

Evaluation Criteria	Alternative 1 Original Class E.A. Design	Alternative 2 Proposed New Design
Technical		
Constructability	Constructability challenges are expected related to the proximity to water bodies at both facilities. Both Well 2 and 5 facilities will require an expansion to house the new equipment.	Challenges related to Alternative 2 are comparable to Alternative 1 for Well 5 facility. Well 2 facility construction is simplified but the addition of the watermain connecting the two facilities introduces challenges related to excavation on an active road. Conflicts with existing utilities and traffic control are among the additional challanges and risks.
Redundancy of Supply/Service	Lower redundancy expected with this alternative. The iron and manganese filters will be designed with full redundancy but since they will only service Well 5 facility in this option, the redundancy at Well 2 will not be improved. Majority of Nobleton's raw water supply will be serviced through existing sodium silicate dosing measures.	This alternative provides a higher degree of redundancy. With the elimination of chemical dosage at Well 2, chemical deliveries will be strictly limited to Well 5 facility. Overall quality of the water supply will also be significantly improved. Iron and manganese filters provide an overall superior treatment when compared to sodium silicate dosing.
Resilience to Climate Change	This alternative has minimal impacts to climate change	This alternative has minimal impacts to climate change.
O&M Requirements	O&M resources required at all well sites increase with increasing production and on-site treatment capacity	O&M resource requirement at Well 5 facility will increase drastically while the Well 2 site will have decreased O&M requirements with the removal of on-site treatment. With the centralized treatment, all O&M efforts can be focused at a single treatment plant with centralized chemical deliveries as opposed to spreading Region resources.
Adaptability to Existing Infrastructure	There will be a building expansion at both sites in this alternative.	There will only be a single building expansion but there will be a new raw watermain connecting the two facilities, approximately 700m in length.
Maximizing Use of Existing Infrastructure	Existing infrastructure is not able to house the upgrades. New infrastructure is required at both sites.	This alternative includes the removal of large pieces of equipment from the Well 2 site. As a result, the space that will be emptied can be used to house equipment in the future, maximizing the use of existing infrastructure.
Overall Technical Rating	 Better Constructability; Lower Redundancy; More O&M Resources Required. 	 Worse Constructability; Better Redundancy of Water Supply/Service; Concentrated O&M Resources Required; Maximizes Use of Existing Infrastructure.
Environmental		
Aquatic Vegetation and Life	Moderate impact to aquatic vegetation and life due to excavation activities on site.	Moderate impact to aquatic vegetation and life due to excavation activities on Well 5 facility. Well 2 excavation is significantly decreased and the impact will be lower for Alternative 2 at this facility.
Terrestrial Vegetation and Wildlife	Moderate impact to terrestrial vegetation and life. Excavation for building expansion and chlorine contact tank replacement.	Moderate impact to terrestrial vegetation. Minimal tree removal is expected for the construction of the watermain. Bulk of vegetation removal will be for the Well 5 facility building expansion. However, vegetation will be replaced, and removal at Well 2 will be minimized.
Groundwater Resources - Construction	1 Active construction dewatering is expected during construction. Effects to be mitigated through recommendations from hydrogeological study.	Impact is slightly greater than Alternative 1 related to increased construction dewatering due to deeper excavation. Following the recommendations from hydrogeological study, mitigation measures will be put in place to minimize impact to nearby groundwater features during construction. Measures include dewatering rate and water quality monitoring, discharge to be treated through sedimentation tank and filter bags for suspended solids treatment.



Groundwater Resources - Increased	Alternative 1 proposed an increase to the water taking of Wells 2 and 6. Capacity increase was	Compared to Alternative 1, a greater amount of water taking (7 L/s each) is required from
Well Water Taking	proposed to meet future demand scenarios. Impact identified as moderate with no significant risks	Wells 2 and 6 as part of Alternative 2. Potential impact to private wells within the predicted
	to groundwater resources, or private wells.	zone of influence to 2041 was identified through York Region's recent Hydrogeological
		Assessment (Impact Assessment).
		Further investigation, field verification and monitoring are required to validate the results
		of the desktiop impact assessment. Field verification of private wells, along with a phased
		enhanced groundwater monitoring program comprising new deep and shallow monitoring
		wells throughout the predicted zone of influence to 2041, are proposed to understand the
		long term response of the increased municipal water taking in the local aquifer systems.
		An adaptive mitigation strategy is proposed to proactively minimize any potential impacts
		to private well users. The following long-term programs are proposed to support and
		inform the mitigation strategy:
		i)Private well field verification
		ii)Enhanced groundwater monitoring program
		iii)Groundwater-surface water interaction monitoring program.
Surface Water Resources -	low impact is expected on surface water resources	I ow impact is expected on surface water resources
Construction	Low inpact is expected on surface watch resources.	Low impact is expected on surface water resources.
Surface Water Resources - Long Term	No significant risk identified for surface water resources in the long term due to increased water	Potential increased influence due to increased water taking from the supply aquifer to
	taking from the supply aquifer.	2041. Long term monitoring of the surface water-groundwater interaction and of shallow
		groundwater levels is proposed to identify potential adverse efffects to nearby natural
		surface water features due to long-term municipal well oepration and develop an
		appropriate mitigation plan.
GHG Emissions	Low GHG emissions.	Increase of GHG emissions compared to Alternative 1 due to increased construction
		duration. Contractor to follow strict environmental guidelines.
Overall Environmental Rating	Overall low to moderate environmental impact is expected for this alternative. Mitigation measures	Overall, a moderate to high environmental impact is expected for this alternative.
	will be taken during construction to minimize the impact on the environment surrounding the two	Mitigation measures will be taken during construction to minimize the impact on the
	facilities.	environment surrounding the two facilities. Alternative 2 accounts for future expansion by
		providing necessary underground and aboveground infrastructure. This approach minimizes
		environmental impact of future projects.
		Patantial long term impact of Alternative 2 on the groundwater and surface water
		roceurses is greater compared to Alternative 1. A long form monitoring program is
		resources is greater compared to Alternative 1. A long term monitoring program is
		proposed to be put in place. Adaptive mitigation requirements are to be updated
		periodically based on the monitoring program midlings.
Socioeconomic		
Short-Term Community Impacts	Short term community impact will be similar in both alternatives. Alternative 1 includes a smaller	This alternative has a greater negative short term community impact around the Well 5
	building expansion at the Well 5 facility but also an expansion at the Well 2 Facility.	facility due to the size of the expansion but a smaller impact on the community around
		Well 2 facility. The community will be impacted during raw watermain installation.
		However, timing of the construction activities will be optimized, and a traffic control plan
		will be put in place to mitigate impact.
Long-Term Community Impacts	No long-term community impacts are expected with this alternative.	Greater positive long term community impact is expected with Alternative 2. The water
		quality of the overall system will improve drastically. Ongoing iron and manganese concerns
		filed by the general public will be addressed.
Archeological Sites	All construction activities take place on previously disturbed properties. Archeological potential not	All construction activities take place on previously disturbed properties. Archeological
	expected to be significant.	potential not expected to be significant.



Cultural/Heritage Features	The archeological assessments did not identify any archeological resources at either facility. Fish habitat was identified around the Well 5 facility in the Natural Heritage Assessment completed in August, 2023. The clearance requirements will be followed during design to protect the natural habitat.	The archeological assessments did not identify any archeological resources at either facility. Fish habitat was identified around the Well 5 facility in the Natural Heritage Assessment completed in August, 2023. The clearance requirements will be followed during design to protect the natural habitat.
Overall Socioeconomic Rating	 Minimal negative short term community impact due to construction; 	Moderate negative short term community impact due to the watermain construction;
	No long-term community impact.	Positive long-term community impact with increasing service water quality.
Financial		
Land Acquisition	No land acquisition is expected.	No land acquisition is expected.
Capital Cost	Relatively lower capital cost due to smaller expansion at Well 5 facility. The cost of construction at	Higher capital cost associated with this alternative due to bigger expansion at the Well 5
	the Well 2 site will be higher due to the building expansion and replacement of the chlorine contact tank.	Site and watermain connecting Well 5 and 2 sites.
20 Year Lifecycle Cost	The lifecycle cost is expected to be higher with this alternative. O&M cost over the years will be	Relatively lower lifecycle cost. The addition of a centralized treatment system will account
	higher for Well 2. With the Iron & Manganese treatment maintained at Well 2 site, there will be	for future treatment requirements for the entire system. Iron & Manganese filters are more
	continuous use of chemicals.	reliable and will reduce the O&M cost over their lifetime. Alternative 2 will also eliminate
		the need of continuous sodium silicate consumption.
Overall Financial Rating	Overall financial rating is lower than that of Alternative 2. This alternative has a lower capital cost	With a higher capital cost and lower lifecycle cost, Alternative 2 has a higher overall
	and a higher lifecycle cost.	financial rating to Alternative 1.
Jurisdictional/Regulatory		
Ability to Accommodate Potential	This alternative does not allow enough provision for either facility to accommodate potential future	This alternative provides more flexibility for both well sites. With the removal and
Future Regulatory Changes	regulatory changes. Any new equipment addition at either facility will require a new expansion.	relocation of equipment, both facilities will have more free space that can be used in the
		future for new equipment required as part of any potential future regulatory changes.
Permits and Approvals	Some permit and approvals are anticipated for Alternative 1.	On top of the permits for Alternative 1, additional permits are expected for the watermain
		Included for Alternative 2.
Overall Jurisdictional/Regulatory	Provides less flexibility for future regulatory requirements;	More flexibility to accommodate potential future regulatory changes and new equipment;
Rating	Potentially less permits and approvals	 More potential permit requirements with the new watermain.