

RE: Armstrong Lands, Mansfield Engineering Comments

From: R.J. Burnside & Associates Limited

Dated: March 29th, 2022

Subject: Sub02-2021 Armstrong Lands, Mansfield

Project No.: 300052761.0000

| # | Comments Received | Action / Consultant | Response |
|--|---|---------------------|--|
| Functional Servicing Report, Pinestone Engineering Ltd. | | | |
| 1. | 5.1 Existing Water Servicing - The report indicates “ the maximum permitted flowrate is 661 L/min, and the average operating flowrate is 330 L/min, therefore the Mansfield Water System is operating at approximately 50% capacity”. This statement is erroneous and misleading. Water systems are designed to provide peak demands and it is not expected for them to run at full capacity 24/7. As the report indicates the Maximum Day factor should be approximately 2.75, meaning that the average operating flowrate is expected to be about one third of the maximum permitted rate. Accordingly, the system is not operating at 50% capacity. | Pinestone | Acknowledged. The system is currently providing approximately 16%-40% of the approved volume (951.8m ³) daily. Average flow rate when the pumps are operating is 330 litres per minute. |
| 2. | 5.2 Proposed Water Servicing - The reported modelling of fire flows indicates that water volumes can be delivered through the pipe network and hydrant testing results have been provided. However the availability of water over the required duration of flow was not discussed. The volume or storage available is unlikely to provide adequate volumes over the required duration. The required fire flow of 38 L/s should be adjusted to the interpolated volume required for the population in between the rate of 38 L/s for a population of 500 and the rate of 64 L/s for a population of 1000. | Pinestone | Based on our storage calculations (attached) the total storage provided in the reservoir is sufficient to support the existing community and proposed development under max day plus fire conditions (38 L/sec fire). With respect to Burnside’s letter dated July 28 th , 2022, it is also noted that currently there appears to be adequate resources within the existing water system to accommodate the proposed development. Additionally, we agree with Burnside that a Class EA will ultimately be required to address how the remainder of the settlement lands will be serviced with water. In our opinion, this study should have been commissioned and completed by the Township prior to the OP amendment to include the additional settlement lands within Mansfield. |
| 3. | General Comment - The Township should develop a servicing plan for the Marsville Water System, assessing how this development and all others in the Hamlet will provide an integrated system. | Pinestone | No Action required as this is regarding the Marsville Water System. |

We trust this is satisfactory and should you have any questions or comments, please call.

PINESTONE ENGINEERING LTD.



Joe Voisin, P.Eng.

Mansfield Drinking Water System

Existing Conditions

P.N. 20-11584B

July 4th, 2022

| Standpipe Capacity | |
|---|--------------|
| Tank Full Level (m) | 323.4 |
| Chlorine Contact Lockout Level (m) | 315.6 |
| Standpipe Water Depth (m) | 7.8 |
| Standpipe Diameter (m2) | 9.4 |
| Standpipe Area (m2) | 69.40 |
| Standpipe Volume (m3) | 541.30 |
| Total Treated Water Storage Requirement = A+B+C | |
| MOE Design Guidelines for Drinking Water Systems 2008 - Section 8.4 | |
| A - Fire Storage | |
| Fire Flow Rate (l/s) | 38 |
| Fire Duration (hours) | 2 |
| <i>Fire Storage Volume 'A' (m3)</i> | <i>273.6</i> |
| B - Equalization Storage (25% of maximum day demand) | |
| Max Day Demand* (m3) | 382 |
| <i>Equalization Storage 'B' (m3)</i> | <i>95.5</i> |
| C - Emergency Storage (25% of A+B) | |
| <i>Emergency Storage 'C' (m3)</i> | <i>92.3</i> |
| Total Treated Water Storage Requirement (A+B+C) = | 461.4 |

Notes:

* Maximum day demands taken from DWco. LTD Report dated Feb 22/2021 for the Month of April



July 28, 2022

Via: Email

Tracey Atkinson
Town of Mulmur
758070 2nd Line East
Mulumur ON L9V 0G8

Dear Tracey:

**Re: Armstrong Subdivision, Mansfield
Project No.: 300052761.0000**

Further to our recent discussions regarding the Armstrong Subdivision I am providing an update to my letter of March 29, 2022.

Water Supply

My previous letter recommended that a servicing plan be put in place for the community of Mansfield. Since that time we have reviewed the available information and familiarized ourselves with the capacity of the system as well as current usage. We have also had discussions with the applicant's engineers. This has led to a determination that the system will require increased storage capacity and at least one additional well in order to service all of the lands that have been designated for growth in the Township's Official Plan. A Class Environment Assessment will be required prior to these expansions. We have submitted an overview of this situation to the Township in a separate letter.

While Class EA will provide a more detailed review, it appears that the existing water system can accommodate a portion of the anticipated growth prior to making any upgrades. The order of priorities is:

1. Conduct Class EA, including drilling of test well, to make final assessment;
2. Increase the storage; and
3. Commission additional well or wells.

With respect to the Armstrong Subdivision, at this time there appears to be adequate resources to accommodate the proposed homes. However every new house taxes the system and it would be prudent to have this developer make a fair and reasonable contribution towards the system that will ultimately be required for the community.

Sewage Treatment

We previously commented on the submission, noting that the lots sizes were relatively tight, relying on mechanical treatment systems to work in perpetuity at keeping nitrates down to the required levels. We indicated that some municipalities are reluctant to put reliance on so many

systems working over the long term. When I discussed this with you, it was my understanding that Mulmur may be supportive of such an approach, but this partly depends on addressing another of the comments I had made, which pertains to the background nitrate levels. They are currently as high as 14 mg/l, which already exceeds the maximum that is permissible for land development. The applicant is relying on existing levels to recede as the agricultural activity is discontinued, but we have asked for additional analysis of that assumption.

The density, configuration, and viability of lots in the southern section of the plan (across from Thomson Trail) is of concern to the Township. The issues are as follows:

- Calculated sewage volumes that are approaching the level whereby MECP has jurisdiction, and the Township would have to enter a Responsibility Agreement. (I am in discussion with Azimuth over this point but eventually will need the Building Department to sign off on the volumes);
- Shared ownership of sewage system blocks;
- Everything seems to be squeezed in; and
- The alignment of back to back 90 degree road bends and questions about their affect on the functionality of the road.

The Township is supportive of townhouses being included in this area but feels that the density needs to be reduced and that the lot configuration needs to be simplified and / or rationalized.

Conclusion

As the subdivision continues through the review process and comments are being addressed, the municipality needs to have discussions with the applicant about contributions to the Mansfield Water System and about the configuration of the development in the area south of the creek. An interesting suggestion has come up about the Township's need for a future fire hall site in Mansfield and whether accommodation could be provided within the subject plan. This could be explored in the Thomson Trail area or alternatively, along the frontage of Airport Road.

I trust this captures our discussions on this file. Please let me know if anything further is required.

Yours truly,

R.J. Burnside & Associates Limited



Gord Feniak
GF:js