CSU Development - 1st submission Response to Comments				
The Biglieri Group Ltd.	Feb/2 2022	County File: 15T-21007 - Town File: ZBA-09-21, OPA-03-21		TBG Project: 20697
		Address:787&825 Fallis Line, Millbrook		TBG Client: CSU Developments
Ref	Item	Comment	Consultant	Formal Response
MTO Email				
Email from Cheryl Tolles, dated August 18th, 2021	DPS	This site is out of MTO permit control and no need to circulate us any further on the application. Please keep circulating us as future subdivisions in the area will start creeping to Highway 115, they will start getting pulled into our permit control and municipal spacing from the interchange.	TBG	Noted.
Enbridge Gas Memo				
Memo from Casey O'Neil, dated August 17, 2021	DPS	Enbridge Gas Inc. does not object to the proposed application(s) however, we reserve the right to amend or remove development conditions.	TBG	Noted.
		This response does not constitute a pipe locate, clearance for construction or availability of gas.	TBG	Noted.
		The applicant shall contact Enbridge Gas Inc.'s Customer Connections department by emailing AreaPlanning40@Enbridge.com to determine gas availability, service and meter installation details and to ensure all gas piping is installed prior to the commencement of site landscaping (including, but not limited to: tree planting, silva cells, and/or soil trenches) and/or asphalt paving.	TBG	Noted.
		If the gas main needs to be relocated as a result of changes in the alignment or grade of the future road allowances or for temporary gas pipe installations pertaining to phased construction, all costs are the responsibility of the applicant.	TBG	Noted.
		In the event that easement(s) are required to service this development, and any future adjacent developments, the applicant will provide the easement(s) to Enbridge Gas Inc. at no cost.	TBG	Noted.
Canada Post Memo				
Memo from Chris Wilson, dated July 29 2021		Thank you for the opportunity to comment on the above noted project. Canada Post has no objections for the proposed development.		
		Service type and location:		
	1.0.	Canada Post will provide mail delivery service to this development through centralized mailroom (Lockbox Assemblies) and Community Mailboxes.	TBG	Noted.
	2.0.	Apartment Building(s): If this project has plans for buildings with more than two adjoining units, sharing a common indoor entrance, the developer/owner must supply, install and maintain a centralized mail room facility to Canada Post's specifications. Buildings with more than 99 self-contained units require rear loading lockboxes. Assisted Living units (if any) will require further review to determine appropriate delivery mode.	TBG	Noted.
	3.0.	Detached/Semi/Townhouses dwellings: Will be serviced through Community Mailbox. The location of these sites are determined between my department (Canada Post Delivery Planning) and the Developers appointed Architect and/or Engineering firm.	TBG	Noted.
	4.0.	If this development includes plans for (a) multi-unit building(s) with a common indoor entrance, the developer must supply, install and maintain the mail delivery equipment within these buildings to Canada Post's specifications. Please see attached linked for delivery standards: http://www.canadapost.ca/cpo/mr/assets/pdf/business/standardsmanual_en.pdf	TBG	Noted.
	Municipal requirements:			
	1.0.	Please update our office if the project description changes so that we may determine the impact (if any).	TBG	Noted.
	2.0.	Should this subdivision application be approved, please provide notification of the new civic addresses as soon as possible.	TBG	Noted.
	Developer timeline, obligations and installation:			
	1.0.	Please provide Canada Post with the excavation date for the first foundation/first phase as well as the date development work is scheduled to begin.	TBG	Premature to determine at this time. Will advise as application progresses.
	2.0.	If applicable please ensure that any street facing installs have a depressed curb or curb cut. Contact Canada Post Corporation – Delivery Planning for further details.	TBG	Noted.
	3.0.	If applicable please ensure that any condominiums apartments with more than 99 units, incorporates a mailroom with rear loading lock box assemblies (mailboxes).	TBG	Noted.
	4.0.	Finally, please provide the expected first occupancy date and ensure the future site is accessible to Canada Post 24 hours a day.	TBG	Premature to determine at this time. Will advise as application progresses.

		It is recommended that the owners contact Canada Post as completion draws near so as to finalize the location and compartment they will be assigned to.	TBG	Noted.
		Should you require further information, please do not hesitate to contact me at the above mailing address or telephone number.	TBG	Noted.
		Please include Appendix A & B along with the developer timeline, obligations and installation within the subdivision agreement for this application. This particular development is subject to the Canada Post clearance letter for approval.	TBG	Noted.
Stantec Peer Review				
Memo from Ed Mozuraitis and Roger Freymond,	**AIA**			
		The AIA generally meets the requirements of the Draft Agricultural Impact Assessment (AIA) Guidance Document, March 2018. The only major issue is that the MDS Sketch (Figure 7) is incomplete. It is lacking the distances on the minimum separation arcs.	CLARK CONSULTING	Figure 7 has been updated. Please see updated report submitted with the re-submission.
Memo from Michael Mastronardi, dated Sept 30, 2021	**FSR**			
	2.0.	The FSR did not address or comment specifically on the adequacy of the supply and flow of water to this development from the external water system. This needs to be addressed and documented. In Section 3.0 Wastewater Servicing below, it is note that the FSR states that the Township has recently initiated a Water and Wastewater Master Servicing Study as part of a Municipal Class Environmental Assessment (EA) to examine water and wastewater servicing alternatives within the current urban boundary and beyond and that this EA should consider the “proposed” Draft Plan of Subdivision for this development. The Draft Plan of Subdivision indicates that municipal water and sewage is available, but this needs to be confirmed.	VALDOR	The Township is currently undertaking a Growth Management and Master Servicing Study in which a presentation was made to Council on October 18, 2021 by RV Anderson Associates Limited and Watson & Associates. A summary of the presentation is included in Appendix K of the FSR. This development is included within the study area. Upgrades to the water distribution system will be required to meet long term growth by the Municipality. Based on the study to date and after accounting for capacity that is already committed to developments in Millbrook, with water capacity operating at 85% of 3,000 m3/day there is remaining capacity of 450 m3/day which can service a population of approximately 1,000. Discussion with the Municipality also confirmed that water capacity will not be a concern since a new well to be funded through Development Charges as well as re-use of an existing standpipe for additional storage capacity is planned along with further planned upgrades.
	3.0.	A schematic for the proposed WWTP and a manufacturers brochure (Newterra) for a modular decentralized wastewater treatment system of the membrane bio-reactor (MBR) type, along with other sanitary sewage flow calculations and standard sewage system detail drawings are included in Appendix C. However, no preliminary design details based on this modular system were provided in the FSR to review. As well no sanitary sewer design sheets for each sewer run on each street were included in the FSR. The Preliminary Site Servicing and Grading Plan indicates that the treated effluent from the proposed modular wastewater treatment plant is to be discharged to the outlet from the south stormwater management pond proposed to be located immediately north of the modular plant, also in Block 384.	VALDOR	New Terra provided a preliminary siting for the wastewater treatment plant which is shown on Drawing PSG-1 of the FSR within SWM Block 384. The siting was based on the sanitary design flows as indicated in our FSR with additional land available for future expansion. Detailed design drawings for the plant will be provided at detailed design stage for review/approval by the Township as well as the MECP. Sanitary sewer design sheets including sanitary drainage area plans will be provided at the detailed design stage.
	3.0.	The minimum local sanitary sewer pipe size is stated to be 200 mm diameter with a minimum slope of 1% to aid with self-cleaning. Maintenance Holes will be spaced at a maximum distance of 120 metres between them. 100 mm diameter sanitary sewer connections are called for each dwelling unit, with cleanouts at the property line. All these design factors/considerations are in keeping with established MECP and/or township design guidelines/standards. The size of the sanitary services for each of the medium density apartment buildings will have to be determined as part of the design of the buildings and be in accordance with the Ontario Building Code (OBC) and be approved.	VALDOR	Noted.

3.0.	A 375 mm trunk sanitary sewer was constructed from the existing WWTP in Millbrook along County Road 10 and through the neighbouring Millbrook South Subdivision to the east to service urban expansion including a portion of this development, in particular Street A which will have a 200 mm diameter sewer connected to the existing 200 mm sewer stub on Pristine Trail in the neighbouring subdivision (this is what the preliminary site servicing and grading plan shows, but the text in the FSR plan indicates that the sewer on Pristine Trail is a 250 mm diameter sewer, therefore this discrepancy needs to be resolved). The preliminary site servicing and grading plan also shows an interconnection of a proposed 200 mm diameter sewer to a proposed 200 mm diameter sewer on Fallis Line, but it is not clear as to the operation of this interconnection. On the Sanitary Drainage Plan, Figure C, included in Appendix C, there is no indication of this interconnection, therefore it is confusing.	VALDOR	A 250mm sanitary sewer stub was provided at Highlands Blvd. and Pristine Trail. The 250mm sanitary sewer will be extended to the first new manhole on Pristine Trail. A 200mm size sewer can service the rest of Street A. Refer to Drawing PSG-1 in the FSR.
3.0.	The FSR states that availability of treatment capacity at the existing WWTP to service new development is currently being reviewed by the Township in addition to finding a location to construct a new treatment facility to meet the projected growth target over the long term. Therefore, in the FSR, a second treatment facility is being proposed on the subject site to service the majority of the subject lands to be constructed at the extreme south end of the development lands on Block 384 south of Street M, which can also be phased to service other future development. Having said that, the FSR further stares that treatment capacity will therefore be available either through upgrading the existing WWTP or through a proposed WWTP and that it will be a condition of development that needs to be satisfied before building permits can be issued. So, the issue of sanitary treatment has not been finally determined as of the issuing of the FSR. The Draft Plan of Subdivision indicates that municipal water and sewage is available, but this needs to be confirmed.	VALDOR	The Master Servicing Study has progressed and a presentation was made to Council on October 18th 2021. Regarding wastewater treatment capacity the report indicates that after incorporating development already committed the WWTP will be operating at 37% of the average rated capacity of 3,000m3/day and 79% of the peak flow capacity of 8,242 m3/day. The reserve capacity available therefore in the existing WWTP will be able to service approx. 350 units. Alternatively the Newterra plant will be able to service the entire development with upgrades planned in the future. Detailed design will follow if this is the chosen alternative. Similarly there is also reserve capacity in the water treatment plant to service the units and through consultation with the Municipality with plans to fund a new well through DC's and utilize an existing standpipe for storage there will be no issues with water capacity.
4.0.	The local storm sewer network for minor storms, with flow directions is shown on the Preliminary Site Servicing & Grading Plan, but no sewer sizes were indicated. There are no storm sewer design sheets included in any Appendix for each storm sewer run on each of the proposed streets, so storm sewer sizes are still to be determined.	VALDOR	The outfall pipe size from the SWM Pond was determined. The rest of the sewer sizes will be determined at detailed design, once the detailed grading plan is available and as per Township design standards.
6.0.	All of these roadway design parameters are reasonable and typical	VALDOR	Noted.
6.0.	The text of the FSR didn't discuss street lighting, but the standard road cross sections indicated street-lights and there is detail for a decorative light pole and fixture. The detail didn't indicate if the luminaire fixture is of the full cut off (FCO) type, but indicates Type III distribution, which may be FCO. Stantec's recommendation is that all street-light fixtures should be full cut off LED lights, for maximum efficiency and to minimize light trespass and light pollution. It did indicate that the luminaire is 75W LED.	VALDOR	An electrical consultant will be assigned to design proper streetlighting for the development as per Township standards and specifications. To be conducted at detailed design.
6.0.	Comments as to any traffic control measures that may be required at the intersection of Pristine Trail and Fallis Line in terms of capacity, safety, etc., will be addressed in Stantec's separate review of the Traffic Impact Study prepared for this site.	Asurza	Noted.

	8.0.	The FSR indicates the need for and the types of erosion and sediment control measures to be employed during construction to protect the environment, water courses and adjacent properties. These include temporary sediment control basins, silt fences, mud mats, sediment traps and rock check dams. These are all typical erosion and sediment control measures and demonstrate best management practices. As well they are in keeping with the Erosion & Sediment Control Guidelines for Urban Construction (ESC Guideline) issued by the Greater Golden Horseshoe Area Conservation Authorities in 2006.	VALDOR	Noted.
Memo from John J Brisbois and Ron Howieson, dated September 28, 2021		**Geotechnical**		
	Sec1.0	The introduction references the proposed scope of development as consisting of typical 1 story and 2 storey homes, two (2) stormwater management ponds, asphalt paved roadways and servicing. The proposed design grades and service invert elevations were not available at the time of the geotechnical report. Comment: It may be of value to reference the possible presence of basements in this section, consistent t with the reference provided in Section 6.4. The presence of basements may be of particular concerning the context of the potential "artesian" groundwater conditions referenced in Section 6.1.	GHD	GHD has now reviewed the proposed grading plan. Potential flowing artesian groundwater conditions are not a concern for this development based upon our understanding of artesian conditions in the area, the subsurface conditions at the site and the proposed development plans. The ground surface elevations for the residential area ranges from about 250 to 260 masl. Based upon well records reviewed, there are six (6) flowing artesian wells documented in the area (i.e. within 500 m of the property). Each of these flowing wells are located just north of King Street West in the area of Turner Street and the former rail line in the Village of Millbrook. The ground elevation in this area is about 230 masl based upon Peterborough County GIS mapping. The well records indicate that groundwater was encountered within these flowing wells at depths of 5.5 to 26 m below ground surface or at approximate elevations of 224.5 to 204 masl. These elevations correspond to depths that are 25 to 45 m below the ground surface of the proposed development. In addition, no flowing groundwater conditions were encountered within the drilled boreholes on the site to depths of 6.7 m. The presence of artesian conditions and basements is not a concern.
	Sec4	The topography on the property was reported as rolling to hilly with overall relief in the order of 25 m. Comment: Specific to the area of the planned development blocks, the topography shown on the draft plan of Subdivision indicates a moderate overall slope up from the east to the west with relief in the order of 17m.	GHD	Comment only. No further action is warranted.
	Sec6	The presence of soft loose soils encountered in four (4) boreholes was reiterated. The report strongly recommended that raising the grade in the areas of these boreholes be avoided. Recommendation 1: The general topography and relief referenced in Section 4. and commented on above may permit the development to proceed with only limited grading, thereby minimizing the placement of fill and associated potential settlements in this respect. However, if grading is required, areas of 'cut' may also pose a concern with respect to the underlying aquifer and potential artesian conditions outlined in Section 6.1 of the report. Additional commentary in this respect would be of value. The author's recommendation that the design grades, when available, be reviewed in detail in this respect, is substantiated.	GHD	As noted above, flowing artesian wells correspond to groundwater found under pressure at depths that are 25 to 45 m below the ground surface of the proposed development. These depths would be sufficiently deep below the development and flowing artesian conditions are not expected to be encountered by the construction or development activities. In addition, no flowing groundwater conditions were encountered within the drilled boreholes on the site to depths of 6.7 m. Based on reviewed of the preliminary site servicing and grading plan prepared by Valdor, it is GHD's understanding that grade changes of more than one (1) m are not expected in the areas where soft/loose soils were encountered in the boreholes.

Sec6.1	Paragraph 2 provides recommendations for excavation stability in the context of the presence of the water table. Paragraph 2 also includes reference to potential zones of more significant groundwater infiltration; the report includes a recommendation for the use of filtered sumps, sheet piling, or other forms of groundwater control for this purpose. Paragraph 3 references potential artesian conditions associated with a confined aquifer underlying the properly.	GHD	It is our opinion that there is no permanently saturated, shallow aquifer across the site. No further action is warranted.

Sec6.1	Comments for consideration: Section 5 of the report concluded that a static water table was not present within the depth of interest. It is suggested that minor clarification be provided in this section, perhaps referring to Section 5 for reference, in this context.	GHD	The use of sheet piling is not expected at this Site based on the proposed scope for residential development and groundwater conditions encountered. Groundwater seepage or surficial water inflow into proposed excavations is expected to be controlled by pumping from sumps to an acceptable outlet. Should zones producing more significant groundwater infiltration be encountered, pumping from well points or equivalent would need to be considered. Our experience from the adjacent development to the east was there was no water in the soils in the upper lands nearest to Fallis Line with some seepage encountered as the construction activities progressed to the south to lower elevations. Some pockets of sand material were also encountered; however, did not produce groundwater. Seepage into trenches and excavations was handled using sumps.
Sec6.1	Comment for consideration: The use of filtered sumps and other forms of groundwater control (well points or similar) is considered reasonable and appropriate. The authors may wish to clarify the intended use of sheet piling for this purpose, within the context of the proposed scope of residential development.	GHD	The use of sheet piling is not expected at this Site based on the proposed scope for residential development and groundwater conditions encountered. Groundwater seepage or surficial water inflow into proposed excavations is expected to be controlled by pumping from sumps to an acceptable outlet. Should zones producing more significant groundwater infiltration be encountered, pumping from well points or equivalent would need to be considered. Our experience from the adjacent development to the east was there was no water in the soils in the upper lands nearest to Fallis Line with some seepage encountered as the construction activities progressed to the south to lower elevations. Some pockets of sand material were also encountered; however, did not produce groundwater. Seepage into trenches and excavations was handled using sumps.
Sec6.1	Recommendation 2 - Reference to or a discussion of, the underlying aquifer and potential artesian conditions should be added to Sections 5.1 or Section 5.7.	GHD	The underlying aquifer of potential artesian conditions has been addressed in previous responses.
Sec6.2	Paragraph 1 advised of the underlying aquifer and potential for upward seepage through the "leaky" aquitard. The last sentence in the paragraph recommends that the service bedding consist of HPB or HL-8 stone where there is a potential for leakage of the underlying aquifer.	GHD	As noted in previous responses, flowing artesian conditions within the development area are not expected. However, should artesian conditions be encountered it is recommended that groundwater be lowered a minimum of one (1) m below the base of the excavation, using closely spaced well points or similar.
Sec6.2	Recommendation 3 - The potential for heave to occur at the bottom of the service trench excavations should be discussed in view of the presence and influence of the underlying "aquifer". A recommended procedure for evaluating and addressing any potential heave should be provided.	GHD	
Sec6.2	For Consideration - For clarification, is the recommended use of HPB or HL-8 stone intended for conditions where standing water is present at the base of the trench?	GHD	Correct, the use of HPB or HL-8 is recommended should trenching encounter very wet (standing water) or loose subgrades.
Sec6.4	The report references the potential presence of basements. The report reiterates the presence of soft/loose conditions encountered at specific depths in four (4) of the boreholes, providing limitations to the design and construction of foundations in these areas. The report provides bearing reactions and resistances for the design of conventional spread and strip footing foundations placed on the native soils or on engineered fill. The report includes recommendations for the placement of engineered fill.	GHD	Boreholes BH3-17 and BH5-21 are located within areas of residential homes with potential basements. Based on the proposed grading plan, it is expected that the excavation for basements will extend to or below the zones of loose/soft soils. Prior to forming, all foundation excavations must be inspected and approved by a geotechnical engineer. Any loose/soft soils should be sub excavated and replaced with engineered fill.
Sec6.4	Recommendation 4 - If basements are intended for homes in the areas of the four (4) boreholes in which loose/soft zones were encountered, recommendations for foundations should be provided in this respect.	GHD	
Sec6.4	For Consideration - The authors include an option for the use of "Granular Fill" as engineered fill. It may be of benefit to clarify if the granular fill must meet a particular specification (such as OPSS Granular B) or similar.	GHD	The granular fill materials should consist of Granular “B” conforming to the requirements of OPSS Form 1010 or equivalent.

Sec6.4	Recommendation 5 - The text recommends a minimum thickness of engineered fill beneath the footings, if and as required, and refers to proportioning of the strip and spread footings based on the bearing values provided. Is there a maximum size/dimension of footing recommended relative to the thickness of engineered fill referenced?	GHD	The bearing pressures provided are based on footings on the order of 1 m to 2 m wide.
Sec6.4	For Consideration - The recommended lift thickness for the engineered fill is referenced as 300 mm. Section 6.5 refers to infilling or grade raise beneath the building basement floor slab and references a lift thickness of 200 mm for "granular fill". Should the engineered fill specifications in Section 6.4 be edited to include a recommendation for a 300 mm lift thickness for soil fill and a 200 mm lift thickness for granular fill?	GHD	Correct. Earth borrow fill must be placed in maximum 300 mm lifts and granular fill must be placed in maximum 200 mm lifts.
Sec6.5	The report recommends that under-slab drains be included where basements intersect the groundwater table. Comment For Consideration - Section 5.7 states that there is not a permanently saturated shallow aquifer on the Site and that only minimal groundwater seepage should be expected to depths in the range of 0.9 m to 6.4 m. Can the authors clarify the requirement for under-slab drains in the context of the apparent absence of a permanent groundwater table to the depth indicated assuming any basement would not extend below the depth indicated?	GHD	A permanent groundwater table is not expected to be intersected based on a review of the preliminary site grading plan and anticipated depth of basement excavations. If seepage zones are intersected, the intensity of groundwater seepage within basement excavations and the need for under slab drains should be assessed during construction.
Sec6.6	The report recommends that hydrostatic forces be considered in the design of basement or retaining walls where the walls extend below the groundwater table. For Consideration - Section 5.7 states that there is not a permanently saturated shallow aquifer on the site and that only minimal groundwater seepage should be expected to depths in the range of 0.9 m to 6.4 m. Can the authors clarify the recommendation to consider hydrostatic forces, assuming there is no permanent groundwater table assuming any basement would not extend below the depth indicated.	GHD	A permanent groundwater table is not expected to be intersected based on a review of the preliminary site grading plan and anticipated depth of basement excavations, in which case hydrostatic forces will not be an issue.
Sec6.7	The report provides estimates of the hydraulic conductivity of the native soils in the range of 10.4 cm/sec to 10.7 cm/sec. Recommendation 6. Municipalities and other regulatory authorities often adopt a hydraulic conductivity criteria of 10.0cm/sec or less for 'wet' SWM Ponds. The applicable criteria/threshold should be confirmed and if necessary, the requirement for a localized liner in areas of coarser soil materials, as recommended by the authors, be extended to the entire pond	GHD	Based on the preliminary site grading plan the proposed base of the southern SWM Pond is expected to consist of dense to very dense sand soils, as such the liner recommendations provided in the geotechnical report must be extended over the entire pond. Groundwater seepage at lower elevations is likely based upon experience on the neighbouring site to the east, observations in our boreholes and groundwater seeps were observed in the forested area on the south slope of the development. The base of the northern pond is expected to consist of clayey silt and the need for liner is not expected. The need for a localized liner in areas of coarser material (if encountered) should be verified during construction. GHD is not aware of a Municipality-adopted hydraulic conductivity criteria for 'wet" SWM ponds. We agree with the recommended 10-6 cm/sec or less criteria.
Sec6.8	The report includes a recommendation to undertake a test pit program at the time of the tendering phase. Recommendation 6 - Stantec is in full agreement with the authors in this respect. Observations of seepage and groundwater with respect to dewatering/unwatering requirements and assessment of potential base heave in open excavations will be vital to confirming the geotechnical and civil design and to providing information for the Contractors to assess their means and methods of construction	GHD	We agree with the Stantec comment. No further response is required.
	Recommendation 7 - Google Earth imagery indicates that there is a development under construction to the immediate east of the subject property. In consideration of the reference(s) to potential concerns of "artesian" conditions associated with the underlying "aquifer" on the subject property, it is suggested that information from the neighboring development (both investigation and construction related information and documentation) may be of particular value in confirming the conditions likely to be encountered on the subject property.	GHD	Agreed. We have discussed the conditions involved in various aspects of the development to the east and noted that information in this response. It is our understanding that the soils were dry in the higher elevations towards Fallis Line and some seepage was encountered as construction activities progressed to the lower elevations of the development. The seepage water was handled using pumps and sumps. There were no flowing artesian conditions encountered at the adjacent development.

		Recommendation 8 - If there is no information available from the neighboring property it would be of value to advance a limited number of boreholes on me subject property to a depth consistent with confirming the underlying aquifer does not pose a concern for the proposed scope of development	GHD	A total of 26 boreholes were advanced on the property and 11 monitoring wells were installed. Based on the work completed and our understanding of the area in relation to adjacent developments, sufficient work has been completed to provide the opinion that the underlying aquifer does not pose a concern for the proposed scope of development. There were no flowing artesian conditions encountered at the adjacent development
Memo from Netta Benazon and Grace Ferguson, dated September 29, 2021		O.Reg. 153/04 requires that a legal survey be provided in the final Phase One ESA if it is used in support of a record of site condition (RSC). Since the property use was identified to be agricultural and residential, it would therefore not be changing to a more sensitive site use. Consequently, Stantec assumes that a RSC is not required and a legal survey is also not required to be included in the report.	GHD	We concur. A Record of Site Condition is not required, hence a legal survey is not included in the ESA.
		A response to the freedom of information (FOI) request to the Ministry of Environment, Conservation and Parks (MECP) and Technical Standards and Safety Authority(TSSA) for environmental records related to the Site had not been received at the time of issuance of the Report. Under O.Reg. 153/04, a Phase One ESA report is not considered final until responses have been received from these search requests. Since over six months have elapsed since the FOI requests were submitted, GHD should be contacted to inquire if responses to the FOI requests have been received.	GHD	As noted in the previous response, a Record of Site Condition is not required; however, the Regulation (O.Reg. 153/04) is used as a guide for this ESA. The Regulation indicates to “make all reasonable inquiries to obtain such of the following as are reasonably accessible and pertain, unless otherwise specified, to the phase one study area”. GHD obtained the TSSA search requests in documents dated March 10, 2021 and December 15, 2021. There were no fuel safety-related documents for the property. The response letters from TSSA are provided in Attachment A. GHD requested information from the MECP; however, no information was provided to GHD. A follow up request was conducted with the MECP. As noted in the email response to GHD, the MECP is still waiting for the program area within the Ministry to respond to our request. This is also provided in Attachment A. It is our opinion that we have made a reasonable attempt to obtain the MECP search results. As the lands assessed are predominantly agriculturally based, the information expected to be provided by the MECP is not expected to be materially significant to the overall environmental conditions of the property. It is our opinion that the conclusions of the ESA report remain valid without the MECP document.
	Phase 1 ESA	The Site was reported to be snow covered at the time of the site reconnaissance. This is not an allowable limitation under O.Reg. 153/04. It is unclear how GHD concluded that there were no signs of deleterious fill materials at the Site. Furthermore, stained surficial materials or stressed vegetation, if present, would not be observable under snow covered conditions. GHD should conduct a site reconnaissance when snow cover is not present to confirm that there are no obvious deleterious fill materials, stained surficial materials, or stressed vegetation at the Site.	GHD	GHD has conducted various inspections and work programs on the lands on multiple occasions. The undersigned has walked the property as recently as July 2021 and December 2021 without snow cover. It remains our opinion that no signs of deleterious fill, stained surficial materials or stressed vegetation were observed. Photographs are provided in Attachment B illustrating the property conditions on these dates.

		Although Stantec generally agrees that the historical rail line PCA is not likely to contribute to an APEC at the Site, GHD should further assess and provide rationale on the likelihood that the subsurface beneath the former rail line does not contain fill of unknown quality.	GHD	A follow up site reconnaissance was completed of the historical rail line corridor to confirm the absence of fill, rail line ties or ballast material. It is our understanding that the rail line was abandoned in 1920. On either side of the former rail line is forested. No discoloured soils or stressed vegetation was observed. The portion of the rail line within the area to be residentially developed was historically excavated (likely to maintain a gradual grade from top to bottom of the slope) and is lower than the surrounding areas. No rail ties or rail ballast material was observed within the rail line right-of-way. Where the rail bed was built up is within a heavily forested in this area. A number of areas of the rail bed area have been washed out and eroded over the years. The material observed was generally a brown siltysandy with gravel material. No deleterious fill, ballast or discoloured material was observed. Based upon our observations, the likelihood of significant impacts below the former rail line appears low. It remains our opinion that the historical rail line does not contribute to an APEC at the Site.
		Stantec considers that the heating oil AST, the historical release of heating oil, and the temporary construction fuel AST all represent PCAs, but agrees that the reported small quantity of fuel released, and the nature of the heating oil and temporary fuel storage, suggest that these do not contribute to APECs at the Site.	GHD	GHD agrees. No further response required.
		Stantec generally concurs with the report findings that no additional investigation is required and that the Report was in general compliance with O.Reg 153/04. Stantec recommends, however, that further justification be provided with respect to the surficial conditions at the Site and the potential presence of fill of unknown quality along the former railway line.	GHD	Based upon our responses provided above, it is our opinion that no further assessment is required and the Phase One ESA report is valid.
Memo from Roger Freymond and Grant Whitehead, dated October 14, 2021	Hydrogeological			
		Stantec is of the opinion that the scope of the hydrogeological assessment was suitable for the proposed scale of the development on municipal services.	GHD	We concur. No further response is required.
		Stantec is of the opinion that a multi-layered approach should be considered for mitigating the infiltration deficit that includes a number of the following alternatives:	GHD	GHD agrees. This approach or an approach that utilizes multi-layers can be implemented during the Function Servicing / Detailed Design stages.
	1.0.	Roof downspouts of the dwellings directed to pervious lawn areas and grassed swales, where feasible to promote infiltration.	GHD	
	2.0.	Where applicable, grassed swales should be constructed along side and rear lot lines	GHD	
	3.0.	Where possible, the grading of lots should be completed with increased topsoil depth (utilizing HSG A and B type soils1) to encourage infiltration and absorption.	GHD	
	4.0.	Construction of infiltration trenches to infiltrate a portion of the drainage area.		
		During the detailed design stage of the project, Stantec recommends that additional calculations / analysis should be performed to demonstrate that proposed post-development infiltration augmentation measures will be capable at meeting the infiltration deficits projected for the Site (i.e., what annual volume of infiltration can be expected from each measure to maintain pre- to post-development values)	GHD	We concur. No further action at this time.
		In summary, Stantec is in general agreement with the finding of this study, with the following exceptions:		

		As per the recommendation provided in the Geotechnical Peer Review, the reference to potential concerns of “artesian” conditions (Section 4.2.3) associated with the underlying “aquifer” on the subject property has not been investigated as part of this study. Stantec recommends that information from the neighboring development (both investigation and construction related information and documentation) be reviewed as this may be of value in confirming the conditions likely to be encountered on the Site.	GHD	As noted in previous responses, additional information was gathered from the development to the east and for the potential of flowing artesian wells. Artesian conditions were not encountered during construction activities to the east of this development. As noted, artesian conditions appear to correspond to groundwater found under pressure at depths that are 25 to 45 m below the ground surface of the proposed development. These depths would be sufficiently deep below the development that flowing artesian conditions are not expected to be encountered by the construction or development activities. It is our opinion that sufficient investigation was completed to address if there would be anticipated artesian conditions on this site as no flowing groundwater conditions were encountered within the drilled boreholes on the site to depths of 6.7 m.
		Stantec recommends that a multi-layered approach be used for mitigating the infiltration deficit as opposed to just rooftop water being directed to grassed surfaces. Additional measures that could be employed include the construction of grassed swales along side and rear lot lines, grading with increased topsoil depth, and construction of infiltration trenches. Although increased topsoil depth is recommended by GHD, this approach is most effective at enhancing infiltration potential when HSG A and B soils are utilized. In addition, ongoing data collection at the Site should be used to refine the recommendations in this report during detailed design, as appropriate.	GHD	Comment only – no further response at this time. Refining of the recommendations to be completed at the detailed design stage.
Memo from Arash Mirhoseini -TIS. Dated Nov. 10, 2021		**TIS**		
	2.1.	Review of Section 2.1 Study area found that four study intersections along CR10 corridor were selected in this TIS report. It is recommended that a clarification on why the intersection of Tapley Quarter Line and Fallis Line is not included should be included in this TIS since it provides a direct access to/from Highway 115.	Asurza	It was not included because the intersection attracts very little traffic, only few trips were originally estimated in that direction. Recent counts for this intersection were performed to show the same.
		This TIS selected two future horizon years in 2025 and 2030. It is recommended that an additional opening year +5 years horizon, which is 2035 horizon, should be included, unless an approval through a Term of Reference (“TOR”) is provided.	Asurza	The concept for 5 years after build-out normally applies for developments completed not to far in time, in such a way that the 5 years after build-out doesn't fall beyond the 10 years from now. As noted in the "Transportation Impact Analysis for Site Development" published by the ITE, detailed analyses should not be required for horizon years beyond 10 years in the future. There are far too many variables that can change over time and preclude the development of accurate traffic forecast. Evaluate traffic operations for the horizon year 2035 is meaningless to provide recommended actions; the traffic standards and methodologies are not proper for such a long range.
	2.2.	In Section 2.4 Traffic Data of the TIS report, it was mentioned that the 2018 turning movement counts for the CR10 & CR21 intersection were provided by the County of Peterborough and 2021 field traffic counts for the CR10 & Centennial Lane intersection were collected by the Consultant. However, the details of these data collections were not included in Appendix B Traffic Data and Data Projections in this TIS report. Also, this report indicated that the 2021 field traffic counts were used to estimate the intersection without the consideration of Covid-19 impact. It is recommended to provide justification for this assumption.	Asurza	The CR10/Centennial Lane intersection was originally included because it was planned a road connection with the proposed developments east of CR10. Those proposed developments will no be connected with the adjacent roads; therefore, the CR10/Centennial Lane intersection is not a key intersection anymore. Our collected traffic data is included in the updated report. Regarding Covid, we used as much as possible historical data pre-covid; for some intersections where no historical data was available, we made all the efforts to collect data outside of the most restrictive periods and the collected data is very minor in comparison to the available data. The general concept is to estimate a constant growth in traffic over time assuming no impacts to traffic due to restrictions imposed by the province to control the virus.
		Some minor existing traffic volume discrepancies were identified in the traffic volume exhibits, after comparing to the traffic counts in Appendix B. For example, in Exhibit 4: Existing AM Peak Hour Traffic Volumes (2021), at the Larmer Line & CR10 intersection. The volume of northbound left turn movement should be 9 vehicles/hour, not 6 vehicles/hour.	Asurza	Typo corrected in the updated report.

	In Appendix B - CR10 / Centennial Lane existing peak hour traffic volume table, since the traffic counts at this intersection were collected in 2021, the volume type in this table should not be “Projected”. Also, under Section 2.5 Existing Traffic Volumes of the TIS report, it was assumed Tower Hills South and Millbrook Community Centre were both fully built out by 2021. Thus, in this table, it is not clear if the 2021 traffic counts already include the trips generated by these two developments or not. We recommend further clarifications to be provided.	Asurza	The CR10/Centennial Lane is not part of the involved intersections in the updated report; therefore, the comment is not relevant anymore. However, the Fallis Line/Tapley Quarter Line intersection was now included and field counts were completed in 2021. The 2021 includes already the Tower Hill South and Millbrook Community Center trips.
	In Appendix B - CR10 / CR21 existing peak hour traffic volume table, it shows that no Saturday Midday traffic counts were collected in 2018 by the County, thus, it is not clear how 2021 Saturday Midday projected traffic volumes were established.	Asurza	Traffic data for the CR10/CR21 was field collected in 2020 for Saturday mid-day, the table was updated and the data included in the updated report.
	In this TIS report, “Millbrook Development Phase 2 – Traffic Impact Study for the Tower Hill Development Ltd.”” prepared by JD Engineering was mentioned several times as a reference to provide information (e.g., development names, site generated trips, etc.) on some developments which are adjacent to this proposed residential site. It is recommended to include this full JD Engineering report as an appendix in this proposed residential TIS report or excerpts including referenced information to explain the details of trip generation based on these adjacent developments along with the trip generation volumes directly used in the volume tables in Appendix B.	Asurza	Since there are different developments, the excerpts may not convey the complete information for peer review, we can provide an electronic copy of the complete traffic report prepared by JD Engineering; please request the same by email at martin@asurza.ca.
	In Appendix B - CR10 / Fallis Line existing peak hour traffic volume table, for 2021 trip generation by Millbrook Community Center, there are some northbound left-turn trips but there are no eastbound right-turn trips. It is recommended to check if the volumes accurately used in the study.	Asurza	The column noted as eastbound left turns (7 for the am, 14 for pm and 7 for sat) should be for the right turns. Left turn volumes should be "0". The updated report still has this transposed information; however, the volumes are very minor to change the overall results. A memo to address this comment has been prepared (Dated Feb 2 2022).
	A 2% annual growth rate was applied in Appendix B Traffic Data and Data Projections of this TIS report to project the existing 2021 and future 2025 and 2030 background traffic volumes based on the collected traffic counts at the study intersections. Even though this growth rate was referred to the JD Engineering TIS report, it is recommended to provide more information on how to calculate this rate or based on what references.	Asurza	Our company has been involved on different traffic studies within the County of Peterborough; it has been constantly mentioned that if adjacent proposed developments are included in the analysis a growth factor of 2% can be used; otherwise the 2.5% growth factor is to be used. Since we included other proposed developments in the area, the 2% has been part of the analysis.
2.3.	Please revise the name of Appendix C in this TIS report to “Synchro Reports Existing Conditions and Year 2025”.	Asurza	Appendix name updated.
	Based on the Synchro HCM reports appended to the report, a peak hour factor of 0.92 was used for all study area intersections. The report, however, does not clarify whether this factor was calculated from 15-minute turning movement counts or an assumed factor representative of the operations in the area. The TIS report does not mention if the peak hour factor was discussed with and agreed upon with the County or reviewing agency. This issue also exists for all following future scenarios.	Asurza	Yes, the used 0.92 PHF represents the overall operations in the area. As FYI, the peak flow rate for the highest 15 min. period (PHF) varies from 0.81 to 0.97.
	By using Google Map’s “Measure Distance” tool, the storage lane length and taper length for the southbound left-turn movements at the CR 21 and CR 10 intersection are approximately 14m and 20m. Based on the Synchro outputs for the existing conditions in 2021 in Appendix C, the 95th queue lengths for southbound left-turn traffic are 16.9m, 29.8m and 18m during AM peak hour, PM peak hour and Saturday Midday peak hour. All are longer than 14m. The issue of potential vehicle spillback to the southbound through/right-turn shared lane was not identified in the TIS report.	Asurza	The updated report missed to recommend the extension of the southbound left turn lane. A memo to address this comment has been prepared and is dated February 2 2022.
3.1.	As shown in Appendix B Traffic Data and Data Projections in this TIS report, for the calculation of total 2025 and 2030 background volumes, the trips generated by some site-adjacent developments (e.g., Development “A”, “B” and “C”) between 2021 and 2030 were added to the projected background volumes, including some minor values. It is recommended to provide more details to support how these minor site generated trip volumes were calculated.	Asurza	Calculations and additional details for estimation of development "C" (Commercial and Residential East of CR10) is included in the updated report. For other developments in the area, please refer to the traffic study report prepared by JD Engineering.

	A traffic volume typo was found in Exhibit 12: Background PM Peak Hour Traffic Volumes (2030) at the Larmer Line & CR intersection. Specifically, for the southbound through traffic volumes, based on the calculation from Appendix B, the volume number should be 534, instead of 435. This wrong traffic volume was also used in the Synchro that will impact synchro outputs reported for this intersection. It is recommended to recheck and revise this error in the exhibits of the TIS report for both background and total traffic volumes during 2030 PM peak hour, as well as corresponding synchro files and synchro outputs in Appendix E Synchro Reports Background Horizon Year 2030 and Appendix H Synchro reports Total Horizon Year 2030.	Asurza	Volumes have been updated.
3.2.	Like the issue identified in Section 1.5, at the CR 21 and CR 10 intersection, based on the Synchro outputs for the future background traffic in 2025 in Appendix D, the 95th queue lengths for southbound left-turn traffic are 21m, 27m and 23.7m during AM peak hour, PM peak hour and Saturday Midday peak hour; based on the Synchro outputs for the future background traffic in 2030 in Appendix E, the 95th queue lengths for southbound left-turn traffic are 27.1m, 40.2m and 24.9m during AM peak hour, PM peak hour and Saturday Midday peak hour. All are longer than the existing 14m storage lane length. The issue of potential vehicle spillback to the southbound through/right-turn shared lane was not identified in the TIS report.	Asurza	The updated report missed to recommend the extension of the southbound left turn lane. A memo to address this comment has been prepared and is dated February 2 2022.
4.1.	The trip generation in Table 5: Trips Rates and Trips Generation per Land Use of this TIS report showcases discrepancies in Directional Distribution (i.e., 50% entering and 50% exiting) applied for Multifamily Housing (Low Rise) – ITE Code 220 by comparing the ITE 10th edition Directional Distribution (i.e., 54% entering and 46% exiting) for this land use.	Asurza	There is no discrepancies with the Land Use 220. The ITE for the Multifamily Housing (Low Rise) for Saturdays Peak Hour of the Generator(dwelling units as independent variable) doesn't show directional distribution; therefore, the directional distribution of 50% and 50% was adopted to be in line with the Multifamily Housing (Mid Rise).
4.2.	Under Section 4.3 Trip Distribution/Assignment in this TIS report, directional traffic patterns were estimated from the traffic data report obtained from the County and turning movement count reports included in the JD Engineering's TIS report. However, no details of trip distribution based on this information were included as an appendix in this TIS report. It is difficult to understand the methodology used to calculate all trip distribution percentages shown in Appendix F Trip Distribution without having access to the source information. It is recommended to further clarify the methodology applied in the calculation of the overall trip distribution.	Asurza	The methodology for trip distribution is based on the trips entering and leaving the study area which was given a weight in terms of percentage, then, the trips are proportionally distributed at intersections based on the current patterns (methodology explained in the ITE Transportation and Land Development, 2nd Edition). While the methodology is simple, the complexity is introduced due to the estimated diverted trips and further pass-by trips to affect the CR10/Fallis Line intersection only (for details about diverted and pass-by trips, refer to the ITE Trip Generation Handbook). Additionally, the proposed commercial development, used as a background in the study, has now a right in/out access next to CR10 and a full movement access on Fallis Line. To provide with a better picture and details, we have been prepared different layers for the trip distribution (i.e. diverted trips, pass-by, primary trips, etc.), colored in green and red to identify trips IN and trips OUT, and included in the overall excel tables shown in the appendix. All these layers are added together to have an overall distribution of trips. We believe that the trips generation table for the Commercial and Residential East of CR10 will also help and is now included in the memo.
5.1.	As mentioned in Section 5.1 Future Traffic Volumes of this TIS report, future total traffic volumes for the two horizon years are obtained by adding the background traffic plus the trips generated by the proposed developments. Since some potential discrepancies may exist for the calculation of background traffic volumes and volumes generated by some site-adjacent developments, as mentioned in the previous sections of this letter, it is recommended to revisit and update total traffic volumes presented in Exhibit 20 to Exhibit 25, if needed.	Asurza	Updates have been completed.

5.2.	Section 5.4 of the TIS report indicated that traffic signalization was introduced at the CR10 & Larmer Line and the CR10 & Fallis Line intersections in both 2025 and 2030. However, no traffic signal warrant analyses for these two locations were provided in this TIS. It is recommended to conduct the traffic signal warrant analyses for the 2025 and 2030 background and total traffic scenarios to confirm the potential traffic signal installation timeline, and add the analysis details, as well synchro outputs based on this improvement for these scenarios, in some new appendices.	Asurza	The stop condition at the CR10/Fallis Line intersection is largely saturated with operational problems when including the proposed developments; this intersection is immediately recognized for the need of an additional or different type of control to manage the intersection; in this case, the stop control doesn't support anymore the future conditions and traffic signals was recommended. In the case of CR10/Larmer Line intersection, the condition is not obvious, and signal justification procedure was prepared and included in the appendix. It has been noted that although the justification is not mathematically met, it is very close to be warranted (compliance at 100% for the 7 highest hours for 'Delay to Cross Traffic'). As explained in the OTM, the decision or not to install a traffic signal is not to be blindly followed by the warrant procedure, the justification must be used in combination with traffic engineering experience as well as professional judgment. It is our advice to include traffic signals due to the operational issues for the side roads, the operational speed of thru movements at this intersection which lead to safety issues.
	In Section 5.4 of this TIS report, some auxiliary lanes at the CR10 & Larmer Line and the CR10 & Fallis Line intersections were recommended for the total traffic scenarios. The left and right turn lane warrants for these lanes need to be provided. It will also be beneficial to see if traffic operational performance will be acceptable (e.g., LOS D or better) with the traffic signal installation only for all background and total traffic scenarios.	Asurza	The left turn lane warrant for signalized intersections are different for unsignalized intersections. For signalized intersections, the OTM has a general review which states that if left-turning volume plus the opposing volumes > 720 vehicles per hour, a left turn phase may be justified (ta have a left turn phase, a left turn lane is required). The CR10/Larmer Line intersection indicates that a left turn lane will be required. At CR10/Fallis Line intersection due to the projected substantial number of southbound left-turning movements (more than 200 veh once the commercial development is in place) a left turn is needed to avoid hold thru traffic.
	Based on Exhibit 3: Existing Lane Configuration at Intersections in this TIS report, at the Fallis Line & CR10 intersection, the exclusive northbound left turn lane exists in 2021. Thus, it should not be a new auxiliary lane as recommended in Section 5.4 to improve intersection operational performance.	Asurza	The northbound left turn lane exist already but it was proposed a reconfiguration (named as 'new' because the reconfiguration) due to potential entrance to the commercial block. Currently, the commercial block entrance is planned to be a right in/out access only; therefore, there is no need to reconfigure the northbound left turn lane anymore.
	Like the issue identified in Section 1.5, at the CR 21 and CR 10 intersection, based on the Synchro outputs for the total traffic in 2025 in Appendix G, the 95th queue lengths for southbound left-turn traffic are 27.2m, 35m and 24.8m during AM peak hour, PM peak hour and Saturday Midday peak hour; based on the Synchro outputs for the total traffic in 2030 in Appendix H, the 95th queue lengths for southbound left-turn traffic are 22.2m, 42.3m and 28.8m during AM peak hour, PM peak hour and Saturday Midday peak hour. All are longer than the existing 14m storage lane length. The issue of potential vehicle spillback to the southbound through/right-turn shared lane was not identified in the TIS report.	Asurza	Addresses in the updated report.
	As shown in in Appendix G and Appendix H, a 60m eastbound left-turn storage length and a 30m northbound left-turn storage length at the Fallis Line & CR10 intersection were recommended. However, no left-turn lane warrant analysis was provided in this TIS to support these proposed auxiliary turning lanes. In addition, the Synchro outputs in these two appendices show that the 95 the queue lengths for these movements during different peak hours are all longer than the recommended storage lengths. This issue was not cleanly explained in the TIS report.	Asurza	Addresses in the updated report.
6.0.	Under Section 6 Conclusions/Recommendation of this TIS report, the details for auxiliary lanes at the CR10 & Fallis Line and the CR10 & Larmer Line Intersections were introduced. However, the proposed exclusive turn lane storage lengths and taper lengths for these two intersections are different from the storage lengths and taper lengths set up in the corresponding Synchro files, which were shown in Appendix G and Appendix H. It is recommended to confirm these lengths with the consistency anywhere in this TIS.	Asurza	Addresses in the updated report.

		Based on the above, this TIS report prepared in support of the proposed residential development (West of CR10) was found to contain undocumented assumptions and missing calculations, which may have an impact on the results of the intersection operations analysis of the study area intersections and future transportation requirements. As a result, the impact of the proposed residential development on the adjacent road network may not have been satisfactorily assessed. It is recommended for the Peterborough County to request a detailed comment response or an update to the TIS report from the applicant to address the issues brought to light in this Peer Review.	Asurza	Additional and more detailed information has been provided in the updated report.
ORCA				
Cover letter from Matt Wilkinson, Dated Sept 30, 2021	Planning			
		Site Location and Context Technical review of available information, indicate that steep slopes, floodplain, wetlands, watercourses, significant woodlands, and significant wildlife habitat are present on portions of the property and the adjacent lands.	GHD (EIS)	Noted.
		The subject property is directly to the east of an existing residential subdivision. A future subdivision has not yet been built to the north and Agricultural lands exist to the west. The easternmost and southernmost portions of the Site are located within the Millbrook Settlement area; the western portion is located outside of the Settlement Area Boundary.	TBG	Noted.
		ORCA Application Review Otonabee Conservation's role in this application was to review for consistency with Provincial Policy Statement Sections 3.1, 2.1 and 2.2 and for compliance with ORCA Regulation 167/06. The area outside the Settlement Area was reviewed for conformity to Sections 4.2.3 and 4.2.4 of the Growth Plan for the Greater Golden Horseshoe. These roles are highlighted below in accordance with our mandate and policies and now offer the following comments.	TBG	Noted.
	1.0.	Otonabee Conservation has reviewed this application through our delegated authority from the Province to represent provincial interests regarding natural hazards identified in Section 3.1 of the Provincial Policy Statement (PPS).	TBG	Noted.
		Hydrologic features with associated floodplain, and steep slopes were found on the subject site. Section 3.1 of the PPS directs development outside of hazardous lands and prohibits development within a floodway. A combined slope stability/ erosion hazard study is required to confirm the Southern stormwater management (SWM) block is not located within an erosion hazard.	GHD	Refer to the report completed by GHD, entitled "Erosion Hazard Limit and Slope Stability Assessment, Proposed Subdivision Development, 787 and 825 Fallis Line, Millbrook, Ontario", dated December 15, 2021. Refer to Attachment C.
		Technical issues have been identified and are articulated in the accompanying memo (Engineering Review dated September 30, 2021). Until these issues are satisfactorily addressed, consistency with PPS Section 3.1 and compliance with ORCA development policies have not yet been demonstrated.	GHD	See responses in this table and within supporting response to comments memorandums.
	2.0.	The Authority has reviewed the application as a service provider to the County of Peterborough and the Township of Cavan Monaghan, in that we provide technical advice on natural heritage matters through a Memorandum of Understanding.	TBG	Noted.
		As noted, there are natural heritage features of significance present on the subject property and the adjacent lands.	GHD (EIS)	Acknowledged
		ORCA technical staff identified some inconsistencies in the characterization of the wetland and woodland habitats and their boundary identification.	GHD (EIS)	Acknowledged, see updated figure
		The current design indicates the placement of the northern SWM, associated road and lot limits may be within the wetland boundary. ORCA recommends that development and/or site alteration not be permitted within 30 metres of the boundary of a non-provincially significant wetland and be zoned appropriately to limit development.	GHD (EIS)	Discussions with Jasmine Gibson, ecologist from ORCA determined the small wetland near the road has been impacted hydrologically already and the removal and compensation is feasible. Wetland compensation details will be outlined in a Wetland Compensation Report that will be prepared and submitted to ORCA for review at the detailed design stage. The preliminary plan is to compensate for the loss in an area outside the development envelope, below top of bank and adjacent to existing wetland in the southwest corner of the property. That concept diagram was shared with ORCA and is being submitted with this package.
		Please review the accompanying technical memo (Ecological Review dated September 27, 2021). This may result in the possible realignment of the site design.	GHD (EIS)	Acknowledged

		Until these issues are satisfactorily addressed, consistency with Section 2.1 and 2.2 of the PPS, conformity with 4.2.3 and 4.2.4 of Growth Plan for the Greater Golden Horseshoe and compliance with ORCA development policies have not yet been demonstrated.	GHD (EIS)	Acknowledged, see updated figure and responses within this document.
	3.0.	Otonabee Conservation has reviewed the application through a regulatory lens. Under Ontario Regulation 167/06, this Authority's 'Development, Interference with Wetlands and Alterations to Shorelines and Watercourses' regulation under Section 28 of the Conservation Authorities Act, any development, interference with or alteration within a flooding hazard, erosion hazard, watercourse, wetland and their adjacent lands/areas of interference requires a permit from the Authority. When an application is circulated under the Planning Act will also require an Otonabee Conservation permit, it is the practice of the Authority to establish the policy requirements of both processes during the planning stage.	TBG	Noted.
		The proposed development is subject to Ontario Regulation 167/06, Otonabee Conservation's "development, interference with wetlands and alterations to shorelines and watercourses" regulation. Otonabee Conservation regulates development within 30 metres from the boundary of non-provincially significant wetland, and 15 metres from a flooding/ erosion hazard. The stormwater management plan was also reviewed in accordance with TRCA's regulatory requirements to ensure that an ORCA permit can be issued.	VALDOR	Noted.
		The outstanding information noted above requires that theses features/hazards are satisfactorily identified to assess the extent of the ORCA regulated area. The noted concerns regarding slope stability, wetland identification, and impact on hydrology must be satisfactorily addressed in order for Otonabee Conservation to be in a position to issue a permit.	GHD GHD (EIS)	Noted. See Responses in this document.
	4.0.	Otonabee Conservation has reviewed the application in terms of the Revised Trent Source Water Protection Plan (SPP), prepared under the Clean Water Act. The SPP, intended to protect Ontario's drinking water at its source, came into effect on January 1, 2015 and contains policies to protect sources of municipal drinking water supplies from existing and future land use activities.	VALDOR/GHD	Noted.
		The application was also reviewed in consideration of the SPP. It was determined that the subject property is not located within an area that is subject to the policies contained in the SPP.	TBG	Noted.
Engineering Review Memo from Jane Cho, dated Sept 30, 2021	**Engineering**			
	1.0.	Figure 5B shows that a proposed sanitary pipe from the wastewater treatment plant is connected to a proposed storm sewer pipe in the post development condition. This may increase in the total outflow from the site. How does additional flow impact the downstream capacity of the south tributary of Baxter Creek?	VALDOR	From the wastewater flow calculations (Table C1 in Appendix C), the peak total sanitary flow is 50.12 L/s (0.050 cms). It is noted that discharge from the sanitary treatment plant will be lower that this flow, but as demonstrated on Table 4B, the post-development peak flows accounting for this conservative peak sanitary flow do not exceed the pre-development flow targets.
	2.0.	Please provide preliminary calculations and break down the north and south drainage areas how imperviousness of each drainage area has been determined. The imperviousness (TIMP/XIMP, north: 65%/50% & south: 60%/45%) seems low for subdivision development.	VALDOR	A complete breakdown of each proposed land use type is provided in Tables E.5-A & E.5-B, using the runoff coefficients based on the City of Peterborough's engineering standards (these are more conservative that the MOE's standards which the Township references). Based on this table, the imperviousness for the northern area (Catchment 1-201) is 72% (an increase from 65%). In order to be conservative, this number has been increased to 75%. The imperviousness for the southern area (Catchment 2-201) is 56% (a decrease from 60%). However, in order to be conservative, this number has been increased to 60%.
	3.0.	Please provide detailed output files from the VO model. The summary output within the report doesn't provide any basic input information.	VALDOR	The detailed VO model output files have been provided in Appendix E.
	4.0.	Please provide a stage-storage-discharge table for each north and south SWMP.	VALDOR	The stage-storage-discharge tables for both SWM ponds have been provided in Appendix E (Tables E.6-A & E.6-B). Please note that these tables had already been included in the previous submission, and that there have been no changes to the pond design.

5.0.	The Preliminary Site Servicing and Grading Plan does not provide any grading information in association with the wastewater treatment plant, south swm pond, the berm width, the berm slope and extent of fill. a) Please provide existing and proposed elevations for the wastewater treatment plant, the south swm pond, berm and side slope. b) All construction including filling will be done outside the wetland buffer.	VALDOR	The preliminary Site Servicing and Grading Plan has been revised accordingly.
6.0.	All flows from the foundation drains need to be included in the final calculations for matching post development peak flows to pre-development rates at each calculation/comparison point.	VALDOR	The foundation drainage discharge (assuming no flow reduction to be conservative) has been added to the peak post-development flows for both the north and south drainage areas. As shown in Tables 4A & 4B, the post-development flows do not exceed the pre-development flow targets.
7.0.	Please delineate wetland boundaries and 30m buffer. All development should be outside of the buffer.	VALDOR	The wetland boundary and 30 m buffer have been delineated on the plans. All development is located outside of the buffer.
a.	The placement of the north swm pond and associated road and lot limits are on top of and within the wetland boundary and required buffer. Please review the location of the pond, road and lots with ORCA Ecology comments of the EIS. Development layout changes may be required.	GHD	The northern wetland pocket was discussed with ORCA. It was agreed that it is no longer viable and that on-site compensation is proposed in the south west corner of the property outside of the development envelope. The exact layout and design will be completed as a condition of approval.
b.	The headwall and outlet pipe for the South SWM pond is delineated within the wetland boundary and 30m buffer. Generally, this is not allowed due to unnecessary disturbance to the wetland and buffer.	VALDOR	Headwall and outlet pipe were relocated outside the 30m buffer.
i.	Please modify the design to have the headwall, pipe and vegetated filter strip (Section 4.5.12 MOE 2003 swm manual) located outside the wetland buffer.	VALDOR	As per above.
ii.	What requirements does MECP have regarding the outlet pipe location in regard to the discharge from the wastewater treatment plant?	VALDOR	A complete design and MECP Application will be submitted to the Ministry at detailed design stage. Construction won't start until ECA is granted.
8.0.	The south pond and the proposed wastewater treatment plant is located on steep slopes associated with Baxter Creek. Please provide a combined slop stability study and erosion hazard limit for the south pond and wastewater treatment plant including, but not limited to cross-sections of the existing slope, all proposed slope modifications including fill placement, weight loading for the swm pond (full) and all proposed wastewater treatment plant structures (full built-out condition full of water), etc.	GHD	Refer to the report completed by GHD, entitled “Erosion Hazard Limit and Slope Stability Assessment, Proposed Subdivision Development, 787 and 825 Fallis Line, Millbrook, Ontario”, dated December 15, 2021. Refer to Attachment C.
9.0.	North pond		
a.	BH1D-21 shows the water level at 0.2mbgs on March 17, 2021. Water seepage during drilling and water level upon completion were observed at 4.6m and 3.7m respectively. Is this assuming piezometric pressure? Please clarify.	GHD	The water level of 0.2 mbgs at BH1D-21 appears to be a piezometric / potentiometric surface as the well is screened between 3.0 and 6.1 mbgs and water seepage was observed at 4.6 mbgs during drilling. This water level represents a surface to which the water would rise when the seepage zone is contacted. Provided there are no other water bearing sand seams at this location, and the pond stays above 4.6 mbgs where the groundwater seepage was encountered, groundwater is not expected.
b.	The bottom of the SWM pond elevation is designed at 245.0m. Based on the well record and ground elevation, the groundwater elevation and bottom of pond are within the required 1m separation.	GHD	Based upon an elevation of 248 masl at BH1D-21 and a depth of 4.6 mbgs where groundwater seepage was observed within the till, the elevation where groundwater was noted is about 243.4 masl or about 1.6 m below the bottom of the proposed pond elevation of 245 masl.

i.	Since drilling was done in March, does the groundwater elevation accurately define the maximum elevation?	GHD	A water level was collected on March 17, 2021 as well as additional water levels in July 2021. The March water level is the highest recorded from our measurements and reasonably represents a high water level. However, this water level is, in our opinion, a function of the drainage occurring in this north pond area. The north pond is in an area of lower elevation with overland flow draining to this area. There did not appear to be an outlet for water to drain from this area resulting in a poorly drained, saturated area. The soils observed during drilling at BH1S-21 to a depth of 2.4 mbgs was topsoil underlain be clayey silt till. No groundwater seepage from the shallow till was noted. The deeper borehole drilled in the north pond encountered groundwater seepage at about 4.6 mbgs. Improved surface drainage in this area would result in a reduction of standing surface water that infiltrates the shallow till soils in this area and over time, the low permeability soils of this area would be expected to deplete of water.
ii.	Does the pond require a liner to separate stormwater from groundwater?	GHD	It is GHD's opinion that there is no permanently saturated, shallow aquifer within this proposed SWM pond location. Based upon our boreholes in the proposed pond area, groundwater seepage should not be encountered provided the pond stays above approximately 4.6 mbgs. The base of the northern pond is expected to consist of clayey silt and the need for liner is not expected. The need for a localized liner in areas of coarser material (if encountered) should be verified during construction.
c.	Please confirm the seasonally high groundwater elevation for the proposed north pond.	GHD	Refer to response a).
10.0.	South pond		
a.	Table 5.2 indicates the water level observed at 2.0 mbgs on March 17, 2021. However, it does not reflect the borehole log in BH11-17. Please review and correct it.	GHD	The corrected borehole log is provided in Attachment D of this response letter.
b.	The bottom of the SWM pond elevation is designed at 243.0m. When the water level is approximately at 244.5m, it is likely that the pond bottom will become submerged. Please identify any impact on the groundwater level based on the construction of the pond.	GHD	It is GHD's opinion that the hydraulic conditions are discontinuous across the site. In the area of the south pond, seepage was noted at approximately 2.3 m (248.4 masl) at BH10-17; approximately 4.6 m (241.9 masl) at BH11-17, and approximately 5.2 m (240.9 masl) at BH12-17. It is our opinion that there is no permanently saturated, shallow aquifer across the site, within this proposed SWM pond location; however, thin sand seams with water may be encountered based upon our borehole observations and groundwater seeps were observed in the forested area on the south slope of the development. Groundwater within these thin sand seams may deplete over time. The proposed base of the southern SWM Pond is expected to consist of dense to very dense sand soils, as such the liner recommendations provided in the geotechnical report must be extended over the entire pond. A properly lined SWM pond will mitigate any impact to the groundwater conditions at the Site. Additionally, the bottom of the south pond is about 15 to 40 m above the depths where flowing groundwater was encountered within artesian wells in the Village of Millbrook south of the site.
c.	Please confirm the seasonally high groundwater elevation for the proposed south pond.	GHD	Groundwater levels from BH11-17 from March 17, 2021 were observed to be at approximately 244.50 masl. On July 10, 2021 the water level was 243.2 masl. The groundwater elevation is interpolated from a ground surface elevation from ODTM Lidar derived data.
	We recommend the following comments be addressed at detailed design;		

	11.0.	Water balance. Downspout disconnection, top soil depth and reducing grades are standard design practices. All low impact development practices to meet water balance criteria will be directing surface water into the infiltration (e.g., soakway pits, infiltration trenches, etc.). We do not accept the downspout disconnection, top soil depth and reducing grades. Please adjust the design accordingly.	VALDOR	It is acknowledged that downspout disconnections, increased top soil depths and reduced lot grades are standard design practices. However, the ability of an LID to infiltrate water is not related to it being considered a standard practice or not (if infiltration trenches were considered standard, would they therefore not count towards infiltration?). We maintain that these LIDs should be included as part of the water balance analysis in order to accurately calculate the post-development water balance. That being said, however, we have provided a detailed calculation of the infiltration anticipated due to downspout disconnections (refer to Section 5.4.3), following the criteria established in the TRCA LID Manual. Based on this calculation, the anticipated infiltration from downspout disconnections is approximately 14,037 m3/yr which meets approximately 50% of the infiltration deficit under post-development conditions. The remaining deficit (approx. 13,648 m3/yr) will be mitigated through enhanced infiltration LIDs such as infiltration trenches or soakaway pits. Given the relatively shallow groundwater depths within the subject development, the location where infiltration trenches or soakaway pits can be implemented in order to achieve the minimum required separation to groundwater will be highly dependent on the final grading design, which will be evaluated in greater detail at detailed design.
	12.0.	A borehole location plan is missing in Appendix H. Please include in the report.	GHD	An Appendix H is not included in GHD's Geotechnical and Hydrogeological Repots. A borehole location plan is provided as Figure 2 of the Geotechnical Investigation Report and Figure 3 of the Hydrogeological Assessment Report.
	13.0.	As recommended in the geotechnical report, SWM berm's stability analyses will be demonstrated at the detail design or when grading plans are finalized.	GHD	Refer to the report completed by GHD, entitled "Erosion Hazard Limit and Slope Stability Assessment, Proposed Subdivision Development, 787 and 825 Fallis Line, Millbrook, Ontario", dated December 15, 2021. The report is provided in Attachment C.
	14.0.	It is unclear how overland flows from the north drainage are will be conveyed into the proposed North SWM Pond. Will there be an overland flow route(s) incorporated with rip-rap erosion protection within Block 380 that directs overland flows from the easement between Block 64 and 65 to the North SWM pond?	VALDOR	We confirm that there will be an overland flow channel through Block 381 to the North SWM Pond. The requirement for erosion protection will be evaluated at detailed design.
	15.0.	Figure 5A does not show any grades within the North pond. Please provide details of grades.	VALDOR	Figure 5A has been revised accordingly.
	16.0.	The outlet pipe from the North SWM pond is shown connecting to a proposed natural channel. At detail design, the outlet will be confirmed based on what exists in the field and a proper outlet design will be provided.	VALDOR	The tie-in elevations at the outlet of the North SWM Pond will be confirmed on-site at detailed design. It is anticipated that the proposed channel on the north side of Fallis Line will have been constructed prior to a detailed design submission.
	17.0.	As per Table 5B, the 100-year storm elevation is at 246.78m. The 100-year storage elevation shown in Table E.5-B appears to be incorrect. Please review and correct it.	VALDOR	The tables have been revised accordingly.
	18.0.	Please provide a 100-year storm elevation in the South pond on Figure 5B.	VALDOR	Figure 5B has been revised accordingly.
	19.0.	Erosion and Sediment Control Plans (ESC) will be required at detailed design. Please include the construction phasing and timing with regard to site stripping & rough grade, filling of site, installation of services.	VALDOR	ESC plans to be included at detailed design stage along with phasing plans and timing for construction.
Ecology Review of EIS memo, from Jasmine Gibson, dated	Ecology			
		According to available information, Baxter Creek tributaries and associated valley lands, seepage areas/seeps, significant woodland, wetlands, as well as associated habitat for brook and brown trout, significant wildlife (special concern), and threatened and/or endangered species traverse portions of the property and adjacent lands	GHD (EIS)	Acknowledged

Sept 27, 2021		Contrary to the EIS, the Site Plan and Functional Servicing Report suggest that some of these features will be impacted by development and site alteration, e.g., SWM infrastructure. As a result of this discrepancy, natural heritage inventories and impact assessments are incomplete or missing from the 'preliminary' EIS in support of SWM infrastructure, and other proposed disturbances, within natural heritage and water features – this is not consistent with policy.	GHD (EIS)	Acknowledged
	1.0.	Core Area/NHS Feature Constraint Map		
		Figure 1 displays the natural heritage features mapped by GHD October 4, 2018, and June 12 and 24, 2020, for 787 and 825 Fallis Line (Figure A). The EIS also references a previous natural heritage features mapping exercise conducted by Beacon in 2017 for 825 Fallis Line (Figures B & C), which is not consistent with GHD findings. Technical staff also note the following discrepancies or information gaps in the EIS:	GHD (EIS)	Addressed below
	a)	GHD mapped woodland cover as 'upland' forest ecosites, i.e., ELC-FOM7-2 (community 2) and ELC FOC4-1 (community 3) in 2020. Whereas Beacon mapped portions of GHD's ELC communities 2 and 3 as 'wetland' (e.g., SWC3-1, SWM4-1, and SWM6-2), with a similar plant list to Appendix A. Other technical work within the area appears to support Beacon's findings.	GHD (EIS)	As mentioned in the EIS report, seepage areas were detected in several areas among Community 3, however community 2 and 3 were dominated by upland species. GHD's followed OWES techniques to delineated wetland communities within the property limits, community 2 & 3 were not dominated by or contained 50% or greater wetland vegetation.
	b)	GHD plant list (Appendix A) identifies the following wetland indicator plants associated with the understory or ground cover around watercourses and seepage areas/seeps within Community 3: sensitive fern, marsh marigold, watercress, red-osier dogwood, spotted jewelweed, spotted joe-pye-weed, and common duckweed.	GHD (EIS)	Acknowledged. As mentioned within the EIS seepage areas were detected within community 3. Community 3 surrounds the watercourse on the property. As there was no separate vegetation community completed for the watercourse due to the sparsity of vegetation found here, any vegetation species (watercress, marsh marigold, common duckweed)identified in the watercourse were likely captured within community 3.
	c)	EIS Sections 4.2.5 and 5.2 confirm seeps/seepage areas (site of emergence of ground water or hydric soils) are located throughout Communities 3 and 4.	GHD (EIS)	Acknowledged.
	d)	Discussions with GHD indicates Community 3, as well as portions of Community 2, support hummock (upland) and hollow (lowland) microtopography, with the upland areas surrounded by lowland or seepage areas associated with the watercourses.	GHD (EIS)	Acknowledged
	e)	The tributary traversing the western portion of the property is within a steep valley and associated with wetland features. Section 5.1 states the 'significant woodland' is "an edge community between the fields and the wetland communities at the lower elevations". Where are these wetlands?	GHD (EIS)	This statement should read "the significant woodland is an edge community between the fields and woodland communities at the lower elevations"
	f)	No soil information has been provided in support of the ELC ecosites proposed.	GHD (EIS)	Soil profiles were not completed as ecosites were determined clearly based on dominant species
		As per the Ecological Land Classification (ELC) and Ontario Wetland Evaluation System (OWES), soil condition influences community structure, and in the absence of soil information and seasonal inventories (spring to winter) to determine extent of flooding or ponded water wetland forests/swamps may be misidentified as upland features.	GHD (EIS)	GHD did find that area was patchy with low areas and willows, through to monoculture cedar with few understory species. If FOC is shown as wetland and the code changes to SWC, it does not impact on developable area. We can agree that much of that community was wetter and meets the definition of swamp.
		As such, in consideration of ELC and OWES assessment criteria, please provide the following information within the location of the proposed SWM infrastructure within the proposed Core Area/NHS:	GHD (EIS)	Provided below
		Soil data for each ELC ecosite/GHD community (Figure 1).	GHD (EIS)	Soil profiles were not completed as ecosites were determined clearly based on dominant species and the lack of wetland indicator species (with the exception of the seepage areas)
		A map of seepage areas/seeps (hydric soils).	GHD (EIS)	three seeps were identified in community 3-the Figure will be revised to include the seepage areas for the next submission of the EIS
		Comment on ELC mapping discrepancy in consideration of previous ELC work by Beacon; OWES 50% rule to discriminate between wetland and upland areas; provincial data layer for watercourses beyond the 30-m VPZ (see BH11-21); and other mapping provided with the submission that reference 'wetland boundary' within the proposed Core Area/NHS.	GHD (EIS)	GHD used OWES protocol to delineate wetland boundary. The boundary of any wetlands found were delineated in the field using a handheld GPS unit.

	Given EIS mapping discrepancies, and 2020 field data collected during drought conditions, a full season review (fall, winter, spring, summer) is necessary to document natural variability of wet/hydrologic features in support of the SWM outlet corridor through significant features and/or regulated areas.	GHD (EIS)	The stormwater outfall was discussed with Valdor and we recommended the outlet be pulled back outside of the 30 meter wetland buffer and include a spreader/plunge pool that will prevent a point source discharge that may carve through a wetland/woodland. This design overflows over a broad front of the spreader, that allows discharge to seep through the wetland/woodland to a drainage point. Additional surveys may be warranted at the detailed design stage.
2.0.	30-metre Buffer or Vegetation Protection Zone (VPZs)		
	EIS Sections 5.3 and 8, as well as the recommendations #7.2 (SWH), 7.3 (significant woodlands), 7.8 and 7.9 (fish habitat), propose a 30-metre buffer or vegetation protection zone (VPZ) between development and the significant features within communities 2, 3 and 4, as well as wetlands.	GHD (EIS)	Acknowledged
	While a 30-metre VPZ/buffer is consistent with provincial and Otonabee Conservation policies, technical staff note the following disturbances proposed by others on the subject lands within the 30-m VPZ/buffer, as well as significant features, are not consistent with policy:	GHD (EIS)	Response below
	* Site Plan proposes lots, roads, and/or SWM infrastructure within the wetlands along Fallis Line.	GHD (EIS)	Discussions with ORCA supported the wetland removal of community 10 and 11, along Fallis Line. Appendix A outlines where Wetland Compensation would occur on the property. Details will follow in a Wetland Compensation Report to be completed and reviewed by ORCA staff at the detailed design stage.
	* Functional Servicing Report proposes a Wastewater Treatment Plant and SWM outlet corridor, which includes a headwall outfall, within significant features.	GHD (EIS)	Acknowledged
	SWM infrastructure, or new residential lots, placed within a wetland is not consistent with Otonabee Conservation wetland policies 7.1(1), 7.2(8) and 7.2(14). SWM inputs should be directed to permanent lotic/flowing systems to minimize impacts to wetland hydroperiods, and outlets to watercourses incorporate natural channel design in lieu of headwalls into the feature. Small interferences with wetlands may be supported on existing lots of record for public infrastructure (see policy 7.1(7) and 7.2(8)), where the regulatory tests are satisfied, and ecological offsetting is provided.	GHD (EIS)	Acknowledged. Discussions with ORCA supported the wetland removal of community 10 and 11, along Fallis Road. Appendix A outlines where Wetland Compensation would occur on the property. Details will follow in a Wetland Compensation Report to be completed and reviewed by ORCA staff. SWM outfall will be designed to be outside of 30 meter wetland buffer and include our concept of spreader/plunge pool and allow to seep through the woodland to a drainage point. A headwall is no longer proposed.
	No details of the work proposed, including 'impact assessment' or appropriate feature inventories, has been provided in the EIS with respect to these disturbances, or compensation proposed to offset functional loss from impacted/removed features. Therefore, technical staff recommends GHD work with Valdor Engineering to confirm the "no go" areas in consideration of a mitigation hierarchy to identify an appropriate infrastructure corridor/design that minimizes risk to natural heritage and water features in consideration of provincial policies, as well as satisfies the erosion, pollution, flooding and conservation of lands regulatory tests of the Conservation Authorities Act.	GHD (EIS)	Appendix A outlines the location of wetland Compensation. A Wetland Compensation Plan will be completed and submitted to ORCA for review.
3.0.	Significant Habitat		
	There are known occurrences of the following two threatened grassland birds: Bobolink and Eastern Meadowlark and one special concern reptile: Snapping Turtle traversing the area. The threatened bird species and Category 1, 2 and 3 habitats are protected under the Endangered Species Act (ESA).	GHD (EIS)	No habitat existed for these species on the subject property. The agricultural fields were planted in soy bean at the time of the field visit so would provide no habitat for grassland birds. The snapping turtle inhabits slow-moving water with soft mud or sand bottom and abundant vegetation. The watercourse on the subject property was quite shallow and did not contain abundant vegetation. Additionally the wetland adjacent Fallis line (community 10 & 11) contained no visible standing water and was abundant in transitional species; this wetland was not ideal habitat for the snapping turtle
	While the EIS states that the threatened birds were not present, species-targeted grassland bird surveys were not conducted, and a characterization of the lands identified as 'Agriculture' (Figure 1) was not provided, by GHD in support of ruling out 'habitat' within the development envelope. As such, additional grassland bird surveys may be required prior to site alteration to demonstrate consistency with the ESA.	GHD (EIS)	No habitat existed for these species on the subject property. The agricultural fields were planted in soy bean at the time of the field visit so would provide no habitat for grassland birds.

		The proposed SWM corridor traverses GHD's recommended protected Core Area/NHS, which includes endangered bat, significant wildlife, and fish habitats – this is not consistent with provincial policies in the absence of appropriate inventories and assessment of risk to minimize impacts to features. It is understood that species targeted surveys for some features were not conducted given GHD's recommendation to protect communities 2, 3 and 4, i.e., no intrusion into significant features.	GHD (EIS)	The stormwater outfall should be designed outside of the 30 meter wetland buffer and include our concept of spreader/plunge pool and allow to seep through the woodland to a drainage point.
		As such, further technical review by GHD is necessary to confirm feature boundaries and assess impacts/mitigations if development or site alteration is proposed within the forested feature/Core Area/NHS in the southern extent of the subject lands.	GHD (EIS)	Acknowledged see comments above.
	4.0.	Conclusion		
		The Site Plan and Functional Servicing Report are not consistent with GHD's recommendations, and there are discrepancies and a lack of impact assessments from the actual proposed work within the EIS. To demonstrate consistency with Growth Plan policies 4.2.3.1 and 4.2.4 (1 to 3), where applicable, PPS policies 2.1.5, 2.1.6, 2.1.7, 2.1.8 and 2.2.1, and Otonabee Conservation policies 7.1(1), 7.1(7), 7.2(8, 14 & 16) and 8.1(9), additional information, including confirmation of feature boundaries, reassessment of impacts from the proposed Site Plan and SWM infrastructure, compensation options, and possible realignment of lot fabric, is required from the consultants in support of further technical review.	GHD (EIS)	Acknowledged. See comments above.
Curve Lake First Nation				
Memo from Chief Emily Whetung, dated Sept 13, 2021		Curve Lake First Nation is requiring a File Fee for this project in the amount of $250.00 as outlined in our Consultation and Accommodation Standards. This Fee includes project updates as well as review of standard material and project overviews. Depending on the amount of documents to be reviewed by the Consultation Department, additional fees may apply. Please make this payment to Curve Lake First Nation Consultation Department and please indicate the project name or number on the cheque.	CSU	Fee has been paid.
		In order to assist us in providing you with timely input, it would be appreciated if you could provide a summary statement indicating how the project will address the following areas that are of concern to our First Nation within our Traditional and Treaty Territory: possible environmental impact to our drinking water; endangerment to fish and wild game; impact on Aboriginal heritage and cultural values; and to endangered species; lands; savannas etc.	GHD (EIS) TBG	Summary Statement provided directly to Curve Lake.
		After the information is reviewed it is expected that you or a representative will be in contact to make arrangements to discuss this matter in more detail and possibly set up a date and time to meet with Curve Lake First Nation in person (or virtually).	TBG	Noted. Request has been provided.
		Although we have not conducted exhaustive research nor have we the resources to do so, there may be the presence of burial or archaeological sites in your proposed project area. Please note, that we have particular concern for the remains of our ancestors. Should excavation unearth bones, remains, or other such evidence of a native burial site or any other archaeological findings, we must be notified without delay. In the case of a burial site, Council reminds you of your obligations under the Cemeteries Act to notify the nearest First Nation Government or other community of Aboriginal people which is willing to act as a representative and whose members have a close cultural affinity to the interred person. As I am sure you are aware, the regulations further state that the representative is needed before the remains and associated artifacts can be removed. Should such a find occur, we request that you contact our First Nation immediately.	Aecom	Stage 2 Archaeological Assessment to occur in the spring of 2022. AECOM will engage with Curve Lake field liaisons to coordinate with them once the field work has been scheduled.
		Curve Lake First Nation also has available, trained Cultural Heritage Liaisons who are able to actively participate in the archaeological assessment process as a member of a field crew, the cost of which will be borne by the proponent. Curve Lake First Nation expects engagement at Stage 1 of an archaeological assessment so that we may include Indigenous Knowledge of the land in the process. We insist that at least one of our Cultural Heritage Liaisons be involved in any Stage 2-4 assessments, including test pitting, and/or pedestrian surveys to full excavation.	Aecom	Please see above.
		Although we may not always have representation at all stakeholder meetings, as rights holders', it is our wish to be kept apprised throughout all phases of this project. Please note that this letter does not constitute consultation, but it does represent the initial engagement process.	TBG	Summary Statement provided directly to Curve Lake. Meeting to occur after review and next steps determined.
Cavan Monaghan - Staff Comments December 17, 2021				

Fire		As development of buildings three or more storeys proceeds within the Millbrook area, a forecasted need of an elevated apparatus will become necessary. Currently, the longest ladder that the fire department has (only one of) would reach a third-floor window (if the ground is level) and no higher.	TBG	Noted.
		an agreement with the applicant to install a sprinkler system in this development is required. This agreement will be necessary to state that that the hydrants will be operational and tested according to the NFPA standards for Fire hydrants prior to construction of any buildings and records supplied to the Director of Public Works and the Fire Chief.	TBG	Noted.
		The Township will consider four (4) storey developments in apartment blocks provided fire prevention and safety measures are implemented during construction. The current building height needs to be addressed in the official plan amendment application and Planning Rationale Report (PRR).	TBG	We have amended the application to a 4-storey apartment building as requested. Please see planning Cover Letter for amendment to OPA. Please see below for planning response as related to justification for 4-storey building.
Parks & Trails		The Township is supportive of including the trails and parkland dedication of Blocks 380, 381, 382 and 385 but as some of these are mostly hazard lands in the Natural Heritage buffer, there should be identification of additional parkland within the plan of subdivision. Keep in mind that as outlined in Section 8.12 (d) of the Township's Official Plan, land designated as part of the Natural Heritage System will not be included as part of the parkland dedication	TBG	The Blocks noted in this comment are not located on hazard lands. These Blocks are now denoted as 381, 382, 383 & 386. We believe that Block 386 (formerly block 385) was misinterpreted as referring to the buffer block. Note that Block 384, being the NHS Block, includes both the identified Environmental features as well as the 30m buffer block.
		Additional parkland should be identified within the subdivision and closer to the higher density blocks. This parkland should include one equipped with playground 1 equipment and active play. The Planning Rationale Report identifies 2.06 ha of the total 49.2 ha site means parkland is only 4.18% which most of the parkland being trails/walkways. As identified above, more parkland (versus cash in lieu) is required.	TBG	The Net developable area of the site is 32.88ha (NHS block 384 removed). There is a proposed 2.06ha of Parkland, this results in a parkland dedication of 6.23%. Note that park blocks 381 and 382 are primarily to include trail connections through the site. However these park blocks have significant frontage on Pristine Trail (34m and 38m) where potential play structures could be included. Further analysis to determine location to occur through detailed design.
		Trails and connections should be identified in the plan.	TBG	Trail connections are not shown on Draft Plans of Subdivision. However TBG has prepared a Trails Plan. Please refer to Appendix 3 of the cover letter.
		There is an assumption of parkland connections and trails throughout the subdivision and connecting to the Towerhill South subdivision through the Pristine Trail Extension.	TBG	Correct. See Appendix 3 of the cover letter.
		Consider a 3 metre trail along Blocks 380 and 381 coinciding (in part) with the former railway line. Inclusion and connection with a 3 metre trail in Block 385 should also be considered.	TBG	Blocks 381 and 382 (formerly 380 & 381) are intended to act as a large north-south trail connection between Tower Hill north and Tower Hill South as well as Downtown Millbrook to the south. See Appendix 3 of the cover letter. Through detailed design a 3m trail width can be specified.
		What does Block 382 connect to in the adjacent development to the east? If this is to be a trail connection, consider a 3 metre trail in this block but it is to access the NHS, Staff do not encourage uncontrolled access to the NHS.	TBG	Block 383 (former 382) will connect to a buffer block in Tower Hill South, which TBG understands is also functioning as a trail connection eastward.
		Any trail connections should be linear and also line up with the proposed trail connections as identified on the approved Towerhill North Plan of Subdivision.	TBG	The proposed trail system lines up with the trail system in Towerhill North (adjacent to the realigned creek). See block 381.
		Any parkland and trails has to not only connect internally but also to adjacent and neighbouring trails (refer to CM Trails Master Plan).	TBG	The north south trail in Blocks 381 and 382 would form part of the Victoria Rail Trail (Option A). This trail can be continued south through NHS Block 384 to connect to the future Grand Trunk Rail Line Trail. It also connects to the planned trail system in Towerhill North adjacent to the realigned creek.
Road Layout		Road pattern layout is consistent with other adjacent development and the Township supports this approach.	TBG	Noted.
		spacing of roads and trail connections need to match those roads and trail connections identified and approved coming from Towerhill North and South.	TBG	The Draft Plan has been amended to accommodate a future road extension which aligns with the Towerhill North Subdivision.

		Road patterns and traffic should reflect the location and logistics of the School Site as identified on the north side of Fallis Line West. The TIS will likely have to be amended to reflect this.	TBG	The Draft Plan has been amended to accommodate a future road extension which aligns with the Towerhill North Subdivision. This connection will not be available immediately as it requires acquisition of an existing residential parcel not owned by the applicant.
		A second point of access to the subdivision will be necessary to access Fallis Line. The TIS will have to be updated to reflect this.	TBG	The Draft Plan has been amended to accommodate a future road extension which aligns with the Towerhill North Subdivision. This connection will not be available immediately as it requires acquisition of an existing residential parcel not owned by the applicant.
		The existing and additional access being requested on Fallis Line West should also align and work with the proposed and approved access points coming from the Towerhill North subdivision.	TBG	The Draft Plan has been amended to accommodate a future road extension which aligns with the Towerhill North Subdivision. This connection will not be available immediately as it requires acquisition of an existing residential parcel not owned by the applicant.
		Taking into consideration that the private landowner fronting on Fallis Line (south side) may eventually become part of this proposed development, the Township would like to see potential lotting pattern of this property should it be included in the development in the future. Due to their size and configuration, we need concept plans based on possible future use.	TBG	Future lotting has be shown on the Draft Plan. Note that a large portion of this site will be comprised of the municipal road requested above.
		Street lighting should match the pattern and spacing already accepted within the other subdivisions within the Township (i.e., decorative street lighting).	VALDOR	Streetlighting plans to be prepared at detailed design by qualified electrical consultant for review/approval by the Township.
		Street lighting needs to match up with sidewalk placement throughout the subdivision (i.e., on the same side to illuminate walkways).	VALDOR	As per above.
		Each dwelling must have an attached garage and a minimum of two external parking spaces with a minimum length of 6 metres to accommodate larger parking requirements.	TBG	All proposed units will have external two external parking spaces and an attached garage.
Stormwater Management		why are there two (2) SWM Blocks identified in the plan?	Valdor	Drainage from the existing site discharges to two distinct outlets (north and south), which must be maintained under post-development conditions. The north SWM pond will feed the realigned natural channel within Towerhill Phase 2 lands. Refer to Figures 4A & 4B in the FSR.
		Staff do not support two SWM ponds for this site. The design should be revised to accommodate this.	Valdor	Two ponds are required due to the fact that there are 2 different watersheds that need to be managed separately. The north pond feeds the current tributary within Towerhill North which will ultimately be realigned to accommodate the Towerhill Phase 2 Development. Conservation Authority will not permit rerouting of watersheds. Storm sewer pipes will also be excessively large and will need to be constructed at substantial depths if the 2 watersheds were to be combined.
		Township not supportive of Block 379 as a SWM as it fronts on Fallis Line West.	Valdor	The SWM Block is proposed at the lowest location of the watershed which is the most ideal location and right next to the culvert crossing Fallis Line which accepts the drainage through the future Towerhill North lands.
		more information is required about Block 380 and what it is to accommodate. Is this a wetland that drains north? Is this intending to be a trail connection?	TBG	Block 380 is now identified as Block 381 on the most recent site plan submitted. This block will be part of the Trail Network as can be seen in Appendix 3 of the cover letter.
		Is there wetland compensation (offset) being considered addressed on the plan (Otonabee Region Conservation Authority (ORCA) discussion)?	GHD (EIS)	The compensation is planned for the southwest corner of the property outside of the development envelope as per our addendum to the EIS and Figure 2.
		How will water drainage off this site align with drainage identified on approved plans of Towerhill North (i.e., wetland on this property draining to re-aligned channel on north side of Fallis Line)?	Valdor	Discharge from the north SWM pond will feed the realigned natural channel within Towerhill Phase 2 lands.
		More information needed about SWM on Block 384. Stormwater Management needs to consider any offsite impacts (i.e., possible flood) to neighbouring subdivisions (development to the east on Baxter Creek) like housing on Brookside Drive.	Valdor	The post-development flows to the south will not exceed the pre-development flows, so there will not be additional flooding.

		Is the property on Block 384 big enough to accommodate a SWM and WWTP?	Valdor	Yes there is sufficient space to accommodate both. All pond sizing calculations are included in the FSR. NewTerra reviewed the treatment plant sizing for the required sanitary flows and sized it accordingly and additional space for expansion was also considered and incorporated.
Functional Servicing Study and Water Wastewater Services		Through this application, the applicant has proposed a stand-alone plant. Staff would like to have more details provided through conceptual site plan for this plant. Staff would also like information related to amount and quality of discharge, location of discharge, impacts on Baxter Creek. This would be a full functional report on the plant proposal that we would have peer reviewed by our consultant.	VALDOR	The plant was designed based on the average discharge flow from the development as determined in the FSR. Effluent quality conforms with MECP criteria and an ECA will be required. The discharge location is combined with the south SWM pond outfall. The quantity of runoff was considered with the SWM discharge and negligible in comparison to the SWM discharge rate. A preliminary siting is shown within Block 384. NewTerra will assist in providing a full functional report prior to proceeding with detailed design.
		More information is required about the siting and potential of the “Newterra Plan”. Township needs to know if this is necessary if sufficient water/wastewater is available. Where is the “plant” going? Again, is the property big enough to accommodate a SWM and WWTP?	VALDOR	The Newterra Plant represents an alternative even though expansion of the existing Millbrook Treatment Plant is planned to meet the requirements of this development through the Growth Management and Master Servicing Study currently taking place. The plant will be located within the south SWM Block furthest from any homes and area has been preliminary sized to accommodate the proposed development as well as any future expansion. Access roads and parking space for maintenance vehicles will be provided. Refer to Drawing PSG-1 in the FSR for location details.
		Staff would also be interested in understanding the provincial position on these plants and ultimate population it could handle.	VALDOR	These plants are approved by the MECP and have been successfully constructed in other parts of the Province.
		The development cannot proceed until such time as the Township has confirmed through its Water/Wastewater Master Servicing Study there is sufficient reserve (allocation) of water and wastewater capacity.	VALDOR	Noted.
		If there is sufficient water/wastewater reserve (allocation), development should progress in a phased approach. A phasing plan will be required.	VALDOR	Phasing will be determined at a later date, prior to final engineering design completion.
		Is this wastewater system being proposed to accommodate future development not identified on this plan?	VALDOR	The plant can be expanded to accommodate future development to the north of Fallis Line to the ORM boundary. Room for expansion has been incorporated in the sizing of the Block.
		On Block 380, where will water discharge and will a “modular decentralized wastewater treatment system” go forward of sufficient water/wastewater is supplied by the Township?	VALDOR	A modular decentralized wastewater system is an alternative unless the City can provide sufficient water/wastewater treatment capacity.

Planning	1.0.	A Record of Site Condition will be needed for the former rail trail lands.	GHD	It is GHD's position that a Record of Site Condition (RSC) is not required for the former railway line. The historical rail line has been used as a parkland property use for about 100 years as a private trail for recreational activities. Once developed, the majority of the trail will remain parkland with a short section to be developed for residential purposes. Based upon this current property use and the future use after development, it is our opinion that a RSC is not required. Within Ontario Regulation 153/04: Records of Site Condition – Part XV.1 of the Act (under the Environmental Protection Act, Section 168), there are exemptions to the changes of use that require an RSC. As defined within Section 168.3.1 of the Act, a change in use from industrial or commercial to residential or parkland cannot occur without an RSC. However, based on the exemption under s.168.3.1 (1) (a) of the Act, the property can be changed from a railway line to a trail used for recreational activities without an RSC. Regardless of this exemption, it is our professional opinion that an RSC does not apply since the development is changing property use from agricultural and / or parkland to residential use. An RSC is not required for this property use change.
				After development, the majority of the private trail will continue to remain as parkland and trails. There are lots that will be developed within the former rail line (Lots 51 to 59 on Street B), however, there was no evidence observed of any former rail line materials (ballast, rail ties, rails etc.) in any of the areas reviewed on this Site. Within proposed Lots 51 to 59, this area has been previously excavated and is lower than the surrounding terrain. Further north along the historical rail alignment, a gravel driveway has replaced the rail line to access the residential home. It remains our opinion that the former rail line presents a very low level of concern from an environmental site assessment perspective and is suitable for development without an RSC. We are in agreement with the Stantec comment #22 that the historical rail line PCA is not likely to contribute to an APEC, negating the rationale for an RSC.
	2.0.	Has the previous Plan of Subdivision been formally withdrawn?	TBG	To be discussed with Town staff.
	3.0.	The proposed development will expand the Millbrook Settlement Area by a significant amount and while the Planning Rationale Report (PRR) identifies this, more information and a greater justification needs to be provided to address why the expansion and why here?	TBG	See Cover letter.
	4.0.	The expansion is less than 40ha (i.e., just under 31 ha) and outside of a Municipal Comprehensive Review but the justification of the proposed expansion into the Agricultural designation needs to address if reasonable alternatives have been evaluated. Minor expansions have been approved elsewhere but there is concern of the cumulative impact of all these expansions without enough justification.	TBG	See Cover letter.
	5.0.	The medium density Blocks (372 & 373) do not look big enough to accommodate the proposed 5 storeys when taking into consideration requirements for parking, loading, etc. Further explanation is required. If medium density of 5 storeys is not possible, could local commercial be located in one of both of these blocks? Is something else being considered?	TBG	The apartment building has been amended to 4 storeys in height. Block 379 depth has been increased (~51m deep) and a concept plan provided. See Cover Letter for further details.
	6.0.	Current OP only permits three (3) storeys and while 4 storeys was just approved for Towerhill North, why 5 storeys here?	TBG	The Apartment building height has been reduced to 4 storeys and is now consistent with planning approvals granted at the Tower Hill North Site.
	7.0.	Township will consider four (4) storey developments in apartment blocks provided fire prevention and safety measures are implemented during construction (as noted previously). The current building height needs to be addressed in the official plan amendment application and PRR.	TBG	The Apartment building height has been reduced to 4 storeys and is now consistent with planning approvals granted at the Tower Hill North Site. The Draft OPA has been revised to include this. See appendix 3 of the Cover Letter. See Cover letter for further details.

	8.0.	The PRR needs to provide more information and detail about the 200 units in the 2 medium density blocks. What is the proposed built form, timing (i.e., phasing).	TBG	The apartment building will be the last phase of development. The use will be residential. See Cover letter for further details.
	9.0.	Location of medium density and 5 storeys may be a concern for location along Fallis Line West.	TBG	We have allowed frontage on a local road so that access to the medium density block would be off the local road and not off of Fallis Line. Secondary emergency exit off Fallis line can be accommodated if requested through site plan process. Location of higher density uses along the arterial roads will reduce traffic on local streets. See Cover letter for further details.
	10.0.	How will affordable housing issue be addressed? Planning Justification Report indicates that the subdivision has been designed with a full range of residential uses inclusive of single-detached and townhouse dwellings along with medium density residential blocks which may include apartment dwellings or other forms of medium density housing. More details are required on the latter proposed development as well as any information regarding affordable housing.	TBG	See Cover letter for further details.
	11.0.	How does this plan address the employment targets (Section 2.1.3)?	TBG	See Cover letter for further details.
	12.0.	Additional information is required in OPA Application form the Description of Subject Lands, Details of the Amendment – parts a), p), q), r) and the Additional Information sections. Additional comments on the OPA Application form may be forthcoming.	TBG	These portions of the application form have been re-submitted.
	13.0.	Development in key natural heritage features or hydrologically sensitive features is prohibited.	GHD (EIS)	See comments to ORCA above regarding removal and compensation.