, 2020).

Our review letter of April 29, 2020 identified four (4) primary issues. These were as follows:

1. The NER does not include an assessment of site access alternatives that avoid impacting Core Environmental Features and associated ecological functions;
2. The NER does not appropriately identify fish habitat in the Northern Wetlands;
3. There are gaps in the impact assessment; and
4. Recommendations for mitigation require more detail and better integration with the Site Plan package.

We have reviewed Riverstone's responses to these primary issues and have provided comment on these below.

### **Primary Issue 1. Evaluation of Alternative Site Access Options**

Riverstone clarifies that the NER did not include a comparative analysis of access road alternatives since those had previously been eliminated by the proponent for non ecological reasons, leaving only Option 1 (access to Shantz Station Road through Core Environmental Features).

In responding to our concerns regarding Option 1 and the need to evaluate alternatives for avoiding Core Environmental Features in order to satisfy the various policy tests and the NER Terms of Reference, we note that the Access Road Analysis Report was updated in September 2020 and now includes a more comprehensive discussion and explanation of how key evaluation criteria (transportation, social, environmental, and economic) were considered in selecting the preferred access road option.

Also appended to the Updated Access Road Analysis Report is an August 12, 2020 letter from Riverstone that discusses the ecological impacts associated with the two access road options which supplements the analysis.

The policy tests related to constructing an access road within a Core Environmental Features require demonstrating that a) potential impacts will be localized and/or reversible, and b) that other alternatives are less feasible from a technical, environmental and/or financial perspective.

With respect to satisfying the impact test, we believe this test could potentially be satisfied through implementation of the proposed Access Road Management and Ecological Enhancement Compensation Plan, however it is our opinion that quantity of proposed plantings would need to be substantially increased to demonstrate the test of impact reversibility and to achieve the stated objective of net environmental gain. Further discussion on this matter is offered under Issue 4.

With respect to the feasibility test, the Access Road Analysis Report has been updated to include a more comprehensive explanation of why Option 2 (access to Forester Road) is considered less feasible than Option 1. We appreciate the inclusion of these additional details as it provides greater transparency into how the feasibility of the two options was assessed. The updated analysis continues to rank Option 2 as most preferred from an environmental perspective as it completely avoids Core Environmental Features. This analysis is also now supported by the additional information provided by Riverstone which is contained in Appendix 5 of the Access Road Analysis Report. Option 2, however is ranked as least preferred when consideration is given to transportation, social and economic factors. From the information provided, it appears that the Township is preferential to Option 1 from both a transportation and social perspective and the proponent is preferential to Option 1 from a fiscal perspective as it is have as expensive, although the cost comparison omits any costs associated with compensating for environmental impacts. As the applicable municipal policies neither define feasibility nor provide thresholds or guidance for evaluating and weighing the various criteria, we are of the opinion that the analysis provided satisfies the feasibility component of this policy test.

We do however have some outstanding concerns related to the following:

1. We had previously requested a full cost accounting of both access road options, but only the road costs have been provided. To provide a fairer comparison of the financial costs associated with the two option, we recommend that additional costs of implementing the ARM/EECP be included in the comparison table.
2. The extent of proposed forest removal continues to be reported variably in the updated Access Road Analysis as 0.16 ha, 0.18 ha and 0.38 ha. Similarly, the extent of proposed “new reforested/naturalized areas is variably reported as 6.0 ha and 6.5 ha. We recommend that all reports and plans be reviewed for consistency and corrected.
3. Page 24 of the Updated Access Road Analysis states: *If Option 1 does not proceed, these ecological enhancements would not occur. Final rehabilitation would be limited to returning the site within the licensed area to agricultural use.* We suggest that this statement be removed as provincial and municipal policies not only require project impacts to be mitigated, but to also demonstrate how the natural heritage system and functions can be maintained, restored and enhanced.

## **Primary Issue 2. Fish Habitat**

In our original review of the NER we had expressed some general concerns with respect to a) how fish habitat was characterized and b) potential project impacts of the wetland water balance and how this could indirectly affect fish habitat.

In response, Riverstone completed supplementary field investigations to characterize the drainage features and assess whether the wetlands support fish habitat. We are satisfied with the additional work and the characterization.

With respect to potential direct impacts on fish habitat, we are satisfied that Riverstone has demonstrated that there will be none.

With respect to indirect impacts on downstream fish habitat which could result from hydrological changes, we understand that the MTE has completed further analyses for the wetland water balance, and that the GRCA and Region’s hydrogeological peer review consultant have accepted the updated analysis which demonstrates only a slight reduction in flow to the Northern Wetland. In light of the supplementary analyses provided by MTE and the subsequent agency and consultant review, we offer no further comments on this issue.

## **Primary Issue 3. Gaps in Impact Assessment**

The Riverstone responses have clarified and/or addressed most of our previous concerns related to the NER. Included in the Riverstone response is a table identifying how our detailed comments have been addressed. We are generally satisfied with the majority of these responses.

With respect to addressing the habitats of endangered and threatened species Riverstone has confirmed that the previously reported butternut tree is a black walnut and is located off-site. With respect to endangered bats, Riverstone has completed supplemental work to screen the area affected

by the new road for listed species of bats. We have no further comments on this issue and defer to MECP's review.

In our original review, we had identified that NER had made certain conclusions regarding impacts to wetland hydrology and fish habitat that were not entirely consistent with the findings of the supporting hydrogeological investigations and wetland water balance. As discussed under Issue 2, we are satisfied with the supplementary characterization work and have deferred matters related to the wetland water balance to the hydrogeological reviewer.

With respect to our concerns related to the access road and potential interference with amphibian and reptile movement, we appreciate that Riverstone has considered use of ecopassages, however we are not convinced by their responses that wildlife do not cross the driveway or that it is not possible to incorporate an ecopassage into the driveway. The introduction of jersey barriers along the driveway will create a barrier for small wildlife and was one of the reasons they were proposed in the first place. In our opinion, ecopassages remain necessary to facilitate the movements of reptiles and amphibians. As most reptiles and amphibians can swim, we do not believe that it is necessary for the ecopassages to be dry. Integrating a small open top box culvert with a metal grate cover that is flush to the road surface would not require elevating the road, nor widening the grading footprint. The passage would simply be embedded into the road. We suggest that alternatives continue to be explored to mitigate the impact of introducing barriers to movement.

With respect to our previous concerns regarding assessing impacts to trees and vegetation resulting from the driveway widening and road construction through the Wagner Woodlot, we had recommended that a tree inventory and preservation plan be prepared. Riverstone has subsequently prepared a tree inventory and preservation plan for the affected areas (Attachment 3 of their response letter). The inventory is helpful for quantifying the general impacts; however, it appears that the preservation plan is preliminary as the reports suggests that the alignment and design details for the extension through the woodlot have not yet been finalized.

We offer the following comments and recommendations.

1. We recommend that the tree inventory and preservation plan be revised with more detail and updated in accordance with municipal standards and guidelines.
2. From the plan included, it is unclear how the disturbance limits for the access road extension were established. We assume that grading limits were used, but because there are no plans and profiles for the "extension" included in the ARM/EECP (Feb 2020 and Nov 2020 redlined version) we are uncertain. The arborist report also notes that "*Impacts outlined in the following section are subject to change as a result of alterations of the access road extension during the ongoing design process.*" which suggests that this work is preliminary and could change. Please clarify.
3. It is assumed that the access road extension will be 8-10 m in width, however the plans show the footprint to be several meters wider.
4. It is unclear from the report whether it will be revised once design details for the road extension become available.
5. Section 5.1.1 Impact Assessment states that 53 trees will need to be removed from the extension. This section should also speak to the impacts of the 46 additional trees along the existing driveway that will be impacted.

6. Details for trees along the existing driveway are missing from the graphic and the table. These should be added.
7. Both graphics should also identify the location of tree protection fencing and other measures to be implemented to protect trees in accordance with Regional guidelines or best arboricultural practices.
8. Any recommendations for tree preservation and protection should also be carried forth to the Site Plans and Notes.

#### **Primary Issue 4. Integration of NER and ARM/EECP With ARA Site Plan Package**

The NER makes conclusions with respect to impacts that are linked almost entirely to implementation of certain mitigation and management measures, including compensation for removal of portions of a significant woodland forested, buffering woodlands and wetlands, enhancing linkages, restoring habitats and linkages as well as the related monitoring to ensure compliance and performance.

To ensure that recommended measures are implemented, we have recommended that all the details of the proposed mitigation/compensation/enhancement works be included on the drawings and notes that for the Site Plan package for the ARA licence application.

In reviewing the Redlined ARM/EECP (November 2020) we note that the report recommends adding notes to the ARA Site Plans, however the Site Plans are not included with this report. We did however find redlined versions of the Site Plans (dated September 2020) appended to the MHBC Response Letter to the EEAC Working Group dated December 4, 2020. We note that redlined Site Plans include many of the notes from the November 2020 ARM/EECP and assume these will eventually be finalized and submitted to MNR. Please confirm.

In reviewing the ARM/EECP (November 2020) and redlined Site Plans (September 2020), we note that most of the recommendations have now been integrated in the redlined Site Plan drawings and notes. We are pleased that these have been included and this gives us some more confidence that they will be implemented. However, we also note that the updated ARM/EECP has still not addressed our previous concerns regarding including more landscaping details for the compensation plantings and restoration prescriptions. More specifically:

1. There remain inconsistencies between the updated ARM/EECP and Access Road Analysis reports. The analysis report variably describes the total area to be restored/naturalized as 6.0 ha or 6.5 ha. Please correct.
2. The ARM/EECP states variably that 0.36 ha or 0.16 ha of woodland are proposed to be removed, while the Access Road Analysis states 0.16 ha, 0.18 ha and 0.38 ha. Please correct.
3. The NER originally estimated that extent of removal at 0.16 ha. In examining the footprint reflected on the Tree Inventory Plan, it appears that it is wider than the 8-10 m described in the ARM/EECP. Please verify.
4. Table 2 of the ARM/EECP lists seven zones and describes these as Reforestation/Naturalization on Adjacent Lands to the North of the License Area. From the Site Plans, it appears that only Zones 1-4 are outside the Area to Be Licensed.
5. Table 5 - Zone 2 area (0.7 ha) should subtract the 0.2 ha already counted for the pond in Zone 2.

6. Table 5 should be expanded to include estimated plantings (i.e. # of trees/shrubs and area to be seeded).
7. Section 4.2.3 refers to densities and specifies ranges in the number of trees to be planted in each zone as well as spacing requirements. It remains unclear how densities were determined and how it relate to compensation. Please provide an explanation.
8. There is limited information of what is to be planted in Zones 6 & Zone 7. These areas are effectively buffer areas and it sounds like there will be only sporadic tree and shrub plantings so it is unlikely that this will achieve the desired buffering functions.

The NER relies on the recommendations of the ARM/EECP to mitigate and compensate for impacts. The NER is states that a 6.5 ha area will be reforested and naturalized to offset these impacts and to also enhance connectivity. We remain concerned that the extent of plantings proposed is grossly inadequate to achieve the compensation and mitigation objectives.

It is recognized that some of the zones identified are already naturalizing and therefore do not require as many supplemental plantings (i.e. Zone 4 [0.2 ha]), and that Zone 2 [0.7 ha] will contain new [0.2 ha] pond which won't be reforested. This still leaves 5.8 ha of terrestrial area to be planted. Using the values provides in the ARM/EECP, we understand that the zones are to be planted with between 340 – 460 native trees and that these will all be small whips (> 30 cm tall). We also understand that between 560 and 660 native shrubs will also be planted. The ARM/EECP specifies that tree whips will be planted 5.0 m on centre (O.C.) and that shrubs will be planted 3.0 m O.C. It is unclear whether it is the specified spacing densities or quantity ranges that will be used for implementation. This needs to be clarified. It is also unclear how to interpret low and moderate and full density restoration/reforestation.

The recommended spacing translates to a density of 400 trees and 1,111 shrubs per one hectare. The ARM/EECP however proposes to reforest/naturalize an area of 5.8 ha, so one would expect that the total quantities would be at least substantially higher than the quantity ranges described.

Reforestation densities are typically in the range of 1,600 – 2,000 trees per hectare. Conservation Halton requires naturalization planting to have a minimum density of 1,000 trees per hectare as this is the density used to define a woodland under the Forestry Act. 1,000 trees per hectare is a standard requirement for buffer/compensation plantings in many municipalities. The reasons naturalization plantings are implemented at higher densities is because the size of stock material (whips) is small and survivorship tends to be much lower than traditional landscaping which includes maintenance watering, rodent protection, mulching, soil amendments and tending.

The quantities of trees and shrubs proposed are well below standard densities for reforestation and naturalization and should be increased.

The access road works will result in the removal of 99 trees ranging in size from 16-63 cm in diameter. The proposed compensation involves planting only 90-110 tree whips less than 1 cm in diameter as a replacement. This level of compensation is well below any accepted standards for tree replacement that we are aware of.

The NER relies upon on the ARM/EECP to satisfy the policy test of localized and reversible impacts. In our opinion this test cannot be satisfied with levels of replacement plantings that have been proposed.

We recommend revising the planting prescriptions in the ARM/EECP as follows:

- Full Reforestation – Trees 2.0 m O.C.; Shrubs 2.0 m O.C. Density of 2,500 /ha. T/S Ratio 1:1;
- Moderate Density – Trees 2.5 m O.C.; Shrubs 2.5 m O.C. Density of 1,600/ha. T/S Ratio 1:2; and
- Low Density – Trees 3.0 m O.C.; Shrubs 3.0 m O.C. Density of 1,111/ha. T/S Ratio of 1:3.

## Conclusions

In summary, the Riverstone responses and supplementary investigations have addressed most of our previous concerns and issues. There are however a few key issues remaining that need to be addressed to satisfy the policy test of impact reversibility.

They are as follows:

1. The NER relies on the ARM/EECP to demonstrate that environmental impacts associated with this project can be mitigated and reversed, however we find the level of compensation/restoration plantings proposed in the ARM/EECP to be grossly insufficient to meet this policy test. We have provided preliminary suggestions on how what these levels should be and are available to work with Riverstone to arrive at a solution;
2. Design details for the proposed access road extension through the Wagner Woodlot do not appear to be available. These are necessary to finalize the Arborist Report and confirm the extent of impacts to trees; and
3. We remain of the opinion that the introduction of jersey barriers along the access road through the Northern Wetland will impede the movements of small wildlife such as reptiles and amphibians and that ecopassages can help mitigate this impact. We are not convinced that ecopassages are not necessary nor feasible to integrate. There are designs that would be relatively easy to implement and do not require changing the driveway design. We recommend that they be further explored and implemented.

Should you have any questions, please do not hesitate to contact the undersigned.

Yours Truly,

**Beacon Environmental**



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