



Stantec Consulting Ltd.
675 Cochrane Dr. Markham Ontario

May 24, 2018
File: 160950451

Attention: Caitlin Robinson, Planner, Peterborough County
County of Peterborough
470 Water Street
Peterborough, ON K9H 3M3

Dear Caitlin,

Reference: Peer Review for Preliminary Stormwater Management Report & Jack Creek Floodline Commentary
Pilgrim's Rest Part lots 3 & 4, Concession 11 (Burleigh) Township of North Kawartha, County of Peterborough

Stantec Consulting Ltd. (Stantec) was retained by the County of Peterborough (the County) to peer review the *Preliminary Stormwater Management (SWM) Report for the Proposed Residential Redevelopment of Pilgrim's Rest Campground* by Dobri Engineering Ltd. (June 24, 2017) [the SWM Report]. The SWM Report is in support of a proposed residential redevelopment of the property currently occupied by the Pilgrim's Rest Campground. The proposed redevelopment will include a 30-lot residential condominium development located in Part Lot 3&4, Concession 11 (Burleigh) Township of North Kawartha, County of Peterborough.

The technical studies submitted in support of the development applications include:

1. *Preliminary Stormwater Management Report* dated June 24, 2017 and prepared by Dobri Engineering Ltd. (Dobri, 2017);
2. *Hydrogeologic and Site Servicing Study*, dated May 2017 and prepared by Oakridge Environmental Ltd. (Oakridge, 2017); and
3. *Environmental Impact Study (EIS)* dated March 2016 and prepared by Oakridge Environmental Ltd. (Oakridge, 2016).

In addition to the above technical studies, the County also provided the Planning Justification Report prepared by Ecovue Consulting Services Inc. (Ecovue, 2017) for review, as needed.

This letter details the results of the Preliminary Stormwater Management Report peer review comments. Peer review comments for the Hydrogeological and Site Servicing Report (Oakridge, 2017) and EIS (Oakridge, 2016) are provided in separate letters.

PROPOSED DEVELOPMENT DETAILS

Official Plan amendment, Zoning By-law amendment and plan of condominium apply to the lands located in Part of Lots 3 and 4, Concession 11 – Burleigh Ward, Township of North Kawartha, County of Peterborough. The property is located on the north shoreline of Stoney Lake, south of County Road 56 (Northey's Bay Road). Current street access to the property is via Cheboutequion Drive and County Road 5. The property is located on the north shoreline of Stoney Lake, south of



May 24, 2018
Caitlin Robinson, Planner, Peterborough County
Page 2 of 4

**Reference: Peer Review for Preliminary Stormwater Management Report & Jack Creek Floodline Commentary
Pilgrim's Rest Part lots 3 & 4, Concession 11 (Burleigh) Township of North Kawartha, County of Peterborough**

County Road 56 (Northey's Bay Road). Current street access to the property is via Cheboutequion Drive and County Road 56. The following details are provided:

- The total area of the property to be re-developed is approximately 28.8 hectares with frontage on County Road 56.
- The property also includes approximately 699.5 m of frontage on Stony Lake.
- A small island, located offshore south of the existing docking area, is also owned by 2293040 Ontario Inc. and is subject to the current applications.
- The island (Block 7 on the Draft Plan of Condominium) will be included as an Open Space block within the Plan of Condominium. No development is proposed on the island and no formal access to the island is contemplated.
- The proposed plan of vacant land condominium is comprised of 30 single detached units for seasonal residential uses (single detached dwellings). The new lots will occupy approximately 19 ha, leaving the remaining 9.8 ha in a natural state.

FINDINGS OF THE FUNCTIONAL STORMWATER MANAGEMENT REPORT

Dobri (2017) states that the purpose of the Preliminary Stormwater Management (SWM) Report was to provide both stormwater quality and stormwater quantity controls for a land development project. The following is noted, with respect to the Preliminary SWM Report completed by Dobri (2017):

- The report did not provide description of the existing site conditions (vegetative cover, runoff coefficients, etc.).
- The report stated that the post-development drainage areas will be similar to the pre-development conditions, however, an Existing Drainage Area Plan was not provided.
- Drawing 15-511-POST illustrates the Post-Development conditions. The various drainage catchment area boundaries are noted. All stormwater runoff is directed towards Stony Lake and Jack Creek, and other small tributaries which discharge into Stony Lake. A minimum 15m buffer strip will be maintained adjacent all the noted water courses and the Lake.
- Stormwater quantity controls will not be required for this development, since it is adjacent to Stony Lake.
- The average runoff coefficient for the development area is calculated to be 0.32.



May 24, 2018
Caitlin Robinson, Planner, Peterborough County
Page 3 of 4

**Reference: Peer Review for Preliminary Stormwater Management Report & Jack Creek
Floodline Commentary
Pilgrim's Rest Part lots 3 & 4, Concession 11 (Burleigh) Township of North Kawartha,
County of Peterborough**

- The road will not be designed with open ditches/swales, but rather with surface runoff via sheet flow across the roadway. The runoff will continue via sheet flow across the lots and along the side yard swales. Where necessary, shallow drainage swales will be constructed along the rear yard and discharged through flow spreaders and through the natural vegetated lands before entering Stony Lake.

GENERAL COMMENTS

The following general comments are provided for the proposed SWM and Drainage plan:

- Please provide existing conditions plan, description of the existing conditions and drainage pattern;
- Page 2 states that enhanced level of protection for permanent water quality is appropriate for the site. Page 5 of the report notes that grass swales are sized to provide quality, but more detail should be shown, but it does not provide specific details of how the enhanced level will be achieved for the Site. Please provide further details and supporting calculations to confirm that the proposed measures will achieve the enhanced level quality control.
- The report stated that the road will not be designed with open ditches/swales, but rather with surface runoff via sheet flow across the roadway. Please provide grading plan and include overland flow arrows on drawing to support the proposed road and lots drainage pattern.
- The water flow through Jack Creek has been estimated for the 100-yr storm event, and is presented in Appendix B. The calculations were based on Rational Method, which is not suitable for such large drainage area of 14,475 ha as per the MNR mapping. As such, the resulting discharge values could not be assumed accurate enough for flood impact analysis. The analysis should be based on a hydrologic model using Visual Otthymo, PCSWMM or another approved model.
- The 100-year water elevation calculations did not take the downstream water elevation into consideration. Since the creek is directly discharging into the Stoney Lake, the water elevation at the lake should be included in the calculations using a proper hydraulic model like HEC-RAS/GeoRAS, or PCSWMM.
- It is noted that the Hull Bay - South Bay Provincially Significant Wetland (PSW) Complex lies adjacent to the Pilgrim's Rest property shoreline and covers a large portion of the lake directly adjacent to the proposed development. Please provide water balance details to confirm that the proposed development will not have Negative impact on this PSW.



May 24, 2018
Caitlin Robinson, Planner, Peterborough County
Page 4 of 4

**Reference: Peer Review for Preliminary Stormwater Management Report & Jack Creek
Floodline Commentary
Pilgrim's Rest Part lots 3 & 4, Concession 11 (Burleigh) Township of North Kawartha,
County of Peterborough**

- Please provide water balance calculations to confirm that the proposed development will not have significant impact on wells in the area.

STANTEC CONCLUSIONS AND RECOMMENDATIONS

Based on our review of the SWM Report, the following conclusions and recommendations are presented:

- The report should state the guidelines applicable to the Site (Conservation Authority , Municipality, MOECC ..etc) and the corresponding design criteria based on these guidelines.
- Please provide further details and supporting calculations to confirm that the proposed quality control measures will achieve the Enhanced level target.
- The report should include water balance and quality control requirements for the PSW and ground water. If required, details should be provided to show how these requirements will be satisfied.
- Flood impact analysis should be based on hydrological models as the Rational Method is not considered as appropriate for such large watershed area.

We trust these comments are sufficient for your purposes; however, if you have any questions or require clarification, please do not hesitate to contact the undersigned.

Regards,

STANTEC CONSULTING LTD.

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To:	To whom it may concern County of Peterborough	From:	Martin Kaczmarek Stantec Consulting Ltd.
File:	160950451	Date:	May 28, 2018

Reference: Peer Review: Tranplan Associates, Pilgrim's Rest Campground Fire Route 24 Access Traffic Impact Statement

The purpose of this Memorandum is to peer review the *Pilgrim's Rest Campground Fire Route 24 Access Traffic Impact Statement* (TIS) prepared by Tranplan Associates in August 2016. The TIS was prepared by Tranplan in support of an additional access on to Fire Route 24 as part of the redevelopment of the Pilgrim's Rest Campground. The comments regarding this Report are the following:

- **Section 1.0:** The Report notes that a traffic impact assessment (TIA) was prepared for the proposed redevelopment in November 2011. The TIA should be attached to the Report for reference.
- **Section 2.2:** The footnote should reference the MTO *Geometric Design Standard for Ontario Highways (GDSOH) Figure E3-6*, or *Table E3-1*, as the *Commercial Site Access Policy and Standard Designs* guideline referenced does not provide values for required stopping sight distance (SSD).
- **Section 2.2:** No mention was made that the available turning sight distance for vehicles turning left on to Cheboutequion Drive does not meet MTO requirements. The minimum turning sight distance for a vehicle turning left with a design speed of 60 km/h, as per *Figure E3-6* of the MTO *GDSOH*, is 140 metres.
- **Section 2.2:** The report mentions that 90 - 92 metres of sight distance is currently available towards the left of the Fire Route 24 entrance onto Cheboutequion Drive. As per *Figure E3-6* of the MTO *GDSOH*, the minimum stopping sight distance for a design speed of 60 km/h is 85 metres. Based on our assessment, the available sight distance from the Fire Route 24 driveway looking towards the left is approximately 70 metres. As a result, the minimum stopping sight distance would not be sufficient. The correct available sight distance should be reviewed carefully to ensure that vehicles exiting the driveway are not subject to unsafe conditions.
- **Section 2.4:** It is unclear in the report what is included in the 30 – 35 vehicles per hour forecast along Cheboutequion Road. The report should include the forecast year, whether the forecast includes site generated trips, the number of trips the site will generate, the peak periods used, and the directional flows.
- **Section 3.0:** We do not agree with the conclusion that the intersection of Cheboutequion Drive with Fire Route 24 has sufficient turning sight distance, as discussed above. Drivers exiting Fire Route 24 are not expected to have difficulty finding adequate gaps on Cheboutequion Drive due to the low volumes along Cheboutequion Drive, however, the low visibility to the left of Fire Route 24 may result in unsafe conditions by not providing drivers with enough sight distance to anticipate when it is safe to exit.

SUMMARY

There is a concern regarding the available sight distance along Cheboutequion Drive, south of the Fire Route 24 intersection with Cheboutequion Drive. Under the current conditions, the left turning sight distance requirement of 140 metres and the stopping sight distance requirement of 85 metres do not appear to be satisfied for vehicles exiting from Fire Route 24. It is recommended that the Report include remedial measures to mitigate the risk imposed on vehicles exiting from Fire Route 24 (trimming foliage, installing cautionary signage, and/or imposing a reduced speed limit around the bend).



May 28, 2018
To whom it may concern
Page 2 of 2

Reference: Peer Review: Tranplan Associates, Pilgrim's Rest Campground Fire Route 24 Access Traffic Impact Statement

STANTEC CONSULTING LTD.

A handwritten signature in blue ink, appearing to read "François Tomeo".

François Tomeo, P.Eng.
Senior Transportation Planner
Phone: (416) 598-6685
François.Tomeo@stantec.com

Attachment: Pilgrim's Rest Campground Fire Route 24 Access Traffic Impact Statement

c. Roger Freymond, Stantec



Pilgrim's Rest Campground

Fire Route 24 Access

Township of North Kawartha

Traffic Impact Statement

Final Report

Prepared by:

Tranplan Associates

PO Box 455

Lakefield, ON

K0L 2H0

www.tranplan.com

Prepared for:

Royal Homes Limited

Per EcoVue Consulting Services

August, 2016

August 29, 2016

EcoVue Consulting Services Inc.
311 George St. North, Suite 200
Peterborough ON K9J 3H3

**Attn: Peter Josephs,
Senior Planner**

Dear Sir:

**RE: Fire Route 24 Entrance Assessment - Pilgrim's Rest Campground
2250 Northey's Bay Road, Peterborough County Road 56**

1.0 BACKGROUND

In November, 2011 Tranplan Associates completed a traffic impact assessment for the proposed relocation of the site entrance to *Pilgrim's Rest Campground*. The entrance was relocated from Peterborough County Road (CR) 56 also known as Northey's Bay Road to the adjacent Cheboutequion Road (see *Exhibit 1 - Key Map*). The study was carried as part of an overall redevelopment plan for the *Pilgrim's Rest Campground* that will see the site converted from the existing seasonal campground operation to a recreational condominium development.

As part of the ongoing redevelopment plans, Tranplan Associates has been retained to complete an assessment of the current Fire Route (FR) 24 entrance to Cheboutequion Road. This entrance is now being considered as an additional access point to accommodate 3 lots in the redeveloped *Pilgrim's Rest* site as illustrated in *Exhibit 2 - Site Plan*.

2.0 SITE VISIT

Tranplan Associates staff completed a site visit to the Cheboutequion Road corridor on May 18, 2016 to assess the potential use of the FR 24 access as an additional site entrance location for the redeveloped *Pilgrims Rest Campground*. The assessment consisted of the following evaluations:

2.1 The Posted Speed Limit

The posted speed limit on this section of Cheboutequion Road is 40 kph. This is an acceptable speed limit for a local rural road that provides access to recreational homes in a shoreline environment. Sight line requirements that would normally be associated with an unposted rural road are normally based on 80 kph standards. In the case of Cheboutequion Road, sight lines can be based on the lower 40 kph posted speed.

2.2 Available Sight Distance at the FR 24 Entrance

The sight lines for the FR 24 entrance to Cheboutequion Road were measured following current County and Ministry of Transportation Ontario (MTO) procedures for assessing turning sight distances (TSD) at entrances¹ to adjacent roadways. The TSD to the south around the horizontal curve (see *Exhibit 3*) was measured and found to be about 90 - 92 m. This particular sight line is limited by the horizontal curve on Cheboutequion Road south of the FR 24 entrance. If the “inside” of the curve were brushed out within the right-of-way (ROW), it would likely provide up to an additional 5 m of sight distance. It is noted that the 90 m of available stopping sight distance (SSD) will meet MTO requirements for a speed of 60 - 65 kph. The TSD was then measured to the north along Cheboutequion Road and found to be over 170 m. This sight distance is limited by a crest vertical curve north of the FR 24 entrance. The available SSD in both directions exceeds the SSD requirements for the posted speed of 40 kph.

2.3 The Angle of Intersection of the FR 24 Alignment

The FR 24 alignment meets the Cheboutequion Road alignment at an angle of about 108 degrees of arc as illustrated in *Exhibit 1*. This is an acceptable angle of intersection based on current Transportation Association of Canada (TAC) criteria. The TAC standards allow road intersection angles ranging from 70 to 110 degrees of arc.

2.4 Future Traffic Volumes

Cheboutequion Road is forecast to carry about 30 - 35 vehicles per hour (vph) during future summer peak hour periods. With these relatively low volumes, the Cheboutequion Road corridor will be able to accommodate additional traffic from 3 new lots in the south portion of the *Pilgrim's Rest* development. These lots are proposed to front directly onto FR 24 as illustrated in *Exhibit 2 – Concept Plan*. *Exhibit 2* illustrates a concept plan that is an ongoing working draft.

2.5 The FR 24 Corridor

Fire Route 24 has a rural cross-section with a 4.0 m gravel platform from the vicinity of a potential Pilgrim's Rest access point to the intersection with Cheboutequion Road. The alignment of FR 24 from this potential access location to Cheboutequion Road is relatively straight with a uniform grade line (see *Exhibit 4*). The overall FR 24 cross-section and geometrics should be assessed against current Township standards to determine if any geometric improvements might be required to bring FR 24 up to Township standards for a private recreational access road.

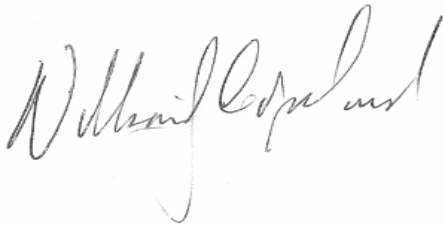
¹ See “Visibility”, pg. 2 and Table 1 pg.6, Commercial Site Access Policy and Standard Designs, MTO, 1994.

3.0 CONCLUSIONS AND RECOMMENDATIONS

Fire Route 24 and its intersection with Cheboutequion Road will provide acceptable access for 3 new lots to be located in the southern portion of the proposed *Pilgrim's Rest* development. This conclusion is supported with a set of field observations and measurements described above in *Section 2.0*. The FR 24/Cheboutequion intersection has sufficient turning sight distance for drivers to select acceptable gaps in Cheboutequion Road traffic stream. Cheboutequion Road has sufficient residual traffic capacity to accept any additional traffic from the 3 lots in the *Pilgrim's Rest* development that will utilize the FR 24 access.

On behalf of Tranplan Associates I would like to thank you for the opportunity to work with your study team on this project. If we can be of any further assistance please contact me at your convenience.

Yours truly,



William Copeland, P.Eng.

WJC/tlg

EXHIBITS

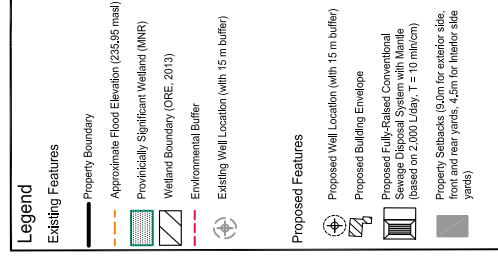
Exhibit 1

Key Map - Pilgrim's Rest



Exhibit 2 Concept Plan

Lot #	Area (ha)	Road Frontage (m)
1	0.44	59.6
2	0.56	59.0
3	0.51	78.2
4	0.55	48.2
5	0.55	46.3
6	0.66	39.7
7	0.57	59.5
8	0.57	59.5
9	0.57	42.9
10	0.50	42.8
11	0.51	42.4
12	0.53	48.8
13	0.52	51.7
14	0.50	51.7
15	0.53	51.9
16	0.46	66.8
17	0.44	51.9
18	0.46	42.3
19	0.47	42.3
20	0.46	59.2
21	0.50	59.5
22	0.51	57.6
23	0.52	39.7
24	0.51	39.7
25	0.51	39.4
26	0.49	52.4
27	0.43	64.3
28	0.41	40.7
29	0.50	40.7
30	0.52	42.4



**3 Lots with Access
To FR 24**



PROJECT NO: 14-1468
DATE: July 29 2016
HORIZ. SCALE: 1:1,500

Concept Plan Pilgrims Rest Condominium

Part of Lot 3 and 4 Concession 11
Burleigh Ward, Township of North Kawartha

Exhibit 3 FR 24 Intersection

Sight Distance Looking South
Along Cheboutequion Drive



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Sight Distance Looking North
Along Cheboutequion Drive

Possible Additional Access



Cheboutequion Drive

Exhibit 4 Fire Route 24

**Looking West towards
Cheboutequion Drive**



Peterborough County Cr
Main Entrance

**Looking East towards
Pilgrim's Rest Lots**



Possible Additional Access

Cheboutequion Dr.

June 29, 2018
File: 160950451

Attention: Ms. Caitlin Robinson, B.E.S, Planner

County of Peterborough
470 Water Street
Peterborough, ON K9H 3M3

Dear Ms. Robinson,

**Reference: Hydrogeological and Site Servicing Study
Proposed Residential Development, Pilgrim's Rest Campground
Part Lots 3 & 4, Concession 11, Township of North Kawartha**

The County of Peterborough requested Stantec to conduct a peer review of the hydrogeological and Site Servicing Study for the above noted proposed development, prepared by Oakridge Environmental Ltd. (ORE) on behalf of 2293040 Ontario Inc., Pilgrim's Rest Campground. The subject property is currently used as a seasonal campground, with 87 serviced trailer sites and approximately 20 unserviced camping sites. A seasonal residential condominium development, with 30 separate units, is proposed to replace the existing seasonal campground. The property is 29.0 ha (72 acres) in size, the proposed development will occupy approximately 19.0 ha (47 acres) of the property.

The existing campground obtains communal water from a surface water intake. Waste water generated by the campground is disposed through a single large sewage septic system, with an estimated sewage flow of 45,000 L/day. The current sewage system does not operate under an Environmental Compliance Approval (ECA) or a Certificate of Approval (C of A).

In order to support the development application, a hydrogeological and site servicing assessment is required to verify that there is a sufficient quantity of acceptable quality water available to supply any future proposed residences and to determine the allowable density by completing an impact assessment of waste water effluent loading for the site. The requirements were assessed in relation to Section 2.6.3 of the County of Peterborough's Official Plan, which refers to compliance with the Ministry of Environment and Climate Change (MOECC) guidelines. The hydrogeological requirements for development application are contained in two MOECC documents: Procedure D-5-5; which pertains to testing requirements to assess the availability of an adequate water supply; and, D-5-4; which pertains to evaluating the site's capacity to adequately deal with septic effluent and the potential impact of the effluent.

INVESTIGATIONS AND FINDINGS

ORE conducted a background review and a number of investigations, including but not limited to:

- Shallow soil exploration to characterize local soil conditions;
- Conducting an assessment of the site's potential capacity for sewage and the ability to accept individual on-site sewage systems in accordance with MOECC procedure D-5-4;

Reference: Hydrogeological and Site Servicing Study
Proposed Residential Development, Pilgrim's Rest Campground
Part Lots 3 & 4, Concession 11, Township of North Kawartha

- Drilling seven (7) test wells and conducting preliminary pumping tests on each well, including the existing residence and campground office;
- Selecting a number of wells for “hydraulic fracturing”, to attempt to increase well yields;
- Selecting five (5) test wells for the purpose of conducting pumping tests and water quality sampling in accordance with MOECC Procedure D-5-5; and
- Conducting a nitrate loading assessment to determine the maximum number of lots to meet the nitrate loading criteria

SITE CONDITIONS

The Site topography is dominated by rock knobs and trough-like valleys which often contain wetlands and/or pockets of poorly drained soils. Drainage patterns are complex with three local drainage basins draining the Site. There is a thin veneer of overburden across much of the Site, where the bedrock does not outcrop. Many areas have less than 1.0 m of overburden.

The underlying bedrock is Precambrian age rock, consisting primarily of granitic gneiss and iron rich metasediments. Well records from the MOECC within 1 km of the Site typically have a fairly low well yield in the range of 1-4 gallons per minute (gpm). Several wells produced up to 100 gpm while some areas showed wells were abandoned due to insufficient water. And two wells abandoned due to water quality issues. The depth to a water producing zone was also highly variable, with no apparent correlation, which is to be expected given the fractured nature of the bedrock.

WATER SUPPLY TESTING

Seven (7) test wells were drilled on-site, and one well previously drilled on-site was also tested. One well had insufficient water and was reported as “dry”, while another did not produce water. Five (5) wells tested by the well driller indicated that there could be yields of 2 gpm or greater. The wells were subjected to low-pressure hydraulic fracturing in an attempt to increase well yields. Preliminary pumping tests were then conducted by ORE to assess the well yields. Several wells were shown to not be suitable for further testing due to insufficient yield. Four wells were subjected to further hydraulic fracturing under higher pressure.

Under MOECC Procedure D-5-5, minimum water supply requirements have been established, based on daily usage, during periods of high water demand (one two (2) hour period the morning and one in the evening). D-5-5 states that the average per person demand is 450 Litres/day and is the equivalent of a peak demand of 3.75 Litres/day. Based on typical occupancy the average day water demand per residence is 2,250 L/day. ORE indicated that this volume could be divided between the morning and evening period (typically 1-2 hours for each period) and concluded that to comply with the minimum requirement for Procedure D-5-5 the test wells should be capable of meeting this criteria. It is noted that Procedure D-5-5 states that the rate shall not be less than 13.7 L/min (3.0 Imperial gpm). Procedure D-5-5 also states that

Reference: Hydrogeological and Site Servicing Study
Proposed Residential Development, Pilgrim's Rest Campground
Part Lots 3 & 4, Concession 11, Township of North Kawartha

the only instance where rates lower than these may be used is where preliminary results indicate that the pumping test rate cannot be sustained in the long term, and consideration is given to systems which would compensate for low well yields.

ORE concluded that *"despite the challenging water supply conditions at the site, all of the tested wells satisfied the requirements of MOECC Procedure D-5-5."* ORE indicated that future wells may need to be hydraulically fractured to increase well yields, especially when the yields are below 5.4 L/min (1.2 lgpm). ORE also indicated that *"supplementary water storage will likely be necessary for the majority of the proposed lots on site, however the need for supplementary storage should be determined on an individual basis, based on the well conditions and the homeowners water supply requirements."*

Water quality testing was also carried out during the pumping tests. ORE concluded that water quality testing indicated that the water quality *"is reasonably good and within the expected range of values for groundwater in the study area. All of the test wells meet the health related quality criteria of D-5-5 and the Ontario Drinking Water Quality Standards"*. Many wells showed high concentrations of iron and manganese as well as elevated hardness, all of which are aesthetic parameters. Elevated sodium concentrations (above health related warning levels) are found in several of the wells tested. Fluoride is elevated in several wells, with Fluoride exceeding the Ontario Drinking Water Standard Maximum Acceptable Concentration (MAC) at one well location. Radionuclides were not included in the testing program and it is recommended that Gross Alpha and Gross Beta be included in any future water quality testing to demonstrate radionuclides are not an issue in the bedrock system.

WASTEWATER TREATMENT

The existing waste water treatment is through a central sewage disposal system servicing the entire site. As indicated previously, the system does not operate under any existing approvals. ORE indicated that test pit excavation near the effluent disposal bed revealed bedrock at a depth of only 0.49 m below ground surface. The Ontario Building Code (OBC) requires that the bottom of a sewage disposal absorption trench be at least 0.9 m *"above the high ground water table, rock or soil with a percolation time greater than 50 minutes"*. ORE concluded that the existing system appears to be undersized for the flow rate and it is not known if the existing disposal bed meets the OBC requirement and/or whether the effluent is being sufficiently treated.

Nitrate Impact Assessment

A nitrate impact assessment was conducted based on the MOECC Procedure D-5-4, which sets the maximum allowable nitrate concentration at the site boundary to be 10 mg/L, from wastewater discharging into the groundwater. The Procedure uses specific nitrate loading criteria from septic system disposal beds and allows for dilution by groundwater as the principal attenuation mechanism.

Reference: Hydrogeological and Site Servicing Study
Proposed Residential Development, Pilgrim's Rest Campground
Part Lots 3 & 4, Concession 11, Township of North Kawartha

The assessment conducted by ORE used the three (3) local drainage areas within the Site in which development has been designated. ORE determined the volume of water available for dilution within each of the drainage areas and determined the maximum number of lots that could be theoretically supported in each of these areas, based on theoretical nitrate concentrations for each area. It is unclear what is considered the downgradient "boundary" where the effluent would ultimately migrate.

ORE "backed out" the theoretical number of lots based on the nitrate loading formula, dilution rate and keeping the final nitrate concentration under 10 mg/L. The resulting theoretical number of lots was 11, 9 and 10, for the three (3) drainage basins for a total of 30 lots. ORE concluded that this number of lots was sustainable but would likely require raised septic tile beds in many areas due to the shallow bedrock and water table.

Sewage Disposal

ORE recommended that the proposed development be serviced by conventional septic systems and that given the thin soils, fully raised septic beds would likely be required. ORE also indicated that due to the thin permeable soils, the site would be considered moderately sensitive with respect to hydrogeologic conditions.

ORE'S MAIN CONCLUSIONS AND RECOMMENDATIONS

The following are ORE's main conclusions and recommendations:

1. The existing central sewage system (including Class 1 systems) would not be appropriate for use to service the proposed development. If the proposed development proceeds the all existing systems on-site will be decommissioned.
2. Based on test well data, ORE concludes that each proposed lot can obtain an adequate supply of acceptable water quality from a combination of two water bearing zones in the bedrock; however, aggressive hydrofracturing of the bedrock may be required.
3. Well yields are variable, and some wells will have lower than ideal well yields. In some cases, the yield may not be acceptable and supplementary water storage may be necessary or more than one well may need to be drilled to obtain an acceptable quantity of water. A lake-based, potable water supply system is not currently considered for any proposed lot.
4. A Well Certification Program is recommended, given the variable groundwater conditions on the site. ORE are recommending that prior to the issuance of a building permit for each lot, a well be constructed under the supervision of a Qualified Person who will certify in writing that the drilled well will meet the minimum construction, water demand and water quality requirements as set out in the Well Certification Program in Appendix G of the ORE report.

Reference: Hydrogeological and Site Servicing Study
Proposed Residential Development, Pilgrim's Rest Campground
Part Lots 3 & 4, Concession 11, Township of North Kawartha

5. Based on the results of the on-site investigation a nitrate impact assessment was conducted in accordance with MOECC Procedure D-5-4. The area was divided into three (3) separate drainage basins and ORE concluded that the development should be able to support thirty (30) residences and still comply with MOECC Procedure D-5-4 (i.e. < 10.0 mg/L at the downgradient site boundary).
6. The development is expected to have no significant impact on water quality in Stony Lake and should represent a net improvement by removing the current trailer park. The presence of non-calcareous silicate derived sand will help attenuate (through sorption) the phosphorous contained within the effluent. A 30 m setback from the lake is recommended for the construction of septic systems, as well as the use of proprietary wastewater treatment systems.

STANTEC RESPONSE TO CONCLUSIONS AND RECOMMENDATIONS

The following response is provided, corresponding to the numbering above:

1. It is recommended that, if the development does not proceed, the current central sewage system needs to be properly assessed and upgraded as necessary to be brought into compliance with the Ontario Building Code.
2. It is Stantec's opinion that the Site has a highly variable and generally low well yield and there may be substantial difficulty in obtaining an adequate water supply on a lot by lot basis. See additional comments, as per the Well Certification program in Point 4, the onus will be on the lot owner to establish a water supply, after purchasing the lot. This approach is not recommended to the County by Stantec.
3. As per Point 2 and Point 4, given the highly variable nature of the water bearing zones in the bedrock, both with respect to location and of the fractures and well yield, the onus is on the owner of each individual lot to establish a water supply prior to the issuance of a building permit. This approach is not recommended to the County by Stantec.
4. The introductory paragraph in the Well Certification Program (WCP) document states: "All development lots are subject to this Well Certification Program. *It is the responsibility of the lot owner to ensure the program is undertaken.*" As indicated above, it is Stantec's interpretation that the WCP requires that a water supply be established prior to the issuance of a building permit. This places the onus on the owner of each individual lot. Several options were put forth, from drilling numerous wells on the property, supplementing well water supply with storage, having small (less than five (5) lot) communal water supply wells, and surface water supply. Many of these alternatives are very complex and not recommended to the County by Stantec.
5. Water quality testing should include screening for the presence of radionuclide parameters. In addition, fluoride was detected above the Maximum Acceptable Concentration (MAC) at one test well location.

Reference: Hydrogeological and Site Servicing Study
Proposed Residential Development, Pilgrim's Rest Campground
Part Lots 3 & 4, Concession 11, Township of North Kawartha

In our opinion, a well having raw water quality exceeding a MAC is not considered a potable water supply.

6. The nitrate impact assessment was conducted to provide the maximum number of lots to achieve an objective of under 10 mg/L. This assessment was conducted following MOECC Procedure D-5-5. It is noted that the assessment is to provide the nitrate concentration at the down gradient boundary of the Site; however, it is unclear what represents the downgradient boundary when there are three (3) subcatchment areas and variable topography within the study area. No local water table conditions have been established and no local shallow groundwater flow direction has been determined so it is unclear where septic effluent would migrate within each subcatchment area. Based on MOECC Procedure D-5-4, the Site would be considered to be in a hydrogeologically sensitive environment (shallow depth to rock with coarse soils above the rock, resulting in little attenuation). As well, it has not been shown that the sewage effluent is hydrogeologically isolated from the water supply "aquifer".
7. The non-calcareous silica derived sand will likely be adequate to minimize potential phosphorous loading to Stony Lake; however, it would be by mineral precipitation not sorption.

To further support Stantec's concerns regarding the proposed development, a recent Ontario Municipal Board (OMB) decision, Case No. PL150313, dated October 6, 2017, highlighted several of the concerns noted above. The application involved waterfront development on Stony Lake by Burleigh Bay Corporation (BBC) for a 58 lot condominium development, including a central recreation facility and marina. A major issue was whether the hydrogeological assessment was sufficient to determine that an adequate and safe supply of water was available for each of the 58 lots. If there were water supply issues, the proponent (BBC) submitted that the imposition of conditions and a well certification process would adequately address such uncertainties. It was argued that there was insufficient water yield available to meet the needs of the development.

The evidence before the Board showed that only two out of eleven wells provide a reasonable well yield (20,000 L/day). Opinion evidence provided in opposition to the development indicated that the transmissivity of six (6) of the eleven (11) wells was less than 1.0 square metres per day and can barely be characterized as a water supply, with two (2) other wells running dry after three hours of gentle pumping. It is noted that the testing performed on the wells for the current application were all less than 0.4 square metres per day with the exception of one well, well below what the opinion evidence and the Board concluded would be a viable aquifer.

The Board concluded that:

- BBC had not established that the development can be serviced with an adequate supply of water
- The Well Certification Program and Contingency plan did not address the Board's concerns as it: *"ignores the practical limitations of placing a concentrated waterfront development relying on multiple wells, in close proximity, on lands that have been identified as possibly incapable of supplying water to*

Reference: Hydrogeological and Site Servicing Study
Proposed Residential Development, Pilgrim's Rest Campground
Part Lots 3 & 4, Concession 11, Township of North Kawartha

every lot owner. If there are real uncertainties as to well access to water for buyers, this means they are purchasing lots with these potential issues related to water servicing and significant costs associated with this reality, as being unresolved." The Board further stated: to include a contingency solution that is, at the outset, objectionable would place all Parties, including the Township, into the difficult planning quagmire."

There are many similarities to the current development, with the same concerns and issues and it is Stantec's opinion that the development as proposed cannot be supported, given the above noted concerns.

CLOSURE

Based on the discussion presented above, it is our opinion that the information presented shows there is likely insufficient water to support the proposed development and the onus is placed on individual lot owners, after the purchase of the lot, to determine if there is adequate water for the owner's individual lot. It is also our opinion that the property is in a sensitive hydrogeological setting and may not support the scale of the proposed development.

I trust these comments present our concerns. Please do not hesitate to contact the undersigned if you have any questions.

Regards,

STANTEC CONSULTING LTD.


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June 29, 2018
File: 160950451 Task A514

Attention: Caitlin Robinson, Planner, Peterborough County

County of Peterborough
470 Water Street
Peterborough, ON K9H 3M3
VIA EMAIL: crobinson@ptbocounty.ca

Dear Caitlin,

Reference: Peer Review of Environmental Impact Study for a Proposed Residential Redevelopment of Pilgrim's Rest Campground (March 2016), prepared by Oakridge Environmental Ltd.

Stantec Consulting Ltd. (Stantec) was retained by the County of Peterborough (the County) to peer review an *Environmental Impact Study (EIS) Proposed Residential Redevelopment of Pilgrim's Rest Campground* by Oakridge Environmental Ltd. (ORE; March 2016). The EIS is in support of a proposed residential redevelopment of the property currently occupied by the Pilgrim's Rest Campground. The proposed redevelopment will include a 30-lot residential condominium development located in Part Lot 3&4, Concession 11 (Burleigh) Township of North Kawartha, County of Peterborough.

This letter has been prepared to provide comments to the County of Peterborough on the EIS and includes Stantec's opinion and comments on the following analysis:

- **Purpose of the EIS and the EIS Addendum** - Is the purpose to conduct the EIS clearly defined?
- **Scope of Assessment and Conformity to County of Peterborough Official Plan (OP) Requirements, the Provincial Policy Statement (PPS) and the Growth Plan for the Greater Golden Horseshoe (GPGGH)** – Does the application have a clear scope, which conforms to the County of Peterborough's OP's requirements for an EIS and to the PPS and GPGGH?
- **Background Review and Field Studies and Potential Environmental Impacts** – Are there any potential deficiencies in the field methods used and/or desktop sources consulted during the collection of baseline data?
- **Impact Assessment and Mitigation Measures** – Have all the potential pathways for environmental impacts been identified, does the EIS propose appropriate mitigation measures to address the potential impacts and did the authors complete suitable review of both the potential impacts of the project and identify any potential residual concerns?
- **Summary** - Does the EIS generally meet the requirements and standards for an EIS under Municipal and Provincial policies and guidelines, and is there any reason to expect residual impacts on significant features?

Stantec has conducted the peer review in keeping with the standard practice for peer reviews established under our retainer with the County of Peterborough. We have formed our opinions and made our comments

June 29, 2018

Caitlin Robinson, Planner, Peterborough County

Page 2 of 7

Reference: Peer Review of Environmental Impact Study for a Proposed Residential Redevelopment of Pilgrim's Rest Campground (March 2016), prepared by Oakridge Environmental Ltd.

based on a review of the documents as presented. Stantec has not conducted a site visit nor have we replicated the background data collection or analyses that are reported on in the EIS. The summary of background data and field results are taken at face value as presented by the Authors. Where assumptions were required to interpret the results of the EIS we have listed our assumptions.

PURPOSE OF THE EIS

The stated purpose of the EIS is that it is in support of a proposed redevelopment of Pilgrim's Rest Campground which is located off Cheboutequion Road near Northey's Bay Road on Stony Lake. The redevelopment of two areas of 29 ha (mainland) and 0.5 ha (island) will include the transition from a campground of eighty-seven (87) trailer sites that have water services and twenty (20) unserviced camping sites to a condo development of 30 sites on private services. The EIS indicated that the proposed development will only utilize approximately 19 ha of the 29 ha. The remaining 10 ha will be used for "*passive recreational use*". The 0.5 ha island site will not be redeveloped and recommended to be placed in a protective zone category to preclude future development.

The EIS indicates that the report was completed in conjunction with the *Planning Report* by EcoVue Consulting Services Ltd. (August 30, 2017).

Triggers for the EIS are described throughout Section 3.0 of the EIS and include the following:

- The proposed redevelopment will be located adjacent to water features that possess fish habitat;
- The subject property is within 120 m of a provincially significant wetland (PSW; Hull South Bay); and
- The property is within 30 m of Stony Lake.

SCOPE OF ASSESSMENT AND CONFORMITY TO OFFICIAL PLAN REQUIREMENTS AND THE PROVINCIAL POLICY STATEMENT

The EIS provides a description of the Policy Framework for the application including the PPS, Trent-Severn Waterway (TSW), the OP and the Clear, Stony and White Lake Plan. There, was no discussion on the GPGGH which Stantec acknowledges, has been updated since the published date of the EIS. Some context on how the policy changes in the GPGGH may impact the application is recommended. If the GPGGH Indicates that "key hydrologic features are to be no less than 30 meters measured from the outside boundary of the key natural heritage or hydrological feature" (see below), then the proposed set-backs do not appear to be sufficient for the project.

"4.2.4 Lands Adjacent to Key Hydrologic Features and Key Natural Heritage Features

1. *Outside settlement areas, a proposal for new development or site alteration within 120 metres of a key natural heritage feature within the Natural Heritage System or a key hydrologic feature will require a natural heritage evaluation or hydrologic evaluation that identifies a vegetation protection zone, which:*

June 29, 2018

Caitlin Robinson, Planner, Peterborough County

Page 3 of 7

Reference: Peer Review of Environmental Impact Study for a Proposed Residential Redevelopment of Pilgrim's Rest Campground (March 2016), prepared by Oakridge Environmental Ltd.

- a. *is of sufficient width to protect the key natural heritage feature or key hydrologic feature and its functions from the impacts of the proposed change;*
- b. *is established to achieve and be maintained as natural self-sustaining vegetation; and*
- c. *for key hydrologic features, fish habitat, and significant woodlands, is no less than 30 metres measured from the outside boundary of the key natural heritage feature or key hydrologic feature.”(GPGGH 2017)*

The Planning Report by Ecoview (2017) provided a discussion on how the EIS determined that the “*development is not expected to have a negative impact on any natural features and their ecological functions. As such it is our opinion that the proposed condominium development is consistent with the applicable policies of the 2017 Growth Plan.*” However, more discussion is recommended in the EIS on whether the proposed development meets the applicable policies outlined in Section 4.2 of the GPGGH.

There is no discussion on whether the woodland would be identified as significant under Natural Heritage Reference Manual (MNRF 2010). Some discussion regarding the site as significant woodlands should be considered in the report.

Additional pieces of policy or legislation which the EIS indicated could interact with the project included the following:

- *Endangered Species Act (ESA);*
- *Fisheries Act;*
- *Navigable Waters Protection Act;*
- *Migratory Birds Convention Act (MBCA); and*
- *The Species at Risk Act (SARA).*

Finally, there is no indication of any regulatory consultation which may have occurred or is ongoing in support of the project including the Ministry of Natural Resources and Forestry (MNRF). Due to the potential for SARs to interact with the project, consultation with the MNRF is recommended.

BACKGROUND REVIEW, FIELD STUDIES AND POTENTIAL IMPACTS

The EIS completed a thorough review of background material which was augmented with eight (8) field surveys in 2013 and 2014. The background review of information generally appears sufficient for the scope of the proposed development. However, additional review could involve the following:

- The authors did not appear to consult with the MNRF to address recent listings to the *Endangered Species Act* (ESA) of several bat species whose range overlap the region, the potential occurrence of Blanding's Turtles in the area, etc. Stantec recommends that the author file an Information request form with the MNRF for the project and consult with the MNRF regarding the potential for Blanding's Turtles to be impacted by the project.

June 29, 2018

Caitlin Robinson, Planner, Peterborough County

Page 4 of 7

Reference: Peer Review of Environmental Impact Study for a Proposed Residential Redevelopment of Pilgrim's Rest Campground (March 2016), prepared by Oakridge Environmental Ltd.

Field investigations listed in Section 6.1.1 of the EIS seemed appropriate and comprehensive based on the information provided. Surveys appeared to have occurred during the appropriate time of year, suitable weather conditions and the appropriate times of day. However, bat surveys did not appear to be completed in support of the application using acoustic monitors as per the protocol. Recent listings of bats to the ESA should warrant field surveys to determine their consideration into the potential impacts from development and if an Overall Benefit Permit would be required for the site. Otherwise, Stantec is of the opinion that the field surveys would be at an appropriate level of detail for the proposed development. The results of the surveys generally coincide with what Stantec would expect for this type of habitat.

During a review of the SARs in Section 6.0 of the EIS, avian and herpetile species not identified during surveys were assumed to not be currently present on-site (e.g., Least Bittern and Blandings Turtle). However, the EIS indicates that "*Stoney Lake provides excellent habitat for both Blanding's Turtle and Northern Map Turtle*" and that "*Although neither species (i.e., Blanding's Turtle and Northern Map Turtle) were observed during the inspections, it is highly likely that the SAR turtles could occur proximal to the site.*" Based on the assumption above, Stantec recommends that a review of the Blanding's Turtle General Habitat Description, and other SARs who may have suitable habitat, be reviewed for the project to determine if and what habitat could potentially be disturbed and if an Overall Benefit Permit may be required. This can be determined through the submission of an Information Gathering Form (IGF). The IGF submission would initiate consultation with the MNRF and is recommended to be filed.

Three Butternuts have been identified in the area with the one located on the subject property and assessed to be retainable. The other two Butternuts were located off the subject property. Stantec agrees with the assessment that the Butternuts require a 25 m buffer. Should the proposed development buffer of 25 m be retained, Stantec has no concerns regarding the methodology proposed to address Butternuts located on the property. If the buffer cannot be retained, the proponent is encouraged to contact the MNRF regarding compensation as per the EIS.

Some discussion is recommended regarding Hull South Bay PSW. There is no discussion about why the area was classified as a PSW or a description of the PSW as it was evaluated. Much of the impacts around wetlands including loss of wetland function do not appear to be thoroughly reviewed. Because of the potential habitat for Blandings Turtle in the area, some discussion is warranted on whether setbacks or mitigation measures should be similar to those typically required for PSWs and if necessary adjusted based on wetland boundary for polygons contiguous with the bay wetland communities.

The observation of the Whip-poor-will is recommended to be reviewed against the General Habitat Description (MNRF). Although the authors did not observe a nest, the potential for the species to be utilizing the adjacent area based on the General Habitat Description should be discussed and consultation should occur with the MNRF if necessary.

MITIGATION MEASURES AND IMPACT ASSESSMENT

Stantec assumes that Blanding's Turtle may be present in the adjacent aquatic features for the area and the mitigation measures for Blandings Turtles be proposed and discussed between the proponent, the

June 29, 2018

Caitlin Robinson, Planner, Peterborough County

Page 5 of 7

Reference: Peer Review of Environmental Impact Study for a Proposed Residential Redevelopment of Pilgrim's Rest Campground (March 2016), prepared by Oakridge Environmental Ltd.

proponent's consultant and the MNRF and that any mitigation strategies and measures will be approved (permitted) by the MNRF to reduce potential impacts on Blanding Turtles and will be implemented as permitted.

The EIS provides a series of mitigation measures designed to limit potential impacts to both aquatic and terrestrial features in the general area. Stantec recommends that buffers be appropriately defined for development. A 30 m setback is the typical distance to reduce impacts to PSWs and other important wetlands/watercourses with implementation of effective mitigation measures. Some additional discussion would help Stantec to understand what a sufficient buffer to limit impacts should be on these sensitive features.

Stantec recommends that the migratory bird window be proposed to meet the requirements of Environment Canada and should be marginally extended. Bird Studies Canada (https://www.ec.gc.ca/paom-itmb/default.asp?lang=En&n=4F39A78F-1#_02) recommends a timing window from early April to late August to limit potential impacts to nesting migratory birds.

The EIS indicates that because shoreline areas are to *"become a common element to be shared by residents of the condominium development for passive recreational use. As such, impacts to the shoreline area should be minimal and shoreline improvements should be possible"*. Stantec recommends that this statement is qualified including what type of shoreline improvements should be possible.

Stantec would prefer to have a clear understanding of how a change in boat traffic or usage of the docks in Block 1 by condominium owners may change or there is any anticipated change at all and why. Since boat traffic through the PSW and the lake is likely to be altered, and/or the potential for the docks to be improved or changed, would any potential changes have any additional impact upon aquatic species.

On Page 34 of the EIS, in regard to the Snapping Turtle, the EIS indicates that "no significant in-water works is proposed for the redevelopment that could impact this predominately aquatic species." Stantec recommends that significance is defined for in-water works. No in-water works have been proposed with Stantec requesting some clarification of what would be determined to be insignificant.

Regarding the small drainage feature identified at the lot lines for lots 6, 7, 8, 9 and 13. There are concerns with it being placed within the property line and the potential for the shared feature to be damaged should there be property fences are defined boundaries erected at any time. Stantec would recommend additional justification as to why it was not provided as a common area similar to Lots 4, 5, 6 and 7 or be moved away from the property line and placed within a specific lot(s) to reduce the potential for impact.

SUMMARY

In the context of the size of the development (30-lot condominium), and provided the additional issues outlined in this letter are addressed, Stantec feels that the scope of the assessment was generally adequate to identify existing conditions and identify potential environmental constraints at the site. However, potential impacts should be more thoroughly discussed to provide a clear understanding of the

June 29, 2018

Caitlin Robinson, Planner, Peterborough County

Page 6 of 7

Reference: Peer Review of Environmental Impact Study for a Proposed Residential Redevelopment of Pilgrim's Rest Campground (March 2016), prepared by Oakridge Environmental Ltd.

potential effects that the project may have on those environmental constraints which were identified. Stantec assumes that the following will be addressed to the County's satisfaction:

- Mitigation recommendations will be implemented as per the EIS.
- The project will be compared against Blanding's Turtle General Habitat Description and the MNRF will be consulted. An Overall Benefit permit will be obtained from the MNRF for the permanent disturbance to Blanding's Turtle habitat, if warranted.
- Bat SARs are considered in the application.
- Compensation is agreed upon with the MNRF should any disturbance be anticipated to occur to any Butternut during construction.
- Set-backs are consistent with the GPGGH.
- Further clarification on the potential impacts to the Whip-poor-will is recommended including potential consultation with the MNRF.
- Some discussion is recommended on the potential impacts from the proposed project on the PSW and Stony Lake and "significant in-water works" is defined.
- Additional justification as to why the small drainage feature identified at the lot lines for lots 6, 7, 8, 9 and 13 was not provided as a common area similar to Lots 4, 5, 6 and 7 or be moved away from the property line and placed within a specific lot(s) to reduce the potential for impact.
- Discussion is recommended on whether the area could be considered a significant woodland.
- Current recommendations by Bird Studies Canada regarding the *Migratory Bird and Convention Act*, are that vegetation is preserved during the breeding bird nesting window and that the proposed window be marginally extended to meet Environmental Canada's requirements to protect migratory bird nests.

June 29, 2018

Caitlin Robinson, Planner, Peterborough County

Page 7 of 7

Reference: Peer Review of Environmental Impact Study for a Proposed Residential Redevelopment of Pilgrim's Rest Campground (March 2016), prepared by Oakridge Environmental Ltd.

CLOSURE

This review of the EIS prepared by ORE has been prepared as per the Contract between the County of Peterborough and Stantec Consulting Ltd. Should you have any questions or concerns regarding the information detailed herein, please do not hesitate to contact the undersigned.

Regards,

STANTEC CONSULTING LTD.



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