

A dark grey background with a network diagram of interconnected nodes and lines. The nodes are represented by small circles of varying sizes, and the lines are thin and light grey. The overall effect is a complex, interconnected web of connections.

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Public Information Centre

Pelham New Elevated Storage Tank and Enhanced Conceptual Design Class Environmental Assessment

Virtual Public Information Centre Timeline

Tuesday, Aug. 31, 2021: Project information, project overview video, and transcript posted on Niagara Region's website.

Aug. 31 to Sept. 14, 2021: Submit questions or comments via the online form.

Sept. 28, 2021: Responses to questions and comments will be posted to the website.

Welcome

We invite you to view the virtual Public Information Centre (PIC) presentation which includes:

- What we plan to achieve
- Study findings to date
- Evaluation of the alternative sites
- Next steps

Please review the materials and submit your comments through comment sheets available at:

<https://www.niagararegion.ca/projects/pelham-elevated-tank>



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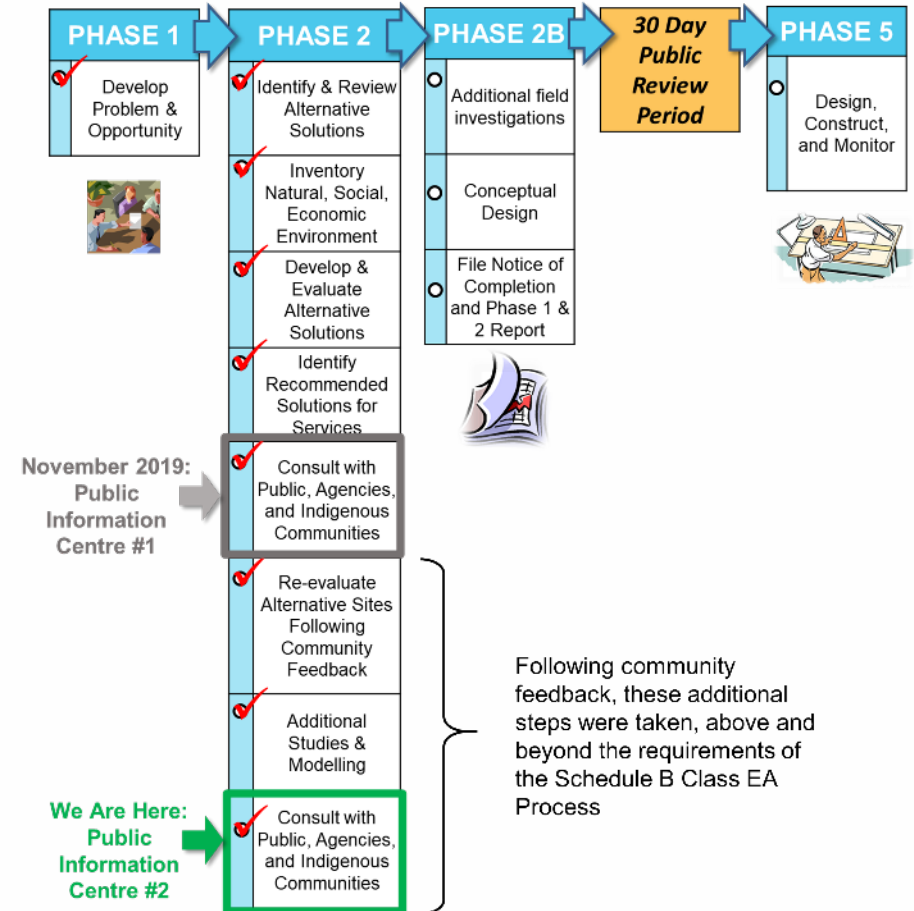
Municipal Class EA Process & Timeline

Niagara Region is undertaking a Schedule B Municipal Class EA study for the Pelham Water Service Area to plan for future water storage, pressure needs and make improvements to the water system, as required.

The Pelham Class EA study to date:

- Started in May 2019 with the Notice of Commencement
- Identified and evaluated alternative solutions from May-November 2019
- Presented identified recommended solution in Public Information Centre (PIC) #1 November 2019
- We heard your comments at PIC #1 for additional consultation and review of the potential sites for the new Elevated Water Storage Tank (EST).
- Based on this, the Project Team has reconsidered and re-evaluated suitable sites within the Town of Pelham for the construction of a new EST and the necessary improvements to the existing water system, and identified a recommended solution

Schedule B Municipal Class EA Process



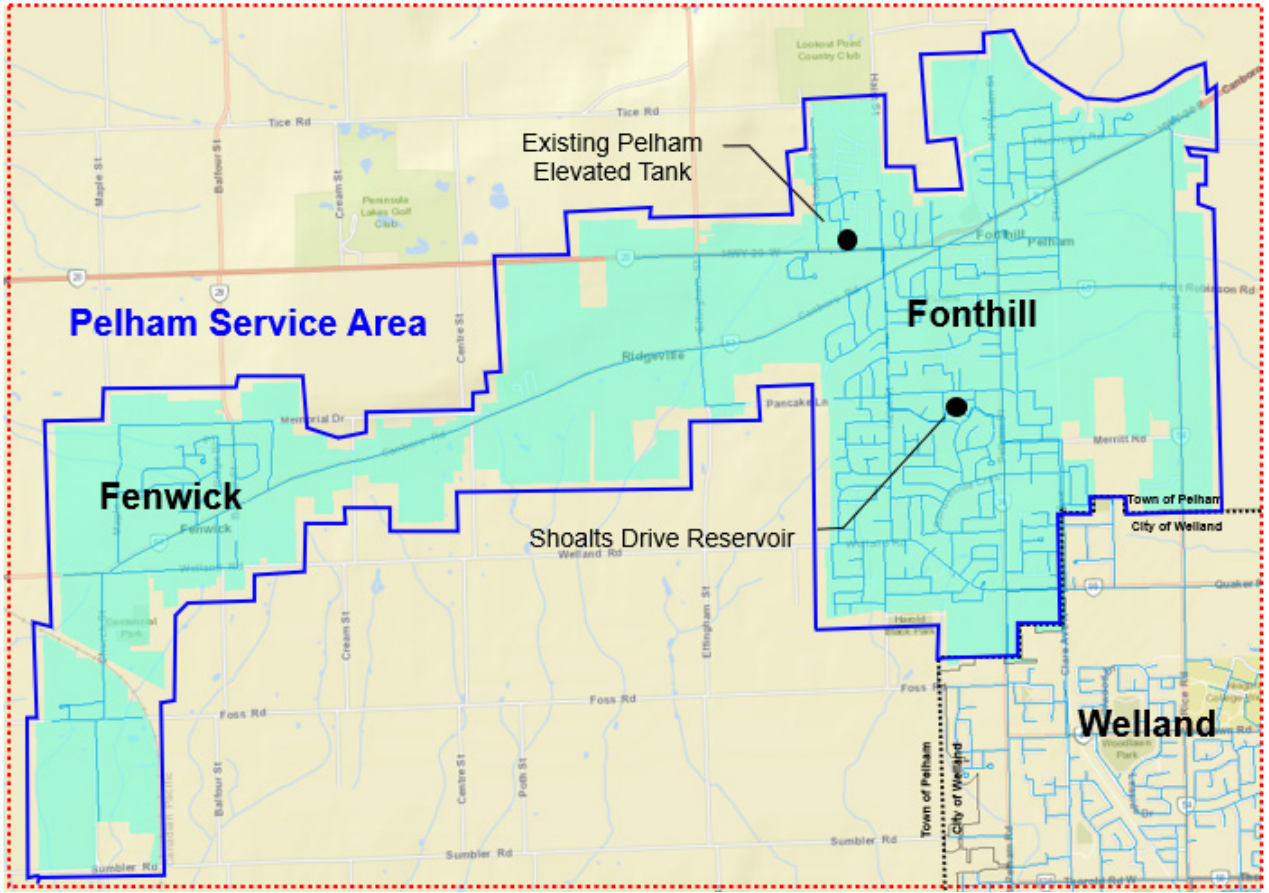
Problem & Opportunity (P&O) Statement & Study Area

The Pelham Water Service Area requires improvements to meet the need of the growing community and expected increasing growth to 2041. The need for these improvements was identified through the Niagara Region Water and Wastewater Master Servicing Plan in 2016:

- Construction of a New Elevated Water Storage Tank (EST) and associated system upgrades.

This Class EA will:

- Identify and evaluate potential sites for the new EST.
- Identify necessary improvements to the existing water service area.
- Select a preferred site and associated system upgrades for the new EST considering social, economical, technical, archaeological, and environmental factors.



The Pelham Service Area:

- Part of the overall Welland Water System. Services Fonthill and Fenwick. Supplies water from the Welland Water Treatment Plant through the Shoalts Drive Reservoir and existing Pelham EST.
- The storage capacity of the existing EST is not sufficient for the growing community of Pelham. In addition, it cannot meet desired pressures at higher elevations in northwest Fonthill without the need for a booster pumping station.
- Storage and pressure needs can both be met by removing the existing 2,000 m³ EST and booster pumping station and replacing them with a 6,000 m³ EST at a higher elevation.



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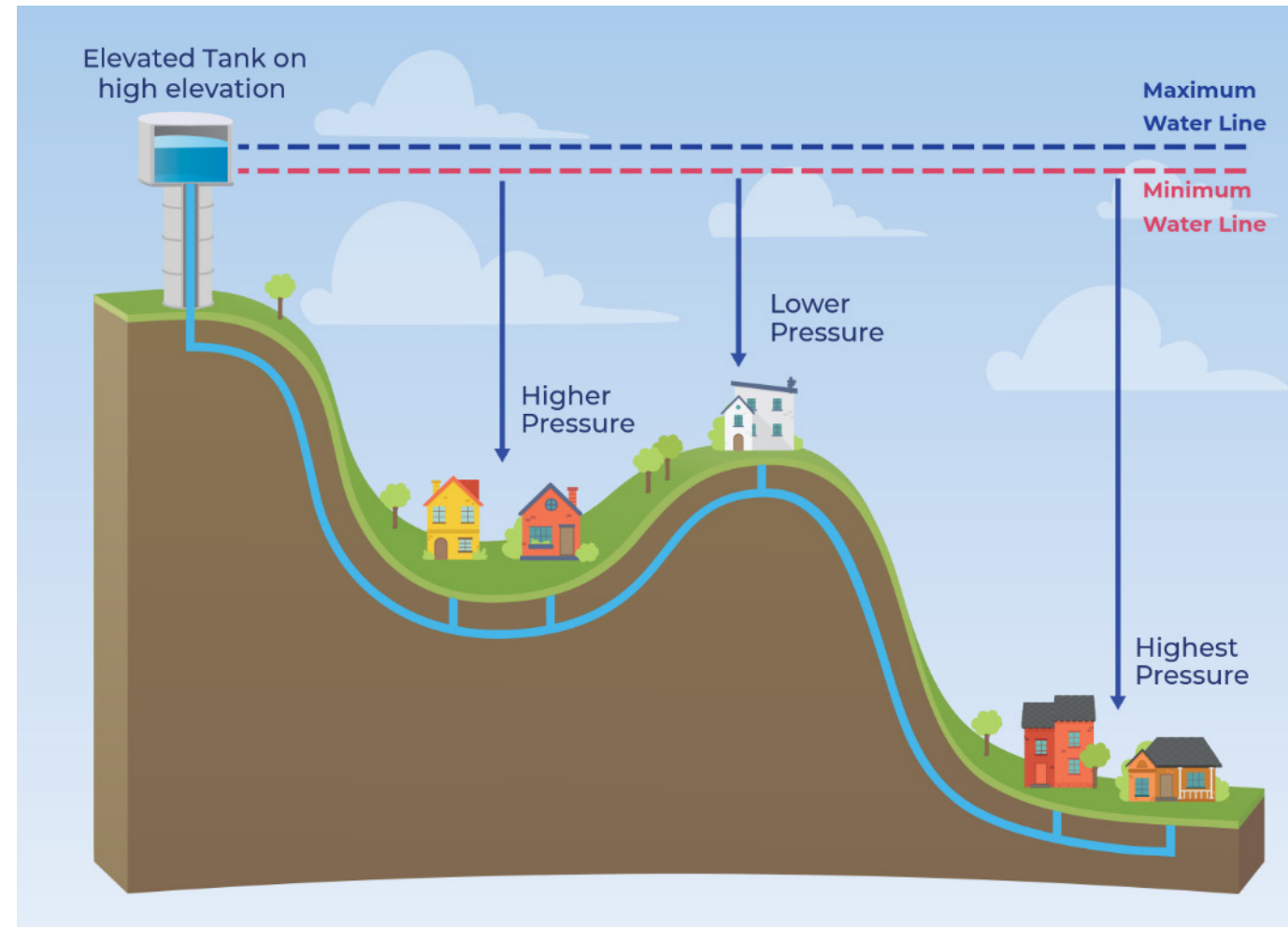


How the Water System Works

The greater the height difference between the water level in an elevated water storage tank (EST) and a home, the more water pressure is available for that home.

The home at the top of the hill will have lower water pressure than the home at the bottom of the hill.

It is preferred to have an EST that can provide the Region of Niagara's preferred pressure range of 50 to 80 psi to the local system. The local system must provide a minimum of 40 psi to the home on the highest hill, and not more than 100 psi to the home at the lowest point in the water service area, to meet the Ministry of Environment, Conservation and Parks (MECP) acceptable pressure range.



Screening of Areas to Locate Alternative Sites

Screening Factors:

Elevation ■

- Elevation too low for required height of EST

Land Use ■

- Land is forested or occupied by: homes, golf, commercial uses, communication towers

Distance ■

- Further from urban settlements and Regional transmission main, and would require additional infrastructure and cost

Space Limitations ■

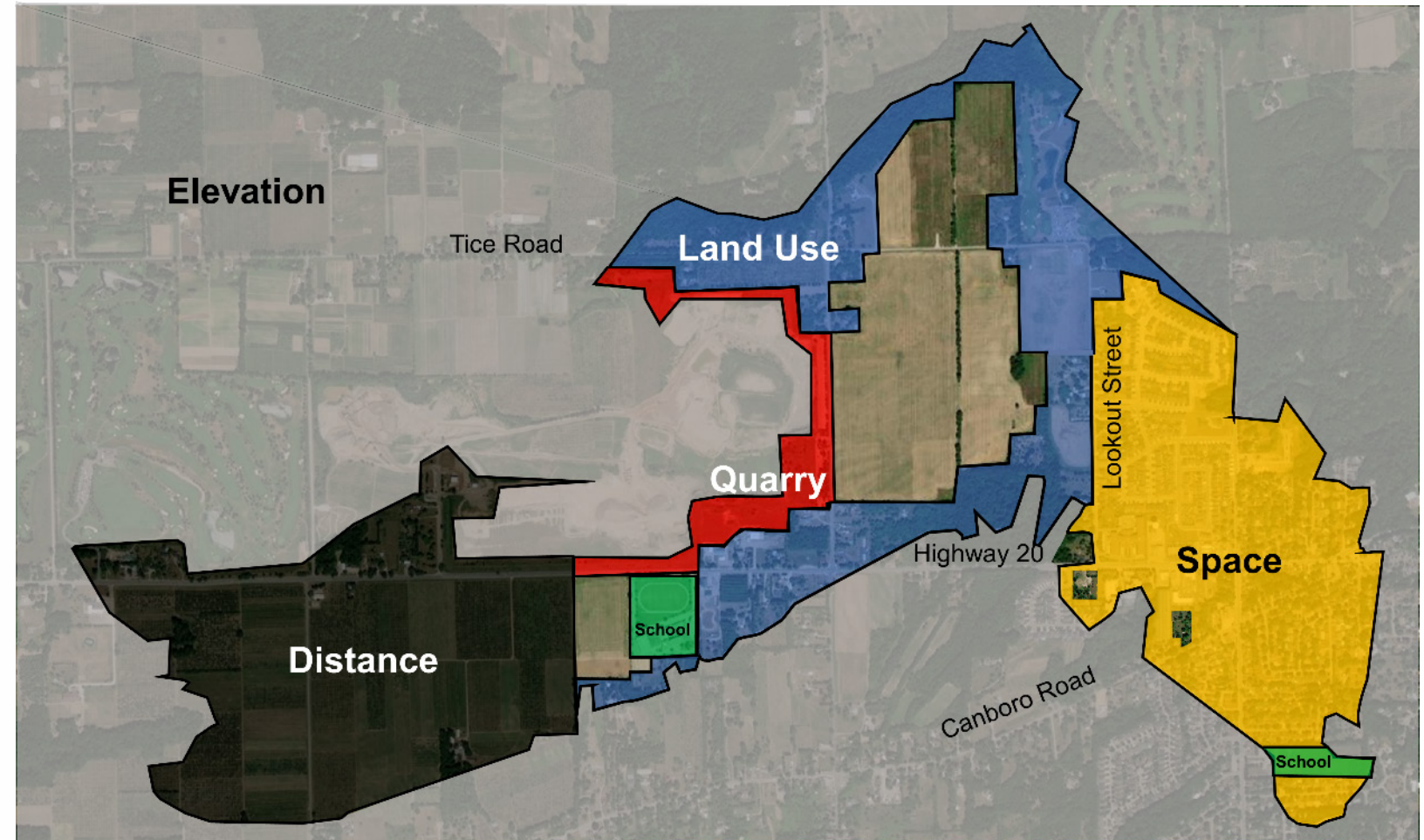
- Dense residential or commercial, insufficient space for EST

Quarry ■

- Impacts from quarry activities

School ■

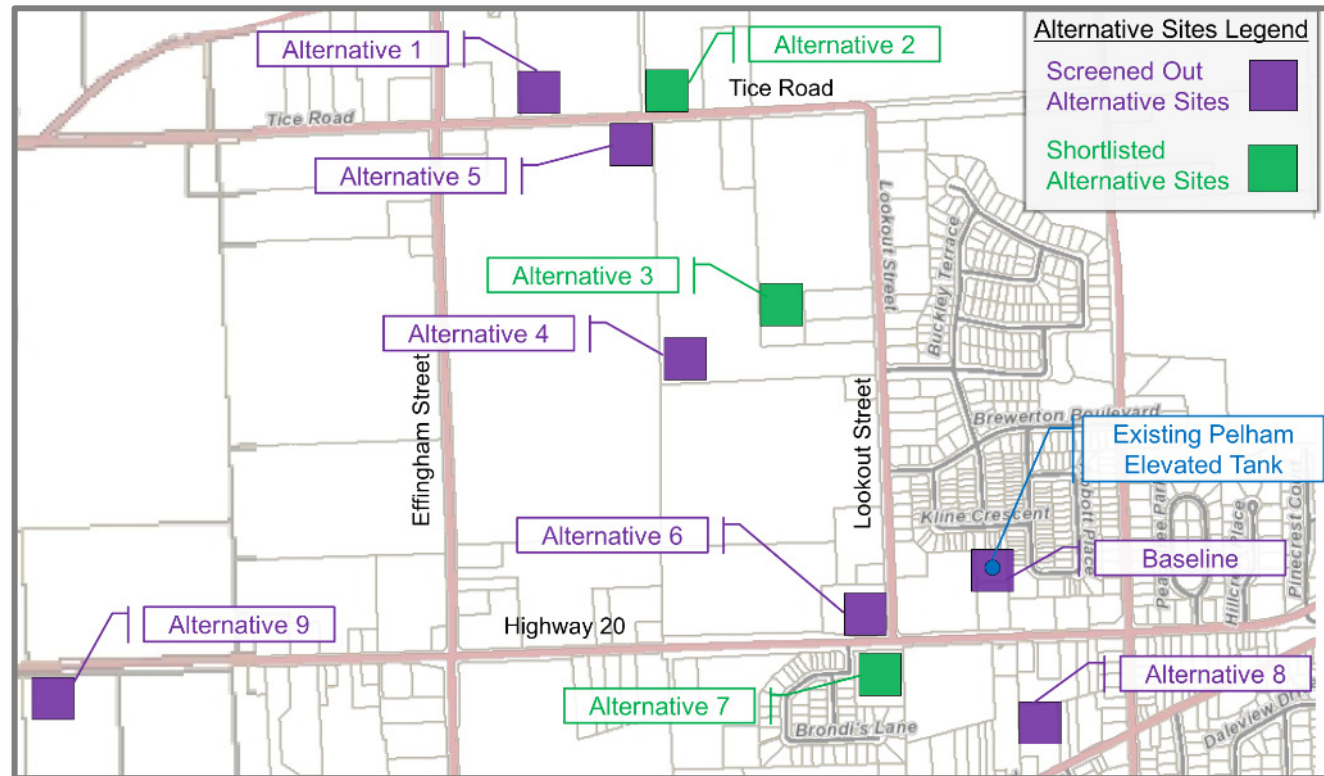
- Disruptive to operation of school, reduces yard size



Potential areas in which the new EST could be located were screened based on listed factors. Some areas were screened out by more than one factor. For the purpose of simplicity, the main factor is shown in the figure above. A preliminary list of alternative EST sites was developed based on areas that passed the screening process (refer to following panel for preliminary list of sites).

Preliminary List & Short List of Alternative Sites

Further Screening of Alternative Sites:



| Alt. # | Description | Key Points | Carry Forward to Short List? |
|--------|--|--|------------------------------|
| 0 | Do Nothing – Baseline scenario, existing EST remains | <ul style="list-style-type: none"> Does not satisfy Problem & Opportunity Statement | No |
| 1 | East of 275 Tice Road | <ul style="list-style-type: none"> Currently farmed | No |
| 2 | West of 229 Tice Road | <ul style="list-style-type: none"> Adequate space, currently vacant, further from Regional transmission main | Yes |
| 3 | South of existing Golf Driving Range (220 Tice Road) | <ul style="list-style-type: none"> Adequate space, currently vacant, property owner willing to sell | Yes |
| 4 | 1574 Lookout Street | <ul style="list-style-type: none"> Currently farmed, residential buildings on property | No |
| 5 | 1591 Effingham Street | <ul style="list-style-type: none"> Currently farmed, residential buildings on property | No |
| 6 | 205 Hwy 20 West | <ul style="list-style-type: none"> Insufficient space, lower elevation, residential area, partly wooded | No |
| 7 | 202 Hwy 20 West | <ul style="list-style-type: none"> Adequate space, currently vacant, but lower elevation, residential area | Yes |
| 8 | 169 Canboro Road | <ul style="list-style-type: none"> Lower elevation, residential buildings on property, residential area | No |
| 9 | West of School (350 Hwy 20 West) | <ul style="list-style-type: none"> Adequate space, however close to school and at a greater distance from the Regional watermain and urban settlement areas | No |

Evaluation Criteria for Reviewing Short Listed Alternatives

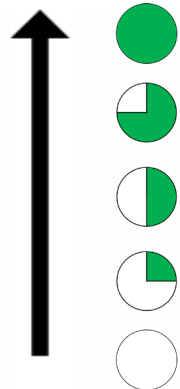
Each of the short listed alternatives will be evaluated based on the following criteria:

| Criteria | Example Considerations |
|------------|--|
| Social | <ul style="list-style-type: none"> • Effects on neighbouring properties • Effects on Indigenous communities • Sensory impacts during and after construction (noise, dust, etc.) • Effects on the municipality, local businesses, etc. • Future growth as per the Region Official Plan |
| Economical | <ul style="list-style-type: none"> • Life cycle costs (capital cost, operation & maintenance cost) • Sustainability and affordability |

| Criteria | Example Considerations |
|----------------|---|
| Technical | <ul style="list-style-type: none"> • Compatibility with existing systems • Ease of implementation • Effects on operations and maintenance • System complexity and redundancy • Ability to meet existing and future water demands and provide expected Level of Service |
| Archaeological | <ul style="list-style-type: none"> • Effects on archeological sites or structures • Effects on cultural sites or structures |
| Environmental | <ul style="list-style-type: none"> • Effects on wildlife and vegetation • Effects on habitats and air quality • Effects on Source Water Protection • Climate Change |

Evaluation of Short Listed Alternatives Sites

Lowest Impact
(Most Positive Solution)



Highest Impact
(Most Negative Solution)

| Evaluation Criteria | Alternative Site 2 – West of 229 Tice Road | Rating | Alternative Site 3 – South of Driving Range | Rating | Alternative Site 7 – 202 Hwy 20 West | Rating |
|---------------------------|--|--------|--|--------|---|--------|
| Social | <ul style="list-style-type: none"> Zoned as Residential, Commercial or Industrial; rezoning required Land privately owned, currently vacant. Part of a large, 23-acre property; severance of land may impact property owner Moderate aesthetic impacts to surrounding properties as further away from Lookout Street | | <ul style="list-style-type: none"> Zoned as Agriculture with an amendment to allow the Golf Course; rezoning required Land privately owned by Golf Course; severance of land required, property owner has indicated willingness to sell Moderate aesthetic impacts to surrounding properties as further away from Lookout Street | | <ul style="list-style-type: none"> Zoned as Residential; rezoning required Land privately owned; currently vacant. Part of a 2.5 acre property; purchase of whole property required Higher aesthetic impacts to surrounding properties as closer Lookout Street & Highway 20 West residential area (houses, condos) | |
| Economical | <ul style="list-style-type: none"> Moderate capital costs anticipated for land acquisition & overall EST height based on ground elevation Highest capital cost for longer watermain Similar EST operation and maintenance lifecycle costs anticipated for all tank locations | | <ul style="list-style-type: none"> Lower capital costs anticipated related to land acquisition & overall EST height based on ground elevation Moderate capital cost for longer watermain Similar EST operation and maintenance lifecycle costs anticipated for all tank locations | | <ul style="list-style-type: none"> Higher capital costs anticipated for land acquisition & overall EST height based on ground elevation Lower capital cost for shorter watermain Similar EST operation and maintenance lifecycle costs anticipated for all tank locations | |
| Technical | <ul style="list-style-type: none"> Similar approvals anticipated to be required Similar operations and maintenance effects Similar improvements to water distribution system for pressure and fire flows Further from existing watercourse – if carried forward, geotechnical/hydrogeological study required to determine construction impacts Existing communications tower nearby – interruption of signals to be minimized | | <ul style="list-style-type: none"> Similar approvals anticipated to be required Similar operations and maintenance effects Similar improvements to water distribution system for pressure and fire flows Further from existing watercourse – if carried forward, geotechnical/hydrogeological study required to determine construction impacts Existing communications tower nearby – interruption of signals to be minimized | | <ul style="list-style-type: none"> Similar approvals anticipated to be required Similar operations and maintenance effects Similar improvements to water distribution system for pressure and fire flows Closer to existing watercourse – if carried forward, geotechnical/hydrogeological study required to determine construction impacts | |
| Archaeological | <ul style="list-style-type: none"> Potential for archaeological interest. | | <ul style="list-style-type: none"> Less potential for archaeological interest as land has been previously disturbed | | <ul style="list-style-type: none"> Less potential for archaeological interest as land has been previously disturbed and developed | |
| Environmental | <ul style="list-style-type: none"> Moderate impact from natural environmental perspective, with mitigation measures required during design/construction: <ul style="list-style-type: none"> If alternative carried forward, field study of vegetation/wildlife required Located on Provincially Significant Area of Natural and Scientific Interest (Kame Delta Formation) Located in Greenbelt and Niagara Escarpment Plan Areas | | <ul style="list-style-type: none"> Moderate impact from natural environmental perspective, with mitigation measures required during design/construction: <ul style="list-style-type: none"> Barn Swallows observed (Species at Risk) Located on Provincially Significant Area of Natural and Scientific Interest (Kame Delta Formation) Located in Greenbelt Plan Area | | <ul style="list-style-type: none"> Least impact from natural environmental perspective: <ul style="list-style-type: none"> If alternative carried forward, field study of vegetation/wildlife required Vacant lot in residential area | |
| Overall Conclusion | Alternative will not be carried forward. | | Alternative to be carried forward – Recommended Elevated Water Storage Tank Site | | Alternative will not be carried forward. | |

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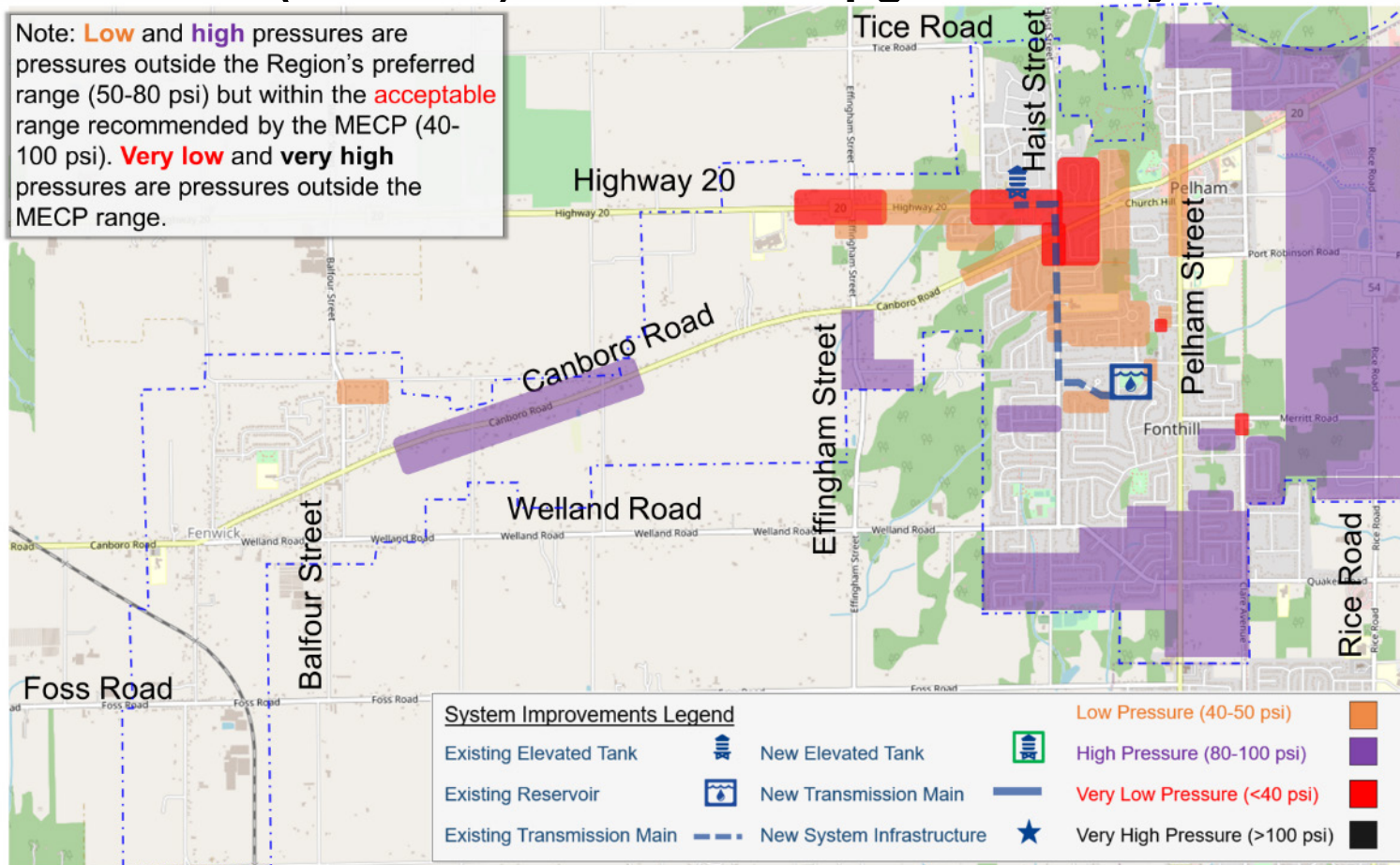
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System Improvement Options: Scenario 0

Scenario 0 (Baseline) in 2041: No Upgrades to System

Note: **Low** and **high** pressures are pressures outside the Region's preferred range (50-80 psi) but within the **acceptable** range recommended by the MECP (40-100 psi). **Very low** and **very high** pressures are pressures outside the MECP range.



System Upgrades

- No upgrades

Comparison to 2041 Baseline

Pressures

- Large area in northwest Fonthill will experience low or very low pressures
- Large areas in southern and eastern Fonthill will experience high pressures
- Small area in northeast Fenwick experiences low pressure

Fire Flows

- Available fire flows worsen compared to present day flows

As Scenario 0 cannot meet the acceptable pressure range while accommodating growth to 2041, it will not be carried forward. Baseline pressures and fire flows will be used as a comparison point for Scenarios 1, 2 and 3.

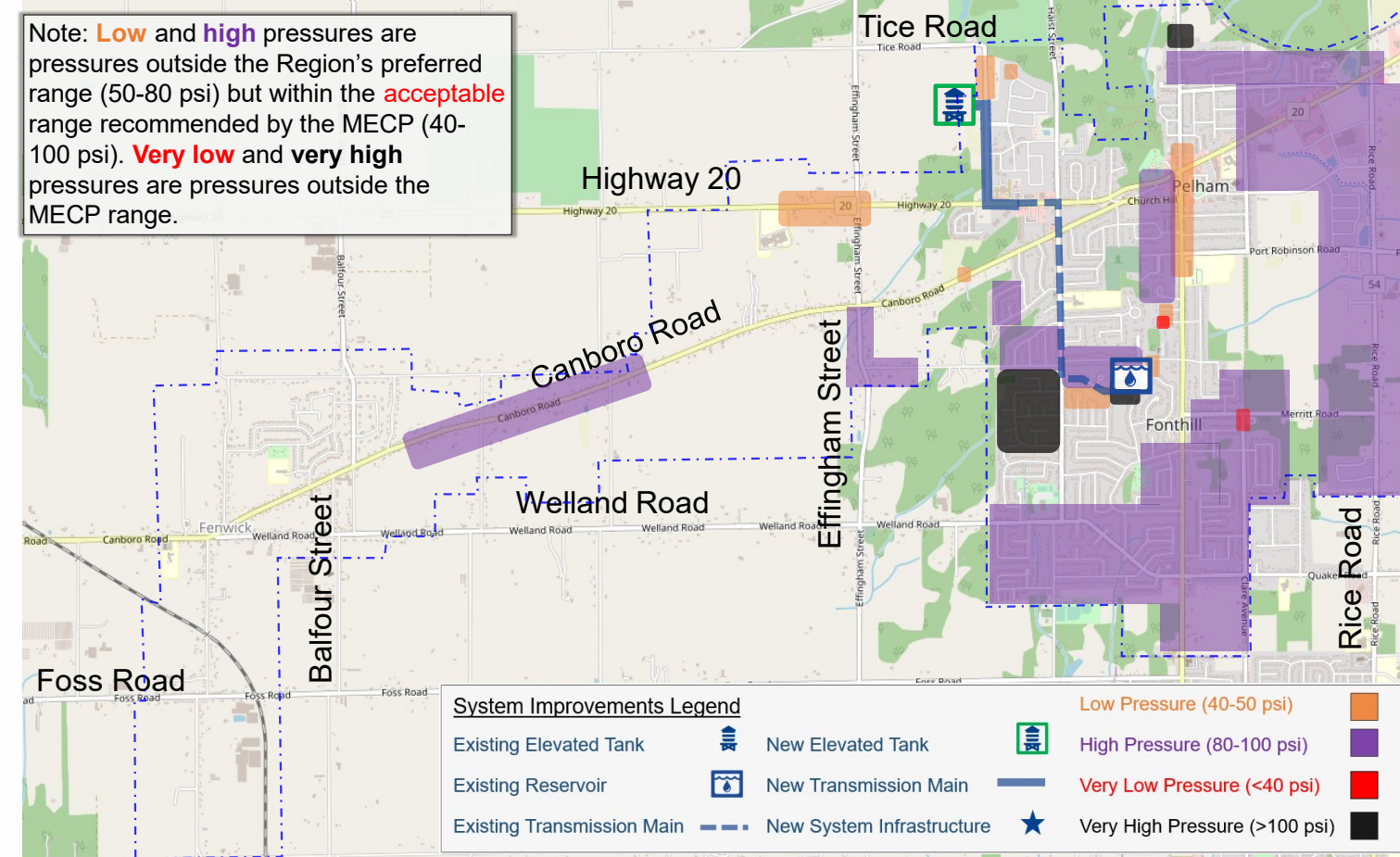
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System Improvement Options: Scenario 1

Scenario 1 in 2041: New Elevated Storage Tank



System Upgrades

- New pumps at Shoalts Drive reservoir
- New Elevated Storage Tank (EST)
- New Regional transmission main connects new EST to existing transmission main

Comparison to 2041 Baseline

Pressures

- Overall, fewer areas experience low or very low pressure, and more areas experience high pressure
- Certain areas in central and northern Fonthill experience very high pressure
- Fenwick is within the preferred pressure range

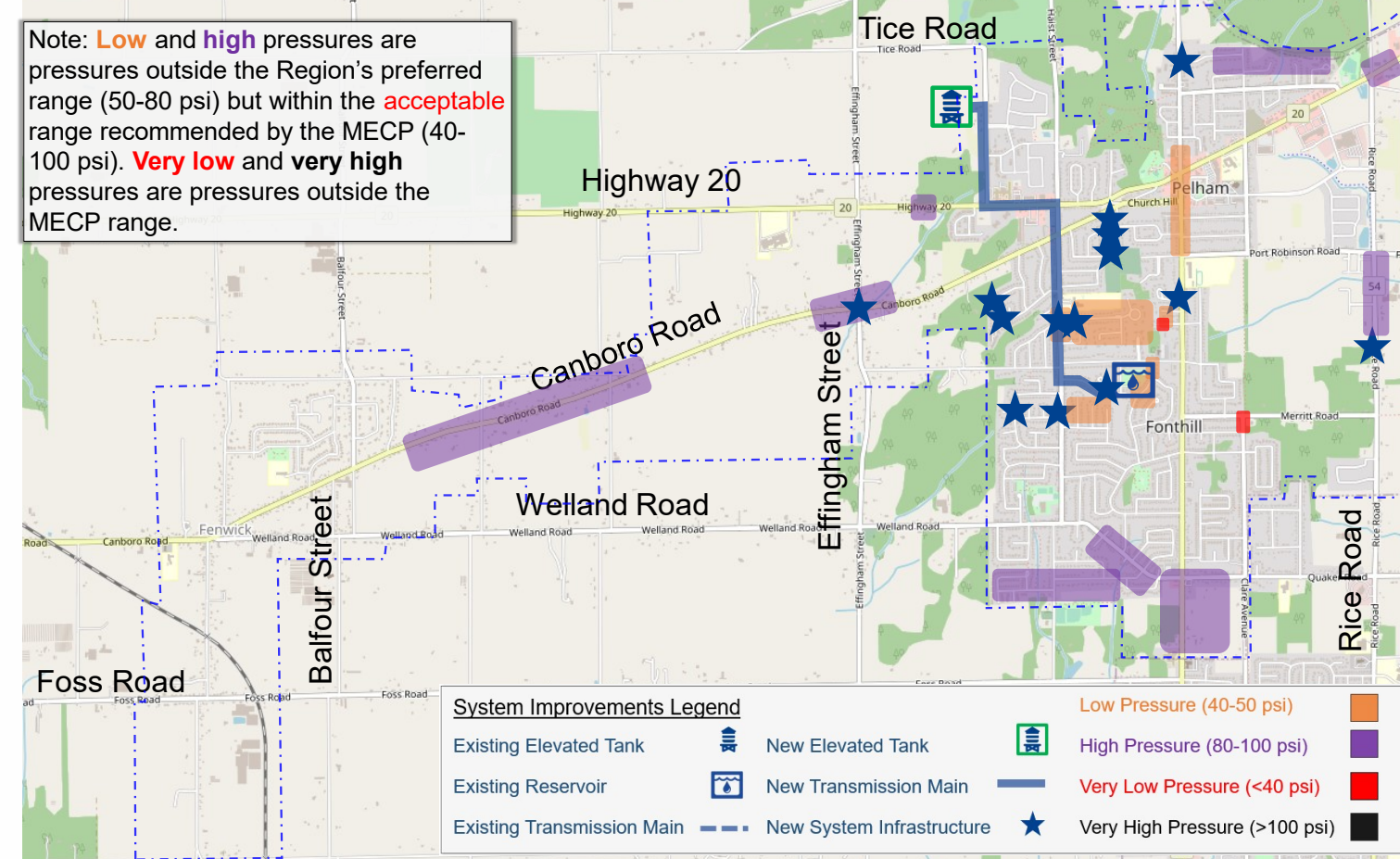
Fire Flows

- Available fire flows improved compared to baseline
- Further improvements could be achieved by upgrading small and dead-ended watermains

Conclusion: Scenario 1 cannot meet acceptable pressure range while accommodating growth to 2041. Therefore, it will not be carried forward.

System Improvement Options: Scenario 2

Scenario 2 in 2041: New EST, Transmission Main & System Infrastructure



System Upgrades

- New pumps at Shoalts Drive reservoir
- New Elevated Storage Tank (EST)
- New, larger transmission main connects reservoir to EST, and connects to local system
- Significant amount of additional new system infrastructure required (pressure control valve chambers; ★)

Comparison to 2041 Baseline

Pressures

- Overall, fewer areas experience low, high or very low pressures
- No areas with very high pressure
- Most of Fenwick is within the preferred pressure range

Fire Flows

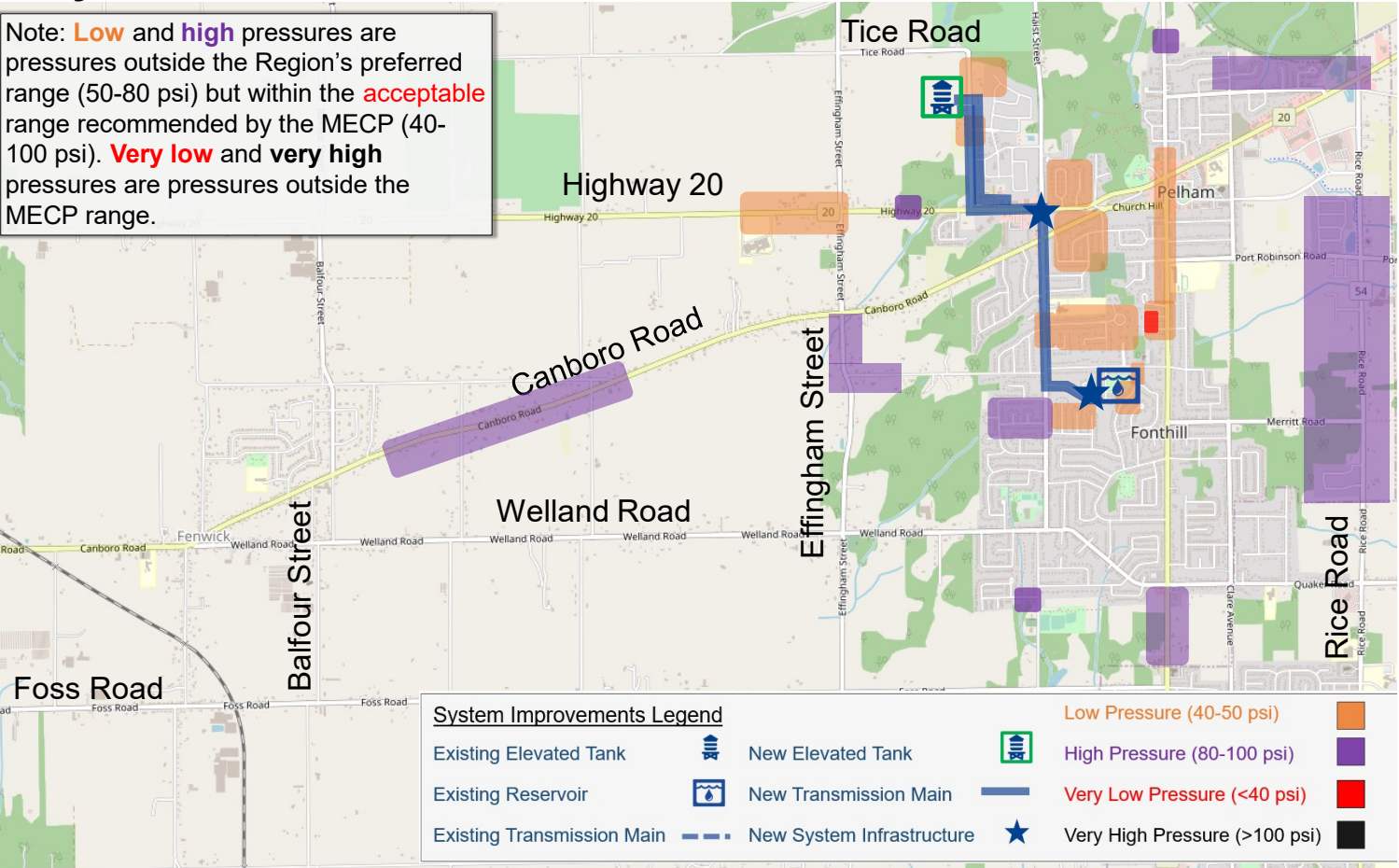
- Available fire flows improved compared to baseline
- Further improvements could be achieved by upgrading small and dead-ended watermains

Conclusion: Scenario 2 has more areas in the preferred pressure range and improves fire flows. This will be carried forward for comparison with Scenario 3.

System Improvement Options: Scenario 3

Scenario 3 in 2041: New EST, Dedicated Transmission Main & System Infrastructure

Note: **Low** and **high** pressures are pressures outside the Region's preferred range (50-80 psi) but within the **acceptable** range recommended by the MECP (40-100 psi). **Very low** and **very high** pressures are pressures outside the MECP range.



System Upgrades

- New pumps at Shoalts Drive reservoir
- New Elevated Storage Tank (EST)
- New, larger transmission main connects reservoir to EST, existing transmission main stays connected to local system
- Significant amount of new system infrastructure required (pressure control valve chambers)

Comparison to 2041 Baseline

Pressures

- Overall, fewer areas experience low, high or very low pressures
- No areas of very high pressure
- Most of Fenwick is within the preferred pressure range

Fire Flows

- Available fire flows improved compared to baseline
- Further improvements could be achieved by upgrading small and dead-ended watermains

Conclusion: Scenario 3 has more areas in the preferred pressure range and improves fire flows compared to baseline. Scenario 3 also requires less new system infrastructure than Scenario 2, reducing lifecycle costs, as well as construction, operation and maintenance impacts. Therefore, Scenario 3 is recommended.

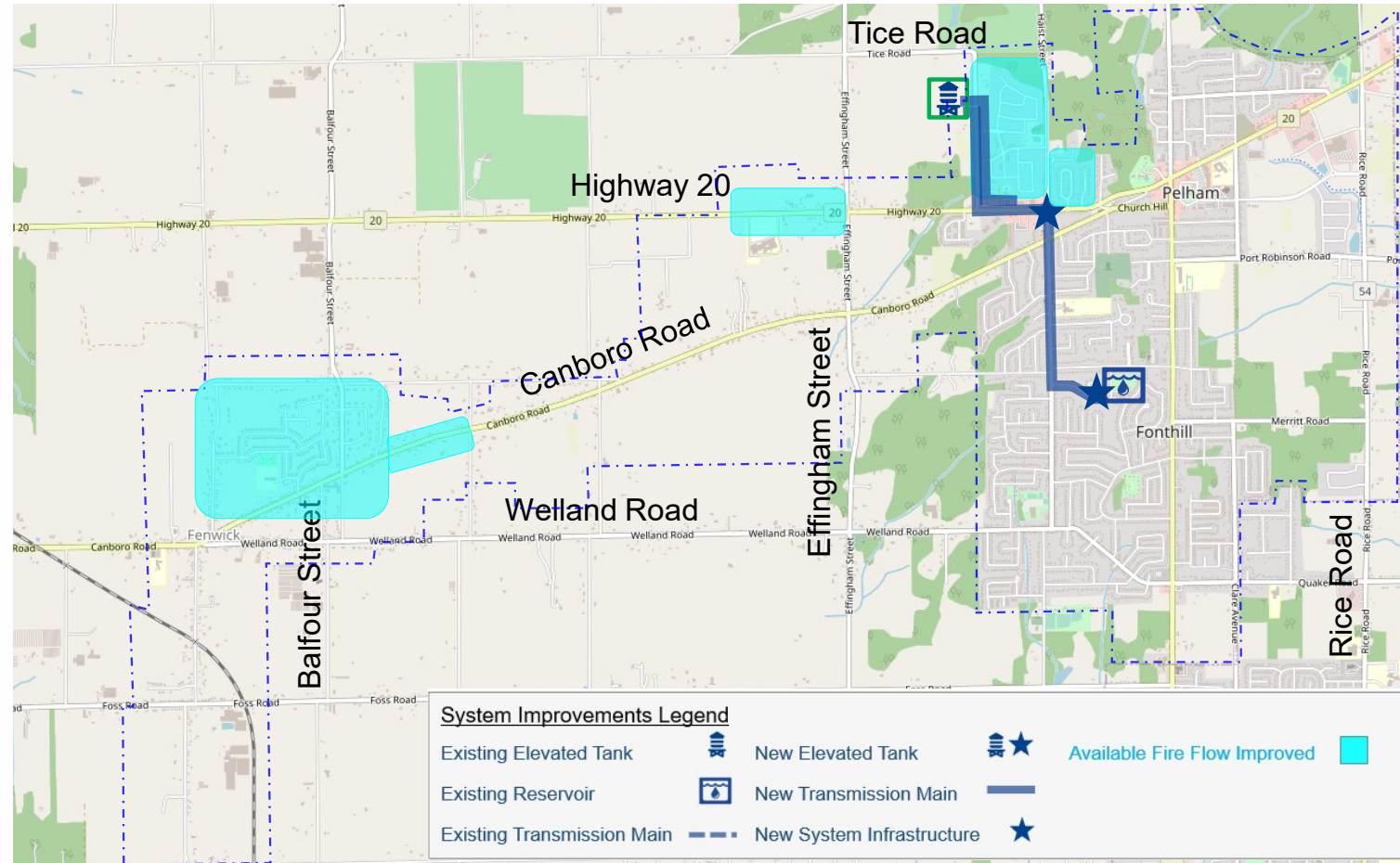


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System Improvement Options: Scenario 3 – Fire Flows

Scenario 3 in 2041: New EST, Dedicated Transmission Main & System Infrastructure



Comparison to 2041 Baseline

Fire Flows

- Available fire flows improved compared to baseline
- Areas west of Effingham Street & Highway 20 West, east of Lookout Street and in northern Fenwick improved from low fire flows in baseline
- Further improvements could be achieved by upgrading small and dead-ended watermains

Conclusion: Scenario 3 improves fire flows compared to baseline. Scenario 3 also requires less new system infrastructure than Scenario 2, reducing lifecycle costs, as well as construction, operation and maintenance impacts. Therefore, Scenario 3 is the recommended option.

Recommended Site & System Improvements

Site Alternative 3 + System Improvement Scenario 3:

New Elevated Storage Tank (EST) South of Golf Driving Range with Dedicated Transmission Main:

- New EST approx. 44m tall above ground level
- Space for additional infrastructure e.g. overflow pond
- New access road to new EST
- Removal of existing Pelham EST and booster station
- New feeder main from existing Shoalts Drive reservoir, with new pumps to fill the new EST
- New watermain from new EST connected to existing Region and local watermains
- New pressure reducing valve chamber at Highway 20 West & Haist Street

Additional Studies to be undertaken as part of Class EA or detailed design:

- Stage 2 Archaeological Assessment
- Geotechnical/hydrogeological study
- Topographic survey

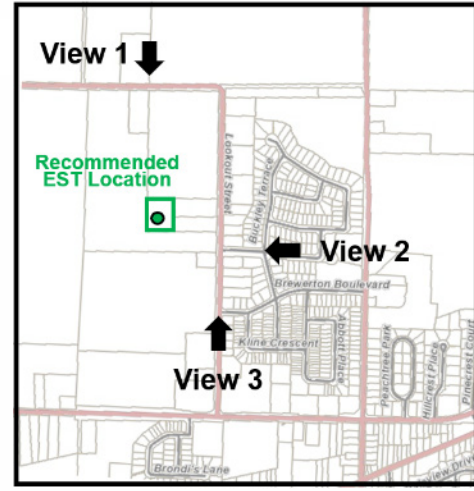


Rendering of Recommended Location for New Elevated Storage Tank



View 1 – Tice Road at Existing Driving Range Looking South

Key Map



View 2 – Marlene Stewart Drive and Near Buckley Terrace Looking West



View 3 – Lookout Street Near Brewerton Boulevard Looking North

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The Project Team will be completing the field work for the archaeological and geotechnical investigations to confirm the preferred location prior to proceeding with design.

Public Input

| Opportunity | Anticipated Timeline |
|--|---------------------------------|
| Public Information Centre #2's Comment Period | August 31 to September 14, 2021 |
| Class EA/Project File Report for public review | Late 2021 |

Questions or Comments?

Please download a comment sheet from the project website and submit comments by **September 14, 2021** to: newpelhamelevatedtank@niagararegion.ca

More information including copies of project notices and PIC materials can be found on the Project Website: niagararegion.ca/projects/pelham-elevated-tank/

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