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15th February, 2022

Evans Planning
8481 Keele Street, Unit 12
Vaughan, ON
L4K 1Z7

Attention: Mr. Adam Layton

Re: Updated Reports with Response Matrix

Mr. Layton,

As requested, please find attached updated reports for Storm Water Management, Water and Wastewater Servicing, Traffic Impact, and Fire Storage in support of the Retail East zoning application, PEC File # OPA1-2019; Z59-19. We have compiled a list of comments related to our initial reports along with responses below.

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Draft Site Plan		
1	It is noted the 'Tile Bed Envelope' locations have been placed in close proximity to the natural features on the subject lands. As greater setbacks will provide greater attenuation and reduced risk related to the systems, it is recommended alternate locations are selected as far as reasonably possible from the wetland/surface water features.	GG – To the extent possible setbacks have been maximized. The proposed tile field setback from the wetland/surface water features will exceed Ontario building code requirements.
Engineering		
1	A peer review has been solicited for the Water and Wastewater Servicing Assessment Report. Staff anticipate providing further comments related to servicing at a later date. Staff have received comments from Quinte Conservation related to the Assessment that has been forwarded to your office.	GG - Acknowledged
2	The Stormwater Management Report has been circulated to Quinte Conservation for review; comments have been sent under a separate letterhead from the Conservation Authority.	GG - Acknowledged
3	The Traffic Impact Review Letter proposes a detailed Traffic Impact Study be completed, with updated traffic counts, during the site plan application stage; however, through preliminary work, the developer currently proposes adding a southbound left turn lane and a northbound right turn lane on Loyalist Parkway at the proposed entrance – this being at the intersection of the Loyalist Parkway and Patridge Hollow Road. Please provide a detailed lane layout of what is proposed for	GG - Auxiliary lane layout drawing has been created and referenced in the entrance study. based on available right of way limits provided by Ontario land surveyor no property acquisition will be required.



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	turning lands with accurate depictions of the Municipal Road Allowance to ensure enough room exists to accommodate the two extra full lanes as proposed.	
4	The entrance to the development is proposed in-line with Partridge Hollow Road; however this entrance location as shown does not meet MTO minimum sight distance requirements, missing 14 metres. It is recommended an engineering matrix analysis be completed to determine the risk versus benefit to having a slightly reduced sightline against having two intersection points on Loyalist Parkway. Please provide an Engineer recommended entrance location to the County.	GG – Entrance has been relocated south of partridge hollow road in a location agreed to by county staff. Improved line of sight provided.
5	The owner shall enter into an agreement with the County for a financial contribution for upgrades to Loyalist Parkway as deemed necessary by the Director of Development Services.	GG - We confirm that signalization is not required. Entrance improvements and auxillary lane construction timing and financial agreement requirements to be determined.
Fire		
1	Fire has reviewed the Planning Justification Report and would like additional information related to the method proposed to be used for fire protection. As required by the OBC 3.2.5.7(1), an adequate supply of water for firefighting shall be provided for every building. Please provide details for further review.	GG – Addressed in attached letter report by P. Zandbergen, P.Eng. Adequate water storage will be provided on site, in accordance with OBC.
Regulation #319/09		
1	Please note that a portion of the subject lands lie within the regulated area of a watercourse and wetland. By virtue of Ontario Regulation #319/09 - Regulation of Development, Interference with Wetlands and Alterations to Shorelines and Watercourses), the owners will need to apply to the Conservation Authority for a permit prior to site grading or development (construction) within 30 meters of the watercourse or wetland.	GG – Stormwater features will encroach on this 30 metre setback, therefore a Permit from the CA will be required prior to construction. A minimum setback of 15 metres is proposed.
SWM		
2	Staff reviewed the Blocknote Preliminary Stormwater Management Report by Greer Galloway. It is proposed to build a spa, winery and hotel complex on the 58 ha site. Development density will be very low (3 of 58 ha.). The stormwater report is written at a high level, outlining a stormwater approach and strategy using best management practices and bio retention LIDs. This approach is acceptable for	GG - Acknowledged. Detailed design documents will be required as part of future submissions.



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	this site and level of development. Detailed engineering drawings and calculations will need to be submitted in the future for a complete review.	
3	A geotechnical study will have to be completed prior to engineering design work is undertaken to provide the working parameters for the design. This requirement is noted in the submitted report.	GG – Acknowledged. To be completed prior to detailed design. Geotechnical investigation will be required as part of future submissions.
Quinte Source Protection Plan		
4	The property is not located within an Intake Protection Zone. Staff have no concerns.	Acknowledged.
Water and Wastewater Servicing Assessment		
5	<p>Conservation Authority staff have reviewed the Water and Wastewater Servicing Assessment report prepared by Greer Galloway dated June, 2019.</p> <p>This site is proposed for the development of a 50 room resort hotel, Nordic Spa with hydrotherapy and thermotherapy pools/outdoor baths, conference meeting hall, 50 seat restaurant, 25 seat café and winery with retail area and housing for temporary field workers. The design daily flow (water taking) for the development was determined to be in the order of 52,839 l/day. However this calculation did not include water demand for the winery, field spraying and temporary field workers. Some uncertainty is also associated with water use of the various spa facilities. Regardless, the assessment does suggest the potential for use of water conservation measures where feasible and the recycling of grey water to reduce overall demand.</p> <p>Based on this preliminary review of water demand it would be apparent that approvals for this development will be required from the Ministry of the Environment Conservation and Parks. This would include a Permit to Take Water for daily flows in excess of 50000 litres/day, and an environmental compliance approval for the wastewater system that would be needed to accommodate flows of greater than 10000 litres/day.</p>	<p>GG – Acknowledged. Future approvals will require clarification of development demands.</p> <p>Vineyard irrigation is not used. Water demand projections include temporary field workers. An ECA is required for the development. The need for a PTTW is dependent on actual vs projected water demand. Current projections for Phase 1 are lower than 50,000 l/day but a PTTW may be sought as the water demand is likely to come close to the 50,000 l/day threshold. Projections for Phase 2 of the development exceeds 50,000 LPD.</p> <p>An ECA for the on-site disposal system will be required from the MECP.</p>
6	Water supply for the proposed facility was proposed to be obtained from groundwater. An assessment of potential groundwater suitability was completed through the drilling of 5 test wells, hydrofracturing of 4 of the wells, and pump testing of three of these wells. These	GG - Neighbouring wells were monitored. No response was observed. A longer term pumping test, once all production wells have been developed, will be conducted simultaneously, along with well



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	<p>tests were completed on May 9, 2019 during a wet spring season (Quinte Region received above average rainfall in April and May). The details of the hydrofracturing were not provided so it is uncertain of how this process was completed.</p> <p>Prior to the pumping test, a neighborhood survey was completed of three residents with two participating. One of these residents indicated that their well runs dry in the summer months and that a trickle system is in use. A 6 hour pumping test was completed simultaneously on three wells at nominal pumping rates of 7, 7.5, and 16 lpm. A total of approximately 11000 litres (significantly lower than the projected demand of 52839 litres) of water was pumped from the wells and water quality samples were collected for laboratory analysis. It is uncertain if neighboring wells were monitored during the pumping test, however theoretical drawdown was estimated by empirical formulas.</p>	<p>monitoring of all neighbouring wells (as permitted). This will be completed during the late summer, prior to site plan approval, and as part of the PTTW application process.</p>
7	<p>The results of water quality analysis indicated many parameters at acceptable levels. However unacceptable levels of total coliform and turbidity were reported. Both of these parameters are health related and exceedance of the drinking water limits would suggest the water supply as not being suitable for the proposed use.</p>	<p>GG - Turbidity is the result of the well construction and not a property of the aquifer. Elevated total coliform is present due to the limited overburden thickness across the site. Elevated total coliform does not render the aquifer unsuited for its proposed use. The proposed development will be a regulated system and raw water criteria for unregulated private wells do not apply. Suitable treatment will be provided for the water. This is likely to consist of cartridge filtration down to 1-micron, UV irradiation, and chlorination for residual.</p>
8	<p>The use of onsite sewage systems is proposed for the development through the use of raised leaching beds. An assessment of potential impact was completed through the calculation of dilution of sewage effluent in consideration of Ministry of the Environment Conservation and Parks (MECP) Guideline D-5-4. Given onsite sewage disposal will require approval through an environmental compliance approval the assessment of the impact potential using Guideline D-5-4 is not appropriate. Such assessment will be required through consideration to MECP Guideline B-7 which has different criteria and target levels.</p>	<p>GG - An ECA will be required for onsite sewage treatment systems. Potential impacts will not be assessed under guideline D-5-4.</p>



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9	The groundwater assessment indicated limited availability of groundwater during a period of above average precipitation. The total volume of groundwater pumped from the site was approximately one fifth of the anticipated daily demand. The quality of the groundwater was also determined as not acceptable in terms of two health related parameters. We would recommend that consideration be given to the feasibility of utilizing the nearby municipal supply from the Village of Consecon.	GG - After discussions with PEC staff, it as been confirmed that it is not possible to extend services beyond the boundary of Consecon. Additional water wells are to be proven prior to the site plan approval stage. A water treatment system suitable for a GUDI source and applicable health related parameters will be provided.
10	Assessment of impact potential from onsite sewage disposal was insufficient to demonstrate the feasibility for the use of onsite sewage systems for the proposed development. We would recommend a review of this assessment in reference to relevant MECP guidelines. A preconsultation with the MECP regarding the proposed development is also recommended.	GG - A pre-consultation meeting has been held with the MECP. Onsite sewage treatment is considered feasible. The level of treatment required will be determined through the environmental impact analysis.
Groundwater Quantity		
	The consultant has conducted a reasonable initial evaluation of the aquifer system and determined that the aquifer is a highly vulnerable unconfined shallow fractured limestone bedrock aquifer. The aquifer fractures consist of dissolution enhanced (karst) crustal rebound joint sets in the limestone bedrock as well as bedding fractures etc. The aquifer is low yield and therefore multiple wells would have to be pumped simultaneously (24 hrs/day – each day) to produce the development needs of 53,000 L/day.	GG - We note that the projected water demand has been further refined since the 2019 report.
	In Cambium's opinion potential impacts/interference with neighbouring well users and the site wetland/water course are unlikely over the short term as demonstrated by the consultant. However, the use of multiple wells sited across the property pumped simultaneously for 24 hrs/day each day of the week may cause base-flow losses and interference. Because the pumping test was conducted in spring, a time of high recharge and low stress, we would recommend a longer term full scale pumping test be conducted during a period of low recharge and high water stress such as in August, to adequately demonstrate that the on-site supply wells could support the proposed development with no impacts to either the on-site surface water system or adjacent well users.	GG - Some additional testing has been completed during September 2021. This testing generally confirms earlier interpretations regarding short-term yield potential of the wells/aquifer. Additional well development and longer term testing is to be conducted in later summer, in support of the site plan approval stage.



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<u>Groundwater Quality</u>		
	<p>The concentrations of sodium and associated chloride in the most productive well (Well No. 2) reported at 131mg/L and 234 mg/L respectively are elevated. The sodium concentration is more than 6 times the ODWQS limit reportable to the local health unit for sodium restricted diets. The sodium concentration is approaching the aesthetic limit of 200mg/L. After 200 mg/L the water is no longer palatable to the average person. Some individuals can taste the salt at lower concentrations. Similarly, chloride is approaching the ODWQS limit of 250 mg/L. Because the sampling was conducted during the spring freshet in May when recharge is at its greatest, it is Cambium's opinion that sampling should be conducted during the low flow season such as August to determine whether or not sodium and chloride concentrations increase.</p>	<p>GG - The sodium and chloride levels meet the ODWS for sodium and chloride. We agree with the reviewer's recommendation although we believe that such testing should be conducted for the final water supply well array since multiple wells are proposed.</p>
	<p>The consultant and proponent should evaluate whether or not the irrigation of shallow soils during high water stress levels will result in eventual salinization of the soils and further enrichment of sodium chloride in the drinking water. We note that treatment of groundwater with reverse osmosis (RO) technology is not feasible given the 53,000 L/day volume.</p>	<p>GG - Irrigation is not proposed for the site.</p> <p>We note that depending on the chemistry of the final water supply, if necessary RO may be feasible for a small portion of the overall supply system (i.e. drinking water). This should be assessed at the design stage.</p>
	<p>The corrosion potential due to salt content of the groundwater should be evaluated.</p>	<p>GG - We agree with the reviewer's recommendation although we believe that such analysis should be conducted for the final water supply well array since multiple wells are proposed. An initial assessment based on a single water sample indicates that the corrosion potential for under 250 mg/l chloride is low.</p>
	<p>Because there is little aquifer filtration capacity and short aquifer residency time for recharge water/precipitation the fate of pesticides and fertilizers used in the operation will of need to be understood and at a minimum be conducted in a location that is downstream of any drinking water wells – on and off-site.</p>	<p>GG - We agree with the reviewer's comment.</p>
	<p>We agree with the consultant that the groundwater would need to be treated as a GUDI system with treatment including but not limited to filtration and disinfection.</p>	<p>GG - Groundwater supply from the site will be treated as GUDI</p>
<u>Wastewater/Sewage Disposal</u>		
	<p>The consultant has provided an annual groundwater recharge rate of 200 mm/year for</p>	<p>GG - Nitrate attenuation will be modelled using a recharge rate of 250</p>



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	<p>their nitrate attenuation calculations and water balance. The shallow soils are described as clay loam. Typically, a rate of 200 mm/year is used for sandy soils; based on the description of the surficial soils being clay loam, the annual infiltration rate may be lower (150 mm/year). As such, it is recommended that the composition of the native soils and their respective infiltration rate should be confirmed through insitu testing (i.e. percolation or infiltration testing). Furthermore, the consultant has identified that the receiving aquifer is largely a collection of karst enhanced joint sets observable in aerial photos. The consultant will need to evaluate infiltration in context to this shallow fracture network</p>	<p>mm/a based on following the predictive assessment methodology described in chapter 22 of the MECP design guidelines for sewage works. A lower recharge rate should be assumed for the assessment of groundwater yield sustainability. We note that there is very little clay in the shallow soils however the “clay loam” description is tentatively used because of the presence of ponded surface water after precipitation events (i.e., infiltration is low over portions of the site – either due to the effective permeability of the shallow soils or, as is more likely, the low fracture permeability of the underlying bedrock). In situ tests will be needed for the detailed design of subsurface sewage disposal systems.</p>
	<p>Furthermore, the D-5-4 guideline is an acceptable methodology for assessing the nitrate generation for developments with sewage works with less than a daily capacity of 10,000 L/day. The daily sewage loading rate for the phase 2 development is estimated at 53,000 L/day, which would be subject to a Reasonable Use Guideline limit of 2.5 mg/L at the property boundary, following the predictive assessment methodology described in Chapter 22 of the MECP Design Guidelines for Sewage Works.</p>	<p>GG - Correct, an ECA will be required.</p>
	<p>We agree with the consultant that a raised leaching bed system will likely be required. Because the aquifer is highly vulnerable we also recommend:</p> <ol style="list-style-type: none"> 1. Tertiary treatment to comply with the Reasonable Use Guidelines. 2. Location of the sewage disposal site must be down-gradient of the capture zone of any drinking water wells. 	<p>GG - We agree with the reviewer’s comment.</p>
<p>Water</p>		
	<p>We are not satisfied that the proponent has sufficiently demonstrated that the proposed development can be serviced with both potable and fire water demands. We are concerned that there is insufficient water available within the aquifer for the long-term sustainability of the development without negatively affecting nearby existing users. The developer should investigate a stand-alone water treatment and storage solutions based on</p>	<p>GG - Water for fire protection is typically met through storage. The availability of sufficient quantities of groundwater for potable requirements will depend on the aquifer behaviour under long term pumping. Additional supply wells have been recommended. Well interference is considered unlikely due to the large setback from neighbouring wells and</p>



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	what the groundwater table can support from a water taking perspective.	the generally low yield of the bedrock aquifer which limits the zone of influence. We agree that a stand-alone water treatment and storage system is required.
	We support Cambium's recommendation for further investigation in periods of low recharge and high-water service such as August to provide additional information regarding the long-term effects on the aquifer and sodium concentrations.	GG - We agree. This will be completed prior to the site plan approval application.
	Quinte Conservation identifies neighboring wells that currently run dry during summer months. A risk management plan should be drafted to address actions necessary if adjacent wells are negatively affected or the site cannot meet daily peak demand or fire flow requirements.	GG - We agree. One such measure will be the provision of water storage suitable for receiving hauled treated water during extreme drought conditions.
	We support Quinte Conservation's concern that the daily water demand calculations did not include water for agricultural purposes and should be reevaluated to reflect such. <ul style="list-style-type: none"> • Provide fire flow and max day demand supply / demand calculations in accordance to Fire Underwriters Survey standards. 	GG - No groundwater irrigation is proposed for the vineyards Fire protection requirements are addressed in a new letter report by GGG. Adequate storage will be provided for fire protection.
	We support Quinte Conservation's comments about water quality and request additional information as to how unacceptable levels of total coliform and turbidity will be addressed.	GG - Based on our preliminary testing, we do not expect high turbidity to be an issue. Elevated total coliforms are expected to be a characteristic of groundwater the site and the groundwater will be treated as GUDI with water treatment equivalent to that provided for a surface water source.
	We do not support Quinte Conservation's recommendation to investigate the feasibility to extend municipal water services from Consecon to the site. <ul style="list-style-type: none"> • This is beyond the urban service boundary. • It is not permitted with the current water supply agreement from Quinte West that supplies potable water to Consecon. • The length of watermain would result in undue maintenance and operational obligational costs 	GG - Acknowledged. Extension of municipal servicing no longer contemplated.
Sanitary		
	The proponent should provide greater clarity in respect of the proposed sewage treatment plant system. Specifically, we are concerned that a Membrane Bioreactor treatment unit is not being	GG - The sewage treatment plant design will be selected based on the environmental impact analysis carried out as part of the ECA



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	proposed as used in similar resort developments in the County.	process. It is likely that this will include tertiary treatment.
	We support Cambium recommendations that: <ul style="list-style-type: none"> • Tertiary treatment to comply with Reasonable Use Guidelines is recommended. • Location of the sewage disposal site must be down-gradient of the capturing zone of any drinking water wells. 	GG - We also agree
	We support Quinte Conservation's recommendation for sanitary designs in accordance of MECP guidelines are required to confirm the feasibility of onsite sewage disposal.	GG - As noted in our report, an ECA is required for onsite sewage treatment.
Stormwater		
	The proponent shall provide detailed analysis on managing pre and post development flows including safe conveyance for the regional events. Additionally, the proponent shall provide an analysis on how the stormwater management systems will recharge the groundwater table in concert with the proposed water taking. Following a detailed submission, the municipality will peer review for sufficiency.	GG – An updated preliminary stormwater report will be provided to reflect current site plan. A detailed design and report will be provided to support future submissions.
	We support the recommendation for LID designs, subject that there is a minimum 2% slope at least 5m from any structures. Consideration should be given to high-use areas where longer periods of ponding would have a negative impact to the use. Roads and travelled surfaces shall have sufficient drainage and not follow LID design guidelines.	GG – Acknowledged. This will be considered as part of future detailed submissions at the Site Plan approval stage.
Traffic		
	We are supportive of the proposed entrance improvements (i.e. turning lanes and tapers) and we anticipate additional safety improvements during the detailed engineering design which may include intersection lighting and potentially a voluntary contribution towards future signalization.	GG – Signalization will not be required based on the current site plan and background traffic information currently available.
	The municipality has completed an Active Transportation Plan and the developer shall provide voluntary contribution towards future shoulder paving in concert with the initiatives identified in the ATP.	GG – Acknowledged
	We support Greer Galloway's recommendation that additional traffic counts be taken in peak summer months.	GG – Understood. Detailed counts and revised entrance study will be provided as part of future detailed submissions.
	We prefer the main entrance to the site align with Partridge Hollow Road.	GG – Reflecting further consultation with County staff the proposed entrance is located south of partridge hollow road.



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	We support the recommendation for dedicated southbound left turn lane. We request that a northbound full right turn lane be installed as opposed to a turning taper.	GG – Southbound left turn lane remains proposed but a northbound right turn taper will be adequate (taper width will reflect a full 3.5m without obstructing northbound through traffic).
	Advanced warning signage should be provided to address sightline deficiencies.	GG – With the proposed entrance being south of the municipal intersection, signage may not be required, or should be coordinated with municipal intersection signage.
Traffic – April 8, 2021		
	This letter is further to the response comments sent to you from the County of Prince Edward on April 1, 2021. Staff have reviewed the Risk/Benefit Entrance Matrix submission, prepared by Greer Galloway and dated March 11, 2020. As the recommended entrance within the submission is to be located south of Partridge Hollow Road, staff are satisfied with this proposed location as shown on the revised concept plan.	GG - Acknowledged.

If you have any questions or concerns, please contact us.

Thank you,

**THE GREER GALLOWAY GROUP INC.
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**Tony Guerrero, P. Eng.
Senior Project Manager**