

**Water System Alternative Solutions Evaluation Matrix
Phase 2**

Criteria	Criteria Indicator	Alternative 1 Do Nothing	Alternative 2 Connect to Municipal	Alternative 3 New Onsite Communal System
NATURAL ENVIRONMENT				
Impacts to Designated Site / Species	<ul style="list-style-type: none"> Natural heritage features proximity to development footprint. Endangered/threatened species habitat or confirmed or candidate significant wildlife habitat overlapping development footprint. 	No impact over existing conditions.	Requires crossing through associated natural heritage features of Black Drain crossing of Wellington Road 19 south of 2 nd Line, and a tributary of the Grand River crossing Belwood Road approximately 350m northeast of Gartshore Street.	Requires removal of Threatened Species Habitat (Eastern Meadowlark) for onsite Water Treatment Plant (WTP).
		Most Preferred	Least Preferred	Less Preferred
Impacts to Surface Water Quality	<ul style="list-style-type: none"> Sedimentation of adjacent water bodies. Qualitative analysis of potential for deleterious substances to enter surface water. 	No impact over existing conditions.	Construction of watermain within existing rights-of-way (ROWs) may result in the release of sediment to adjacent water bodies for any open cut construction areas.	Construction of watermain from wells to onsite WTP and water forcemain to connect to water distribution system may result in the release of sediment to adjacent water bodies. Since works are confined to the Site, potential extent of impact is less than Alternative 2. No anticipated impact to surface water features from pumping from the deep bedrock aquifer.
		Most Preferred	Least Preferred	Less Preferred
Impacts to Ground Water Quality and Quantity	<ul style="list-style-type: none"> Reduction of groundwater quantity through construction dewatering. Interference of shallow aquifers or springs. Qualitative analysis of potential for deleterious substances to enter groundwater. 	No impact over existing conditions.	Construction of watermain within existing ROWs may require construction dewatering for any open cut construction areas and may result in localized impacts (groundwater quantity reduction) to private water supply wells within the zone of influence. Potential for impact to groundwater quality due to accidental release of contaminants from operation of construction equipment. Requires an increase in water taking from existing municipal water supply. Available water supply capacity from existing system would need to be confirmed.	Shallow overburden wells within the zone of influence may be impacted by construction dewatering activities on Site. The deep bedrock aquifer provides a suitable water supply. No interference with shallow overburden wells from operation of new onsite communal well, which draws groundwater from the deep bedrock aquifer, separated from the shallow overburden aquifer. Minimal interference with deep bedrock wells from operation of the new onsite communal well. Potential for impact to shallow groundwater quality due to accidental release of contaminants from operation of construction equipment.
		Most Preferred	Least Preferred	Less Preferred
Impact to Hazard Lands	<ul style="list-style-type: none"> Impacts to regulated areas. 	No impact over existing conditions.	Construction of the watermain will require works within regulated areas associated with the Black Drain crossing of Wellington Road 19 south of 2 nd Line and a tributary of the Grand River crossing Belwood Road approximately 350m northeast of Gartshore Street. A permit with Grand River Conservation Authority will be required for works within these areas.	A segment of the watermain from the well falls within regulated area associated with Irvine Creek. A permit with Grand River Conservation Authority will be required for works within this area.
		Most Preferred	Least Preferred	Less Preferred
Impacts to Vegetation and Terrestrial Habitat	<ul style="list-style-type: none"> Vegetation removals. Impacts to naturalized vegetation community overlapping with the development footprint. Impacts to habitat connectivity. 	No impact over existing conditions.	Tree removals are possible within watermain and watercourse crossings. Potential impact greater than Alternative 3 due to length of watermain route.	Some tree removals are possible within the footprint of watermain from the wells and the WTP. However, potential impact less than Alternative 2.
		Most Preferred	Least Preferred	Less Preferred
Impacts to Aquatic Habitat	<ul style="list-style-type: none"> Direct or indirect impacts to aquatic features and fish habitat. 	No impact over existing conditions.	Temporary impacts through construction of watermain at Black Drain (Tributary of Irvine Creek) crossing and tributary of the Grand River crossing Belwood Road approximately 350m northeast of Gartshore Street.	Marginal potential for indirect impacts to Irvine Creek but can be mitigated with erosion and sediment control measures.
		Most Preferred	Least Preferred	Less Preferred
Source Water Protection	<ul style="list-style-type: none"> Impacts to Source Water Protection Areas. 	No impact over existing conditions.	Watermain within existing ROWs will traverse through Wellhead Protection Area (WHPA)-B. However, operation of a watermain in a WHPA-B is not considered a significant drinking water threat. The watermain is considered a preferential pathway and would require reporting of the activity under the Clean Water Act.	NW and SE Sites fall within a WHPA-D with a low vulnerability score of 2. Operation of an onsite communal water system within a WHPA-D is not considered to be significant drinking water threat.
		Most Preferred	Least Preferred	Less Preferred
SUMMARY OF NATURAL ENVIRONMENT EVALUATION		Most Preferred	Least Preferred	Less Preferred

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SOCIO-CULTURAL ENVIRONMENT				
Compatibility with Official Plan and Provincial Growth Plans	<ul style="list-style-type: none"> Is the alternative consistent with Official Plan? Is the alternative compatible with the Provincial Growth Plans? 	<p>Not consistent with Wellington County Official Plan (OP).</p> <p>The Do Nothing Alternative will not contribute to the supply of housing in response to the More Homes Built Faster Act 2022 (Bill 23).</p>	<p>Section 9.2 of the Wellington County OP allows additional residential lots, subject to a servicing study. Alternative 2 would involve servicing through connection to the existing water system in Fergus. Therefore, Alternative 2 is compatible with the Wellington County OP.</p> <p>Proposed redevelopment will contribute to the supply of housing in response to the More Homes Built Faster Act 2022 (Bill 23). Consistent with PPS 2020 Policies 1.1.4, 1.1.5.4, 1.1.5.5. Consistent with Growth Plan for Greater Golden Horseshoe (GGH) 2019 Policies 2.2.9.3 and 2.2.9.6.</p>	<p>Section 9.2 of the Wellington County Official Plan (OP) allows additional residential lots, subject to a servicing study. An onsite communal water system can service the proposed residential lots. Therefore, Alternative 3 is compatible with the Wellington County OP.</p> <p>Proposed redevelopment will contribute to the supply of housing in response to the More Homes Built Faster Act 2022 (Bill 23). Consistent with PPS 2020 Policies 1.1.4, 1.1.5.4, 1.1.5.5. Consistent with Growth Plan for Greater Golden Horseshoe (GGH) 2019 Policies 2.2.9.3 and 2.2.9.6.</p>
		Least Preferred	Most Preferred	Most Preferred
Heritage Resources (archaeological features, built heritage, and cultural heritage landscapes)	<ul style="list-style-type: none"> Area of high or known archaeological potential to be removed or disturbed. Feature of heritage value to be removed or disturbed. 	No impact over existing conditions.	No impacts to existing conditions within Study Area; however, potential for impacts to archaeological and heritage resources along watermain route from closest connection point to existing water system supply in Fergus if route were crossing through undisturbed areas or adjacent to heritage properties and/or landscapes.	No known archaeological within the onsite WTP footprint based on Stage 2 Archaeological Assessment.
		Most Preferred	Least Preferred	Most Preferred
Noise impacts	<ul style="list-style-type: none"> Construction related noise impacts. Permanent or long-term impacts during operation of water treatment plant or other water system facilities. 	No impact over existing conditions.	Temporary noise impacts anticipated during construction of watermain to connection point to existing water system supply in Fergus.	Temporary noise impacts anticipated during construction of the onsite WTP. Noise associated with the operation of the onsite WTP can be mitigated to ensure applicable noise guidelines are met at the proposed and existing sensitive receptors.
		Most Preferred	Least Preferred	Less Preferred
Nuisance impacts	<ul style="list-style-type: none"> Traffic impacts during construction. Temporary disruption to property access during construction. Visual impacts to adjacent residences. 	No impact over existing conditions.	Construction of watermain would require temporary reduction of traffic lanes on Wellington Road 19 and Belwood Road in Fergus. No disruptions to property access anticipated. No visual impacts to adjacent residences.	Construction of the forcemain connection to the water distribution system across Wellington Road 19 would require temporary reduction of traffic lanes. No disruptions to property access anticipated. Visual impacts to adjacent residences associated with the onsite WTP can be mitigated through landscaping and vegetated buffers.
		Most Preferred	Least Preferred	Less Preferred
Impact to existing private water wells	<ul style="list-style-type: none"> Reduction of existing water supply (quantity) and quality for private water wells in vicinity of Study Area. 	Continuation of golf course operations on SE Site may have potential impacts to shallow groundwater.	<p>Construction of watermain within existing ROWs may require construction dewatering for any open cut construction areas and may result in localized impacts (groundwater quantity reduction) to private water supply wells within the zone of influence.</p> <p>Potential for impact to groundwater quality due to accidental release of contaminants from operation of construction equipment.</p>	<p>The deep bedrock aquifer provides a suitable water supply. No interference with shallow overburden wells from operation of the new onsite communal well which draws groundwater from the deep bedrock aquifer, separated from the shallow aquifer. Minimal interference with deep bedrock wells from operation of the new onsite communal well.</p> <p>Shallow overburden wells within the zone of influence may be impacted by construction dewatering activities on Site.</p> <p>Potential for impact to shallow groundwater quality due to accidental release of contaminants from operation of construction equipment.</p>
		Less Preferred	Less Preferred	Most Preferred
SUMMARY OF SOCIO-CULTURAL ENVIRONMENT EVALUATION		Less Preferred	Least Preferred	Most Preferred

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TECHNICAL ENVIRONMENT				
Ability to service proposed development	<ul style="list-style-type: none"> Sufficient water quantity for development? (water supply firm capacity, storage, etc.) Ability of water service to meet applicable drinking water quality standards. Ability to service future development beyond current plan. Reliability of water service. 	No services to lands designated for development.	Requires an increase in water taking from existing municipal water supply. Available water supply capacity from existing system would need to be confirmed. Water quality from the existing municipal system would meet the Ontario Drinking Water Quality Standards. Due to recent changes within the Township of Centre Wellington OP, the development would not have had water supply allocated for servicing during the completion of the Water Supply Master Plan in 2019. Allocation of water supply would need to be coordinated between the Developer and Township. The Water Supply Master Plan does identify a water supply that exceeds the water demand within the Township Water Supply Master Plan until 2026 meaning some reserve capacity may be available within the Township. Water system upgrades at the well treatment facility and local water distribution system may be required to convey normal day water demands to the proposed development.	Communal well has a tested yield of 8.8 L/s and can meet the maximum day demand of 5.03 L/s. Additional well capacity is available to support future growth. Communal well is not considered groundwater under the direct influence of surface water (GUDI). Water quality in the bedrock aquifer meets the Ontario Drinking Water Quality Standards with the exception of hardness and total dissolved solids, which can be treated. Minimal water treatment is required to provide safe drinking water in accordance with the Ontario Safe Drinking Water Act. Multiple wells on site to provide system redundancy. Location of ground water wells on the proposed parcel maximizes separation from private wells along Wellington Road 19. Emergency power generators may be required to ensure security of water supply. Surface water source is in close proximity but does not border development requiring easements. Surface water source would require significant water treatment to meet Ontario Drinking Water Quality Standards.
		Least Preferred	Less Preferred	Most Preferred
Approvals/permitting requirements	<ul style="list-style-type: none"> Ministry of Environment, Conservation and Parks (MECP), Permit to Take Water (PTTW) and Engineering Evaluation Report (EER). Municipal type service agreement (MTSA). Building permit. Grand River Conservation Authority (GRCA). Local Fire Authority. All other approvals/permitting requirements. 	No permits/approvals required. As stated in the 2023 Municipal Class Environmental Assessment (MCEA) Document the Do Nothing Alternative: "does not necessarily mean however, that no further development in the community would occur.	EASR/ PTTW DWWP GRCA Road Occupancy Permit (Watermain Alignment) Utility clearances (Hydro, Enbridge, Municipal Drains, MECP) SAR clearances First Nations Consultation	PTTW DWL GRCA Road Occupancy Permit (Local to Site Area Only) MTSA Building Permit First Nations Consultation
		N/A	Less Preferred	Less Preferred
Site considerations and construction requirements	<ul style="list-style-type: none"> Site investigations required. Construction requirements/phasing plan. Land development/spatial requirements. Site servicing including roads and electrical. 	No site investigations or construction impacts. As stated in the 2023 Municipal Class Environmental Assessment (MCEA) Document the Do Nothing Alternative: "does not necessarily mean however, that no further development in the community would occur.	Studies include but not limited to: <ul style="list-style-type: none"> Geotechnical Hydrogeological Natural Environment Arborist Report Disruption to public / traffic impacts during construction of linear infrastructure (approximately 3.8 km). Rolling traffic management plan during construction of watermain works. Ability to use existing infrastructure for water supply. Water Storage / Reservoir and Pump House would require aboveground or below ground storage if deemed required from a servicing perspective. Hydro and standby power would be required for local facility.	Environmental protection measures required during construction. Geotechnical and hydrogeological investigation at the proposed onsite WTP location is required. Use of an existing groundwater well. Access to groundwater wells is available. Watermains (approximately 846 m) required to convey flows from groundwater wells to onsite WTP. Onsite WTP requires subgrade excavation, shoring and dewatering. Traffic impacts at entrance of Fergus Golf and Country Club during and post construction. Noise disturbances during construction/occasionally during operation. Upgrades to hydro system may be required. Most work is on existing developed land.
		N/A	Less Preferred	Less Preferred
Operation and maintenance requirements and complexity	<ul style="list-style-type: none"> Operator requirements (training and certification). Maintenance requirements. Overall complexity of system. Testing and reporting requirements. 	No operations and maintenance. As stated in the 2023 Municipal Class Environmental Assessment (MCEA) Document the Do Nothing Alternative: "does not necessarily mean however, that no further development in the community would occur.	Minimal operating costs to maintain new watermain. Yearly valve cycling and flushing of watermain would be required during low water demand periods. Low operational complexity. No watermain redundancy and emergency works would be required. Testing and reporting to be in accordance with DWWP. Moderate impacts on existing municipal infrastructure (pumping, storage, and quality).	Moderate operation and maintenance due to treatment and pumping requirements. Facility servicing agreement would be required for operation and maintenance of the facility on a yearly basis. Facility operators shall be certified in operating drinking water systems. Moderate operational complexity. Testing and reporting to be in accordance with Drinking Water License and PTTW. Privately operated and maintained, little to no impact on municipal operations.
		N/A	Least Preferred	Less Preferred

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Conformity with applicable guidelines and standards	<ul style="list-style-type: none"> MECP Regulations, Safe Drinking Water Act and Ontario Regulation 170/03. Township of Centre Wellington. Fire Underwriter Survey. Electrical Safety Authority (ESA). Building Code. 	Not applicable. As stated in the 2023 Municipal Class Environmental Assessment (MCEA) Document the Do Nothing Alternative: "does not necessarily mean however, that no further development in the community would occur.	MECP Regulations, Safe Drinking Water Act and Ontario Regulation 170/03 Township of Centre Wellington Fire Underwriter Survey Electrical Safety Authority (ESA) Ontario Building Code (OBC)	MECP Regulations, Safe Drinking Water Act and Ontario Regulation 170/03 Township of Centre Wellington Fire Underwriter Survey Electrical Safety Authority (ESA) Ontario Building Code (OBC)
		N/A	Less Preferred	Less Preferred
SUMMARY OF TECHNICAL ENVIRONMENT EVALUATION		Least Preferred	Less Preferred	Most Preferred
FINANCIAL ENVIRONMENT				
Comparative capital costs	<ul style="list-style-type: none"> High level estimates of capital costs 	No infrastructure required.	Total Capital Cost to developer (\$10M) <ul style="list-style-type: none"> Watermain (\$5M) Reservoir/BPS/Rechlorination (\$5M) Any local upgrades to provide water servicing to the development would include additional unknown capital costs to developer (out of scope of EA Study).	Total Capital Cost to developer (\$10M) <ul style="list-style-type: none"> WTP (\$9M) Watermain (\$0.5M) New wells and piping (\$0.5M)
		Most Preferred	Least Preferred	Less Preferred
Estimated operations and maintenance costs	<ul style="list-style-type: none"> High level estimates of operational costs 	No operational cost increases.	\$100K for O&M costs to developer for watermain (flushing, valve cycling, water quality testing). \$300K for O&M costs to developer for Water Reservoir/Pump House.	\$400K for O&M costs to developer for WTP and groundwater wells.
		Most Preferred	Least Preferred	Least Preferred
SUMMARY OF FINANCIAL ENVIRONMENT EVALUATION		Most Preferred	Least Preferred	Less Preferred
OVERALL EVALUATION		Less Preferred	Least Preferred	Most Preferred
PROBLEM / OPPORTUNITY STATEMENT				
Addresses Problem / Opportunity Statement		Does not address problem / opportunity statement. Not a viable alternative.	Addresses problem / opportunity statement.	Addresses problem / opportunity statement.
RECOMMENDATION		Not Carried Forward	Not Carried Forward	Carried Forward