Tay Valley Township

REPORT

COMMITTEE OF THE WHOLE
December 7th, 2021

Report #PD-2021-42
Noelle Reeve, Planner

MABERLY PINES HYDROGEOLOGICAL REVIEW
BLUMETRIC ENVIRONMENTAL INC. FINDINGS

STAFF RECOMMENDATION(S)

It is recommended:

"WHEREAS, a review of the hydrogeological features of the area contained within the Maberly Pines Subdivision was conducted, including obtaining ground water samples from the existing wells for laboratory analysis and research of well records in the area for flow data in order to determine a private servicing layout which would identify the location of the dwelling, well and septic for each vacant lot in the Maberly Pines Subdivision, based on Water and Earth Sciences Associates (WESA's) recommendations in comparison with a private servicing layout based on constrained development (ex. incinerating toilets, importing potable water);

AND WHEREAS, BluMetric Environmental Inc**.** was retained to undertake the review;

NOW THEREFORE BE IT RESOLVED THAT, the recommendations from the results of the Maberly Pines Hydrogeological Review by BluMetric Environmental Inc. be included as part of the issuance of future building permits in the Maberly Pines subdivision."

It is recommended:

"WHEREAS, a hydrogeological review of the Maberly Pines Subdivision has been conducted;

AND WHEREAS, the recommendations from the results of the Maberly Pines Hydrogeological Review by BluMetric Environmental Inc. will be included as part of the issuance of future building permits in the Maberly Pines subdivision;

AND WHEREAS, a summary of the property ownership (ex. multiple lots owned by the same owner) of the existing lots in the Maberly Pines subdivision has been prepared;

AND WHEREAS, the number of viable lots identified in the private servicing layout has been detailed;

AND WHEREAS, the Ontario Hydro criteria for providing electrical services to the undeveloped lots in a subdivision such as Maberly Pines has been determined;

AND WHEREAS, a return-on-investment assessment of the subdivision still needs to be conducted;

NOWTHEREFORE BE IT RESOLVED THAT, as the next step in moving towards lifting the holding zone that a report be presented to Council detailing the following:

- a summary of the property ownership;
- the number of viable lots;
- the Ontario Hydro criteria for providing electrical services to the undeveloped lots; and
- a return-on-investment assessment of the subdivision."

BACKGROUND

In August 2021, Tay Valley Council directed staff to issue a Request for Proposal (RFP) for a hydrogeological review of the Maberly Pines subdivision to determine if there is sufficient water quality and quantity for the lots and that there is sufficient nitrate dilution capacity for septic systems for the lots. BluMetric Environmental Inc. was awarded the contract.

RESOLUTION #C-2021-08-25

*"**THAT**, staff retain a hydrogeologist at an upset limit of $20,000 funded from the contingency reserve to:*

- *Provide a high-level review of the hydrological features of the area contained within the Maberly Pines Subdivision*
- *obtain groundwater samples from the existing wells for laboratory analysis; and*
- *research well records in the area for flow data;*

to determine a private servicing layout which would identify the location of the dwelling, well and septic for each vacant lot in the Maberly Pines Subdivision, based on Water and Earth Sciences Associates (WESA's) recommendations in comparison with a private servicing layout based on constrained development (ex. incinerating toilets, importing potable water) for Council's consideration;

***THAT,** staff prepare a summary of the property ownership (ex. multiple lots owned by the same owner) of the existing lots in the Maberly Pines subdivision;*

***THAT,** staff details the number of viable lots identified in the private servicing layout;*

***THAT,** staff submits a report including cost estimates on the requirements to provide road access to service all the viable lots indicated by the private servicing layout;*

***THAT,** staff determine Ontario Hydro criteria for providing electrical services to the undeveloped lots in a subdivision such as Maberly Pines;*

***AND THAT**, staff conduct a return-on-investment assessment for the subdivision."*

DISCUSSION

The BluMetric report states that "the subject property is suitable for development as a residential subdivision at the proposed density, if future development incorporates appropriate alternatives for wastewater treatment at lots that are not suitable for conventional systems".

Existing water well records within 500 m of the subdivision show that well yields are acceptable in most cases. Some wells have relatively low yields. This may be due to the nature of the fractured bedrock aquifer at the site. Any potential impacts to neighbouring well users are expected to be minimal.

A small percentage of future wells may not intersect fracture networks that will provide sufficient yield for normal residential use. If the yield of any future well is insufficient to provide an adequate quantity of water to meet 'peak demand' requirements, surface storage may be required. In these cases, the amount of surface storage should be determined based on the actual sustainable yield of the well, as determined by a six-hour pumping test.

Analytical results from a water quality sample obtained from the well at 2003 Pond Lane (within the subdivision) are all below the limits specified in the Ontario Drinking Water Safety Operating Guidelines (ODWSOG), except for the result for hardness. Hardness levels below 500 mg/L in drinking water are considered generally acceptable for most domestic purposes and can be treated using a conventional water softener system.

The concentration of sodium (28.7 mg/L) in the sample from the well at 2003 Pond Lane exceeds 20 mg/L. The local Medical Officer of Health should be notified when the sodium concentration exceeds 20 mg/L.

The site is potentially hydrogeologically sensitive. Discontinuous thin soil coverage reduces the potential for filtration of contaminants. Measures for well construction and septic system design are provided by BluMetric to mitigate potential water quality impacts (see Attachment 1).

Specific mitigation measures for individual lots are laid out in Attachment 2.

The results of a site wide predictive nitrate impact assessment show that additional nitrate loading from individual septic systems should be well below the provincially mandated limit of 10 mg/L so the subdivision should have an acceptable impact.

Lot Layouts are provided in Attachment 3.

To view the full 105 page report please see the link on the Township website (Package).

FINANCIAL CONSIDERATIONS

The cost of the Hydrogeological Study was undertaken by the Township up front with sources of repayment to be determined following the Development Cost Charges discussion. The location of Maberly Pines subdivision in close proximity to Maberly could provide the Hamlet of Maberly with an economic boost.

STRATEGIC PLAN LINK

Environment: Tay Valley continues to be known for its environmental policies and practices. Our residents have access to clean lakes and a healthy, sustainable environment.

Guiding Principles - We consider climate change and the environment in all decisions and operations.

CLIMATE CONSIDERATIONS

Clustering lots in a subdivision is preferable to allowing severed lots to proliferate across the landscape. Clustering reduces the impact on carbon sequestration that trees and unevaluated wetlands provide. Clustering provides opportunities for Greenhouse Gas reduction through micro-transit.

OPTIONS CONSIDERED

Option #1 – Accept the private servicing layout which identify the location of the dwelling, well and septic for each vacant lot in the Maberly Pines Subdivision, based on Water and Earth Sciences Associates (WESA's) recommendations, based on well records in area for flow data, groundwater samples from the existing wells for laboratory analysis.

Option #2 – Do not accept the recommendations of the BluMetric Report and staff no further work on this file.

CONCLUSIONS

The Township has been looking at how to allow for the unprecedented increase of interest in purchasing and building on lots in the Maberly Pines to be permitted through Building Permits without jeopardizing the drinking water and septic capacity for the existing and new residents of Maberly Pines. BluMetric has provided a lot servicing layout (where houses, wells and septics should be located) as well as recommendations to mitigate any negative impacts to well water or septic functioning.

ATTACHMENTS

1. Mitigation Recommendations for Development
2. Specific Mitigation for Individual Lots
3. Lot Servicing Layout

Prepared and Submitted By:

Noelle Reeve,
Planner

Approved for Submission By:

Amanda Mabo,
Acting Chief Administrative Officer/Clerk

Attachment 1 - MITIGATION RECOMMENDATIONS FOR DEVELOPMENT

WATER SUPPLY

• All future water wells in the subdivisions should be constructed so that the steel water well casing is installed and grouted into place to a depth of 4 m (12 feet) into competent bedrock or to a minimum depth of 12 m, whichever depth is greatest. This will reduce the potential of contamination. If any new well is deemed to be incapable of providing an adequate supply or use with supplemental storage (i.e. extremely low yield), it should be decommissioned according to the requirements of O.Reg. 903.
• At the time of new well installation, the drilling of the casing hole, installation of casing, and grouting of the annular space should be inspected by a licensed Professional Engineer or Professional Geoscientist of Ontario. All well construction must be carried out by a licensed well technician.
• Wells should be developed to a sand free state in order to ensure that the residual turbidity created by the well drilling activities is completely purged from the well. Additional well development, prior to placing the well into use, is strongly recommended in order to provide adequate development of the formation and remove extraneous rock debris from the aquifer pathways.
• All future water wells should be constructed so that the top of well casing is a minimum of 400 mm above the finished grade within a 3 m radius of the wellhead. The grade should slope away from the wellhead in all directions for a distance of at least 3 m.
• Well owners should ensure that the wellhead and surrounding area are maintained in accordance with the requirements of O.Reg. 903. Future well owners should refer to the MECP Water Supply Wells Requirements and Best Management Practices, (Revised April 2015) website at: https://dr6j45jk9xcmk.cloudfront.net/documents/4410/a-wwbmptitle-master-table-of-contents-chapter-1.pdf
• The raw water found in the water supply aquifer system is considered to be hard. Residential grade water softeners are recommended where water hardness is deemed unsuitable. A warning clause addressed to people on low sodium diets should be registered on title regarding the elevated concentration of sodium (> 20 mg/L) associated with water softeners.

WASTEWATER TREATMENT

• For lots that meet clearances and requirements in accordance with the OBC, it is suggested that fully raised Class 4 sewage systems consisting of a septic tank and leaching beds be implemented (i.e. conventional systems with raised beds). Imported fill should be used to raise septic beds no less than 900 mm above native ground surface. These lots are listed in Table 5 and indicated on Figure 4.
• Special attention should be taken with the placement of fully raised Class 4 sewage systems on steeply sloping lots that meet clearances and requirements in accordance with the OBC, including as indicated in Table 5 and on Figure 4 (i.e. conventional systems with raised beds on sloping lots).
• For lots that exceed clearances and requirements outlined in the OBC it is suggested that alternative sewage treatment systems be implemented. These lots are identified in Table 5 and on Figure 4 and include Lots 18, 19, 27, 37, and 38.

• Special attention should be taken with the placement of septic beds on sites with water bodies. Ideally a minimum distance of 30 m should be maintained between the water body high water line and septic bed as recommended by WESA (1979). In some cases (Lots 44 and 45) this will not be possible, so the OBC minimum distance of 15 m must be maintained. These lots are indicated in Table 5.
• A lot-specific investigation should be carried out for the detailed sewage system design and site grading plan at each lot as part of the building permit application process.
• Proposed well, septic, and building locations are noted on Figure 4 (Conceptual Lot Development Plan B – Restricted Private Services).
• Future owners of individual onsite wastewater treatment systems should familiarize themselves with basic safety and maintenance information which is available at: http://www.omafra.gov.on.ca/english/environment/facts/sep_smart.htm

Attachment 2 - SPECIFIC MITIGATION FOR INDIVIDUAL LOTS

Table 5: Lot Serviceability Summary

Lot #	Area (m^2)	Status	Conventional / Restricted	Restrictions / Considerations	Solutions / Recommendations
1	8737	Vacant	Conventional	Observatory	Raised Bed
2	13952	Vacant	Conventional	N/A	Raised Bed
3	8693	Vacant	Conventional	Gradient	Max. 4:1 slope for septic / Raised Bed
4	6824	Vacant	Conventional	N/A	Raised Bed
5	8066	Vacant	Conventional	N/A	Raised Bed
6	7712	Developed	-	-	-
7	14003	Vacant	Conventional	N/A	Raised Bed
8	12012	Vacant	Conventional	Surface water body	OBC clearances 15 metres / WESA 1979 = 30 m / Raised Bed
9	17486	Vacant	Conventional	N/A	Raised Bed
10	11369	Vacant	Conventional	N/A	Raised Bed
11	11596	Vacant	Conventional	N/A	Raised Bed
12	9687	Vacant	Conventional	N/A	Raised Bed
13	8030	Vacant	Conventional	N/A	Raised Bed
14	8075	Vacant	Conventional	Gradient	Max. 4:1 slope for septic / Raised Bed
15	9771	Vacant	Conventional	Gradient	Max. 4:1 slope for septic / Raised Bed
16	9118	Vacant	Conventional	Gradient, Exposed Bedrock	Max. 4:1 slope for septic, Raised Bed
17	10604	Vacant	Conventional	Gradient, Exposed Bedrock	Max. 4:1 slope for septic, Raised Bed
18	9068	Vacant	Restricted	Gradient, Exposed Bedrock, well	Max. 4:1 slope for septic, Alternative Sewage Treatment System
19	7966	Vacant	Restricted	Gradient, Exposed Bedrock, well	Max. 4:1 slope for septic, Alternative Sewage Treatment System
20	12424	Developed	-	-	-
21	8488	Vacant	Conventional	N/A	Raised Bed
22	7789	Vacant	Conventional	N/A	Raised Bed
23	11079	Permitted	-	-	-
24	10840	Developed	-	-	-
25	12592	Vacant	Restricted	Gradient, Exposed Bedrock	Max. 4:1 slope for septic, Raised bed
26	11831	Vacant	Conventional	N/A	Raised Bed
27	4700	Vacant	Restricted	Lot size	Alternative Sewage Treatment System
28	6974	Vacant	Conventional	Gradient	Max 4:1 slope for septic / Raised Bed
29	10770	Vacant	Conventional	N/A	Raised Bed
30	6233	Vacant	Conventional	N/A	Raised Bed
31	32459	Vacant	Conventional	N/A	Raised Bed
32	20926	Vacant	Conventional	N/A	Raised Bed
33	15389	Vacant	Conventional	Exposed Bedrock	Raised Bed
34	9840	Vacant	Conventional	Gradient	Max 4:1 slope for septic / Raised Bed
35	6145	Permitted	-	-	-
36	7609	Vacant	Conventional	Surface Water Body	OBC clearances 15 metres from surface waters / WESA 1979 = 30 m / Raised Bed
37	6791	Vacant	Restricted	Lot size, Surface Water Body, well proximity to septic treatment system, well proximity to neighboring wells	OBC clearances 15 metres from surface waters / WESA 1979 = 30 m / Recommended >30 metres between well and septic / Alternative Sewage Treatment System
38	6442	Vacant	Restricted	Lot size, Surface Water Body, well proximity to septic treatment system, well proximity to neighboring wells	OBC clearances 15 metres from surface waters / WESA 1979 = 30 m / Recommended >30 metres between well and septic / Alternative Sewage Treatment System
39	8473	Vacant	Conventional	Gradient, Surface Water Body	Max. 4:1 slope for septic, OBC clearances 15 metres
40	8287	Vacant	Conventional	N/A	Raised Bed
41	13254	Vacant	Conventional	Gradient	Max. 4:1 slope for septic
42	6413	Vacant	Conventional	N/A	Raised Bed
43	6901	Vacant	Conventional	N/A	Raised Bed
44	6522	Vacant	Restricted	Lot size, Surface Water Body	Max. 4:1 slope for septic, OBC clearances 15 metres / WESA 1979 = 30m not possible
45	9520	Vacant	Restricted	Lot size, Surface Water Body	Max. 4:1 slope for septic, OBC clearances 15 metres / WESA 1979 = 30m not possible
46	10298	Vacant	Conventional	N/A	Raised Bed
47	7389	Developed	-	-	-
48	7120	Vacant	Conventional	N/A	Raised Bed
49	12097	Vacant	Conventional	N/A	Raised Bed
50	11534	Vacant	Conventional	Exposed Bedrock	Raised Bed
51	12634	Vacant	Conventional	Exposed Bedrock	Raised Bed
52	10099	Vacant	Conventional	Gradient, Exposed Bedrock	Max. 4:1 slope for septic, Raised Bed
53	15447	Vacant	Conventional	N/A	Raised Bed
54	16997	Vacant	Conventional	Surface Water Body	OBC clearances 15 metres from surface waters / WESA 1979 = 30m / Raised Bed
55	23678	Developed	-	-	-
56	18025	Vacant	Conventional	N/A	Raised Bed

Attachment 3