



August 31, 2021

Project 19-001

Ms. Jenn Burnett, Senior Planner
Township of Georgian Bluffs
177964 Grey Road 18
Owen Sound, ON N4K 5N5

Re: Engineering Peer Review for Shahabi Subdivision
Client ref.: 42T2020-05

Dear Ms. Burnett,

GSS Engineering has reviewed the document titled “Engineering Peer Review for Shahabi Subdivision” completed by WSP. The purpose of this letter is to outline the actionable items from this review, and our firm’s comments/recommendation on how to proceed.

Stormwater Management and Drainage

Item D1: It is unclear if any other regional stormwater reports (other than from the applicant) have been performed for this area. Integrated planning with watershed, and sub watersheds has not been addressed. If no other stormwater plans are available for this area, it should be stated.

Response: No other stormwater plans referenced, nor available for this area. Response incorporated within Section 4.0 of FSSM report.

Item D2: All flow from the property will be deposited onto the shore road allowance prior to making it to Georgian Bay. This includes the proposed drainage easement between Lots 1 & 2. It is unclear if ‘end of pipe’ measures will be required at the low end of the easement, or who will be responsible for the maintenance. A utility right of way or easement to connect the flows from the easement to Georgian Bay may be required

Response: At the request of the Township of Georgian Bluffs, a drainage easement is proposed through lots 1 and 2 to convey flows from the western ditch of Balmy Beach Road. Any additional utility right of ways to convey flows across the shore road allowance to be provided by the Township. Additionally, maintenance for such easement across the Township’s road allowance would be the responsibility of the Township.

We note that at present, no defined flow of stormwater occurs across the subject property from Balmy Beach Road to Georgian Bay. We also note the subdivider who owns land south of the subject land (Barry’s Construction) is required to provide a similar drainage allowance from Balmy Beach Road to Georgian Bay.

Item D3: The existing and future drainage patterns have not been shown on the drawings. There are no drainage arrows indicating the intent of the overland flow for neither small, nor large storm events. It is unclear how storm runoff will be contained on a lot by lot basis. Additionally, no flow calculations or background information has been provided for anticipated flows that are reaching, or being generated by, the property (for pre or post development conditions). The flow delivered by the two existing culverts in the northwest corner of the property has been described as 'minimal/limited' and 'does not carry a large amount of flow'. The origin of this observation, or when this was observed, has not been stated.

Response: Drainage arrows indicating overland storm flow directions have been incorporated within the stormwater management design drawing 19001-06. Per GSCA requests, post development flows are to match predevelopment flows. Increased flows from development have been accounted for through integration of infiltration trenches on each lot.

Individual lot grading to ensure that developed area redirects stormwater to drainage swale and eventually the infiltration trench. Calculations for the trench volume considered the developable land constrained by the 15m wave setback to approximately 10m of the Balmy Beach Road allowance. Infiltration trenches sized to receive a 10mm rain event were provided in conformance with a general LID approach. We note that we are not aware of any published, numeric guidelines for LID systems by Grey County.

Flow delivered by the two existing culverts in the northwest corner of the property was inspected on multiple occasions after major storm events. FSSM updated to clarify this. It is our stance that the drainage easement provided between proposed lots 1 and 2 is sufficient to accommodate these external flows.

Item D4: It is unclear what existing buildings will be removed from the site. Currently, the Schematic House Plan (Figure 1) and the Drainage and Stormwater Management Plan have an existing garage situated in the easement between Lot 1 and Lot 2.

Response: Drawing 19001-02 indicates the buildings that are to be removed from site. To clarify, the owner's intent is to remove all existing buildings on lots 1, 2, and 3 in addition to the pool house and pool located on lot 4. All other structures on lots 4, 5, and 6 are to be retained.

Item D5: The drawings show infiltration trenches are located at, and infiltrate into, the top edge of a pronounced slope. This could cause the slope to become unstable. The long-term maintenance of the infiltration basins has not been addressed. The drawing entitled Drainage and Stormwater Plan shows a U-shaped hyphenated line on each lot. It is unclear what this represents, and it is not on the legend. A Schematic House Plan has only been included for Lot 1. This will be required for all Lots.

Response: Per cross-section A-A on drawing 19001-06 the bottom/outlet of the infiltration trenches are approximately 800mm below the top of berm. For storm events exceeding the trench design capacity, stormwater is anticipated to overflow the top of berm and continue down the approx. 15% back of berm slope. Property owners are expected to ensure continued exposure of top river stone for effective infiltration. With this design and proper maintenance, it slope instability is not expected to occur in storm events within reason.

Hyphenated line representing proposed drainage swales has been incorporated within respective drawing legends. Drawing 19001-08 and 19001-09 have been included to show schematic house plans for lots 1 to 6.

Item D6: The servicing report states that two drainage easements were requested by the County. Only one was provided between Lots 1 and 2. It would seem a similar easement as could be placed between two other lots on the property, ideally on the south end of the property. There are currently no infiltration facilities in the proposed drainage easement.

Response: Two drainage easements were proposed within the Functional Servicing and Stormwater Management Report (FSSM). One between lots 1 and 2, and one shared easement between lot 6 and the southern adjacent lot. Since the writing of this report, communications with the southern lot developer (Barry's Construction) have indicated that there is no such interest in said shared easement. The existing 350mm culvert conveying water from the west ditch of balmy beach road to the east ditch has been observed to convey small to zero volumes of flow. It is in our opinion that the single drainage easement provided between lots 1 and 2 is sufficient at conveying this flow. See item D2 for additional comments.

Item D7: The Functional Servicing Study makes note of requests from the Grey Sauble Conservation Authority (GSCA). This communication has not been provided in the application. We will note that the last paragraph of Section 4.2 of the FSSM report is ambiguous.

Response: Communications with GSCA have been incorporated within Appendix C of revised FSSM report. Last paragraph of Section 4.2 reworded for clarity.

Item D8: Section 4.1 of the FSSM report describes a rear yard catch basin (RYCB). The words 'rear yard' in this description are a bit misleading as it CB is actually in the front yard but in township right of way. The CB captures roadside runoff and directs under the driveway of the north neighboring lot. The outfall of the mechanism deposits this flow into the Township right of way. With the current stormwater management plan, this right of way and indeed up to the centerline of the road has been assumed to be overland flow down to the shore road allowance. This puts the Township in a situation where their drainage mechanism is outflowing to what will be private property. It would be prudent to connect this outflow to a drainage easement with a suitable conveyance mechanism.

Response: Section 4.1 of the FSSM report has been edited to clarify the structure as a catch basin. For drainage, refer to Item D2 response.

Item D9: The East side invert of the existing culvert that crosses the road is approximately 30cm higher than the West side invert.

Response: Elevation shown is for water level, not the eastern invert elevation of the 350mm culvert. As indicated in section 4.1 of the FSSM report, the existing culvert is partially buried with age on the east side; as such, only the water level could be measured and represented on drawings.

Sewage Servicing

Item S1: The consultant should provide an interpretation of groundwater flow in order to confirm the ultimate receiver(s) of the sewage effluent. This information is required in order to conduct the sewage impact assessment.

Response: Topographic survey of existing conditions verifies that the land slopes down from each lot towards Georgian Bay. Groundwater is interpreted to flow down gradient from the property into Georgian Bay. It is our opinion that no further analysis is required.

Item S2: Water servicing for the lot adjacent to the southern property boundary has not been discussed. Due to the proximity of the dwelling to the south to the proposed development, existing water servicing should be identified on a plan and described in the report.

Response: Note that all lots immediately South of the proposed development (Barry's Construction development) to also be provided potable water by way of watermain extension. Therefore, there are no shore wells, drilled wells, or water contamination issues anticipated from this proposed development to the adjacent southern lot.

Item S3: Pending the results of Comment #S1 above, the consultant may be required to provide an impact assessment for nitrates. It is noted that this development is landlocked and as such it is not immediately clear how a groundwater assessment would not be required.

Response: Nitrates introduced from the 3 existing and 3 proposed septic systems will flow down gradient through septic beds to the southern extent of the properties. The shore road allowance is the only land downgrade from the property, and it is considered undevelopable due to 100-year flood setbacks. As such, the direct downstream receiver of any nitrates would be Georgian Bay. As indicated in the FSSM, provincial policies do not include limits on surface water nitrate concentrations, therefore a Nitrate impact assessment is not required for this development.

Item S4: The consultant has not provided any comments on impacts to surface water or neighbouring wells (including shorewells). Impacts associated with nitrate, phosphorus and bacteria/coliforms should be considered for these features.

Response: Per Item S3 response, the Georgian Bay is the direct receiver of all 6 lots septic discharge. Lots to the North of this development are on municipal water. Additionally, the lot directly to the south (Barry's Construction development) is to connect to the municipal water system. Therefore, there are no anticipated impacts to the water quality of neighboring lots. Given the distance between this proposed development and further southern lots, any constituents of concern can be expected to have diluted within the Georgian Bay to concentrations of negligible impact.

Item S5: No test pit logs for the July 19, 2019 investigation have been provided in the reports. The consultant should provide test pit logs, including a description of soils and observations related to groundwater.

Response: Test pit logs completed by GM BluePlan were attached within Appendix B of the FSSM report.

Item S6: The consultant should note the total finished floor area and fixture units when calculating the daily design sewage flow for the proposed dwellings, as per Table 8.2.1.3.A. of the OBC.

Response: Given that house plans are not currently available, total fixture counts are similarly not available. We remain satisfied that the Township's CBO will accept the flow estimate of 2000 L/day for a 4-bedroom dwelling as appropriate for the septic system design.

Item S7: A conceptual lot layout should be provided for Lots 4 and 6 of the development (at minimum) as these lots appear to be restrictive in terms of developable area, as shown on Drawing 19001-05. Consideration should be given to the soil conditions encountered within the test pits when showing the conceptual leaching bed locations and sizing requirements. The required setbacks according to Table 8.2.1.6.(2) and Section 8.7.4.2.(11) of the OBC should also be considered.

Response: Per Item D5 response, schematic plans for lots 1 to 6 have been provided in drawings 19001-08 and 19001-09. Note that as septic design has not been completed, drawings are only approximate schematics with appropriate OBC setbacks. As indicated on drawing 19001-08 lots 1, 2, and 3 will require partially raised septic systems due to presence of silt and clay in native soil.

Item S8: It is not clear how sewage servicing is provided to the existing buildings at the site. The locations of the existing systems (if known) should be provided on the plans and a statement on if and how these systems are to be decommissioned should be provided. If any sewage systems are to be maintained, a description of the systems, location on the plans, and a capacity analysis according the current OBC guidelines should be provided.

Response: Drawing 19001-09 represents approximate locations of existing septic systems on proposed lots 4, 5, and 6. The intent is for these systems and their respective buildings to be retained post severance. A local septic servicing company will be contracted to complete a capacity analysis and confirm the locations of the existing systems to be retained. Drawings to be updated with the capacity analysis once completed. There are currently no septic systems on any lots that will require decommissioning.

Watermain

Item W1: The existing water service conditions for the existing properties have not been addressed and have not been shown on the plans. It is unclear which existing dwellings have a water service.

Response: We believe any aged/existing water supply facilities on the property are irrelevant as all existing and new developments to be provided with new water supply by extension of watermain.

Item W2: The source feeding existing water services and the location of the service lines is not shown. The existing shore well located in Georgian Bay, directly south of proposed lot 6, is not shown on the plans. The proposed long-term implications, and the methodology for removal of these services has not been addressed. Depending on the method, removal may require the use of, and have implications for, the Townships roadside shore allowance.

Response: See Item W1 response. Removals to be coordinated with Township for use of road allowance if required.

Item W3: The proposed extension of the $\phi 200\text{mm}$ water main along the road frontage is appropriate and in keeping with standard practice for municipal water systems. Hydrant placement, as located on the plans, is appropriate and falls within the 150m spacing stipulated by Schedule C to the Subdivision Servicing Agreement for residential areas.

Response: Noted.

Item W4: The Functional Servicing and Stormwater Management report notes that each lot will receive and individual service, though they are not shown on the plan. The FSSM denote that the watermain and the services be constructed to Georgian Bluffs' watermain standards. However, the suggested construction of $\phi 25\text{mm}$ Munipex with tracing wire, differs from the Schedule C to the Subdivision Servicing Agreement which stipulates a 20mm Type K copper service. The note to build water system infrastructure to Georgian Bluffs Engineering standards is not on the drawings.

Response: Section 3.0 of FSSM was revised to standards set out in Georgian Bluffs Schedule "C" Subdivision Agreement. Dedicated water service drawing incorporated within set as 19001-07; similarly, this drawing contains notes on compliance with Georgian Bluffs engineering standards.

We note that the Township will retain their own engineering consultant to design the new 200mm watermain extension on Balmy Beach Road (including connections of individual services). As such, the watermain and services shown is schematic only. We understand the developer will fund the watermain installation in part but is not the contractor of said watermain.

Item W5: The alignment of the waterline shows no dimensions for the offset from property line. The separation from the gas line is also not shown.

Response: Proposed water servicing drawing 19001-07 added to set, includes dimensions from property lines and offsets from gas line.

Sincerely,



Spencer Manoryk, E.I.T

SNM/JTG/nc

cc: Dr. Mehran Shahabi, Client
Genevieve Scott, Cuesta Planning Consultants Inc.
Jennifer Burnett, Township of Georgian Bluffs
Stephanie Lavey-Avon, Grey County



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