Town of The Blue Mountains Municipal Master Plan for Town-Wide Water Distribution

Presented by: Brent Bouteiller
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JLR No.: 27550-0001
Class EA Process – Approach 1 Master Plan

Phase 1 – Problem/ Opportunity

- Under the Environmental Assessment Act, municipalities must consider potential environmental effects before a potential project begins.

Phase 2 – Alternative Solutions

- The Master Plan will become the basis for additional investigations for the specific Schedule B and Schedule C projects identified within it.
Study Area – Key Plan
Key System Issues

Issue No. 1 - East Side Supply: There is a need to provide adequate, secure water supply to meet projected demands east of Arrowhead Road Booster Pumping Station. These areas include Pressure Zone 4 (Craigleith), Zone 5 (Swiss Meadows) and Castle Glen.

Issue No. 2 – Zone 1, 2, 3 Storage: In the 20-year and Build-Out scenarios there are storage deficits in Pressure Zone 1 (Thornbury/Clarksburg), Zone 2 (Lora Bay) and Zone 3 (Camperdown) combined. Storage in Zone 2 and 2a (Lora Bay) is accessed through the 10th line BPS and the system cannot supply near-term (i.e. 0 -10 year) projected maximum day plus fire flow demands to these areas.

Issue No. 3 – Zone 4 Storage: In the 20-year and Build-Out scenarios there is a storage deficiency in Zone 4 (Craigleith).

Issue No. 4 – Zone 5 Storage and Fire Protection: In the Build-Out scenario there is a storage deficiency in Zone 5 (Swiss Meadows). Currently, not all areas are serviced with adequate sized watermains and hydrants.

Issue No. 5 – Supply & Storage for Castle Glen: For Build-Out of Castle Glen, municipal water supply will be required.
Issue No. 1 East Side Water Supply – Overview

- Four main alternatives were identified.
- Due to the long term implications of selecting a 20-year/Build-Out supply alternative, it is recommended that a Schedule ‘C’ Water Supply Class EA for East Pressure Zones be conducted prior to implementation of any water supply alternative.
- In the interim, the baseline alternative to upgrade the west to east feedermain and Arrowhead Road BPS has been carried forward for budgeting purposes.
Issue No. 2 Storage Deficiency
Pressure Zones 1, 2, 3 - Overview

- Existing 10th Line BPS Site (Alternative 2.3 & 2.5)
- New Floating Reservoir Site (Alternative 2.4)
- Existing Elevated Tower Site (Alternative 2.1)
- New Elevated Tower Site (Alternative 2.2 & 2.4)
- Existing Thornbury Reservoir Site (Alternative 2.5)

Legend:
- Booster Station
- Booster Station and Reservoir
- Reservoir
- Treatment Plant and Booster Station
- Watermain
- Pressure Zone

- Camperdown
- Clarksburg
- Craigleith
- Lora Bay
- Swiss Meadows
- Thornbury East
- Thornbury West
Issue No. 2 Storage Deficiency
Pressure Zones 1,2,3 – Preferred Alternative

- A Schedule ‘B’ Class EA for the West Pressure Zones Storage is required to select the preferred water storage and distribution alternative prior to project implementation.

- The preliminary preferred alternative is Zone 1 Elevated Tower (at the Tomahawk municipal golf course) and Zone 2 Reservoir (at one of four potential locations in Lora Bay).

- For budgeting purposes the cost of Alternative 2.4 – Zone 1 Elevated Tower and Zone 2 Floating Reservoir (Alternative Location No. 1) has been carried forward.
Issue No. 3 Storage Deficiency
Pressure Zone 4 - Overview

Build Elevated Tower at a New Location (Alternative 3.2)
Build In-Ground Storage at a New Location (Alternative 3.3)
Expand Storage at Happy Valley Reservoir (Alternative 3.1)
Issue No. 3 Storage Deficiency
Pressure Zone 4 – Preferred Alternative

- A Schedule ‘B’ Class EA for the East Pressure Zones Storage is required to select the preferred water storage and distribution alternative prior to project implementation. This Class EA could be combined with the Schedule ‘C’ Class EA for East Side Supply.

- The preliminary preferred alternative is Alternative 3.2 – Expand Storage at Happy Valley Reservoir and this alternative has been carried forward for budgeting purposes.
Issue No. 4 and No. 5 – Overview & Preferred Alternative

Issue No. 4: Storage Deficiency in Pressure Zone 5

**Recommendation:** Maintain the current level of service (i.e. fire protection supplemented with tanker trucks).

Issue No. 5: Water Supply and Storage for Castle Glen

**Recommendation:** Connect to Castle Glen groundwater system (constructed in development Phase 1) to the Town’s water system.
Future Water Distribution, 20-Years and Build Out Pressure Zones 2 and 2a (Lora Bay)

Legend
- Existing Watermain
- 20-year Watermain
- Build-Out Watermain
- Infill
- Preferred Alternative
- $ Pressure Zones

- Location Option 1
- Location Option 2
- Location Option 3
- Location Option 4

- 10th Line Booster Pump Station
- Thornbury Water Treatment Plant
- 1-West

- Build-Out: Two additional PRVs to provide Zone 2a with emergency and fire flows.

- 2 - 5-Year Timeline: Construct new Zone 2 floating reservoir and headend in Lora Bay. Additional storage and water distribution system to be selected through project specific Schedule B CEA prior to implementation.
Future Water Distribution, 20-Years and Build Out Pressure Zones 1-West (Thornbury and Clarksburg)

9 to 20-Year Timeline:
- Construct new 1,000 m³ elevated tower at new site (Thornbury Municipal lands) in Zone 1.
- Upgrade 0.3 km watermain from new elevated tank to existing watermain to 300 mm.

*Final solution for storage and distribution improvements will be subject to Schedule 6 Class EA.*
Future Water Distribution, 20-Years and Build Out Pressure Zones 1a, 1-West and 3 (Camperdown)
Future Water Distribution, 20-Years and Build Out Pressure Zones 1-East, 4a-d, 5 (Craigleith and Swiss Meadows)
## Preferred Alternative 5-Year Capital Cost

<table>
<thead>
<tr>
<th>Proposed Project</th>
<th>Budget</th>
<th>Funding</th>
</tr>
</thead>
<tbody>
<tr>
<td>Complete Schedule ‘B’ Class EA and Pre-Design for West Pressure Zones Storage</td>
<td>$0.25M</td>
<td>Growth</td>
</tr>
<tr>
<td>Complete Schedule ‘C’ East Side Water Supply and Schedule ‘B’ East Side Water Storage Class EA and Pre-Design</td>
<td>$0.75M</td>
<td>Growth</td>
</tr>
<tr>
<td>Pending Outcome of Class EA - New 1,700 m$^3$ reservoir in Zone 2 (excludes feedermain)</td>
<td>$3.50M</td>
<td>Growth</td>
</tr>
<tr>
<td>Implement findings from Hidden Lake Class EA</td>
<td>TBD</td>
<td>Growth</td>
</tr>
<tr>
<td>Check valve at Grey Road 40 and Timberleif</td>
<td>$0.15M</td>
<td>Non-Growth</td>
</tr>
<tr>
<td>Implement findings from Zone 4c Pressure Modification Conceptual Design</td>
<td>$0.35M</td>
<td>Non-Growth</td>
</tr>
<tr>
<td>Add pressure Zone 4b into 4 (PRV not operating)</td>
<td>---</td>
<td>Non-Growth</td>
</tr>
</tbody>
</table>

Total 5-Year Capital Costs = $5.00M
## Preferred Alternative 20-Year Capital Cost

<table>
<thead>
<tr>
<th>Proposed Project</th>
<th>Budget</th>
<th>Funding</th>
</tr>
</thead>
<tbody>
<tr>
<td>Implement findings from Schedule 'C' Water Supply Class EA for East Zones</td>
<td>$14.00M</td>
<td>Growth</td>
</tr>
<tr>
<td>Pending Outcome of Class EA – Decommission Victoria Street Tower and construct 1,000 m³ elevated tank on Municipal Lands (excludes feedermain)</td>
<td>$3.10M</td>
<td>Growth/Non-Growth</td>
</tr>
<tr>
<td>Pending Outcome of Class EA - Add 1,000 m³ below grade storage near Happy Valley Reservoir site</td>
<td>$3.00M</td>
<td>Growth</td>
</tr>
<tr>
<td>Looping of watermain in existing distribution system</td>
<td>$2.50M</td>
<td>Non-Growth</td>
</tr>
<tr>
<td>Extend existing watermain into new growth areas</td>
<td>$9.00M</td>
<td>Growth</td>
</tr>
</tbody>
</table>

Total 20-Year Capital Costs = $31.60M
## Preferred Alternative Build-Out Capital Cost

<table>
<thead>
<tr>
<th>Proposed Project</th>
<th>Budget</th>
<th>Funding</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pending outcome of Class EA - Expand the storage near the Happy Valley Reservoir site to add 2,300 m³</td>
<td>$3.40M</td>
<td>Growth</td>
</tr>
<tr>
<td>Add two additional PRVs in Zone 2a</td>
<td>$0.35M</td>
<td>Growth</td>
</tr>
<tr>
<td>Extend existing watermain into new growth areas</td>
<td>$14.40M</td>
<td>Growth</td>
</tr>
</tbody>
</table>

Total Build-Out Capital Costs = $18.15M

Total Capital Costs to Build-Out = $54.75M
Next Steps

1. Hold Public Information Center to receive public comments (May 29).
2. Draft Master Plan report to be presented to Council for acceptance.
3. Town can implement Schedule A and A+ projects.
4. For Schedule B and Schedule C projects, Class EA’s must be completed prior to implementation.
Contact Us

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