MUNICIPAL CLASS ENVIRONMENTAL ASSESSMENT FOR TIVERTON SUPPLY SYSTEM AND EXPANSION

OPEN HOUSE

WELCOME

MAY 23, 2025
4 PM – 6 PM
Whitney Crawford Community Centre

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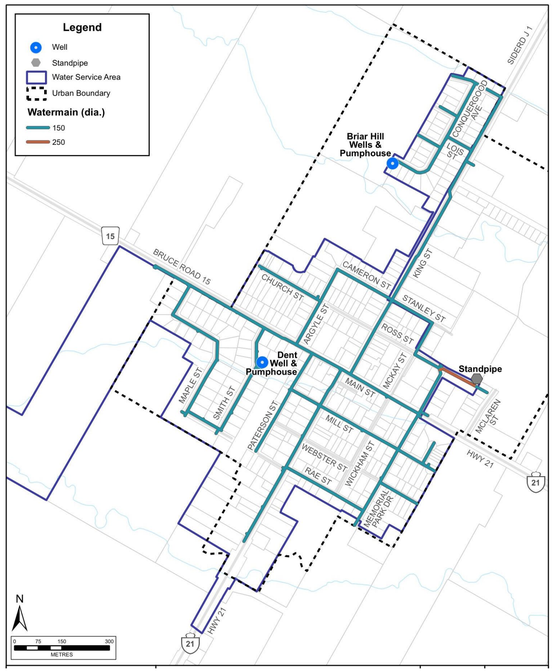
THE MUNICIPALITY OF KINCARDINE

BMROSS engineering better communities

Current Tiverton Drinking Water System



- System is supplied by three (3) groundwater wells, drilled in 1971, 2003 and 2006. The Briar Hill well site has two wells and the Dent well site has one well.
  - At each well site there is a pumphouse containing flow metering, iron and manganese sequestering system, sodium hypochlorite system for primary and secondary disinfection, and a standby generator.
- 7.9 km of watermain and 372 connections, servicing approximately 720 persons as of 2021.

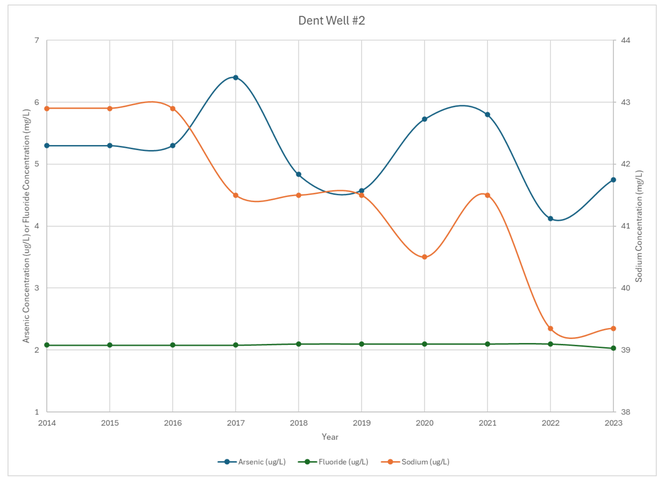
Capacity	775 m^3/day
Current maximum demand	616 m^3/day or 1.66 m^3/day per customer
Committed Capacity	424 m^3/day (256 Equivalent Residential Units)
Uncommitted Reserve Capacity	**-265 m^3/day (or – 160 ERUs)**

System is overcommitted in terms of water supply

Other Issues/Concerns with Current Groundwater System

- **Condition of the Briar Hill well**
  - Casing of the well is deteriorating and could fail.
  - Mechanical and electrical equipment at the site is reaching the end of useful life.
  - Well and wellhouse likely needs to be replaced in the near future.
- **Concerns regarding water quality**
  - Water meets the Ontario Drinking Water Standards and is safe but has low levels of arsenic and higher levels of fluoride and sodium.
  - Ontario Drinking Water Standards for: Arsenic – 10 ug/L (values above have this require increased sampling frequency), Fluoride – 1.5 mg/L
  - Safe Drinking Water Act requires notice to Medical Officer of Health for sodium above 20 mg/L

Corrosion pitting on the well casing at Briar Hill Well, mineral staining, cracks in wellhouse building



Municipal Class Environmental Assessment Process (MCEA)

- The MCEA is the planning and approval process for municipal road, **water,** wastewater and stormwater projects.
- Municipalities must follow the MCEA process to meet the requirements of the Environmental Assessment Act.
- Considers the impact to the natural, social-economic, cultural and technical environments
- The MCEA process includes:
  - Consultation
  - Consideration of alternative solutions
  - Identifying impacts of the alternative solutions
  - Documenting the decision-making process.

The MCEA Process

1	2	3	4	5
Problem or opportunity identification	Evaluation of alternative solutions and selection of preferred solution	Identification and evaluation of alternative design concepts and selection of preferred solution	Preparation and submission of Environmental Study Report (ESR) for public and government agency review	Implementation of the preferred alternative and monitoring of impacts

The system lacks adequate reserve capacity in terms of supply of raw water.

Population growth will increase water needs.

Condition of well casing, electrical and mechanical equipment at end of life, potential to improve water quality & mitigate risks.

To address these issues, the Municipality of Kincardine has initiated a Municipal Class Environmental Assessment.

Phase 1 – Define the Problem or Opportunity:

The 2023 Water and Wastewater Master Plan identified the Tiverton Drinking Water System (DWS) is overcommitted and additional supply capacity is required to support future growth.

Phase 2 – Identify Alternative Solutions

1. Expand the existing wells and/or construct new groundwater supply wells.
2. Construct a booster pumping station and watermain to connect Tiverton to the Kincardine DWS at Inverhuron
3. Limit water demands and limit community growth.
4. Do nothing.

Initial Review of Alternative Solutions

Alternative	Initial Evaluation	Carried Forward for Further Evaluation (Yes or No)
1 – Expand existing or construct new groundwater wells	• May need to consider multiple well sites to achieve needed yields. • Potential to secure sufficient water supply for current and future needs. • Can connect new wells to existing water distribution system. • Will require drilling of a test well(s). • Potential for significant capital costs if multiple wells are required. • New wells will add new Source Water Protection areas. • Potential for highly mineralized raw water quality.	Yes – carry forward for further evaluation.
2 – Construct a BPS to connect to the Kincardine Drinking Water System at Inverhuron	• Sufficient supply capacity available in the KDWS to accommodate existing and future growth in Tiverton. • Would have significant capital costs. • Would require a BPS in Inverhuron and watermain to extend east on Bruce Road 15.	Yes – carry forward for further evaluation.
3 – Reduce demands/ limit community growth	• Would require a significant decrease in current water usage to provide enough capacity for committed development. • Would limit future growth opportunities in Tiverton. • Does not address the need for additional supply.	No – not considered practical or feasible given the current demand commitments and does not address existing concerns
4 - Do Nothing	• Considered if the impacts of other alternatives are too great or cannot be mitigated. • Does not address the need for additional supply. • Limits future growth opportunities. • Will be used as the benchmark for comparison of other alternatives.	Yes – must always be considered but does not address supply needs or existing concerns.

Next Step

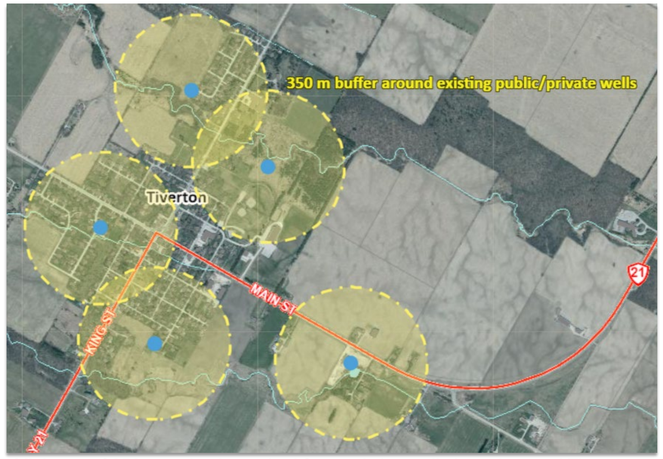
Evaluate the impacts of Alternatives 1, 2 and 4 in greater detail.

Alternative 1: Expand Existing or Construct New Groundwater Supply

- Ian Wilson and Associates (hydrogeologists) reviewed existing well and pumping records to evaluate ability to expand existing wells and water supply from new wells.
- Ability to use/expand existing wells limited
  - Review of existing wells found little potential to re-rate existing wells.
  - Concerns with condition of Briar Hill well casing, condition of wellhouse equipment.
- New Well(s)
  - Expect similar water quality – mineralized with potential for elevated total dissolved solids, sulphate, iron and sodium. Arsenic and fluoride may be present.
  - Information from other wells indicates a 54% chance of a meaningful yield for municipal use (i.e. rate above 200 L/min). Multiple test sites can be expected.
  - Previous testing data indicates it is probable that two additional, properly-spaced well fields (i.e. spaced >700 m apart) could be required, and should be more than 350 m away from the existing wells.
  - Need to set back from existing domestic and commercial wells within the area.
- Need to maintain/rehabilitate existing well sites in conjunction with new sites.

Implementing Alternative 1 will require:

- Maintaining the existing wells, including replacing the Briar Hill well and wellhouse.
- Construction of at least one additional well site, and construction of a second new well in the future.
- May require additional treatment equipment depending on water quality of new wells.



Minimum of 350 m setback required from existing wells in and around Tiverton to avoid interference. New wells will likely need to be located outside of the community.

Potential Costs

Project Component	Cost
Replacement of Briar Hill Well and Wellhouse	$3,600,000
Additional Well 1	$3,600,000
Additional Well 2	$3,600,000
Total	$10,800,000
Unknown costs: additional water treatment equipment, additional watermain to connect new wells to system, land acquisition.	

Alternative 2: Construct a BPS to connect to the Kincardine Drinking Water System at Inverhuron

- This alternatives requires:
  - Construction of a Water Booster Pumping Station (BPS) at Inverhuron
    - Includes standby diesel generator for emergency power outages.
  - Construction of watermain connecting the BPS to Tiverton.
- Site considerations for BPS
  - Proximity to existing Kincardine Drinking Water System
  - Distance to Tiverton
  - Proximity to 3-phase electrical services
  - Minimum site size 20 m x 30 m
  - Potential for Species at Risk
  - Impacts to adjacent properties during construction and operation
  - Archaeological potential

Evaluation of Potential BPS sites

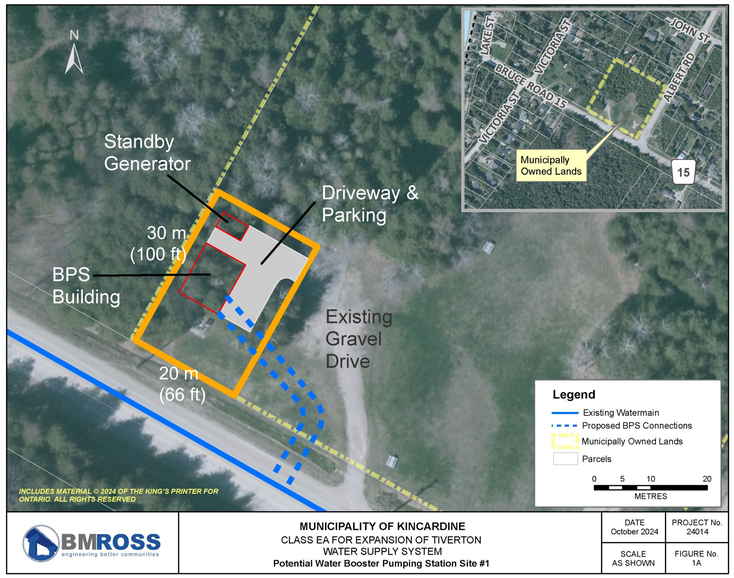
From evaluation of 11 municipally-owned sites in Inverhuron, Inverhuron Park site identified as preferred potential site for a BPS.

Criteria	Site 1 Shoreline Area South of Pine Street	Site 2 – Shoreline Area north of Pine Street	Site 3 – Shoreline area on Lake Street	Site 4 – North of Lake Street	Site 5 – McIntyre Park	Site 6 – Inverhuron Park	Site 7 – Large Wooded Area on Richards Drive	Site 8 – Small Wooded Area near Inverhuron Provincial Park	Site 9 – Small wooded area on Concession 2	Site 10 – Wooded Area on Albert Road	Site 11 - Lagoons
Size of property	0.2 ha (96m by 19.5m)	0.17 hectares (33m by 47m)	0.07 hectares (15m by 47m)	0.05 ha (30m by 16m)	0.17 ha (41m by 50m)	0.99 ha (100m by 102m)	8.83 ha (212m by 415m)	0.81 ha (80m by 100m)	0.28 ha (38m by 73m)	1.26 ha (103m by 123)	14.26 ha (365m by 386m)
Archaeological Potential	Yes – stage 1&2 archaeological assessment required	Yes – stage 1&2 archaeological assessment required	Yes – stage 1&2 archaeological assessment required	Yes – a stage 1 & 2 archaeological assessment required	Yes – a stage 1 & 2 archaeological assessment required	No – archaeological assessment already completed at the site	Yes – a stage 1 & 2 archaeological assessment required	Yes – stage 1 & 2 archaeological assessment required	Yes – stage 1 & 2 archaeological assessment required	Yes – stage 1 & 2 archaeological assessment required	Yes – stage 1 & 2 archaeological assessment required
Potential Species at Risk	wood thrush, eastern wood-pewee, Canada warbler, eastern whip-poor-will, eastern milksnake, pitcher's thistle, eastern meadowlark	wood thrush, eastern wood-pewee, Canada warbler, eastern Whip-poor-will, eastern milksnake, pitcher's thistle, eastern meadowlark	wood thrush, eastern wood-pewee, Canada warbler, eastern whip-poor-will, eastern milksnake, pitcher's thistle, eastern meadowlark	wood thrush, grasshopper sparrow, midland painted turtle, eastern wood-pewee, canada warbler, snapping turtle, eastern whip-poor will, eastern milksnake, yellow-banded bumble bee, red-headed woodpecker, dwarf lake iris, golden-winged warbler, pitcher's thistle, loggerhead strike, eastern meadowlark, bobolink, least bittern	wood thrush, eastern wood-pewee, Canada warbler, Eastern Whip-poor-will, Eastern milksnake, pitcher's thistle, eastern meadowlark	midland painted turtle, wood thrush, eastern wood-pewee, Canada warbler, Eastern Whip-poor-will, Eastern meadowlark	Wood thrush, eastern wood-pewee, Canada warbler, eastern whip-poor-will, eastern milksnake and eastern meadowlark	Brewer's blackbird, pringle's coralroot, grasshopper sparrow, midland painted turtle, wood thrush, eastern wood-pewee, Canada warbler, snapping turtle, Great Lakes sand cherry, eastern whip-poor-will, yellow-banded bumble bee, red-headed woodpecker, Great Lakes sandreed, spotted beebalm, sanddune wildrye, dwarf lake iris, golden-winged warbler, pitcher's thistle, loggerhead shrike, eastern meadowlark and bobolink	Grasshopper sparrow, midland painted turtle, wood thrush, eastern wood-pewee, Canada warbler, eastern whip-poor-will, eastern milksnake, red-headed woodpecker, eastern meadowlark and bobolink	midland painted turtle, wood thrush, eastern wood-pewee, Canada warbler, snapping turtle, eastern whip-poor-will, yellow-headed bumble bee, red-headed woodpecker, dwarf lake iris, eastern meadowlark, RESTRICTED SPECIES, bobolink, grasshopper sparrow and eastern milksnake	Midland painted turtle, wood thrush, eastern wood-pewee, Canada warbler, snapping turtle, eastern whip-poor-will, yellow-banded bumble bee, red-headed woodpecker, dwarf lake iris, eastern meadowlark, RESTRICTED SPECIES, bobolink, grasshopper sparrow and eastern milksnake
Proximity to Existing Watermain	48m – nearest connection point to the Shoreline Distribution is on Victoria St. No watermain within the Lake St. right of way. Would require watermain extension from Victoria St. to service site.	46m from nearest connection point to the Shoreline Distribution is on Victoria St. No watermain within the Lake St. right of way. Would require watermain extension from Victoria St. to service site.	231m from nearest connection point to the Shoreline Distribution is on Victoria St. No watermain within the Lake St. right of way. Would require watermain extension from Victoria St. to service site. Approximately 40 m from connection point if an easement could be established between Lake Street and Victoria (note – ability to establish easement may be limited due to existing dwellings).	Watermain within unopened Lake St. road allowance	Adjacent to existing watermain	Adjacent to existing watermain	578m from nearest connection point to existing distribution system.	110m to connection point at Albert Rd.	561m - based on current extent of distribution system. If water extended to Bruce Power, distance to watermain could decrease to 175 m	204m based on current extent of distribution system. If water extended to Bruce Power, site would be adjacent to watermain.	630m based on current extent of distribution system. If water extended to Bruce Power, site would be adjacent to watermain.
Distance to Tiverton connection	4.8 km	4.6km	4.95km	3.7 km	3.76km	3.49km	5.17km	4.46km	5.69km	5.12km	5.43km
Natural Environment	sea rocket sand beach type, colonial waterbird nesting area, sanddune wildrye. Located within SVCA's regulated area along the shoreline. -Vegetation removal would be required	sea rocket sand beach type, colonial waterbird nesting area, sand dune wildrye. -Located within SVCA's regulated area along the shoreline. -Vegetation removal would be required	sea rocket sand beach type, colonial waterbird nesting area, sanddune wildrye. Located within SVCA's regulated area along the shoreline. -Vegetation removal would be required	little bluestem – long-leaved reed grass – Great Lakes Wheat Grass Dune Grassland type, slender wheat-grass sand barren type, sea rocket sand beach type, fringed candleflame lichen, prairie sandreed, Great Lakes sand cherry, Great Lakes sandreed, sanddune wildrye, colonial waterbird nesting area. -Located within SVCA's regulated area along the shoreline. -Greater potential to disturb sensitive dunes and beach environment	sea rocket sand beach type, colonial waterbird nesting area, sanddune wildrye. Located within SVCA's regulated area along the shoreline. -Potential to avoid tree removals through use of existing open space area	colonial waterbird nesting brea, sanddune wildrye. -Potential to avoid tree removals through use of existing open space area.	Colonial waterbird nesting area -Majority of property is dentified as significant woodland	Colonial Waterbird Nesting Area. Located within SVCA's regulated area along watercourses. -Little Sauble River flows through the site (sensitive coldwater fish species present). -Area sparsely wooded.	Colonial waterbird nesting area. Located within SVCA's regulated area along watercourses. -Entire lot zoned for natural hazard relating to watercourse running through the middle of the property -Potential for impacts to watercourse during construction	Colonial waterbird nesting area, autumn coralroot, sanddune wildrye, ram's-head lady's-slipper -Property is classified as significant woodland	Colonial waterbird nesting area, autumn coralroot, sanddune wildrye, ram's-head lady's-slipper
Proximity to Sensitive Receptors	Directly adjacent to Lake Huron and cottages along shoreline (between 20 and 23 m from nearest receptors). -3 dwellings adjacent to site	Directly adjacent to Lake Huron and cottages along shoreline. Four dwellings within 31 to 42 m of centre of the site.	Directly adjacent to Lake Huron and cottages along shoreline. 5 dwellings between 17 and 35 m from centre of the site.	Directly adjacent to Lake Huron and cottages along shoreline. 6 dwellings within 30 from centre of the site	7 dwellings immediately adjacent to park. Nearest dwelling is 20 m from centre of park.	Dwellings to west, east and north of park. Nearest dwelling s 70 m from centre of cleared area of park. Existing trees provide a natural buffer to west, east and north.	Majority of property is dense wooded area. One dwelling in proximity to property, located to the south	Four dwellings in proximity to site. Closest house is located 50 m from site.	No dwellings adjacent to site. Little Sauble River flows through the site (sensitive coldwater fish species present). Site is wooded.	Site is wooded. Closest house is 90m away.	No dwellings adjacent to site. Site is wooded.
Proximity to Hydro Services	2 phase power on Victoria Street (50m away). Three phase power is required and would need to be extended to this site, which could have significant cost.	2 phase power on Victoria Street (50m away). Three phase power is required and would need to be extended to this site, which could have significant cost.	2 phase power on Victoria Street (231 away). Three phase power is required and would need to be extended to this site, which could have significant cost.	42m from Lake Street that has 3 phase power line. Three phase power is required and would need to be extended to this site, which could have significant cost.	Adjacent to 3 phase power line	Adjacent to 3 phase power line - close connection	Adjacent to 2 phase power. 510 m from 3 phase power. Three phase power is required and would need to be extended to this site, which could have significant cost.	Currently no hydro services to site. 3 phase power located on Albert Street, 105m from site. Three phase power is required and would need to be extended to this site, which could have significant cost.	2 phase power at the intersection of Albert Street and Concession 2 (220 from site) and three phase power at the lagoons (415m away). Three phase power is required and would need to be extended to this site, which could have significant cost.	2 phase power is located at the intersection of Albert Street and Concession 2 (83m away). 3 phase power is located at the lagoons (280m away). Three phase power is required and would need to be extended to this site, which could have significant cost.	2 phase power is located at the intersection of Albert Street and Concession 2 (83m away). 3 phase power is located at the lagoons (280m away). Three phase power is required and would need to be extended to this site, which could have significant cost.
Construction Related Impacts	-Removal of most of the trees on the property would be required. Would impact SAR birds and reduce natural buffer between adjacent properties. -Construction activities within close proximity to existing dwellings -Potential impacts to SAR plants and sensitive beach environment -Potential for high groundwater at site due to proximity to lake	- Tree removal would be required – impacts to SAR birds and reduces natural sound buffer for adjacent dwellings. -Potential impacts to SAR plants and sensitive beach environment- -Construction activities within close proximity to existing dwellings. -Potential for high groundwater due to proximity to lake	Tree removal – impacts to SAR birds and reduction to natural buffer between adjacent dwellings. -Potential impacts to SAR plants and sensitive beach environment. -Construction activities within close proximity to existing dwellings -Potential for high groundwater due to proximity to lake	-Potential to impact SAR plants and sensitive beach environment. -Likely less vegetation to remove but greater potential to disturb sensitive beach areas. -Access site with large equipment may be difficult -Given size and location of site, materials and equipment will likely need to stored offsite -Construction activities within close proximity to existing dwellings -Potential for high groundwater at site due to proximity to lake	-Access to park will be limited during construction -Access to the parking area to the south of the property may also be limited -Limited impacts to vegetation (majority of site is grass lawn that is regularly mowed) -Construction activities within close proximity to existing dwellings	-Access to a portion of the park will be limited during construction. Potential to keep access to existing play equipment. -Limited impacts to vegetation f cleared area of site is utilized southern portion of site is grass lawn that is regularly mowed) -Existing trees will buffer construction noise and activities for adjacent properties. -Sufficient laydown and material storage space on site.	Tree removal will be required -potential impact to SAR birds. Site identified as Significant Woodland. Natural heritage study required. -Additional tree removal/trimming may be required for watermain extension	-Tree removal – impacts to SAR birds -Construction activities within close proximity to existing dwellings. -Additional tree removal/trimming may be required for watermain extension	-Tree removal – impacts to SAR birds -Potential impacts to Little Sauble River running through middle of the site.	-Tree removal – impacts to SAR birds -Site identified as Significant Woodland. Natural heritage study required.	-Potential for tree removal – impacts to SAR birds, depending on where BPS located on site. -Additional tree trimming/removal may be required for watermain extension.
Operation Related Impacts	-Noise from generator impacting neighbouring cottages during power outages. -Floodproofing may be required during proximity to lake	-Noise from generator impacting neighbouring cottages during power outages -Floodproofing may be required due to proximity to lake	-Noise from generator impacting neighbouring cottages during power outages -Floodproofing may be required due to proximity to lake	-Noise from generator impacting neighbouring cottages during power outages -Floodproofing may be required due to proximity to lake -Loss of recreational beach area for BPS site.	-Noise from generator impacting neighbouring cottages during power outages -Will result in permanent loss of parkland for BPS site. Due to small size of park, proportion of site utilized by BPS is larger.	-Will result in permanent loss of parkland for BPS site. -Majority of park will remain available for recreational use. -Noise from generator during power outages may be mitigated by woodlands to east, north and west.	-Noise from generator may impact dwelling to the south during power outages	-Noise from generator impacting neighbouring dwellings during power outages.	-Not expected to have any impacts to adjacent properties	-Not expected to have any impacts to adjacent properties	-Not expected to have any impacts to adjacent properties.

Alternative 2: Construct a BPS to connect to the Kincardine Drinking Water System at Inverhuron

- Probable costs:
  - Booster Pumping Station: $2,200,000
  - Trunk Watermain: $2,600,000
  - Design and Approvals: $275,000
  - Contract Administration: $335,000
- Estimated total cost: $5,410,000 + HST
- Decommissioning existing wells/wellhouses are additional future costs.

Site Layout Option 1



Site Layout Option 2

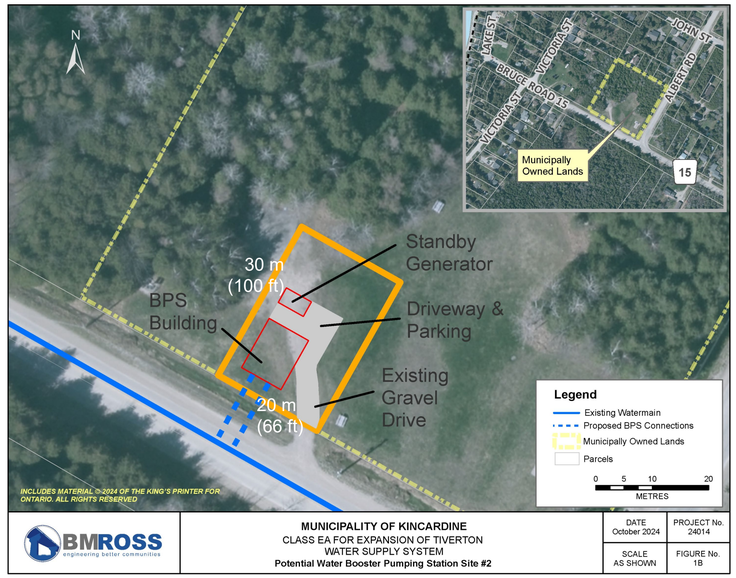


Photo rendering of potential BPS and generator to show approximate size and scale.

The building size will be approximately 9.8 m (32 ft) x 9.8 m (32 ft)

Façade of the building shown is only for illustrative purposes. Decision on the exterior materials for the building will be made during the design phase.

Examples of other BPS buildings


Gary St. BPS - Kincardine


Walker West BPS - Walkerton


St. George Street BPS – St. Marys


Anne St. BPS - Barrie


Stanley BPS - Bluewater

Evaluation of Alternatives

- Summary of advantages and disadvantages

Alternative	Advantages	Disadvantages	Preferred?
Alternative 1 – Expand Wells or New Wells	• Make use of some existing infrastructure. • Opportunity to defer some costs associated with expansion (i.e. initially construct 1 additional well site, wait to construct another).	• Little potential to re-rate existing wells. • Probable need for two new well sites. • Potential for mineralized water & ongoing treatment needs. • May require arsenic treatment process for existing & future wells. • Will need to upgrade/replace infrastructure at existing well sites. • Expanded/new source water protection areas. • Overall cost (initial + long term).	• No
Alternative 2 – Connect to Kincardine DWS	• Sufficient supply to support growth. • Connection available at Inverhuron. • Eliminates potential need for arsenic treatment, upgrading/replacing existing well equipment. • Lower operation and maintenance costs over the long term.	• Loss of portion of park site. • Utilizes some capacity from Kincardine DWS, making it unavailable for other potential future customers. • Initial cost.	• Yes
Alternative 4 – Do Nothing/ Status Quo	• Lower cost	• Does not address problem. • Will still need to address equipment needs (well casing, electrical, mechanical).	• No

Preferred solution is Alternative 2: Construct a BPS and watermain to connect to the Kincardine Drinking Water System

Evaluation of Alternatives

Component	Alternative 1 – Expand the Existing or Construct a New Groundwater Supply	Alternative 2 – Construct a Connection to the Kincardine DWS	Alternative 4 – Do Nothing
Natural – Significant Natural features	○ No significant natural features within the vicinity of or adjacent to the existing wells ◔ New well sites may have the potential to impact a significant natural feature as they will likely be located outside of the community of Tiverton. ◔ Low level of impact.	○No significant natural features within the vicinity of or adjacent to the proposed BPS site and road allowance. ○ Minimal level of impact.	○ No significant natural features within the vicinity of or adjacent to the existing wells. ○ Minimal level of impact.
Natural – Species at risk	◔ New well sites may have the potential to impact species at risk. ◔ Low level of impact.	◔ The BPS has a small footprint and could be placed in previously disturbed areas (cleared for parkland). No species at risk are present at the site. ◔ Operation of BPS and watermain extension is not expected to impact any species at risk or their habitat. ◔ Low level of impact.	○ No change in impacts. ○ Minimal level of impact.
Natural – Wildlife	◔ New well sites may have the potential to impact wildlife and their habitat. ○ Operation of the well is not expected to impact any wildlife or their habitat. ○ Low level of impact.	◔ The BPS has a small footprint within a previously disturbed area (cleared for parkland). ○ Operation of BPS is not expected to impact any wildlife or their habitat. ◔ Low level of impact.	○ No change in impacts. ○ Minimal level of impact.
Natural – Vegetation	◔ New well sites may require clearing of vegetation for wellhouses ◔ Low level of impact.	◔ BPS can be sited to avoid treed areas of site. ◔ Vegetation removal will occur during construction of BPS. Grass is the primary type of vegetation that will be removed ○ Operation or construction of the BPS is not expected to impact trees or vegetation adjacent to the well site. ◔ Low level of impact.	○ No change in impacts. ○ Minimal level of impact.
Natural – Surface water quantity and quality	◑ Test wells will be drilled to conduct pumping test. Water from pumping tests will be directed to local stormwater infrastructure, if available, or discharged to ditch or overland. ◑ Potential for impacts to local surface water quantity and quality from pumping tests. ◑ Moderate level of impact.	○ The only surface water area feature in the immediate vicinity is the existing ditches along Bruce Road 15. ◔ Potential for impacts to surface water during construction, related to construction activities. ○ Sediment and erosion impacts on surface water are expected to be minor and can be minimized with standard construction mitigation measures. ◔ Low level of impact.	◑ Replacement of Briar Hill Well 1 still required under this alternative. Drilling and testing of new well may impact local surface water quantity and quality. ◑ Moderate level of impact.
Natural – Groundwater quantity and quality	◑ Drilling of wells has the potential to impact water levels in local wells utilizing the same aquifer. ◑ Construction of additional wells creates additional transport pathways to groundwater aquifers. ◔ Long-term operation of the well is not expected to impact local aquifer quantity as the pumping test and assessment showed acceptable water level recovery and a 10-year water level above the upper water-bearing zone. ◑ Moderate level of impact.	○ Would allow for all or some of the existing municipal wells to be decommissioned, reducing the number of transport pathways to the aquifer. ○ Reduces dependence on groundwater aquifers. ○ Minimal level of impact.	◑ Replacement of Briar Hill Well #1 still required under this alternative. Drilling and testing of new well may impact local groundwater levels. ◑ Moderate level of impact.
Natural – Air quality, dust and noise	◔ Drilling of wells will increase noise locally during drilling activities. ◔ Normal operation of well is not expected to create additional noise, dust, or air quality impacts. ◔ A diesel generator will be installed at the site for emergency power outages. ◔ Low level of impact.	◔ Construction of the Watermain connection will increase noise locally during construction activities. ◔ Normal operation of the BPS and watermain is not expected to create additional noise, dust, or air quality impacts. ◔ A diesel generator will be installed at the site for use in emergency power outages. Adjacent residents will experienced elevated noise levels during operation of the generator. Noises will be mitigated by acoustical enclosure of generator and existing tree buffer to north, west and east of the site. ◔ Low level of impact.	◔ Replacement of Briar Hill Well #1 will increase noise locally during drilling activities. ◔ Low level of impact.
Natural – Climate change	◔ Construction will require heavy equipment that will release Greenhouse Gases (GHG) as emissions. Impacts related to construction may be reduced through equipment and materials selection. ◔ A backup diesel generator will be utilized during emergency power outages. ◔ Low level of impact.	◔ Construction will require heavy equipment that will release GHG as emissions. Impacts related to construction may be reduced through equipment and materials selection. ◔ Operation of BPS will require electricity. Design of the BPS will consider energy efficiency. ◔ A backup diesel generator will be utilized during emergency power outages. ◔ Low level of impact	◔ Construction of replacement of Briar Hill well will require heavy equipment that will release GHGs as emissions. Impacts related to construction may be reduced through equipment and materials selection. ◔ Low level of impact
Social – Adjacent Land Uses	◔ Drilling of test wells and construction of wellhouses may impact adjacent properties. ◔ Impacts will vary depending on potential sites identified. ◔ Low level of impact.	◔ Adjacent land uses may be impacted temporarily during construction activities. ◔ Operation of the BPS and watermain extension is not expected to impact adjacent land uses. ◔ Low level of impact.	○ No change from current conditions. ○ Minimal level of impact.
Social – Source Water Protection	◑ Any new wells will create new WHPA areas. ◑ Residents within WHPA A or WHPA B with a vulnerability score of 10 will be required to have their septic systems inspected on a 5-year basis. ◑ No new lots serviced by septic systems will be permitted within the highly vulnerable area around the well. ◑ Residents will be impacted by Source Protection policies in WHPAs around new well. ◑ Moderate level of impact.	○ Potential to reduce WHPAs within Tiverton if wells are decommissioned. ○ Minimal level of impact	○ No change from current conditions. ○ Minimal level of impact.
Social – local disruptions	◑ Construction of well housing and drilling will result in temporary noise and construction disruptions for adjacent property owners. ◑ If extension of water distribution is required to connect to new wells, there is a potential for local road closures. ◑ Moderate level of impact.	◑ Construction of BPS and watermain extension will result in temporary noise and construction disruptions for adjacent property owners. ◑ Public access to the park will be restricted during the construction of the BPS. ◑ Will result in a loss of a portion of the existing parkland. ◑ Traffic along Bruce Road 15 can expect delays during the construction of the watermain extension. ◑ Moderate level of impact.	◑ May have service interruptions during replacement of Briar Hill Well #1. ◑ Moderate level of impact.
Social – health and safety	◑ Water supply from new wells is expected to be mineralized with elevated levels of total suspended solids, iron, fluoride and sulphates. ◑ May have service interruptions during replacement of Briar Hill Well #1. ● May need future arsenic treatment at Dent Well. ● High level of impact.	◔ Water supplied by KDWS has lower iron, fluoride and sulphate levels. ◑ Residents will notice difference in the taste of water supplied from KDWS as it is less mineralized. ◑ Moderate level of impact.	◑ Water quality will continue to have elevated levels of total suspended solids, iron, fluoride and sulphates. ◑ May have service interruptions during replacement of Briar Hill Well #1. ● May need future arsenic treatment at Dent Well. ● High level of impact.
Social – construction Impacts	◔ New wells likely to be sited outside of the current community which may minimize construction impacts to adjacent properties. ◑ Replacement of Briar Hill Well would result in localized noise and traffic increases which may impact adjacent properties. ◑ Moderate level of impact.	◑ Construction of BPS at the proposed site will limit public access to a portion of the park. ◑ Adjacent properties will experience an increase in localized noise and traffic during construction. ◑ Construction of the watermain extension has the potential to interrupt traffic along Bruce Road 15. ◑ Moderate level of impact.	◑ Replacement of Briar Hill Well would result in localized noise and traffic increases which may impact adjacent properties. ◑ Moderate level of impact.
Social – future development	◑ Potential to secure sufficient capacity to support future growth. May require multiple new well sites. ◑ Water quality similar to the existing well. ◑ Moderate level of impact.	○ Sufficient supply capacity from the KDWS. ○ Sufficient capacity within distribution watermain from KDWS. ○ Minimal level of impact.	● Opportunity for future development will be restricted under this scenario due to limited capacity in existing wells. ● High level of impact.
Cultural – Archaeological and cultural heritage resources	◑ Potential for impacts to built heritage resources, cultural heritage landscape and archaeological resources depending on the location of new well sites. ◑ Archaeological and cultural heritage studies could be required. ◑ Moderate level of impact.	◔ Stage 1-2 Archeological Assessment completed for BPS site and found low potential for archaeological resources. ◔ Checklist for built heritage resources and cultural heritage landscapes identified low potential for impacts. ◔ Low level of impact.	○ No change from current conditions. ○ Minimal level of impact.
Economic – capital cost and operating costs (costs shown are 2024$ and exclusive of HST)	◑ Will likely require acquiring additional land for new well sites. ● The preliminary probable cost for reconstruction of the existing well and pumphouse is: $3,600,000. ● The preliminary probable cost for a new additional well and pumphouse is $3,600,000. There will be additional costs associated with land acquisition and additional watermain needed to connect to the system from new well sites. ● The preliminary probable cost for a second new well and pumphouse is $3,600,000. There will be additional costs associated with land acquisition and additional watermain needed to connect to the system from new well sites. ◑ May require additional treatment processes for arsenic in the future. ◑ Opportunity to defer costs associated with expansion (i.e. initially constructing one additional well site, waiting to construct a second) ◑ Expected to be paid through existing rates, reserves, and development charges. ● Additional operating costs will be incurred with additional wells. ● High level of impact.	○ No additional land acquisition required. ● Preliminary probable cost for the new BPS and watermain extension: $5,410,000. ◑ Expected to be paid through existing rates, reserves, and development charges. ◑ Will have operating expenses associated with new BPS and trunk watermain. ● No ability to phase or defer costs. ● High level of impact.	◑ Cost for reconstruction of the existing well and pumphouse is: $3,600,00 to maintain existing water commitments. ◑ May require additional treatment processes for arsenic in the future. ◑ Moderate level of impact.
Economic – Property Acquisition	◑ Will likely require acquiring additional land for new well sites. ◑ Property costs are in addition to those noted above. ◑ Moderate level of impact.	○ No additional land acquisition required. ○ Minimal level of impact.	○ No additional land acquisition required. ○ Minimal level of impact.
Economic – life cycle costs	◑ Additional lifecycle costs will be associated with new wells and associated treatment facilities. ◑ Mineralized raw water quality shortens the expected life of well equipment. ◑ Moderate level of impact.	◑ The addition of the BPS and watermain extension are additional assets that will require eventual replacement. ○ Will allow the Municipality to decommission some or all of the groundwater wells and associated aged assets. ◑ Moderate level of impact.	◑ Requires the replacement of Briar Hill Well #1. ◑ No additional lifecycle costs, but mineralized water will continue to shorten the expected life of well equipment in Tiverton. ◑ Minimal level of impact.
Technical – water quality and quantity	● Water quality from new wells is expected to be mineralized, with elevated total suspended solids, fluoride, sodium, iron and sulphates. ● Multiple wells will be likely be required to achieve required quantity. ◑ May require arsenic treatment at Dent Well site in the future. ● High level of impact.	◔ Water supplied from KDWS is not mineralized. Will have less impact on equipment/ distribution system. ◔ Sufficient supply and distribution capacity within KDWS. ◔ Low level of impacts.	● Water will continue to have elevated total suspended solids, fluoride, sodium, iron and sulphate. ◑ May require arsenic treatment at Dent Well site in the future. ● Insufficient supply to support committed future development. ● High level of impact.
Technical – impacts to existing infrastructure	◑ Requires replacement of Briar Hill Well #1 and replacement of end of life mechanical and electrical equipment. ◑ Limited potential to expand existing wells. ◑ Requires maintenance of Dent well and building ◑ Limited potential for a new well site within existing municipal lands and urban boundary – likely to require extension of distribution watermain. ◑ Moderate level of impact.	◔ An existing well could be maintained for backup supply if additional redundancy beyond existing storage is required. ◑ Design will have to consider pressure impacts to service connections near the BPS. May require pressure reducers. ◑ Moderate level of impact.	◑ Existing infrastructure will require ongoing maintenance to ensure continued operation. ◑ Requires replacement of Briar Hill 1 Well and replacement of end of life mechanical and electrical equipment. ◑ Moderate level of impact.

Next Steps

- Review feedback and incorporate feedback received at PIC.
- Prepare Project File Report.
- Present Project File Report with preferred solution to Council.
- Finalize Project File Report and issue Notice of Completion.
- Design Phase — Finalize location at site.
- Apply for Approvals.
- Construction

After EA is complete, the Municipality can proceed with project anytime within a 10-year window

Thank you for attending.

Please submit any questions or comments by June 6, 2025 to:

Lisa Courtney, B. M. Ross and Associates Limited
lcourtney@bmross.net or 519-524-2641