



308 Wellington Street  
2<sup>nd</sup> Floor  
Kingston, ON K7K 7A8  
Canada

613-548-3446  
www.malroz.com

via: e-mail

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James Bar, Mpl, MCIP, RPP.  
Senior Planner  
Planning Building and Licensing Department  
City of Kingston  
1211 John Counter Boulevard, Kingston, ON

Subject: Comments on Response to Draft Technical Comments,  
Proposed Unity Inn & Spa, 2285 Battersea Road, Glenburnie,  
Ontario K0H 1S0

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Dear Mr. Bar:

Malroz Engineering Inc. (Malroz) is pleased to present our comments on the response to our draft Peer Review for the proposed Unity Inn and Spa. We were furnished with the following document by you in response to our Peer Review:

1. *Response to Draft Technical Comments from Malroz Engineering Inc. Hydrogeological Study – Proposed Unity Farm, Inn and Spa, 2285 Battersea Road, Kingston, Ontario*, prepared by ASC Environmental Inc., dated September 30, 2019, File: ASC-458 102I.

The purpose of this review was to evaluate responses to our Peer Review comments dated June 28, 2019 and a subsequent meeting with the developer's team and City of Kingston personnel held on July 12, 2019. We understand that no further field investigation or data collection was included as a part of the ASC response.

## **1. Comments**

We have reviewed the response to our peer review and offer the following comments for your review and consideration. The comments are organized in the same numbering as our original review. The italicized text are our original comments, followed by our current comment based on the proponent's response.

## **Servicing Options**

1. *On Page 7, second-to-last paragraph of the hydrogeologic study, the consultant identifies that for the long-term provision of private on-site services from groundwater, it must be shown to be safe and sustainable. The consultant further identifies that trucking of water, to site, will be undertaken to supply water for certain aspects of the proposed development. The proponent should outline all water supply needs for the site and evaluate the provision of onsite services to support the full proposed development.*

The consultant provided additional detail on the water usage for Phase I, II and III of the development using wastewater flows from the Ontario Building Code (OBC). This included details on the initialization of water takings that are proposed to be phased in at 15,000 litres/day into storage onsite storage tanks of approximately 50,000 litres.

Peak daily water usage from all three phases appears to total approximately 61,000 litres.

The proponent should outline which water uses in the Theoretical Flow Calculations are part of what phase of the development.

The Theoretical Flow Table should link the identified Building Parts to the occupancies specified in OBC Table 8.2.1.3.B. We understand the City plumbing department is evaluating the Theoretical Flows and building uses and the table may be subject to further revision based on that review.

The spa make-up water should be included in the flows.

Considering the Building Part in the Theoretical Flow Calculations include uses where grey water use may not be permissible, such as for potable water, it is unclear where and how grey water will be reused within the system to mitigate water takings. The consultant must detail how and where the grey water will be reused to justify whether 30% diversion and reuse is expected to be feasible.

The net daily flow volume does not include spa make-up water, which would be supplied via the well water distribution system and should for the purposes of evaluating peak daily water usage.

Our understanding is that the development is proposed in stages and as a result the peak daily flow contemplated in the report may not be possible until full buildout of the proposed uses in the Theoretical Flow Calculation Table. Considering the Phasing of the development and the anticipated water demand we recommend

that a monitoring program during the operations phase of the development include metering of groundwater extraction, wastewater treatment, and grey water usage, on a daily basis.

2. *The consultant does not identify how, should offsite water sources be permitted, the offsite water will be separated from onsite sources.*

Clarification was provided by the consultant that the spa make-up water will be separated from the domestic and grey water storage systems.

No further comment required.

### **Groundwater Quantity**

3. *Section 1.4 of the hydrogeological study identifies a peak daily water demand of 75,375 litres, in accordance with the Ontario Building Code. The report further identifies that 29,960 litres per day will be recycled, resulting in a peak daily water taking from groundwater of 45,415 litres.*

*During the site visit, the proposed development was identified to include a brewery, a winery and potentially an open loop groundwater geothermal system. The hydrogeologic study considered for this review does not evaluate for a water demand beyond those outlined on Page 4, in the Table titled 'Anticipated Flow Calculations Based on Site Use for Phase 1 and Phase 2 of Development' which does not include a winery, open loop geothermal system or brewery.*

*The anticipated flow calculations indicate that the spa, with bathhouse, showers and toilets, will have a demand of 150 litres per day. This appears to be low and the peak number of patrons to the spa should be re-evaluated.*

*Page 37, item 8, identifies that the re-use water will supply toilets and laundry. Supporting calculations on the demand for toilet water is not provided (laundry is shown as 7,500 litres per day) and should be included.*

*A Permit to Take Water (PTTW) from the MECP is required for water takings of 50,000 litres or more in any 24 hour period. As well, both closed and open-loop groundwater geothermal system can require approvals and/or licensed installers though the MECP.*

*Considering the site is projecting a peak of 45,415 litres per day of groundwater takings and that there are potential additional water supply needs for tubs, a brewery and winery, or other uses, the proponent should consider the requirement to obtain a PTTW and other approvals. Should additional groundwater uses beyond those identified on Page 4, in the Table titled 'Anticipated Flow*

*Calculations Based on Site Use for Phase 1 and Phase 2 of Development', further adequate study should be undertaken.*

Clarification was provided in comment one on the anticipated daily water takings for the proposed uses of Phases I, II and III of the development, including the spa, winery and brewery. Furthermore, the consultant identified that an open loop groundwater geothermal system is not proposed for the development.

On page 7 of the report the consultant identified that upon commencing operations, water taking will commence at approximately 25,000 litres per day. On page 2 the report identifies that initial water takings for storage purposes will be approximately 15,000 litres per day. The consultant should clarify the noted flows, though both water takings are below the volumes triggering a Permit to Take Water.

The consultant concurred where water takings are above 50,000 litres per day a PTTW is required. Considering the request for a break down in what uses are proposed for each phase of the development, it is unclear if the initial water demand, excluding the contemplated grey water re-use is anticipated to be in excess of 50,000 litres per day or not. As noted in comment one, an operations phase monitoring program should include metering of total daily water taking.

4. *Page 44 recommends a groundwater monitoring program for during and post-site development. However, a detailed monitoring program was not provided in the report. The proponent should provide a proposed monitoring program for review. The monitoring program should include a protocol for responding to water taking concerns from the construction phase and operations phase of the development.*

The consultant has provided an outline of a groundwater monitoring program during construction and post-development.

The monitoring program should clarify which off-site properties are within the area of the program and the proposed number of wells off-site that the consultant is proposing to monitor. We understand this may be a sub-set of representative wells in the monitoring area.

The consultant should identify which on-site wells will have loggers installed in them.

The monitoring program should include metering of total water takings by well, from the on-site wells on a daily basis, including the time the measurement is recorded.

The program is noted as one to two years on Page 8 and two years on page 9. Clarification is needed about whether this time period begins from initial operations, or following completion of all development phases. Considering the

anticipated increase in groundwater takings as additional phases are developed, we anticipate this is two years following the final phase operation. Alternatively, it may be discontinued when superseded by a MECP mandated monitoring program, if a PTTW is subsequently issued for the water takings at site.

Consideration should be given to off-site groundwater sampling at the initiation of the monitoring program from a sub-set of off-site wells to establish baseline water quality measurements.

5. *Groundwater monitoring in on-site and off-site wells was undertaken as a part of the hydrogeologic assessment. The following details should be provided in the pumping test and water level monitoring data tables (eg: Appendix F) to facilitate evaluation:*

- i. water level measurements from a datum (eg. metres below ground, metres below top of casing, etc.),*
- ii. depth of well,*
- iii. clarification regarding the units of numbers stated in cell following "pumping started at".*

The consultant provided additional documentation in the response report.

Table D3 should include whether the datum for water level measurements was the top of the well casing or ground surface.

The Groundwater Elevation table showing monitoring in August, September, November, December and January with data from on- and off-site wells indicates that the elevations are referenced to a geodetic datum. The consultant should clarify how the geodetic elevations were determined.

6. *The consultant describes the pumping test at TW02 as lasting 48 hours, however, although field water quality monitoring data for 48 hours was provided (table D1), the groundwater monitoring data only reflected 24 hours (table D2 and Figure 1 TW2 Pumping Test Drawdown). The consultant should clarify and provide the additional data, if available.*

The data showing approximately 48 hours of pumping and monitoring data was provided.

No further comment requested.

7. *The report does not identify whether additional water supply wells are considered or not. Should additional wells be installed at the site, we recommend that they be assessed for water, quantity, and interference by a qualified hydrogeologist.*

The consultant provided additional clarification that additional wells are not anticipated at this time and that should they be contemplated in the future, they concurred with the recommendation provided in the peer review comment.

### **Groundwater Quality**

8. *During the site visit, it was noted that a water treatment system will be installed at the site to treat and condition the groundwater. Considering that the site will be open to the public, as a commercial operation, the proponent must seek the appropriate approval from the MECP and/or health unit for the drinking water system. We recommend that this information be provided to the City.*

The consultant concurred with the peer review comment.

No further comment required.

9. *Should additional wells be installed at the site, we recommend that they be assessed for water quality by a qualified hydrogeologist, considering the reported water quality.*

The consultant concurred with the peer review comment.

No further comment required.

## **2. Summary**

Our proposal to undertake this peer review included three criteria that were to be considered:

- i. if the hydrogeological work completed by the proponent's consultant team satisfactorily evaluates groundwater quantity, quality and interference to existing or future neighbours.
- ii. provide a conclusion as to whether we agree or disagree with the proponent that the hydrogeological conditions are appropriate for the proposed development water takings and servicing options.
- iii. provide a conclusion as to whether we agree or disagree with the proponent's analysis, assessment, results, conclusions and recommendations.

Considering the outstanding peer review comments above, further information is required from the proponent and their hydrogeologist, in advance of responding to questions i to iii.

### 3. Closure


This peer review is based on the site visit and documents provided to Malroz by the City. We recommend that the comments above be resolved to the satisfaction of the City and their consultant, prior to granting approval.

We remind the reader that the purpose of the peer review was to assess if the proponent has used generally accepted practices to support the conclusions of the hydrogeological study. The peer review is not an audit and as such is not intended to detect facts that were concealed, or omissions in the report. Unless otherwise stated, the peer review does not consider local By-laws, nor does it represent a legal opinion regarding compliance with laws, regulations, and/or guidelines.

We hope this process has been helpful. Please do not hesitate to contact the undersigned if you have any questions or concerns.

Yours truly,

Malroz Engineering Inc.

  
per: John Pyke, P.Geo.  
Environmental Geoscientist

