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Memorandum

To/Attention	Charles Warnock City of Ottawa	Date	April 13, 2018
From	Lance Erion	Project No	102101.5.3.1.5
cc	Marcel Denomme		
Subject	KNL Stage 9 - Additional Information for MOECC Applications		

The purpose of this memorandum is to provide additional information requested by the MOECC to accompany the two ECA applications for the Stage 9 development per the MOECC Pre-Submission Consultation Meeting on September 18, 2017 and as discussed in our meeting on March 28, 2018.

In developing the final design for Stage 9, it was agreed through discussion with representatives from the City of Ottawa and MOECC that the design of the storm system for Stage 9 should respect the natural drainage boundary between the Shirley's Brook Watershed and the Kizell Creek Watershed which Stage 9 straddles. The storm drainage area plans Drawing No. 500 and 501, in the Design Brief for Stage 9 illustrates that the design included in this application for Stage 9 does not require diversion of flow from Shirley's Brook to Kizell Creek. The current design proposal also maintains existing approved water levels in the Beaver Pond which is the primary outlet for Stage 9, and does not require any changes to the existing Beaver Pond outlet structure, all as approved in the ECA no. 5190-7L6RRY November 26, 2008.

Background reports – a hard copy and digital copy on CD of the following reports is attached as Appendix A;

- Shirley's Brook & Watt's Creek Phase 2 Stormwater Management Study prepared by AECOM, Final: April 27, 2015
- Kanata Lakes Serviceability Study prepared by IBI Group, June 2006

Deviations from the 2006 Report

In the 2006 serviceability study all minor system storm flows for the Stage 9 lands outlet to the Beaver Pond SWMF which outlets to the Kizell Creek, see Figure 4 of the 2006 Report. In the current design the lands at the west end of the site which are naturally tributary to the adjacent Shirley's Brook now outlet to Shirley's Brook through an oil and grit separator. The major system in this area outlets to Shirley's Brook in both the 2006 study and the current design. (See Drawing No. 500 in the Design Brief).

At the north east corner of the site the street Briarpath Court is unable to drain to the Beaver Pond as proposed in the 2006 report (see Figure 4) due to physical constraints, overhead power lines, grade raise restrictions and grading constraints with the adjacent railway line. In the current design this street with 3.3 hectares of drainage area outlets directly to the Kizell Creek through an oil and grit separator (see Drawing No. 501 in the Design Brief).

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In the 2006 study the minor system flow for a 9.5 hectare block of external land north of the railway at Briarpath Court which naturally drains to Shirley's Brook was directed to the Beaver Pond. (See Figure 4 in the 2006 Report). Due to the physical constraint of maintaining the rail line in service the minor and major system flows for the 9.5 hectare block remain tributary to Shirley's Brook and this area is not included in the current design for Stage 9.

The storm flows have also increased from the 2006 study as the City of Ottawa design criteria has changed since 2006. In the 2006 report a 88.6 mm storm was used for the 100 year event, we are now using a 106.7 mm storm as a result of consultation with the City.

There are no changes to the sanitary sewer servicing.

Conservation Authority Approval – In applying to the MVCA for their approval (to construct the Stage 9 storm works) the MVCA was provided with hydraulic modeling for the Beaver Pond and Kizell Creek. On review of these applications, the MVCA issued 3 permits approving the in water works required to outlet Stage 9. Attached as Appendix B are the three permits issued by the MVCA for the storm sewer outlets, which includes the outlet to Shirley's Brook, the outlet to the Kizell Creek and two outlets to the Beaver Pond SWMF, one major outlet from Burrard Crescent and a minor outlet from Walden Drive at the east end of the Beaver Pond.

Sediment and Erosion Control Plan – a sediment and erosion control plan is included in Section 6 of the Design Brief and a drawing is included in Appendix E, the contractor will be required to implement the features of the plan prior to commencing construction. IBI field staff will be on site daily and will regularly inspect and monitor the erosion control measures throughout all phases of construction, inspection will occur on a weekly basis and after any significant rainfall event. The contractor will be contractually obliged to remedy and readjust the plan if the sediment and erosion objectives are not being met during construction, should erosion be observed the area shall be rectified immediately and measures such as straw bale or rock check dams will be added.

Downstream Erosion – In our opinion, the AECOM report mentioned above doesn't identify any significant erosion issues in the Kizell Creek (referred to as Upper Kizell Drain in the report) related to the existing approved release rate from the Beaver Pond and the Kizell Creek outlet. Kizell Creek is the immediate receiver of outflow from the Beaver Pond SWMF. The Kizell Creek is tributary to the Kizell Drain which is a municipal drain. A drainage engineer (Andy Robinson, Robinson Consultants) has been appointed to identify and address any existing erosion concerns in the drain to ensure that the drain can accommodate the existing flows.

Hydrogeological Impacts - Due to the large amount of rock blasting in this area there have been concerns on the hydrogeological impact on the site services, future basements and the adjacent Beaver Pond SWMF. Attached as Appendix C is a technical memorandum prepared by Golder Associates, October 13, 2017 which addresses these concerns.

Flooding in basements is prevented by waterproofing the foundation with Planton Membrane and draining groundwater with weeping tiles that are connected to the storm sewers. All catchbasin inlets to the storm sewers are restricted by inlet control devices which limit the hydraulic grade line in the sewers during rare storms. The storm sewer system is designed to provide a minimum 0.3 meter freeboard between the 100 year hydraulic grade line and the underside of footing elevation for all residential units.

There is no change to the existing Beaver Pond outlet structure proposed or changes to the water levels in the pond. Piping of the pond water around the existing structure has not been identified as a problem to date as we understand that sheet piling was used to cut off water flow in the original construction.

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Radon Gas – as this site contains a large amount of Precambrian metamorphic and igneous bedrock there is a potential for radon gas accumulation in the basements of residential units in this development. We are not aware of any preconstruction test to determine if radon gas will be present. However, it is our understanding the builder has adopted the Ministry of Municipal Affairs and Housing Supplementary Standard SB-9 Requirements for Soil Gas Control, September 14, 2012 in previous house construction and is committed to continuing this practice for the house construction in Stage 9. A copy of this standard is attached in Appendix D.

Sincerely yours,

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