Fergus Golf Club Redevelopment Environmental Assessment Study

Public Information Centre #2

September 11, 2023, 6 p.m. - 8 p.m.
Belwood Hall, Township of Centre Wellington

Welcome

to Public Information Centre #2 for the

Fergus Golf Club Redevelopment Environmental Assessment Study

Please Sign In

Meet with Study Team Members

Review the display materials and discuss your questions and ideas with the Study Team

Listen to the **presentation at 6:30pm** and participate in the Question & Answer Period

Please fill out a comment sheet and return it to the comment box today or FergusGolfEA@rjburnside.com by

October 2, 2023

Purpose of Public Information Centre #2

PIC #2 is the second of three mandatory public contact points under the 2023 Municipal Class Environmental Assessment (MCEA) process for Schedule C Projects.

The purpose of PIC #2 is to:

- Provide a summary of PIC #1
- Provide an opportunity to participate and give input
- Discuss the servicing design concepts

PIC #2 will present:

- Project Opportunity Statement
- Results of Technical Investigations
- Preferred Solution
- Alternative design concepts considered
- Next steps

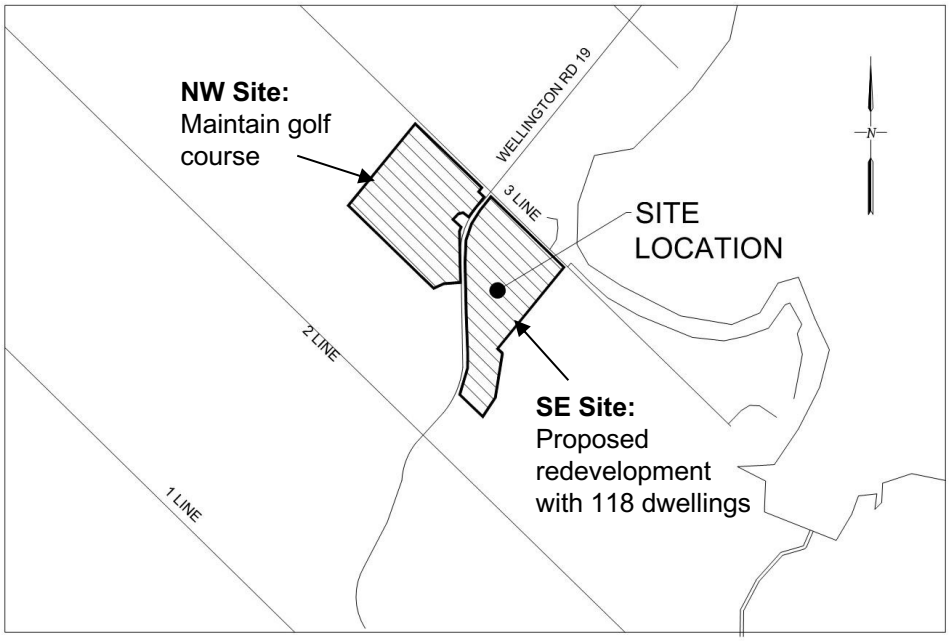
Project Description

The Fergus Golf Club lands are located along the western side of 3rd Line, on both the northern side ("NW Site") and southern side ("SE Site") of Wellington Road 19.

The proposed Fergus Golf Club redevelopment will consist of:

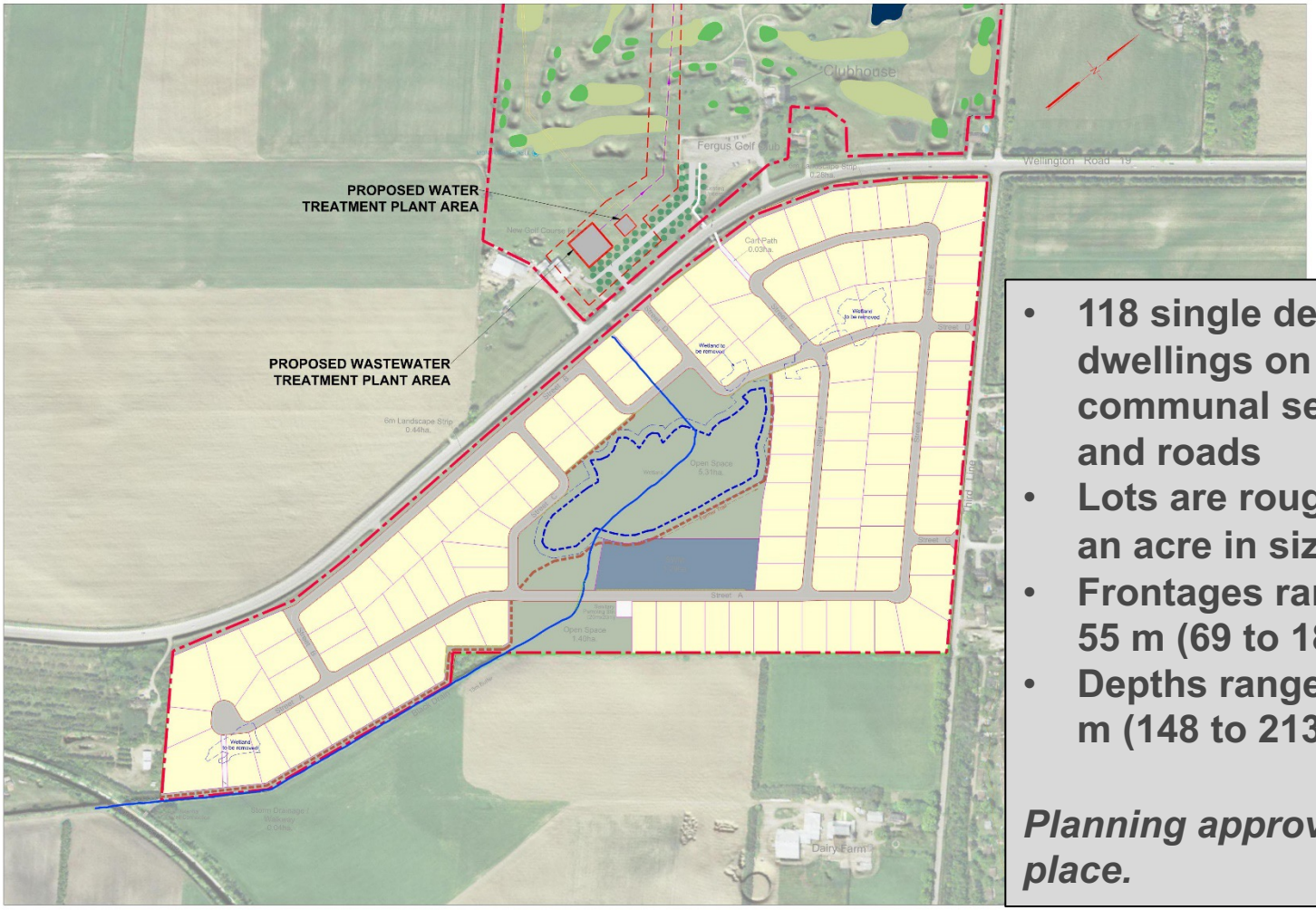
- The existing northwestern golf course (the "NW Site")
- Redeveloping the southeast golf course (the "SE Site") into a private condominium development with 118 single family dwellings.

A Schedule C Municipal Class Environmental Assessment (MCEA) Study is being undertaken for the proposed water and wastewater servicing for the proposed redevelopment.



Study Area Map

Planned Redevelopment



- 118 single detached dwellings on private communal services and roads
- Lots are roughly half an acre in size
- Frontages range 21 to 55 m (69 to 180 ft)
- Depths range 45 to 65 m (148 to 213 ft)

Planning approvals are in place.

Project Opportunity Statement

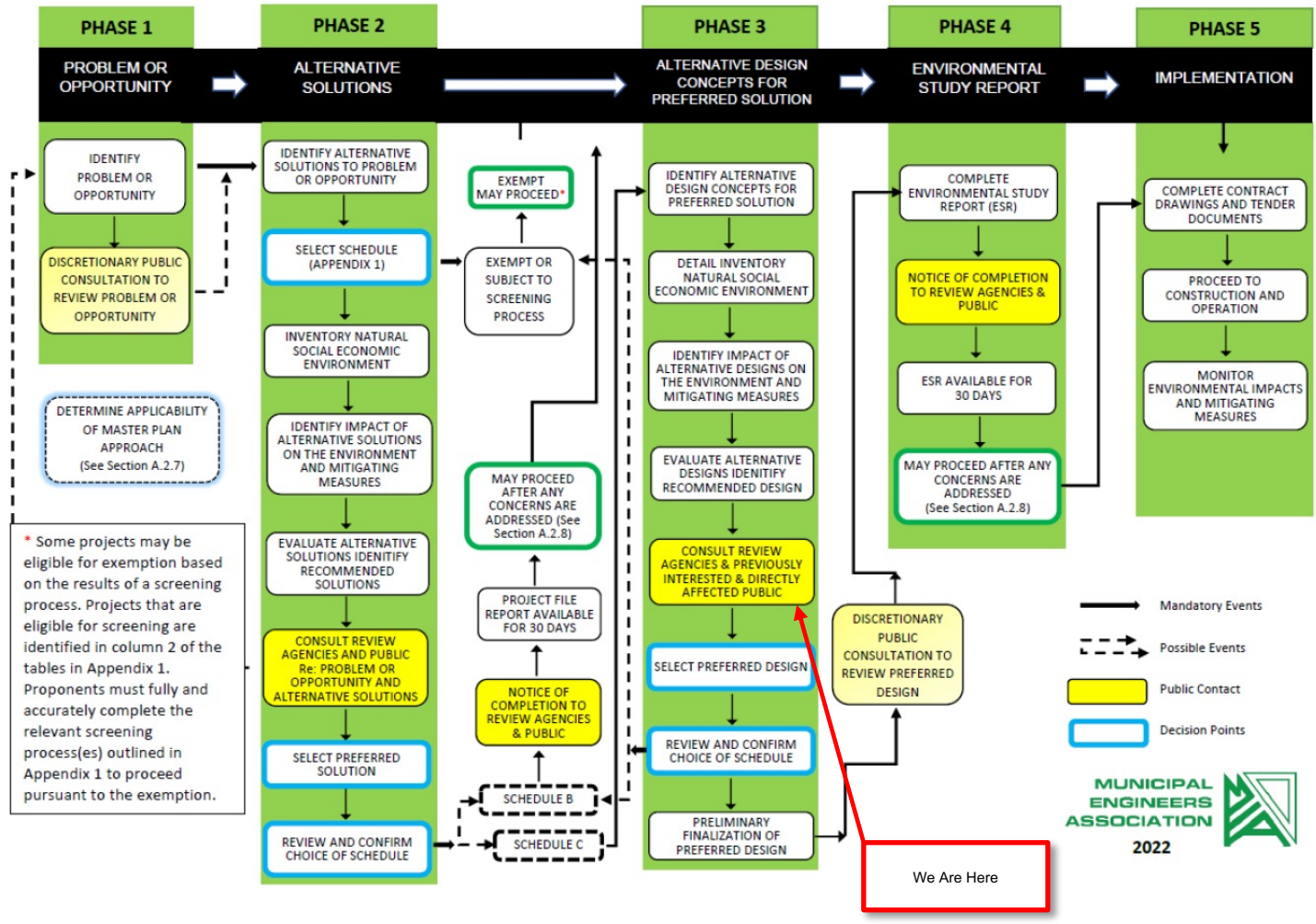
The project opportunity statement defines the principal starting point in the undertaking of the MCEA Study and assists in defining the scope of the project. The Project Opportunity Statement for this MCEA Study is as follows:

Fergus Development Inc. is undertaking the redevelopment of a part of the Fergus Golf Club lands, which will provide single detached rural recreational-based housing, based on the findings of a servicing study, on the SE Site. This redevelopment will contribute to satisfying the need and market demand for recreational focused housing in the Township of Centre Wellington and the County of Wellington. To service the new housing units, Fergus Development Inc. needs to ***consider options to provide cost-effective and environmentally sound means of providing a potable water supply and wastewater servicing****. Alternatives will be examined as part of the MCEA Study including the impacts of alternatives on the natural, socio-cultural, technical and financial environment.*

The Project Opportunity Statement is a requirement of the MCEA process.

The EA Process

The Study is being carried out in accordance with the planning and design process for Schedule C projects as outlined in the 2023 Municipal Class Environmental Assessment, which is approved under the **Ontario Environmental Assessment Act**. Upon completion of the study, an Environmental Study Report (ESR) will be prepared and made available for public review and comment.



Technical Studies

The following studies were completed in conjunction with the Planning Act applications, which also inform the EA Study:

- Planning Justification Report by GSP Group
- Community Design Guidelines by GSP Group
- Functional Servicing Report by R.J. Burnside & Associates Limited (Burnside)
- Stormwater Management Report by Burnside
- Water Servicing Study by TYLin International Canada Inc.
- Environmental Impact Assessment by Beacon Environmental (Beacon)
- Natural Heritage Memo by Beacon
- Environmental Noise Report by Jade Acoustics
- Transportation Report by BA Group
- Stage 1 and 2 Archaeological Assessment by WSP (Golder)
- Preliminary Geotechnical Investigation by WSP (Golder)
- Hydrogeological Investigation by WSP (Golder)
- Water Supply Investigation by WSP (Golder)
- Water Supply Memo by WSP (Golder)

Summary of Key Technical Studies

Natural Heritage Resources

- All significant habitat and natural heritage areas being preserved / protected from development. Enhancements are provided in other areas.

Archaeological Resources

- Stage 1 and 2 Archaeological Assessments cleared both the entire SE Site and the NW Site of archaeological resources.
- First Nation communities participated in field work and pre-consultation.

Hydrogeological Conditions

- Site characterized by low permeability surficial soils, a desirable site condition.
- Existing golf course serviced by groundwater wells and an onsite septic system.
- Existing golf course wells draw water from the deep bedrock aquifer.
- The deep bedrock aquifer is separated from shallow wells by the low permeability soil overburden that extends 20m to 30m below grade.
- There is no identified interaction between shallow water wells and the deep bedrock wells on the site.

Alternative Solutions - Water

1. **Do Nothing**
   - No improvements or changes to address the project opportunity statement.
   - **Mandatory alternative that must be considered in accordance with the 2023 MCEA Process.**
2. **Connect to an Existing Municipal Water Supply System**
   - Requires new watermain from existing system in Fergus along Wellington Road 19 to development site.
   - Requires reservoir, booster pumping station, re-chlorination and backup power on NW Site.
3. **New Onsite Communal Water Supply and Treatment System**
   - Commissioning of new onsite wells.
   - Requires raw water supply main.
   - Requires new onsite communal water treatment plant (WTP), reservoir and backup power.
   - Requires water distribution system via feedermain from WTP to the subdivision.

Alternative Solutions - Wastewater

1. **Do Nothing**
   - No improvements or changes to address the project opportunity statement.
   - **Mandatory alternative that must be considered in accordance with the 2023 MCEA Process.**
2. **Connect to Existing Municipal Wastewater System**
   - Conveyance of untreated wastewater via sewage pumping station and new forcemain from development within Wellington County Road 19 right-of-way (ROW) and within local road ROWs to the existing wastewater treatment plant (WWTP) in Fergus.
3. **New Communal WWTP and Subsurface Discharge**
   - Wastewater treated on-site and discharged to dispersal beds within the NW Site; No off-site works.
4. **New Communal WWTP and Discharge Treated Sewage Effluent to a surface receiving waterbody**
   - Wastewater treated on-site and then conveyed by piping within existing municipal ROWs (Wellington County Rd 19, 2nd Line) to discharge outfall.
   - Discharge outfall location is Grand River.
5. **New Communal Wastewater Treatment Plant and Discharge to Existing Irrigation Ponds followed by Beneficial Reuse for Golf Course Irrigation**
   - Wastewater treated on-site and discharged to irrigation ponds within the NW Site; No off-site works.

Alternative Solutions Evaluation Criteria

- **Natural Environment**
  - Impacts to Designated Site / Species
  - Impacts to Surface Water Quality
  - Impacts to Groundwater Quality and Quantity
  - Impacts to Hazard Lands
  - Impacts to Vegetation and Terrestrial Habitat
  - Impacts to Aquatic Habitat
  - Source Water Protection
- **Socio-Cultural Environment**
  - Compatibility with Official Plan and Provincial Growth Plans
  - Heritage Resources (archaeological features, built heritage, and cultural landscapes)
  - Noise impacts
  - Nuisance impacts
  - Impact to existing private wells
- **Technical Environment**
  - Ability to service proposed development
  - Approvals / permitting requirements
  - Site considerations and construction requirements / complexity
  - Operation and maintenance requirements and complexity
  - Conformity with applicable guidelines and standards
- **Financial Factors**
  - Capital costs
  - Operation and Maintenance costs

Evaluation of Alternative Solutions – Water

Criteria	1: Do Nothing	2: Connect to Existing Municipal Water Supply System	3: New Onsite Communal Water Supply System
Natural Environment	No impact over existing conditions.	Higher impact due to length of watermain / impact footprint.	Lower impact associated with Water Treatment Plant (WTP) footprint.
Ranking	*Most Preferred*	*Least Preferred*	*Less Preferred*
Socio-Cultural Environment	Not consistent with Official Plan (OP). Does not contribute to housing per Bill 23. Continuation of golf course operations on SE Site may have potential impacts to shallow groundwater.	Consistent with OP. Contributes to housing per Bill 23. Potential for impact to archaeological resources. Construction noise and traffic impacts greater due to length of watermain.	Compatible with OP. Contributes to housing per Bill 23. No known archaeological impacts. Noise from onsite WWTP operation can be mitigated. No traffic impacts anticipated. Visual impacts can be screened.
Ranking	*Less Preferred*	*Least Preferred*	*Most Preferred*
Technical Criteria	No services to lands designated for development. No construction or operations and maintenance (O&M) requirements. Does not necessarily mean that no further development in the community would occur.	Requires an increase in water taking from existing municipal water supply – capacity to be confirmed. Requires approvals. Moderate complexity in O&M.	Can adequately service development. Requires approvals. Moderate complexity in O&M.
Ranking	*Least Preferred*	*Less Preferred*	*Most Preferred*
Financial Criteria	No capital or O&M costs.	Capital Costs ~ $10M (Developer responsibility). Moderate O&M costs (Developer responsibility). Capital costs for upgrades to existing water supply system unknown (Developer responsibility).	Capital Costs ~ $10M (Developer responsibility). Moderate O&M costs (Developer responsibility).
Ranking	*Most Preferred*	*Least Preferred*	*Less Preferred*
Overall Ranking	***Less Preferred***	***Least Preferred***	***Most Preferred***
Meets Project Opportunity (PO) Statement	No. Does not meet Project Opportunity Statement. Not a viable alternative.	Yes. Meets Project Opportunity Statement.	Yes. Meets Project Opportunity Statement.
Recommendation	**Not Carried Forward**	**Not Carried Forward**	**Carried Forward**

Evaluation Order of Preference
Least → Less → Most

Evaluation of Alternative Solutions – Wastewater

Criteria	1: Do Nothing	2: Connect to Existing Municipal Wastewater System	3: New Onsite Water System with Subsurface Discharge	4: New Onsite Water System with Discharge to Waterbody	5: New Onsite Water System with Discharge to Irrigation Pond
Natural Environment	No impact over existing conditions.	Higher impact due to length of forcemain / impact footprint.	Moderate impact associated with dispersal beds footprint.	Higher impact due to discharge within Grand River floodplain.	Lower impact associated with only onsite discharge piping to the pond.
Ranking	*Most Preferred*	*Least Preferred*	*Somewhat Preferred*	*Least Preferred*	*More Preferred*
Socio-Cultural Environment	Not consistent with Official Plan (OP). Does not contribute to housing per Bill 23.	Consistent with OP. Contributes to housing per Bill 23. Potential for impact to archaeological resources. Construction noise and traffic impacts greater due to work in urban area.	Consistent with OP. Contributes to housing per Bill 23. Potential for archaeological resources in disbursal bed areas. Noise from onsite WWTP operation can be mitigated. No traffic impacts anticipated. Visual impacts can be screened.	Consistent with OP. Contributes to housing per Bill 23. Potential for archaeological resources along discharge route and outfall. Noise associated discharge route construction. Noise from onsite WWTP operation can be mitigated. Traffic impacts associated with discharge route. Visual impacts can be screened.	Consistent with OP. Contributes to housing per Bill 23. No known archaeological impacts. Noise from onsite WWTP operation can be mitigated. No traffic impacts anticipated. Visual impacts can be screened.
Ranking	*Somewhat Preferred*	*Least Preferred*	*Somewhat Preferred*	*Less Preferred*	*Most Preferred*
Technical Criteria	No services to lands designated for development. No construction or O&M requirements. Does not necessarily mean that no further development in the community would occur.	Insufficient treatment capacity at existing WWTP to accommodate development. Would require upgrades to existing WWTP. Requires long forcemain. Less O&M.	Can adequately service development. Requires approvals.	Can adequately service development. Requires more complex approvals due to outfall. More complex equipment compared to Alternatives 3 and 5. More operator attention.	Can adequately service development. Requires approvals.
Ranking	*Least Preferred*	*Less Preferred*	*More Preferred*	*Somewhat Preferred*	*Most Preferred*
Financial Criteria	No capital or O&M costs.	Capital Cost for forcemain ~ $5M (Developer responsibility). Capital costs for existing WWTP upgrades unknown. Lowest O&M costs (Developer responsibility).	Capital Costs ~ $5M (Developer responsibility). Moderate O&M costs (Developer responsibility).	Capital Costs ~ $7.5M (Developer responsibility). Highest O&M costs (Developer responsibility).	Capital Costs ~ $2.5M (Developer responsibility). Additional O&M costs associated with management of irrigation of effluent (Developer responsibility).
Ranking	*Most Preferred*	*Somewhat Preferred*	*Less Preferred*	*Least Preferred*	*Somewhat Preferred*
Overall Ranking	***More Preferred***	***Less Preferred***	***Somewhat Preferred***	***Least Preferred***	***Most Preferred***
Meets PO Statement	No. Does not meet Project Opportunity Statement. Not a viable alternative.	Yes. Meets Project Opportunity Statement.	Yes. Meets Project Opportunity Statement.	Yes. Meets Project Opportunity Statement.	Yes. Meets Project Opportunity Statement.
Recommendation	**Not Carried Forward**	**Not Carried Forward**	**Not Carried Forward**	**Not Carried Forward**	**Carried Forward**

Evaluation Order of Preference
Least → Less → Somewhat → More → Most

Alternative Design Concepts – Water (Primary Disinfection Treatment)

1a. Ultraviolet Primary Disinfection

- Uses ultraviolet light to inactivate pathogens (i.e., Cryptosporidium and Giardia[1]).
- Minimal to no impact to taste and odour of water.
- Effective as part of a multi-barrier approach to provide a second form of treatment.

1b. Chlorine Primary Disinfection

- Inactivates pathogens in water (i.e., bacteria and viruses).
- Ineffective against Cryptosporidium[1].
- Results in a distinctive odour and taste in treated water.

Note 1: Cryptosporidium and Giardia have not been detected in the groundwater source.

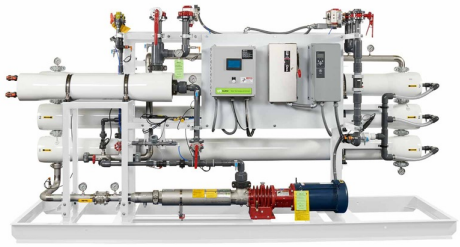
Alternative Design Concepts – Water (Aesthetic Treatment for Hardness)

2a. Ion Exchange

- Salt-based water softener (resin) which replaces calcium and magnesium ('hard' ions) with sodium.
- When resin is saturated with magnesium and calcium, the system is cleaned to flush the minerals away, replacing them with sodium.
- Cleaning of resin produces wastewater containing salt that is detrimental to proposed irrigation system.

2b. Softening Membranes

- Utilizes differential pressure to remove calcium and magnesium ('hard' ions) using semi-permeable membranes.
- This process does not generate salt in the wastewater stream.
- Cleaning of membranes is required.



2c. Crystallization Technology

- Typically used as a decentralized household use system for reducing water hardness.
- Utilizes crystallization technology to change state of minerals from ionic to crystals.
- Crystals are filtered out of the solution and minerals stay suspended in water as they flow through the system in crystalline form.

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Alternative Design Concepts – Water (Storage)

3a. Above Ground

- Store treated water in a standpipe.
- Can be visually seen.
- Easily accessible to maintain and repair.
- Maintains minimum gravity pressure in the system.

3b. Below Ground

- Store treated water in an inground reservoir.
- Minimal visual impact.
- Difficulty to access for maintenance and repair.

Alternative Design Concepts - Wastewater

1. **Membrane Bioreactor (MBR)**
   - Involves both biological aeration processes and filtration through microfiltration membrane.
2. **Sequencing Batch Reactor (SBR)**
   - Uses conventional biological treatment processes in a single reactor tank.
   - Treats one batch of wastewater at a time.
3. **Aerobic Foam Media Trickling Filter**
   - Passive system.
   - Intermittently sprays wastewater over treatment media.
   - Microorganisms that grow on the media treat the liquid.
4. **Moving Bed Biofilm Reactor (MBBR)**
   - Uses conventional aerobic biological treatment processes with enhanced treatment with a media in a bioreactor.
   - Microorganisms grow on the media.
   - Requires clarifier tanks before and after bioreactor.

* For all alternatives, the treated effluent is further filtered, and UV disinfection applied.


Example of MBR


Example of SBR


Example of Aerobic Foam Media Trickling Filter


Example of MBBR

Evaluation Criteria - Water

- **Natural Environment**
  - Impacts to natural environment (general)
- **Socio-Cultural Environment**
  - Operational nuisance impacts (noise, odour)
  - Operational traffic impacts
  - Visual impacts
- **Technical Environment**
  - Ability to meet water treatment / storage criteria
  - Land area requirements
  - Modularity
  - Operation and maintenance requirements and complexity
- **Financial Environment**
  - Comparative capital costs
  - Estimated operations and maintenance costs
  - Estimated 20-year life cycle costs

Evaluation Criteria - Wastewater

- **Socio-Cultural Environment**
  - Operational nuisance impacts (noise, odour)
  - Operational traffic impacts
- **Technical Environment**
  - Ability to meet effluent criteria
  - Land area requirements
  - Modularity
  - Operation and maintenance requirements and complexity
- **Financial Environment**
  - Comparative capital costs
  - Estimated operations and maintenance costs
  - Estimated 20-year life cycle costs

Evaluation of Alternative Design Concepts – Water (Disinfection)

Criteria	1a: Primary Disinfection – Ultraviolet Disinfection	1b: Primary Disinfection - Chlorine
Natural Environment	None.	Negative impact on natural environmental in the event of a spill.
Ranking	*Most Preferred*	*Least Preferred*
Socio-Cultural Environment	Minimal traffic impact due to regular inspection and maintenance. Minimal operational nuisance.	Minimal noise related to pump operation. Minimal chlorine odour. Ventilation system required to ensure cycling of air for chemical room. Moderate operational nuisance.
Ranking	*Most Preferred*	*More Preferred*
Technical Criteria	Requires regular cleaning by mechanical wipers, ultrasonics, or chemicals. Inspection of UV chamber interior required every six months. Safe for operators (no chemical handling, transportation, or storage). Requires less contact time than Alternative 1b.	Cleaning and maintenance of components is required every six months and equipment and chlorine storage tank to be inspected and cleaned annually. Chemical delivery every 3 to 4 weeks. Regular inspection of the equipment, chlorine solution and free chlorine residual levels, adjustment of equipment and dosage rates as required. All forms of chlorine are highly corrosive and toxic as such, pose a risk to operators and require increased training and safety procedures than Alternative 1a.
Ranking	*Most Preferred*	*More Preferred*
Financial Criteria	High estimated capital costs (Developer responsibility). Moderate estimated O&M costs (Developer responsibility).	Moderate estimated capital costs (Developer responsibility). High estimated O&M costs (Developer responsibility).
Ranking	*Most Preferred*	*More Preferred*
Overall Ranking	***Most Preferred***	***More Preferred***
Recommendation	**Recommended**	**Not Carried Forward**

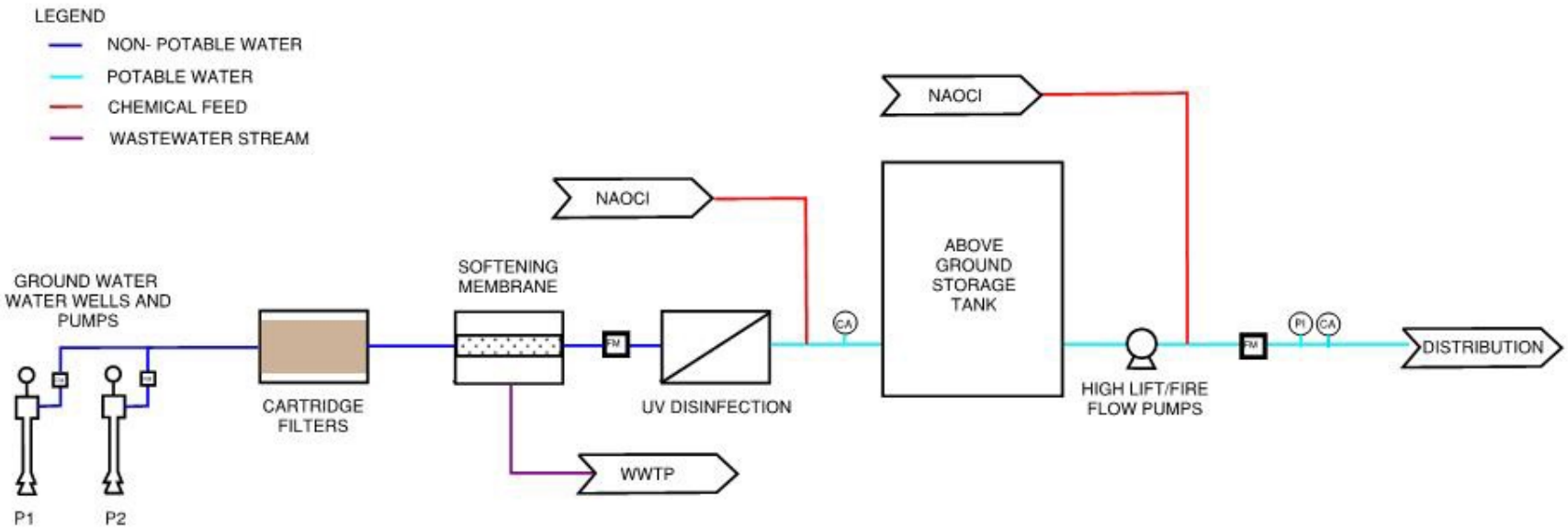
Evaluation of Alternative Design Concepts – Water (Aesthetic Treatment for Hardness)

Criteria	2a: Aesthetic (Hardness) – Ion Exchange	2b: Aesthetic (Hardness) – Softening Membranes	2c: Aesthetic (Hardness) – Crystallization Technology
Natural Environment	Potential impact to soils as result of spray irrigation to golf course.	Minimal to no impact.	Minimal to no impact.
Ranking	*Least Preferred*	*Most Preferred*	*Most Preferred*
Socio-Cultural Environment	Minimal noise related to pump operation. Moderate noise for short duration during operation/cleaning. Higher operational nuisance. Minimal traffic impact due to salt deliveries (3 to 4 weeks) and regular inspection and maintenance.	Minimal noise related to pump operation. Higher operational nuisance. Minimal traffic impact due to regular inspection and maintenance.	Minimal noise and operational nuisance. Maintenance for each residential unit within the development would be required. Minimal to no traffic.
Ranking	*More Preferred*	*More Preferred*	*More Preferred*
Technical Criteria	Ion exchange resin needs to be replaced every 8-12 years. Chemical delivery (dry salt) required every 3 to 4 weeks. Regular regeneration of resin is required. Periodic inspection and maintenance of brine tank.	Membranes replacement (approx. every 10 years). Regular cleaning of membranes is required. Periodic inspection and maintenance.	Media or cartridge replacement range is from 1 to 3 years. No drainage required. Pre-filter to be replaced every 3 to 6 months. Periodic inspection and maintenance Residents would be responsible for operation.
Ranking	*More Preferred*	*Most Preferred*	*Least Preferred*
Financial Criteria	Moderate estimated capital and O&M costs (Developer responsibility). O&M costs include: - Regular regeneration and maintenance of resin. - Re-supply of dry salt. - Moderate energy consumption.	Moderate estimated capital and O&M costs (Developer responsibility). O&M costs include: - Cleaning of membranes. - Membrane replacement (every 10 years). - Higher energy consumption than Alternative 2a.	High estimated capital and O&M costs (Developer responsibility). Installation is required at all residential units when compared to a single system at the water treatment plant. O&M costs include: - Media or cartridge to be replaced every 1 to 3 years. - Low energy consumption.
Ranking	*Most Preferred*	*Most Preferred*	*More Preferred*
Overall Ranking	***More Preferred***	***Most Preferred***	***Least Preferred***
Recommendation	**Not Carried Forward**	**Recommended**	**Not Carried Forward**

Evaluation of Alternative Design Concepts – Water (Storage)

Criteria	3a: Storage - Above Ground	3b: Storage - Below Ground
Natural Environment	Minimal to no impact.	Minimal to no impact.
Ranking	*Most Preferred*	*Most Preferred*
Socio-Cultural Environment	Minimal noise and no odour. Minimal operational nuisance. Can be observed at grade. Less architectural options compared to Alternative 3b. Susceptible to vandalism.	Minimal noise and no odour. Moderate operational nuisance (difficult to service and inspect). Cannot be observed at grade.
Ranking	*More Preferred*	*More Preferred*
Technical Criteria	Larger building footprint as a result of two separate structures. Can be expanded vertically, if required. Second tank can be provided for additional capacity with similar foundation design, if required. Manways provided for easy access. Defects/leaks are easily identified and repaired. More prone to freezing during the winter.	Minimal increase in footprint. Reservoir can be integrated into the below ground foundation design of the WTP. Additional water reservoir cells can be constructed. Complexity to expand a subgrade reservoir is higher than expanding an above ground tank due to excavation, existing foundation constraints, and shoring. Increased confined space training and safety procedures. Difficult identifying and repairing cracks and leaks. Natural protection against the extreme cold and heat, easier to maintain temperate.
Ranking	*Most Preferred*	*More Preferred*
Financial Criteria	Moderate estimated capital costs (Developer responsibility) due to: - Less excavation and shoring systems - Dependent on soils and groundwater - Insulation and mixing required	High estimated capital costs (Developer responsibility) due to: - Deeper and larger excavation and shoring systems - Dependent on soils and groundwater - Insulation and waterproofing required
Ranking	*Most Preferred*	*More Preferred*
Overall Ranking	***Most Preferred***	***More Preferred***
Recommendation	**Recommended**	**Not Carried Forward**

Preferred Water Treatment Design Solution



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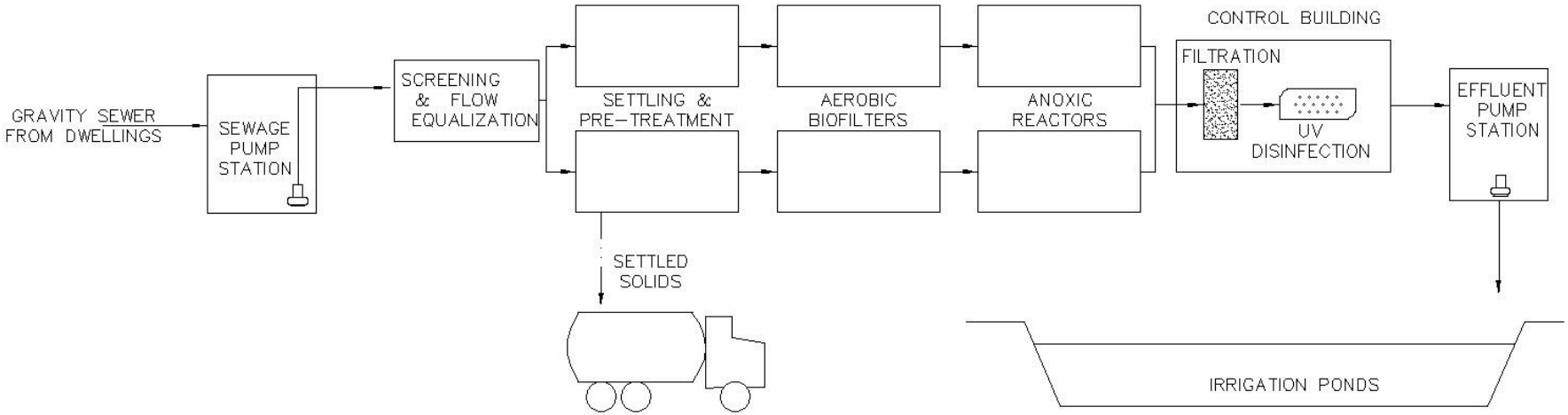
Evaluation of Alternative Design Concepts – Wastewater

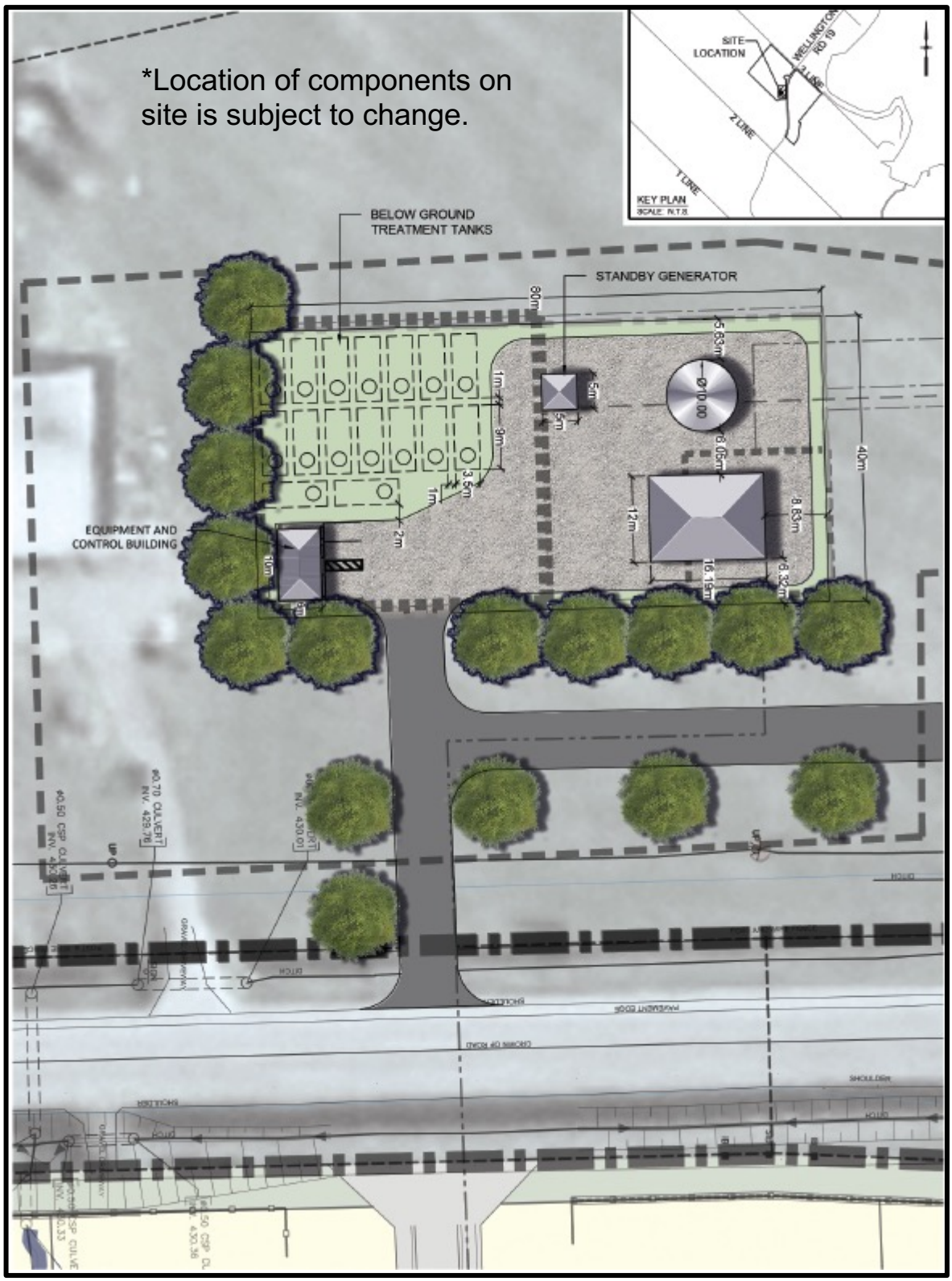
Criteria	1: Membrane Bioreactor (MBR)	2: Sequencing Batch Reactor (SBR)	3:Aerobic Foam Media Trickling Filter	4: Moving Bed Biofilm Reactor (MBBR)
Socio-Cultural Environment	Noise associated with the operation of the MBR system can be mitigated to ensure applicable noise guidelines are met at the proposed and existing noise sensitive receptors.	Noise associated with the operation of the SBR system can be mitigated to ensure applicable noise guidelines are met at the proposed and existing noise sensitive receptors.	Limited mechanical equipment with this technology, no air blowers or large equipment, so minimal noise generation.	Noise associated with the operation of the MBBR system can be mitigated to ensure applicable noise guidelines are met at the proposed and existing noise sensitive receptors.
Ranking	*Less Preferred*	*Less Preferred*	*Most Preferred*	*Less Preferred*
Technical Criteria	Best available technology for phosphorus removal. Can meet objectives for other parameters (BOD, TSS, pathogens) Somewhat inconsistent nitrate removal performance; may require supplemental equipment/ processes. System can be modular. Less resilient to low flows and loadings during initial phase as dwellings gradually become occupied. Plant may struggle to meet effluent objectives during initial phases of development due to low incoming sewage volumes. Operator on site 3x per week for system checks. Highest level of mechanical parts and complex equipment. Requires air blowers.	Above ground building to house UV disinfection equipment, chemical dosing, controls, air blowers, tertiary filters. Below ground concrete tanks to contain SBR aerobic and anoxic processes. Similar to Alternative 4. Operator on site 3x per week for system checks. Moderate level of mechanical parts and complex equipment. Requires air blowers. System is somewhat modular. Can be constructed as multiple parallel treatment trains but may require more initial capital outlay than other options. Less resilient to low flows and loadings during initial phase as dwellings gradually become occupied. Plant may struggle to meet effluent objectives during initial phases of development due to low incoming sewage volumes.	Above ground building to house UV disinfection equipment, chemical dosing, controls, tertiary filters. Below ground tanks would contain most of treatment equipment and processes or could be entirely housed in above ground containers. Similar overall footprint to Alternatives 2 and 4. Smallest building footprint. Operator on site 1x per week for system checks. Minimal mechanical parts and no complex equipment. No air blowers required. High degree of flexibility to accommodate multiple treatment trains and modular installation. More resilient to low flows and loadings during initial phase as dwellings gradually become occupied.	Above ground Control Building to house UV disinfection equipment, chemical dosing, controls, air blowers, tertiary filters. Below ground tanks to contain most of the treatment equipment and processes including bioreactors, clarifiers, anoxic tanks. Similar to Alternative 2. Operator on site 1x per week for system checks. Moderate level of mechanical parts and complex equipment. Requires air blowers. System is somewhat modular. Can be constructed as multiple parallel treatment trains. Less resilient to low flows and loadings during initial phase as dwellings gradually become occupied. Plant may struggle to consistently meet effluent objectives during initial phases of development due to low incoming sewage volumes.
Ranking	*Less Preferred*	*Less Preferred*	*Most Preferred*	*Somewhat Preferred*
Financial Criteria	$3.4M capital costs. $160K to $180K O&M costs. $6.2M life cycle cost. (Developer responsibility)	$3.1M capital costs. $160K to $180K O&M costs. $5.9M life cycle cost. (Developer responsibility)	$2.5M capital costs. $60K to $80K O&M costs. $3.6M life cycle cost. (Developer responsibility)	$2.8M capital costs. $80K to $100K O&M costs. $4.2M life cycle cost. (Developer responsibility)
Ranking	*Least Preferred*	*Least Preferred*	*Most Preferred*	*Somewhat Preferred*
Overall Ranking	***Less Preferred***	***Less Preferred***	***Most Preferred***	***Somewhat Preferred***
Recommendation	**Not Carried Forward**	**Not Carried Forward**	**Recommended**	**Not Carried Forward**

Evaluation Order of Preference
Least → Less → Somewhat → More → Most

Preferred Wastewater Treatment Design Solution



Proposed Site Plan Concept



Next Steps

MCEA Phase 2

- Comment Period to June 30, 2023
- Review Feedback from PIC #1 (July 2023)
- Confirm Preferred Solution (July 2023)

MCEA Phase 3

- Identify and Evaluate Alternative Design Concepts (July – September 2023)
- PIC #2 (September 2023)

MCEA Phase 4

- Draft Environmental Study Report (October 2023)
- Agency Review of Draft ESR (November 2023)
- File EA (December 2023)
- Publication of Notice of Study Completion and Public Review Period (December 2023 – January 2024)

Invitation for Participation

Thanks for participating in this PIC.

Public input is an important component of the decision-making process.

You are invited to provide comments by completing the comment sheet and submitting to the comment box today or FergusGolfEA@rjburnside.com

by October 2, 2023.

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A copy of the display boards and presentation is available at www.rjburnside.com/FergusGEA