

**RESPONSE TO LAKE SIMCOE REGION CONSERVATION AUTHORITY COMMENTS
REGARDING PROPOSED DEVELOPMENT AT 231-249 REACH STREET UXBRIDGE – THE VENETIAN GROUP**

Plan of Subdivision (Region File S-U-2018-01; Plan of Common Element Condominium (Region File: C-U-2018-01);
Zoning By-law Amendment: ZBA-2018-08

Document Reviewed: *Addendum Environmental / Impact Study (Beacon Environmental Limited, March 2018)*

Comment No.	Section	LSRCA Comments (Shauna Fernandes Chagani, Natural Heritage Planning Coordinator)	Consultant Providing Response	Consultant Comments	LSRCA Follow-up Comments
1	N/A	A revised ELC Figure for all the combined properties with the staked feature boundaries, setbacks and proposed development should be provided. All ELC should be assessed to ecosite communities.	Beacon	<p>ELC mapping for the all the subject lands has been completed and a revised Figure 2 is attached. This mapping also includes the LSRCA staked boundaries of ELC communities FOM and FOC3-1.</p> <p>With respect to taking the ELC to the ecosite community level, this was done for all communities, except for the forested lands along the eastern boundary of site, which is assessed to be FOM-Mix Forest. As identified in the previous EIS reports, the FOM community is a Scotch Pine/Poplar/Maple Mixed Forest. The ELC does not have an ecosite level community code with this species composition. The FOM on the site is actually a cultural woodland, a regeneration of a Scotch Pine plantation, which is why there is no FOM ecosite code for this community composition, as Scotch Pine forests do not naturally occur in Southern Ontario.</p>	
2	N/A	Figure 3 should be updated to quantify the areas gained through the +/- areas proposed.	Beacon	The attached site plan prepared by Hunt Design Associates provides the best detail with respect to the small +/- areas that will occur along the staked boundaries of FOC3-1 and FOM. In addition to these	

				<p>areas, Beacon has provided a Figure 3 (see attached that shows the larger areas of woodland that will be removed as a result of the proposed development. Do to scale, it is best to show these areas on separate figures. The assessment of the wooded areas to be removed is detailed in our response to comment 4 below.</p>	
3	N/A	<p>The boundary staked by the LSRCA for FOC3-1 currently has a street and lot proposed within it. The woodland feature as staked for this ecosite should be protected by removing all development and associated grading. In addition, it appears all edges of this feature have not been staked and approved by the LSRCA.</p>	Beacon	<p>The eastern boundary of the FOC3-1community had previously been staked with the LSRCA. The southern boundary was staked with the LSRCA on Nov 21, 2018. The previous EIS completed for the site identified that the FOC3-1community should be retained. The current plan will result in minor encroachments into the southeast corner, in an area that supports edge growth with young Manitoba Maple trees, to allow for the required street and lot layout. As indicated in the most current plan similar minor encroachment will also occur in the FOM woodlot in east, an area that was also identified to be retained. The encroachment into the FOC3-1and FOM communities are minor and will not result in a significant impact. In addition, the loss of these small areas will be address in the Ecological Offsetting Plan.</p>	
4	N/A	<p>An ecological offsetting strategy is required prior to draft plan approval for any loss of natural heritage features.</p>	Beacon	<p>Section 6.3.1 Design Mitigation Measures of the 2018 EIS Addendum Report identified that the area of woodland loss as a result of the development would be mitigated following the LSRCA 2017 Ecological Offsetting Plan (EOP) process. The report recommended that the requirement for an EOP should be identified as a condition of the draft plan approval, and that the details of the final EOP would be developed in consultation with LSRCA following draft plan approval. At a meeting with the LSRCA held</p>	

			<p>on December 12, 2018 to review LSRCA comments, it was clarified that though final specific details of the EOP could be developed post draft plan approval, the <i>strategy of the plan</i> should be provided prior to the draft plan approval. The following provides a summary of the proposed Ecological Offsetting Plan strategy.</p> <p><u>General EOP Strategy</u></p> <p>The proposed development will require the removal of woodland. Based on the proposed development plan and exiting conditions, woodland replacement within subject property is not possible. Therefore, off-site compensation will be required. For the off-site compensation the Proponent, Venetian Group, would prefer to enter into a cash-in-lieu agreement. The final details of the cash-in-lieu agreement will be identified through consultation between the Proponent and the LSRCA.</p> <p><u>Areas of Woodland Loss and Replacement Ratio</u></p> <p>The proposed development will result in the clearing of cultural pine plantation, cultural woodland and yard landscape trees. In addition, small pockets along the edge of the Mixed forest (FOM) and Hemlock Forest (FOC3-1) will also be removed.</p> <p>As shown on the site plan in Attachment 2 the areas of FOM and FOC3-1 forest edge that will be removed represents a combined area of 0.052 ha. This area will be replaced at a ratio of 2:1. In addition, as shown in Figure 3 in Attachment 2, the total area of cultural pine plantation (CUP3-3) that will be removed is 0.77ha,</p>	
--	--	--	--	--

			<p>and total area of cultural woodland (CUWa/b) that will be removed is 0.16 ha. These areas, a total of 0.93 ha, will also be replaced at a ratio of 2:1. Also as shown in Figure 3 in Attachment 2, combined the areal extent of the associated vegetation protection zone (VPZ), defined as a 10 m setback from the dripline of the forest edge, and yard landscape tree is 0.79 ha. This area will be replaced at a ratio of 1:1. Note that no VPZ is identified to edge of the landscape yard trees.</p> <p>Combined the total wooded area that will need to be replaced/compensated for in the EOP is:</p> <p>$(0.052 + 0.93) \times 2 = 1.964 \text{ ha} + 0.79 \text{ ha} = 2.754 \text{ ha}$ (Total Feature).</p> <p><u>Cash-in-Lieu Compensation</u></p> <p>The final cash-in-lieu amount will be determined based on the required area of woodland to be replaced, the cost to recreate that area or its function, as well as monitoring requirements. The location of the area, or areas, where off-set works will be undertaken will be determined by the LSRCA.</p> <p>At this initial stage following the LSRCA calculations the preliminary calculation of the cash-in-lieu amount is:</p> <p>Appropriate replacement dollar value (feature creation cost) = $2.754 \times \\$36,850 = \\$101,484.90$ + Ecosystem Services Value = $2.754 \text{ ha} \times \\$5,750/\text{ha} = \\$15,835.50$</p>	
--	--	--	---	--

				<p style="text-align: center;">+</p> <p>Land Acquisition Fund = 15% of \$101,484.90 + \$15,835.50 = \$17,598.06</p> <p style="text-align: center;">+</p> <p>Administration Fee = 5% of \$101,484.90 + \$15,835.50 = \$5,866.02</p> <p>Total Cost = \$140,784.48</p> <p>*Note the Ecosystem Service Value of \$5,750 is for 2018 based on inflation from the 2016 value of \$5,534 based on the annual consumer price index applied by the Bank of Canada http://www.bankofcanada.ca/rates/related/inflation-calculator.</p>	
5	4.1	The report states the additional lots were assessed for vegetation post 2014. A vascular plant list for these areas should be provided.	Beacon	The 2014 plant list is attached. Combined the 2012 and 2014 surveys included all the “natural” vegetation communities that are currently within the new draft plan. The lands added to the current proposed draft plan represent residential landscaped yards and a detailed plant survey was not required. These areas were walked and no new species of plant were identified to occur, except for non-native ornamental shrubs and trees, and annual/perennial cultivar flowers in gardens.	
6	4.2	It is unclear whether a survey was conducted in the additional areas for Butternut (<i>Juglans cinera</i>).	Beacon	Beacon ecologist when conducting site surveys are always looking for potential Species at Risk, and not just for Butternut. For the surveys conducted by Beacon over the course of the studies no Butternut were observed. However, in the fall of 2018 Mr. Mark Vanderwouw of Shady Lane Tree Care found a young Butternut Tree while conducting a tree hazard assessment on the	

				property. The tree is located along the southern limit of the FOC3-1 community. A Butternut health assessment was undertaken by a MNRF certified Butternut Health Assessor with Beacon and the tree was assessed to be a retainable Category 2 tree. In addition, the entire property was walked again by the Butternut Health Assessor to confirm that only one tree was present. Leaves of the tree were collected and were sent to the MNRF Sault St. Maire facility for genic testing to determine if the tree was a native tree. The test results, attached, found that the tree is a hybrid and not a native Butternut.	
7	4.3.2	Please note all ELS community polygons CUP3-3, CUP, CUWI, FOM, and FOC3-1 would be considered part of the Environmental Constraint Areas based upon criteria of significant woodland as it is part of the contiguous feature. As such conformity with special policy 2.3.3.6.1 of the Township's Official Plan should be demonstrated.	Beacon	That the CUP3-3 and CUW1 communities were considered to be part of the Environmental Constraint Area was clearly identified by Beacon in the 2012 EIS, see Section 8.1 Assessment of Impact, page 13 of that report. The FOC3-1 and FOM communities will be retained, with only minor removal of small pockets the edge habitat, representing a total area of 0.052 ha. With respect to communities CUP3-3 and CUW1a/b, as these are cultural communities (i.e. Scotch Pine plantations), and though contiguous with the FOM community, they were not found to support significant wildlife habitat or other significant natural heritage features, or functions as discussed in full in Section 4.3 of the 2018 EIS Addendum. As detailed above the current site plan will result in the removal of 0.93. It is noted that total area of 0.93 ha in the current revised site plan includes an additional 0.05 ha of the CUW1a edge that will be altered for the installation and maintenance of underground, open-bottom structures, which will accept drainage from the site and promote infiltration. Following installation, the area will be re-vegetated with natural	

				<p>plantings which are not deeply rooted to ensure appropriate operation of the underground facilities.</p> <p>As noted in the previous EIS reports, the wooded areas on the subject property represent edge habitat of a large (+25ha) mature hardwood forest. The removal of these strongly anthropogenic communities will not impact on the natural heritage features and functions of the 25ha mature hardwood forest. However, to mitigate the removal of these cultural wooded areas, as well as yard trees as requested by the LSRCA, these areas will be included as part of the total wooded area that will need to be compensated for in the Ecological Offsetting Plan (see response to comment 4 above). Therefore, it is Beacon's position that with the retention of the FOM and FOC3-1 communities and Ecological Offsetting Plan that the proposed development is in conformity with special policy 2.3.3.6.1 of the Township's Official Plan. Therefore, the EIS concludes that the proposed draft plan of subdivision for the Reach Street lands will not result in a negative impact on the Environmental Conservation Area.</p>	
8	6.3	All mitigation sub-sections need to be included in the EIS (Ecological Offsetting Plan).	Beacon	<p>Section 6.3 of the Addendum EIS does list mitigation measures and it is unclear as what is meant by "All mitigation sub-sections need to be included in the EIS (Ecological Offsetting Plan)." With respect to what mitigation will be required as part of the Ecological Offsetting Plan, the Offsetting Strategy has been provided in response to Comment 4 above. Specific details of the Offsetting Plan will be addressed in consultation with the LSRCA following draft plan approval. However, the response to Comment 4</p>	

				above does provide mitigation with respect to the area of woodland loss.	
9	6.3.1	Tree Preservation Plan and Forest Edge Management Plan: It should be noted that no hazard tree removals will be supported for removal within the woodland line as defined by the LSRCA. Should any hazard removals be required, it is recommended that a buffer be added between the development limit (lot lines) and the protected woodland.	Cosburn Nauboris /Shady Lane	Hazard tree notes have been removed. Only those trees threatening adjacent rear yards should be removed.	
10	6.3.1	Public Trail or Path System: Any trail system proposed within the natural heritage features must be accompanied by a Trails Impact Study.	Cosburn Nauboris	No trails are proposed on site or in the woodland area, only a walkway connection to the existing adjacent subdivision.	
11	6.3.1	Timing of Site Clearing: The breeding bird window in this area is April 1-August 5. Any vegetation (tree, shrubs or ground vegetation) clearing proposed during this window should be supported with a nesting survey (within 24 – 48 hours prior to construction).	Cosburn Nauboris, Sabourin Kimble	Noted	
Document Reviewed: <i>Drawing L1-Landscape Plan (Cosburn Nauboris Ltd, April 23, 2018)</i>					
12	N/A	All text stating hazard tree removal is acceptable in the protected woodland should be removed. As stated in the EIS comments, should nay hazard removal be required then a buffer should be proposed between the feature and the lot limits. This area is only acceptable for installation of edge management planting to mitigate the exposed clear cut edge.	Cosburn Nauboris	The plan has been revised to exclude hazard tree removals.	
Document Reviewed: <i>Hydrological Assessment</i>					
Comment No.	Section	LSRCA Comments (Caroline Hawson, Hydrogeologist)	Consultant Providing Response	Consultant Comments	LSRCA Follow-up Comments

1	N/A	Mapping shows that a large portion of the property is currently designated as Natural Heritage Feature Level 1. It is possible that the proposed development may be subject to significant revisions as a result. If so, the detailed water balance assessment will need to be revised.	PECG	Acknowledged.	
2	N/A	<p>From the Uxbridge Official Plan (section 5.2.6) the ground water monitoring program is to include the following:</p> <p><i>The plan shall permit monitoring of the impact of the development on ground and surface water quality and quantity, and infiltration to include a pre-construction period, the construction period, and the post-construction period (in perpetuity). As a minimum the program shall include the following:</i></p> <ul style="list-style-type: none"> • <i>Monitoring of groundwater levels and quality in the water table aquifer across the property;</i> • <i>Monitoring of groundwater levels and quality in the water supply aquifer (intermediate aquifer as defined by W.B. Beatty & Associates;</i> • <i>Monitoring of the performance of the communal water and sewage disposal system with respect to groundwater quality. In particular, the monitoring program must provide ample warning of impact from the communal system (i.e. must establish appropriate trigger levels) to groundwater quality so that a contingency plan may be implemented</i> 	PECG	<p>The results of PECG's on-going monitoring program is provided in Section 3 of the Hydrogeology Report. Groundwater levels have been stable over all monitoring events.</p> <p>No long term monitoring is proposed as the development will be constructed between approximately 6 and 10 m above the water table. Through an innovative LID treatment train approach, it was shown that infiltration will be increased by 98% and phosphorus removal will be increased by 33% from the baseline condition.</p>	

		<p><i>before any adverse off-site impacts occur;</i></p> <ul style="list-style-type: none"> • <i>Monitoring of potential impact of the development on water quality and quantity in existing supply wells on adjacent properties subject to the cooperation and permission of the owners of the adjacent properties; and,</i> • <i>Monitoring of water level and flow conditions and water quality in the Duffins Creek and Pefferlaw Creek watersheds.</i> <p><i>An annual monitoring report shall be prepared and submitted for peer review to the Township of Uxbridge to the satisfaction of the Region of Durham. And the proponent shall prepare detailed contingency plans to address the following:</i></p> <ul style="list-style-type: none"> • <i>Potential impact on water quality and quantity in existing local water supply wells;</i> • <i>Potential reduction in infiltration and shallow ground levels on the property; and,</i> • <i>Potential impact to shallow ground water quality as result of site development and stormwater management activities, including but not limited to road salt application, fertilizer, herbicide and pesticide application and sewage disposal.</i> 			
--	--	---	--	--	--

		The groundwater monitoring program should be amended to include these components and an updated monitoring schedule.			
3	N/A	<p>Groundwater monitoring wells have been constructed on-site; however, there has been no long term monitoring program to establish the seasonal high groundwater levels. A scan of the drill logs from the Phase 1 EIS shows that the static water level is as high as 0.3 m bgs in wells in the area. A long term monitoring program is required to establish seasonal high groundwater levels on the property and should include monthly readings between 1 March and 30 June. The monitoring wells were completed on 28 January, 2018 and seen to dry on 2 February 2018; however, at this time the ground would have been frozen so this observation is not unexpected.</p> <ul style="list-style-type: none"> • Please provide a topographic map indicating groundwater flow direction for the properties. • Please provide geological cross sections including groundwater levels as appropriate. • Please provide cross sections showing proposed grading, elevation of LID facilities and groundwater levels. 	PECG	<p>Groundwater monitoring was completed at monitoring wells on October 15, 2018, November 8, 2018, and January 4, 2019, which was approximately 8 – 12 months following well installation, allowing enough time for the wells to reach static levels. MWs were dry during monitoring, however private well monitoring show the water table was between 10.05 mbgs and 15.14 mbgs. Across three months of monitoring, water levels showed very minimal fluctuation (0.26 m to 0.41 m), indicating that the shallow water table is relatively stable.</p> <p>A water level of 0.3 mbgs was presented in the Phase 1 ESA (prepared by Sirati and Partners) from drill log #1916851. MECP well records are notoriously unreliable, and through QA/QC of the well log by PECG hydrogeologists, it was confirmed that a water level value of 0.3 m was listed in error as the drill log is recorded illegibly. A piezometric level of 19.8 m is more realistic as this is where the driller first noted the presence of “water bearing” soils.</p> <p>A figure showing groundwater flow direction is provided on Figure 5 of the revised report. Proposed grade, LID depth, and depth to groundwater are shown on Figure 4 of the revised report.</p>	
4	Fig. 2&3	From Figure 2 and Figure 3, it appears that no monitoring wells have been established in the northern part of the property. However, it is in this area significant infiltration facilities are proposed. Ground water monitoring wells are	PECG	<p>Monitoring wells were not installed in the northern portion of the property due to site access limitations.</p> <p>Based on discussions with LSRCA hydrogeology staff on December 12, 2018, the number of monitoring</p>	

		to be established in this area a seasonal high groundwater levels are to be established to assess the functionality of the LID facilities suggested. The groundwater monitoring program is to include monthly readings at a minimum and is to include the 1 March to 30 June timeframe.		wells and locations were deemed sufficient and appropriate. PEGG will continue to monitor water levels up until June 30 th , 2019.	
5	4.3	The property is within the WHPA-Q2 for York Region, a Highly Vulnerable Aquifer and also partially within a SGRA. Since a portion of the property is within a SGRA it is anticipated that infiltration will be in excess of 189mm/yr. A representative percolation rate was established empirically and was determined to be 72 mm/hr. In-situ percolation testing is to be carried out in the vicinity of the base of any LID facilities that will be constructed on the site. This will enable local infiltration rates to be established. These more accurate infiltration rates will aid in sizing any LID facilities.	PECG	In-situ percolation testing was completed to determine representative infiltration rates of the surficial soils using a Guelph Permeameter. In-well infiltration testing was also completed to determine the field saturated conductivity and infiltration rate of the soils at greater depths than was achievable using the Guelph Permeameter. All three testing methods employed by PEGG (empirical, Guelph permeameter, in-well infiltration testing) yielded very similar results providing confidence in the in-specific infiltration rates. Please refer to Section 3.3 of the updated report for more details on the methodology, results, and assessment of these tests.	
6	N/A	From the Phase 1 EIS, it is apparent that there are active private water wells in the area. Infiltration facilities up-gradient of active private water supply wells may be limited to clean water from a rooftop disconnect with all other runoff to be directed to other SWM facilities. In Section 4.3 (PEGG 2018) it is indicated that roadway runoff is to be directed toward infiltration systems. LSRCA is not supportive of the infiltration of any road/driveway runoff due to the potential for contamination of groundwater from de-icing	PECG	The proposed LID program has been revised to include the provision of pre-treatment for all roadway drainage prior to outletting flows into any of the LID works. Catchbasins have been located strategically to ensure long reaches of in-road LID's only receive roof drainage. Further extensive rear yard and open space LID's are also utilized. Therefore, there is no untreated road drainage reaching the LID facilities. The bullet points have been addressed as they appear in the comment: <ul style="list-style-type: none"> Acknowledged and rooftop and landscape runoff has been directed to specific LID's, 	

		<p>salts and heavy metals which are mobilized by de-icing salts and the potential impact on private drinking water wells in the vicinity. Form the Uxbridge Official Plan (Section 5.2.6) it also appears that infiltration of roadway runoff would not be supported due to the potential contamination of the shallow and medium depth aquifers that supply private wells and private drinking water.</p> <ul style="list-style-type: none"> • Rear yard LID measures utilizing a roof top disconnect is acceptable for infiltration purposes. • Please provide plans and cross sections of LID facilities which include the storage depth below any sub drain and depth o water table. • Please provide details of each LID facility separately to ensure that volume and area information can be calculated • Please show calculations to demonstrate that the LID facility is adequately sized for both volume and infiltration drawdown time. • Please note LSRCA is not supportive of LID facilities within private properties and would prefer to see them developed outside of the private property such that they are able to be accessed by the municipality or other for any necessary maintenance. • A solution for the infiltration deficit is for the developer to connect the 		<ul style="list-style-type: none"> • Typical cross sections for each type of LID have been provided on Figure 6 of the FSR report. Detailed cross sections will be provided as part of the detailed site plan process, • Detailed calculations in support of each LID have been provided in Appendix C of the FSR, • As this is proposed to be a common element condominium, all proposed stormwater management works will be private and the responsibility of the condominium corporation, • Infiltration will be increased by 98% from baseline conditions through the proposed LID treatment train. 	
--	--	--	--	---	--

		properties downstream of the proposed development to the municipal water supply and to decommission the private wells as per O. Reg. 903.			
7	N/A	The property is within the water management for York (WHPA-Q2) and from the South Georgian Bay Simcoe Source Protection Plan policy LUP-12 is in effect. Therefore, infiltration volumes in the post-development scenario are to match those of the pre-development scenario. Please demonstrate how this will be achieved using roof top disconnect and clean water run-off only. Please update the water balance assessment and provide detailed tables of the pre-and post-development water balance assessment.	PECG	<p>The proposed LID program has been revised to include the provision of pre-treatment for all roadway drainage prior to outletting flows into any of the LID works. Catchbasins have been located strategically to ensure long reaches of in-road LID's only receive roof drainage. Further extensive rear yard and open space LID's are also utilized. Therefore, there is no untreated road drainage reaching the LID facilities. The bullet points have been addressed as they appear in the comment:</p> <ul style="list-style-type: none"> • Acknowledged and rooftop and landscape runoff has been directed to specific LID's, • Typical cross sections for each type of LID have been provided on Figure 6 of the FSR report. Detailed cross sections will be provided as part of the detailed site plan process, • Detailed calculations in support of each LID have been provided in Appendix C of the FSR, • As this is proposed to be a common element condominium, all proposed stormwater management works will be private and the responsibility of the condominium corporation, • Infiltration will be increased by 98% from baseline conditions through the proposed LID treatment train. 	

				The water balance was revised to include the LID treatment train approach, which captures roof top and clean water runoff in rear yard LIDs and perforated pipes, and directs any excess to two stormwater chambers. Based on this system, annual infiltration will increase by 98% from pre-development, and have an overall positive impact on surrounding natural features. The updated water balance is provided in Section 3.6, 3.7, and 3.8 of the revised report.	
8	N/A	<p>While summary tables have been provided for the water balance, detailed water balance tables (pre- and post-development together with post-development with mitigation) have not been provided. Please provide a detailed climate-based water balance assessment broken down by catchment area and then sub-catchment (pervious areas, roof top disconnect, driveways, walkways, roadways, etc.). Guidelines for producing a climate-based water balance can be found on www.lsrca.on.ca/permits.</p> <ul style="list-style-type: none"> • Please ensure a figure is included showing each catchment area. • Please reassess the MOECC infiltration rates used: woodland will not have the same infiltration factor as urban lawn. 	PECG	<p>Detailed water balance calculations are provided in Tables 13 – 15 of the report, and a summary of the changes pre- to post-development and post-development with LID is provided in Table 16. Water balance calculations were divided by LID catchment areas provided by SKA in order to reduce calculation error and improve consistency between reporting. LID catchment areas are inclusive of all runoff directed to each LID, consisting of rooftop runoff and treated roadway drainage.</p> <p>A figure of the LID catchment areas is provided in Appendix C2 of the report.</p> <p>An infiltration factor of 0.8 was used to represent the woodlot areas, and a factor of 0.7 was used to represent the urban lawns.</p>	
9	N/A	From the MOE Phosphorous Budget Tool, it appears that the pre-and post-development catchment area for forest have been incorrectly calculated. Please reassess and ensure the correct values are included in the water balance tables.	PECG	The recalculated phosphorus budget can be found in Section 3.5 of the updated report.	

Document Reviewed: First Submission – <i>Functional Servicing and Stormwater Management Report</i>					
Comment No.	Section	LSRCA Comments (Unknown TBD)	Consultant Providing Response	Consultant Comments	LSRCA Follow-up Comments
Stormwater Management Design Criteria					
1	4.1.1, Table 1	<p><i>Page 10: Water Quantity:</i> Please note that as per the Uxbridge Brook Watershed Plan (February 1997), the extended detention of 40 mm storm over 24 hours is required for the quantity control in addition to the peak flow control.</p> <p>Please update Table 1 and relevant components of the stormwater management design.</p>	Sabourin Kimble	<p>The extended detention of the 40mm storm has been accomplished on-site through infiltration measures within the proposed LID's. Please refer to Appendix C – LID Design.</p> <p>Table 1 has been updated to reflect the Uxbridge Brook criteria.</p>	
2	4.1.1, Table 1 4.1.2	<p><i>Page 10: Water Quantity:</i> Please update Table 1 to include the volume control criteria as per Section 2.1/2.2.2 of the LSRCA Stormwater Management (SWM) Guidelines (2016) and update relevant section in the report as required. Please note that the noted guidelines supersede the LSRCA LID document (2015).</p>	Sabourin Kimble	Table 1 has been updated to reflect the volume control criteria.	
3	4.1.1, Table 1	<p><i>Page 10: Water Quantity:</i> As per the LSRCA SWM Guidelines; Section 2.1, please update Table 1 to include safe conveyance of the stormwater flows to sufficient outlet(s) without negative impacts on the adjacent properties.</p>	Sabourin Kimble	Table 1 has been updated to reflect the need for safe conveyance.	
4	4.1.1 Table 1	<p><i>Page 10: Water Quantity:</i> Please identify in Table 1 the allowable release rates for both</p>	Sabourin Kimble	Table 1 has been updated to reflect the allowable release rate.	

		proposed outlets as the site specific stormwater quantity control criteria.			
5	4.1.1 Table 1	<i>Page 10: <u>Water Quality</u></i> : Please note that in addition to the specified phosphorous control criteria, the Lake Simcoe Phosphorous Offsetting Policy (September 2017) applies to the revised Plan of Subdivision. Please refine this section.	Sabourin Kimble	Table 1 has been updated to reflect the Phosphorus Offsetting Program.	
6	4.1.1 Table 1	<i>Page 10: <u>Water Quality</u></i> : Please include Erosion and Sediment Control criteria, including site specific methodologies and/or sediment accumulation in areas designated for infiltration.	Sabourin Kimble	As this is a Stage 1 report, erosion and sedimentation controls are identified in section 5.0 of the report. Specific details will be provided through the detailed site plan process and the Stage 2 report.	
7	4.1.1 Table 1	<i>Page 10: <u>Water Balance</u></i> : Please include the site specific infiltration targets/water budget requirements, as applicable.	Sabourin Kimble	The specific details are included in Hydrogeological Report. A new section 4.6 has been added to this report which summarizes the specific details.	
Stormwater Management Concept					
8	4.2 Figure 2	<i>Page 11</i> : Development limits within the property are subject to the natural heritage assessment. Accordingly, the Plan of Subdivision and corresponding SWM Strategy needs to be reviewed in the context of the verified development limits. The development boundary as shown on Figure 2 needs to be confirmed by the LSRCA Natural Heritage Ecologist	Sabourin Kimble	The limit of development has been revised through the EIS and has been reflected in the revised Figure 2.	
9	4.2	<i>Page 11</i> : The SWM Plan needs to account for the site's vulnerability with respect to groundwater and should demonstrate that it will meet or exceed the respective source water protection requirements.	Sabourin Kimble	The assessment of the site's vulnerability with respect to groundwater has been addressed in the hydrogeological report by Palmer Environmental Consultants.	

		<p>It should also be noted that presence of private drinking water supply wells within the drainage catchment will govern feasibility of the stormwater infiltration. The wells are located down gradient from the site and have shallow/medium depths that pose higher risk for contamination.</p> <p><u>Accordingly, the stormwater infiltration measures collecting runoff from the right-of-way (e.g. roads, driveways, sidewalks) are not supported due to potential groundwater contamination.</u></p> <p>The LSRCA hydrogeologist should be consulted to address the site-specific groundwater protection and mitigation requirements. More groundwater investigations may be required in support of the SWM Plan (e.g. potential pollutants pathways).</p>			
10	4.2	<p><i>Page 11:</i> A contingency plan should be developed in conjunction with the monitoring plan to address groundwater vulnerability, including potential implementation strategies to prevent deterioration of the groundwater resources.</p>	Sabourin Kimble	A contingency plan will be developed as part of the detailed site plan process and in the stage 2 report.	
11	4.2	<p><i>Page 11:</i> As per the LSRCA Source Water Protection mapping, a water balance is required for the site.</p> <p>Please refer to the Hydrogeological Assessment Submissions, Conservation Authority Guidelines for Development Applications (2013) for specific water balance and</p>		The hydrogeological report by Palmer Environmental addresses the water balance for the site.	

		hydrogeological assessment requirements. It is encouraged that LSRCA staff be contacted regarding the required scope of a water balance assessment.			
12	4.2	<i>Page 11:</i> Provided the environmental sensitivity of the site, a consultation meeting with the LSRCA staff is recommended to discuss the site-specific requirements.	Sabourin Kimble	Numerous meetings have already occurred, however, if an additional meeting is required as part of the review of this response, it will be coordinated accordingly.	
13	4.2	<i>Page 11:</i> Please note that the approach (Modified Rational Method) used to estimate quantity control requirements would be acceptable for a standalone site. The stormwater analysis for the Reach Street Development is integrated with the Estates of Avonlea subdivision to the north. Therefore, verification of the release rates and flow conveyance is required using the modeling software(s) used in the Estates of Avonlea subdivision.	Sabourin Kimble	This site is a standalone site with a specific release rate identified as part of the Avonlea subdivision. Further, the on-site controls have gone beyond the flow controls identified in the original stormwater management report and as such, it is our opinion that no further modelling is required as we have exceeded the required controls.	
Stormwater Quality Controls/LID Design					
14	4.4	<i>Page 12: The watershed hydrogeological vulnerability analysis (the Uxbridge Brook Watershed Plan; February 1997) indicates that over 40% of the watershed (sandy and sandy loam soils) is highly vulnerable to groundwater contamination, with the most vulnerable area located south of Uxbridge and east of Wagner's Lake, including the subject site.</i> <i>Accordingly, the site-specific water quality control criteria should reflect higher standards/strengthened controls to prevent groundwater contamination. Property</i>	Sabourin Kimble	The proposed stormwater management approach includes adequate pre-treatment of all flows from impervious surfaces which are subject to contaminants (ie; roadways). Further, catchbasins have been strategically located to minimize the impacts of road drainage and maximize contributions from roof drainage.	

		<i>stormwater pre-treatment measures should be incorporated into the SWM Plan (i.e. use of a multi-barrier pre-treatment approach for all infiltration facilities, recommendations for the most suitable land management practices).</i>			
15	4.4	<i>Page 12: Efforts should be made to separate 'clean' stormwater runoff from the road surface runoff and maximize opportunities for infiltration of the 'clean' stormwater runoff.</i>	Sabourin Kimble	Clean and contaminated runoff has been separated to the greatest degree possible. There are large areas with direct contribution from rooftop and landscape areas. All roadway drainage will be pre-treated with an oil/grit separator prior to discharge to an LID facility.	
16	4.4	<i>Page 12: Please indicate if the proposed underground storage units will have a pre-treatment chamber and how the system will be accessed for cleanout purposes and other maintenance activities. It is anticipated that the particular specifics of the maintenance access will be a detailed design issue.</i>	Sabourin Kimble	The proposed system has a pre-treatment chamber with adequate access for maintenance. The details will be provided as part of the detailed design in support of site plan. The details for the system is ultimately designed by the manufacturer based on the size and geometry of the system required.	
17	4.3	<i>Page 12: The in-situ field tests to verify infiltration rates will be required prior to the detailed design approvals.</i>	Sabourin Kimble	Acknowledged. As part of the site plan process, additional field measurements will be completed to verify the infiltration rates at the locations and depths of each LID.	
18	4.3 Figure 6	<i>Page 12: It appears that the rear-yard infiltration trenches are proposed at the back of the lots. Please confirm maintenance access for the rear yard infiltration trenches. Please clarify maintenance access to the facilities.</i>	Sabourin Kimble	The rear yard infiltration facilities will be subject to an easement in favour of the condominium corporation.	
19	4.3 Figure 4	<i>Page 12: The grading plan indicates that slopes along the swales collecting runoff for infiltration range from 2% to 5%. The effectiveness of water quality treatment, as well as infiltration potential will be reduced with increasing grades, hence increased velocities.</i>	Sabourin Kimble	Flow contributions to the rear yard infiltration facilities are from rear yard catchbasins connected to a perforated distribution pipe. No direct infiltration from the surface is anticipated. Lot grading criteria for the Township of Uxbridge requires that all rear yard swales have a minimum longitudinal slope of 2%. The rear yard catchbasin and perforated pipe	

		<i>Please include in the report further discussion concerning operations of the proposed system to maximize the on-site flow capture/ infiltration and provide typical cross-sections of the swales/infiltration trenches.</i>		combination will be successful in capturing the design flows and distributing them into the infiltration gallery. A description of the rear yard infiltration facilities is provided in section 4.4 of the report.	
20	App. C	Please include a total contributing drainage area to the LID facility in the respective calculation sheets.	Sabourin Kimble	Appendix C has been revised to include contributing drainage areas to each LID facility. This information has been provided as information only. The LID's are sized based on contributing impervious areas.	
21	App. 2	Please verify the calculations of a required bottom area (A) for each infiltration trench. It appears that the design parameters (V, P, t) are different than values in the formula (e.g. t=24 hours vs t= 72 hours).	Sabourin Kimble	The calculations in Appendix have been reviewed and revised as necessary to support any design revisions. The bottom area calculation are consistent with the values in the formaulas.	
22	Figure 6	Please clarify a setback from the interior forest area for rear-yard infiltration trench #2. Proper buffer should be incorporated into the design to account for the existing root systems that may affect the integrity of the infiltration system (e.g. punctured geotextile).	Sabourin Kimble	All rear yard infiltration trenches will be located within the development lot. As such it is outside of the buffer to the woodlot and therefore beyond the limits of the existing root systems.	
Stormwater Quality Controls/Phosphorous Budget					
23	App. C LID Design	The proposed Total Phosphorus (TP) removal strategy is mostly based on the operation and efficiency of the infiltration facilities. Therefore, the TP removal calculations require verification based on the confirmed development boundary, as well as the updated SWM Plan.	Sabourin Kimble	The phosphorus removal calculations as provided by Palmer Environmental have taken into account the LID design. Refer to the Palmer report for specific calculations.	
24	N/A	The phosphorus budget calculations are provided in the Hydrogeological Assessment Report prepared by Palmer Environmental Consulting Group Inc. (April 18, 2018). Please	Sabourin Kimble	The phosphorus budget calculations will remain in the Palmer Environmental report. The phosphorus budget has been summarized in section 4.6 of the FSR.	

		include the phosphorous budget discussion and calculations in the SWM Report to address the water quality criteria. Further comments concerning the phosphorus budget calculations are provided below in the section pertaining to the noted report.			
Stormwater Quantity Controls/Storm Servicing/Grading					
25	4.5	<i>Page 14:</i> Please note that given high complexity of the stormwater system, difference modelling approach may be required at the detailed design state to verify the system capacity and operation during various design storm events. Proper contingencies should be allowed at this stage within the system (e.g. storage volume, inlet's capacity). It is anticipated that this will be refined at the detailed design stage.	Sabourin Kimble	The preliminary design calculations enclosed in the report demonstrate that sufficient volume has been provided to satisfy the design criteria of the LSRCA. Greater detail will be provided at the detailed design stage.	
26	4.5 App. D	<i>Page 14:</i> Please assess the outlet sensitivity with respect to the tail water conditions to optimize the on-site quantity control system. This can be completed at the detailed design stage. As per earlier comment, please apply contingencies within the system for the purpose of the functional design.	Sabourin Kimble	Outlet conditions will be assessed at the detailed design stage. As noted above, the enclosed calculations demonstrate that sufficient volume is available to satisfy the LSRCA requirements.	
27	3.1.1 & 4.5 Fig. 6/STM	<i>Pages 5 & 14:</i> The STM MH26 (north-east corner) has been identified as one of the storm sewer connections for the proposed development with the receiving storm sewer system of the Estates of Avonlea subdivision. Please identify the inlet(s) /easements that would receive overland flows from the site at the north-west corner of the property.	Sabourin Kimble	Drainage directed to the northwest corner of the site will be collected by a read yard catchbasin located at the west limit of existing lot 30 and conveyed to the storm sewer system within the subdivision. Refer to drawing ST-1 by Burnside in our Appendix A.	

28	3.1.1 & 4.5 Fig.6/STM	<i>Pages 5 & 14:</i> Please clarify a flow conveyance from the STM MH26 to the SWM pond via the receiving storm sewer system of the Estates of Avonlea subdivision.	Sabourin Kimble	All flows from the subject site will be controlled on-site and conveyed to the storm sewer system within the Estates of Avonlea Subdivision. The storm sewer system within the downstream subdivision will convey the flows to the stormwater management pond.	
29	3.2.1	<i>Page 5:</i> Please confirm allowable release rates for the north-west 'outlet'. It is indicated that the minor system along Village Green Lane was designed to receive flows from approximately 0.38 ha at C=0.35.	Sabourin Kimble	The allowable release rate to the northwest outlet has not been identified as a specific flow but rather an area and associated runoff coefficient as per the rational method known as a CA basis (refer to Burnsides drawing ST-1). The proposed drainage area and runoff coefficient match that of the allowable. Refer to page 1 of Appendix D for supporting calculations.	
30	3.1.2 & 4.5(3.2.1?) Figure 4	<i>Page 5:</i> Please confirm flow capture and conveyance at the low point on Street 'B' (LP 282.38 m). It appears that a swale along the north-west woodlot would intercept and convey potential overflows from the road to the property boundary. No details are provided beyond the property boundary. Please note that flows cannot be discharged onto the adjacent private property. Proper drainage easements/agreements would need to be in place to convey flows via the private property to a sufficient outlet.	Sabourin Kimble	All overland flows will be captured on-site. Details of the capture facilities will be provided at the detailed design stage.	
31	3.2.2 Figure 4	<i>Page 8:</i> Please clarify how the flows from Blocks 1, 2, and 3 will be conveyed to the 'outlet'. It is proposed to discharge the flows into an existing woodlot. Please clarify the flow conveyance to a receiving storm sewer inlet (s).	Sabourin Kimble	All rear yard infiltration systems will convey flow to the infiltration gallery. If and when the gallery reaches capacity an overflow is provided to accept the overflow into the storm sewer system. This applies to all areas except area 3 which will overflow to the surface and outlet overland to the northwest outlet from the site.	

32	3.3.3 Figure 4	<i>Page 8:</i> Figure 4 indicates an existing retaining wall at the swale outlet from Block 3. Please confirm location of the existing retaining wall (e.g. along the property boundary) and that the proposed design will not affect the integrity of the existing structure.	Sabourin Kimble	The existing retaining wall does not exist. It was identified incorrectly on the topographical survey. A site visit confirmed that no retaining wall exists in this location. All reference to this retaining wall has been removed from the plans.	
33	4.5 Fig. 4/6	<i>Page 14:</i> Please provide overland flow capacity calculations and typical cross-sections to demonstrate sufficient capacity and safe conveyance of major storms through the subdivision and to a sufficient outlet. Please provide details concerning the flow capture at potential ponding areas and demonstrate that these areas will not impact emergency vehicles.	Sabourin Kimble	All overland flow capacity and capture calculations will be provided as part of the detailed design of the site.	
34	4.5 Fig 4/6	<i>Page 14:</i> Please provide capacity calculations and typical cross-sections for the swales that would intercept and convey flows from the external drainage areas.	Sabourin Kimble	All overland swale capacity calculations will be provided as part of the detailed design of the site.	
35	App. A	Please clarify use of 'Imperial' vs. 'Metric' label in a column entitled 'Pipe' in the Storm Sewer Design Sheet.	Sabourin Kimble	The "Imperial" and "Metric" labels are utilized for internal purposes only. It is an identifier of whether the pipe is manufactured in the United States or Canada and as such, whether it is built to imperial or metric size specifications.	
36	App. D	Please clarify negative depth of storage for MH10 and MH7 in the quantity control calculations (Appendix D).	Sabourin Kimble	Any negative depth of storage has been removed from the spreadsheet. It provides an indication of whether storage in a specific manhole is anticipated. Negative storage is not utilized in the calculations.	
37	App. D	Please confirm that the Stormchamber storage used in the preliminary water quantity estimates excludes storage provided within a stone layer (available through infiltration). We note that the Stormchamber storage used in a summary calculation is 400.7 cub. M and the total estimated storage available with the	Sabourin Kimble	All stormchamber storage volume calculations for water quantity are exclusive of the base layer utilized for infiltration.	

		Stormchamber, including the stone layers is 499 cu. m.			
38	App. D	It appears that relative elevations were used in the Stormchamber stage-storage analysis. Please adjust invert elevations as per proposed storm sewer/storage system. It is anticipated that this will be updated during the detailed design stage.	Sabourin Kimble	The relative elevations are utilized for the calculation of storage volume only. The actual geodetic elevations of the systems are shown on the enclosed report figures.	
39	App. D	Please verify an orifice size/flow for the 2 nd orifice using a head calculations from the centroid. The outlet design needs to be verified based on the overall updates that may affect the SWM Plan, including storage control requirements.	Sabourin Kimble	The second orifice size calculation is included in Appendix D. Sizes will be verified as part of the detailed design process.	
40	N/A	Please provide digital files for the stormwater quantity control calculations.	Sabourin Kimble	Digital files for the stormwater quantity controls have been included in the enclosed CD.	
41	3.2.2 Fig. 3/4	<i>Page 7:</i> 3:1 slopes are proposed within the woodlot buffers to match the proposed grades within the subdivision with existing grades. All grading should be completed outside of the identified woodlot/natural heritage buffers.	Sabourin Kimble	Grading into the woodlot buffers has been minimized as much as possible. Unfortunately, the servicing requirements for the site result in fill being placed adjacent to the preserved wooded area at the northwest limit of the plan. While this is not necessarily desirable, the fill will not extend beyond the feature limit and the area will be restored with native vegetation to supplement the existing vegetation.	
42	3.2.2 Figure 4	<i>Page 7:</i> The site-specific hydrogeological and or geotechnical recommendations, as well as confirmed development limits may trigger additional modifications to the grading plan. The preliminary grading to be updated as required.	Sabourin Kimble	The grading plan has been prepared based on all updated information for the site.	

43	5	Page 16: Please note that sedimentation and erosion control plans, to the satisfaction of the LSRCA, will be required at the detailed design phase.	Sabourin Kimble	Section 5.0 of the report has been revised accordingly.	
Water Balance					
44	N/A	Please provide water balance calculations and supporting documentation, drawings showing preliminary design details, and facility locations.	Sabourin Kimble	Section 4.6 of the FSR summarizes the water balance assessment. Detailed calculations are contained within the Palmer Environmental Consultants report.	
Figures & Drawings					
45	Figure 1	Please update or clarify the 241 Reach Street lot reference. It appears to point to a different lot.	Sabourin Kimble	Street addresses have been clarified in Figure 1.	
46	Figure 2	Update development boundary as per confirmed limits of the Natural Heritage Area.	Sabourin Kimble	All natural heritage boundaries have been clarified and are reflected on the revised plans.	
47	Figure 2	Please correct label "LSRCA Open Space" a defined by the Natural Heritage Study Classification.	Sabourin Kimble	The Open Space label has been removed.	
48	Figure 2	Please include area of a typical Townhouse in metric (SI) units.	Sabourin Kimble	The typical townhouse details were provided by the Architect and will not be revised to metric for this report.	
49	Figure 6	Please clarify setback from the property boundary for rear yard infiltration trench #3.	Sabourin Kimble	Rear yard infiltration trench #3 will be contained completely within the proposed development.	
50	Figure 6	Include labels for MHH12, MH14 and MH15 on the plan.	Sabourin Kimble	All manholes have been labelled appropriately.	
Document Reviewed: Hydrogeological Assessment, April 18, 2018					
Comment No.	Section	LSRCA Comments (Unknown TBD)	Consultant Providing Response	Consultant Comments	LSRCA Follow-up Comments
51	2.3.1 Figure 1-2	Page 5: No Boreholes or monitoring wells are located within the end-of-pipe SWM facility. Therefore, further details will be required to confirm the site's conditions and water	PECG	Based on discussions with LSRCA hydrogeological staff on December 12, 2018, the number of monitoring wells and locations were deemed sufficient and appropriate. PECG will continue to monitor water levels up until June 30 th , 2019.	

		budget/quantity design requirements at this location.			
Phosphorous Budget					
52	App. C1	The LID design calculations are provided in both the SWM report and the Hydrogeological Report. Please ensure that the calculations in the hydrogeological report reflect the overall SWM Plan updates as it pertains to the LID design.	Sabourin Kimble	Hydrogeological report has been updated.	
53	3.4 App. E	<p>The pre-development phosphorous budget calculations assume 2.89 ha of a low intensity development and 0.7 ha of forest cover under existing conditions; and 1.03 ha of forest and 2.56 ha of development area under the proposed conditions.</p> <p>The LSRCA Natural Heritage mapping, as well as Figure 1, indicates much higher percentage of woodland area within the property boundary. Please update the calculations to better reflect the land use cover.</p> <p>The forest cover under the post-development conditions should reflect a confirmed natural heritage/woodlot boundary and its respective components (e.g. buffers). Please provide update as required.</p>	Sabourin Kimble	Hydrogeological report has been updated to include a revised phosphorous budget.	
54	3.4 App. E	Minor discrepancies are noted in area calculations with the SWM Report vs. Hydrogeological Report (e.g. site area 3.62 ha vs. 3.59 ha). Please update the corresponding numbers to reflect the latest calculations and the total site area.	Sabourin Kimble	Reports have been updated.	

55	App. E	Please verify surface slope gradient (S=0.5%) applied in the Construction Phase Load calculation sheet and update the calculations as required. As per Figure 4 Proposed Grading in the SWM Report, the proposed slopes range from 2% to 5% with local lot grading at 0.5%.	Sabourin Kimble	Reports have been updated.	
56	N/A	Please note that additional comments may be forth coming based on the update SWM Report and/or new information.	Sabourin Kimble	Noted.	

RESUBMISSION REQUIREMENTS:

Comment No.	Resubmission Instructions	✓ When Completed
1	A cover letter which includes a detailed response outlining how each of the comments above have been addressed with reference to applicable report/drawings (i.e. specific sections/pages/details or tab identifiers)	
2	The cover letter is to also include a summary of any additional changes to the design (i.e. in addition to those not identified in the detailed response to comments, and includes changes to reports, drawings, details, facility design, etc.).	
3	All drawings are to be folded (8.5" X 11")	
4	Reports and engineering drawings/details are to be signed and sealed by a Professional Engineer	
5	Reports are to include a digital copy of applicable models on Data CD or USB Thumb Drive	
6	All submission/reports are to include applicable technical components which achieve the minimum requirements outlined in the LSRCA Technical Guidelines for Stormwater Management Submissions, September 2016.	