



Wastewater Treatment and Biosolids Management Master Plan Class Environmental Assessment



Welcome to Virtual Public Open House #3

Please sign in.

The City of Guelph initiated a project to update its Wastewater Treatment and Biosolids Management Master Plan, to establish a strategy for providing capacity for the City's growing population to 2051, in a manner that is sustainable, and protective of our waterways and environment. The project scope was expanded to meet the requirements of Schedule C Class Environmental Assessment (Class EA), as described in Panel 5.

The purpose of this third virtual public open house is to provide a summary of the Class EA development presented in the first two open houses, and to present the implementation plan for recommended capital projects.

This your chance to have your say about the planning process and recommendations.





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Class EA Purpose Statement

The study was initiated to identify a preferred strategy of wastewater treatment and biosolids management projects and when they are required to provide capacity for planned development and growth. Recommendations were developed in consideration of related initiatives and studies, including the City's Official Plan and amendments, climate change targets, legislation and guidelines. The study considered and built on the City's 2009 Wastewater Treatment and 2006 Biosolids Management Master Plans.

Study Area

Wastewater is collected and treated from within the urban boundaries of Guelph, as shown to the right. Wastewater is also collected and treated from the Gazer Mooney subdivision and the Village of Rockwood through an agreement with the City of Guelph.





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Facility Name Update

The Guelph Wastewater Treatment Plant provides capacity to treat 64 million litres of wastewater every day and discharges treated and disinfected effluent to the Speed River. The treatment process generates residuals that have nutrient and energy value, both of which are recovered by current practices. The facility generates:

- High-quality treated effluent that protects the quality of the Speed River
- Biogas with energy value (from treatment of residuals in the anaerobic digesters), which is used to generate electricity and heat in a cogeneration process
- A Canadian Food Inspection Agency approved fertilizer (from treating residuals) that is beneficially reused via land application

To emphasize the City's focus on the resource recovery value of wastewater and commitment to continuing and maximizing resource recovery, the name of the wastewater treatment plant was recently updated to:

Guelph Water Resource Recovery Centre (WRRC)





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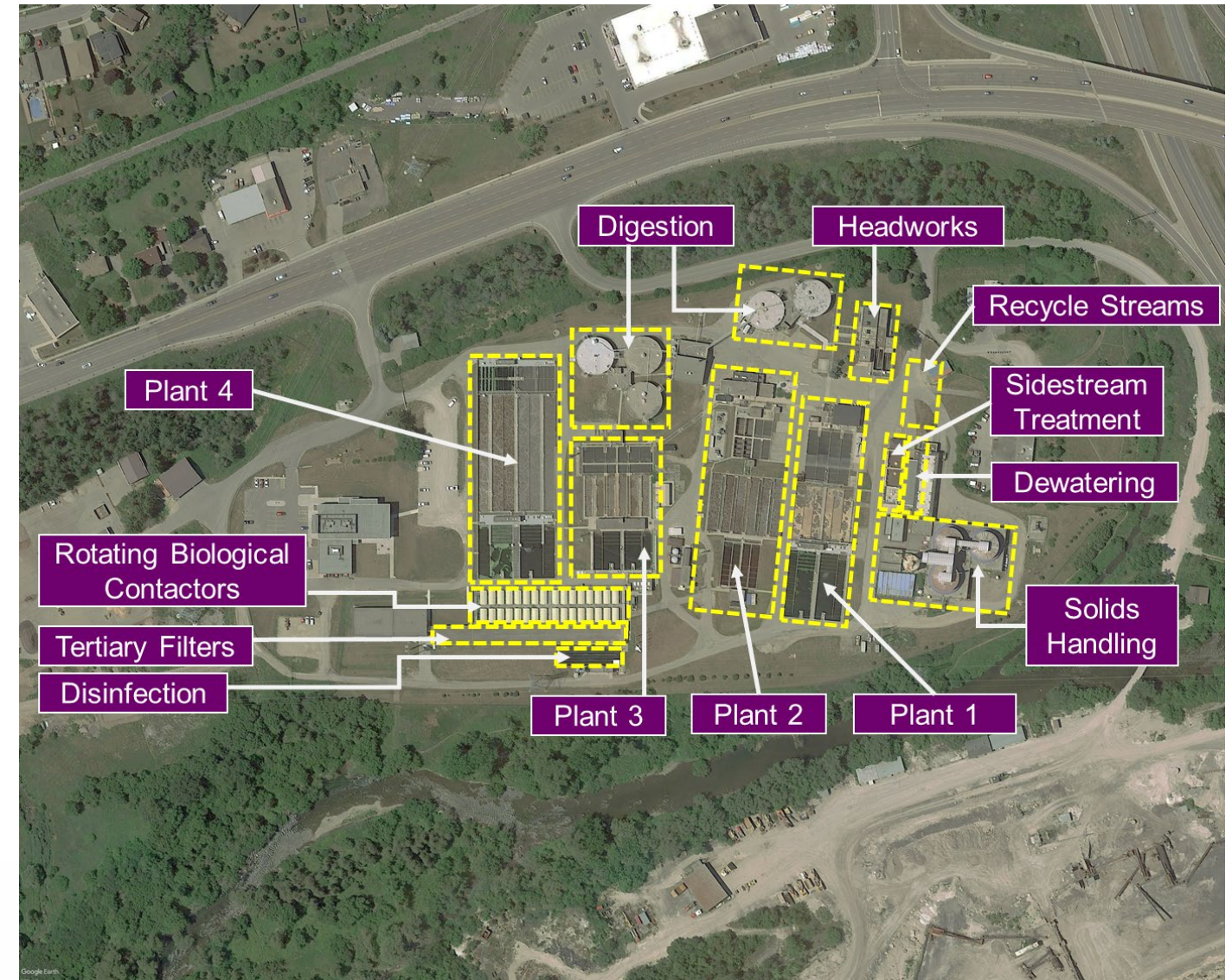


Guelph Water Resource Recovery Centre

The Guelph WRRC has a rated capacity to treat 64 million litres per day (ML/d). This is equal to the volume in 26 Olympic-sized swimming pools per day.

Wastewater arriving at the Guelph WRRC undergoes multiple stages of treatment: preliminary, primary, secondary, tertiary, disinfection and dechlorination. The final treated and disinfected effluent is discharged into the Speed River.

Nutrient-rich solid residuals that are primarily organic are generated in the wastewater treatment process. These are treated by thickening, digestion and dewatering, and are further stabilized through the Lystek process. The final product is a fertilizer product that is approved by Canadian Food Inspection Agency for beneficial **re**-use via land application.





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Class Environmental Assessment Schedule Change

The Wastewater Treatment and Biosolids Management Master Plan was originally initiated to satisfy the requirements of a Schedule B Class Environmental Assessment (EA). Several of the recommended projects identified throughout the detailed evaluation phase will require the expanded scope of a Schedule C Class EA, to plan for a capacity expansion at the Guelph WRRRC. Some of the projects identified are required in a relatively short timeframe to provide capacity for the projected growth.

To effectively complete the Class EA requirements, the Master Plan scope was expanded to include additional activities included in a Schedule C Class EA. Following completion of a Schedule C Class EA, projects are eligible for implementation through detailed design and construction.

For the Schedule C Class EA, Phases 1-4 of the Class EA process are being completed. This includes development of an implementation plan, a third community open house and documentation of the study in an Environmental Study Report (ESR), which will be available for a 30-day public review.

Panel 6 presents an overview of the Schedule C Class EA process.

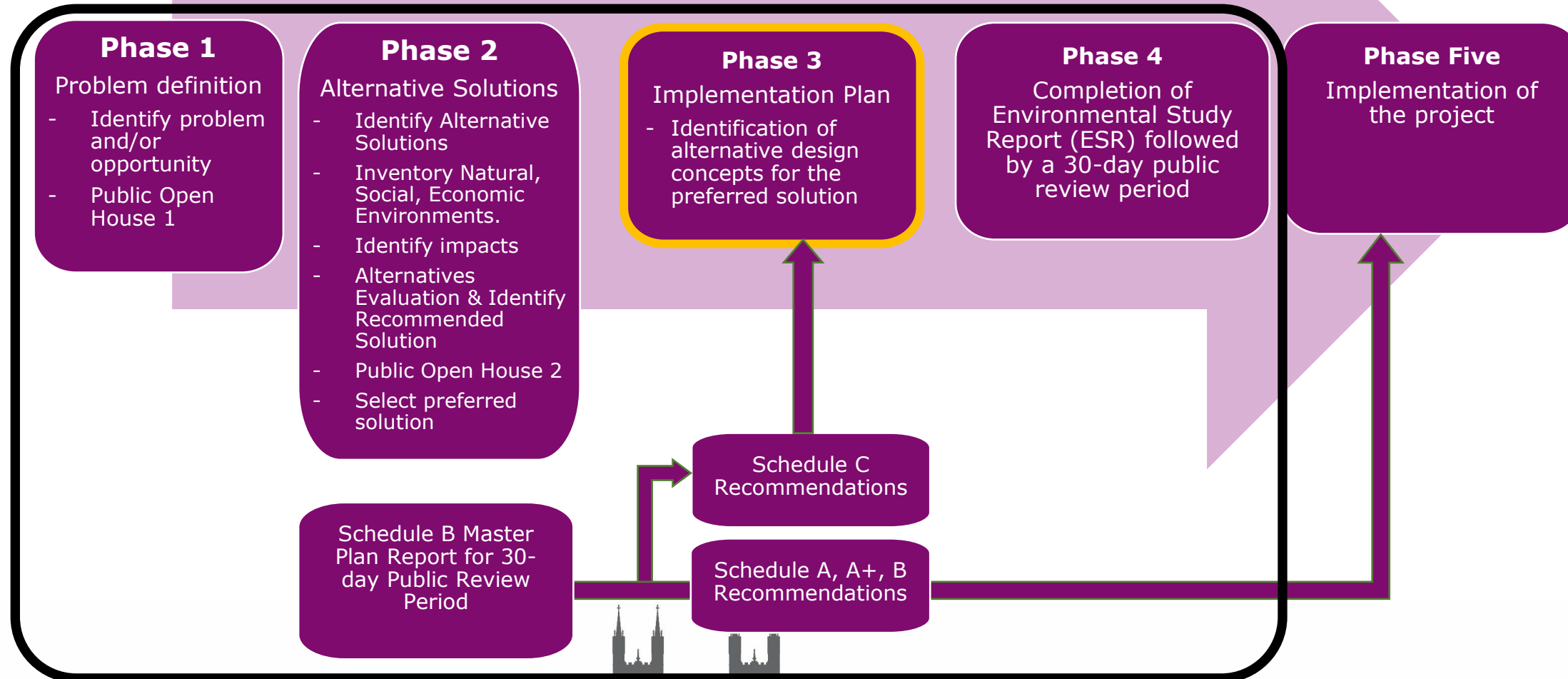




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Class Environmental Assessment Process





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Public Consultation Plan

The City of Guelph is seeking suggestions, comments and ideas about the Class EA study from the City community and neighbours, Indigenous communities, and municipal and provincial agencies.

A Community Liaison Group (CLG) was established for this project, whose members are representative local stakeholders. There have been three (3) CLG meetings held to date.

This is the final of three (3) virtual open houses for the study. The first one was held during Fall 2020 and presented the existing conditions at the Guelph WRRC. The second one was held during Spring 2021 and presented the future conditions, alternatives evaluation and preliminary preferred solution for the Class EA.

Virtual open houses meet the Class EA consultation requirements, provided that they meet your needs as a participant.

The City's "Have Your Say" website shares specific information about the project as well as invites comments, questions and input from the community. The Have Your Say website can be accessed at: <https://www.haveyoursay.guelph.ca/>

Following completion of the ESR, it will be posted to the project website for a 30-day public review period.



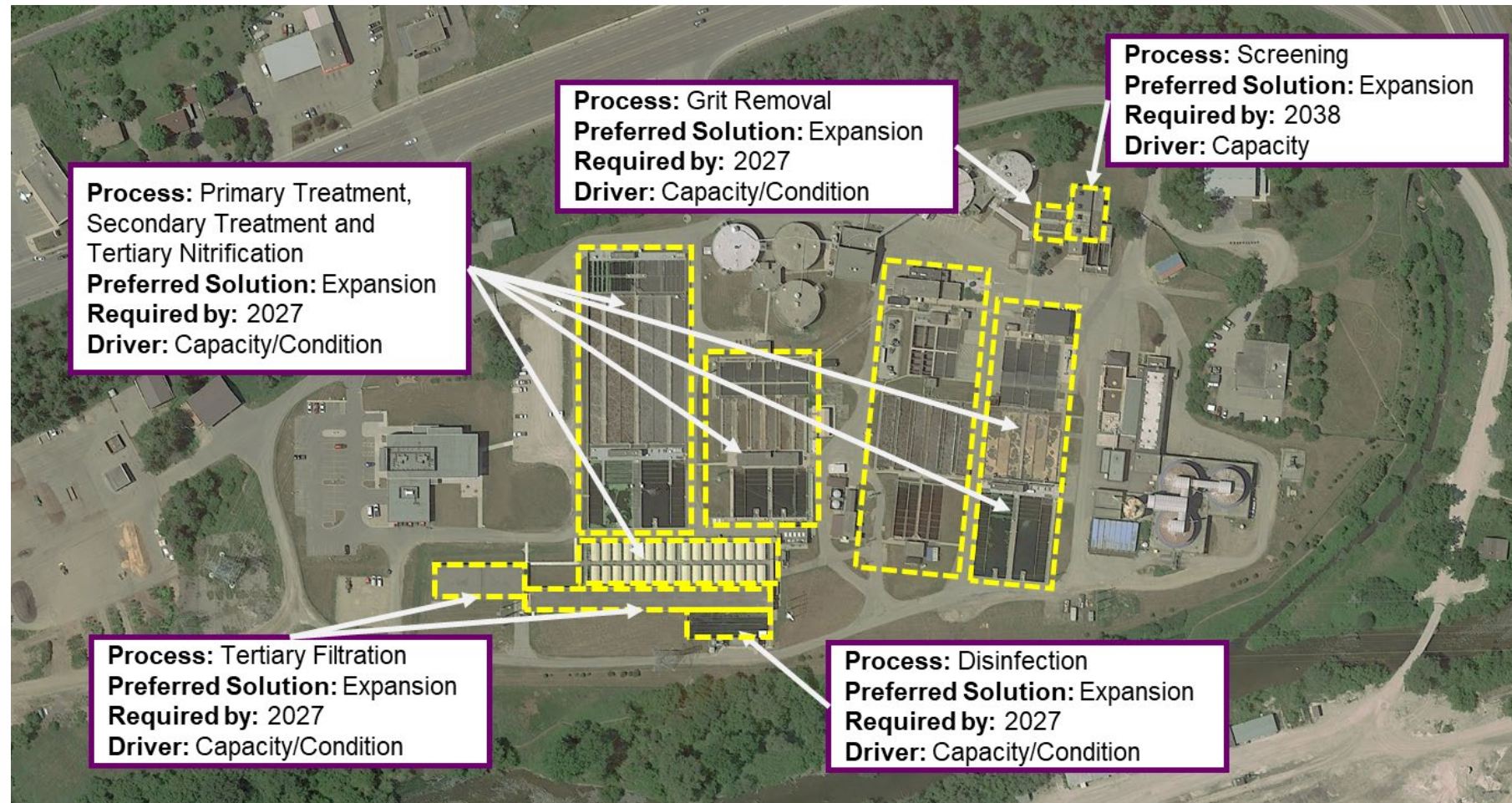


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Summary of Preferred Solution – Wastewater Treatment

The preferred wastewater treatment solution was confirmed following the completion of the second virtual public open house. Key projects, drivers and their timing are shown on the site layout below.



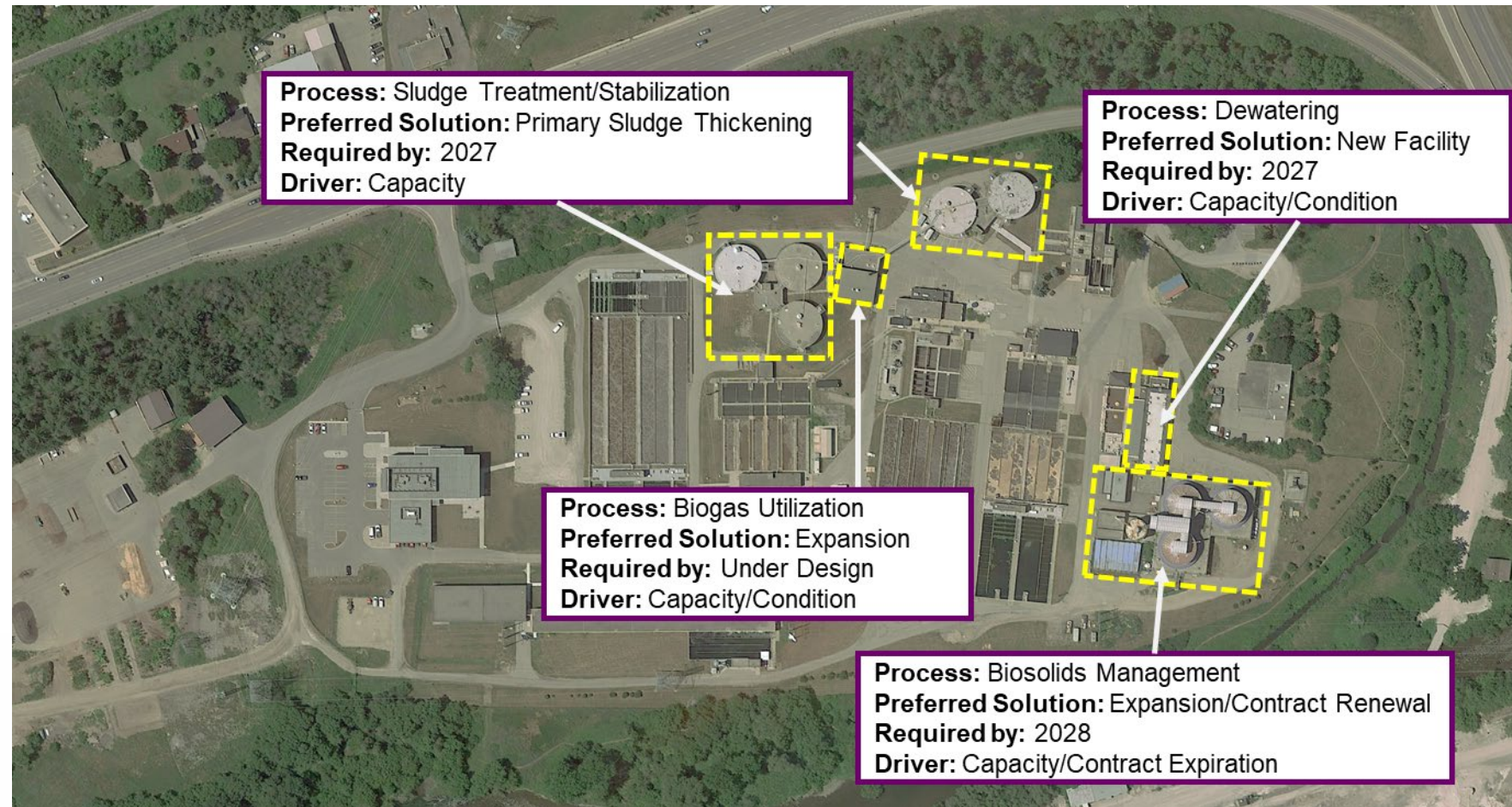


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Summary of Preferred Solution – Biosolids Management

The preferred residuals treatment and biosolids management solution was confirmed following the completion of the second virtual public open house. Key projects, drivers and their timing are shown on the site layout below.





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Implementation Plan – Guelph WRRC Expansion Phases

The upgrades identified in this Class EA were separated into two expansion phases. The expansion phases were developed based on secondary treatment capacity.

The current rated capacity of the Guelph WRRC (64 ML/d) is projected to be exceeded by 2027. By constructing two new secondary clarifiers in Plant 2, removing the RBCs and operating all plants in a nitrifying conventional activated sludge mode, the total secondary treatment capacity will be increased to **72.5 ML/d**.

Flows are projected to exceed 72.5 ML/d by 2038. To expand plant capacity beyond 72.5 ML/d, process intensification within one or more of the existing trains and/or a new treatment train will be required. The Class EA study recommends that the expansion requirements and technology approach for the 2038 expansion be evaluated at a later update of the Guelph WRRC master plan. This will enable consideration of the latest state of technology advancements and the most recent capacity needs projections.





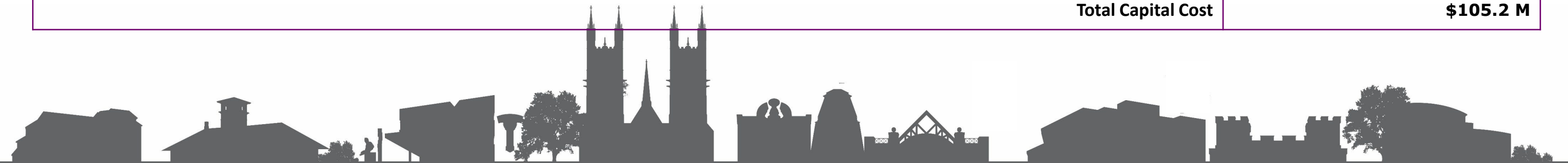
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Phase 1 – Treatment Capacity Expansion to 72.5 ML/d

The first phase of upgrades, which would increase the plant’s treatment capacity from 64 ML/d to 72.5 ML/d, are presented on this slide. These upgrades are required by 2027. Cost estimates are Class D cost estimates, which are developed at a preliminary stage and will be refined as the design progresses.

Project	Capital Cost
• Grit tank rehabilitation and expansion	\$6.0 M
• 2 new secondary clarifiers in Plant 2, remove the rotating biological contactors and operate all plant as conventional activated sludge	\$12.2 M
• Expansion of tertiary treatment with disk filters, decommission East-West filter building	\$33.3 M
• New Ultraviolet Disinfection Facility, decommission the existing chlorine contact tank and chemical systems	\$14.4 M
• New Dewatering Facility with Biosolids Storage, decommission the existing dewatering facility	\$16.1 M
• New Primary Sludge and Waste Activated Sludge Thickening Building, remove existing rotating drum thickener	\$23.1 M
• Enhanced treatment and beneficial re-use (on site or contracted out)	\$28.4 M
Total Capital Cost	\$105.2 M





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Phase 2 – Treatment Capacity Expansion to 79.2 ML/d or Higher

The next expansion phase is predicted to be required by 2038. Since this is several years from now, it is recommended that the Guelph WRRC facility plan be revisited to update capacity needs and identify the best approach to providing capacity at that time. For the purposes of this Class EA, a planning budget of \$48.3 million is carried for this expansion phase.

Project	Capital Cost
• Screening Upgrades	\$14.1 M
• Construct a new Plant 5	\$34.2 M
Total Capital Cost	\$48.3 M



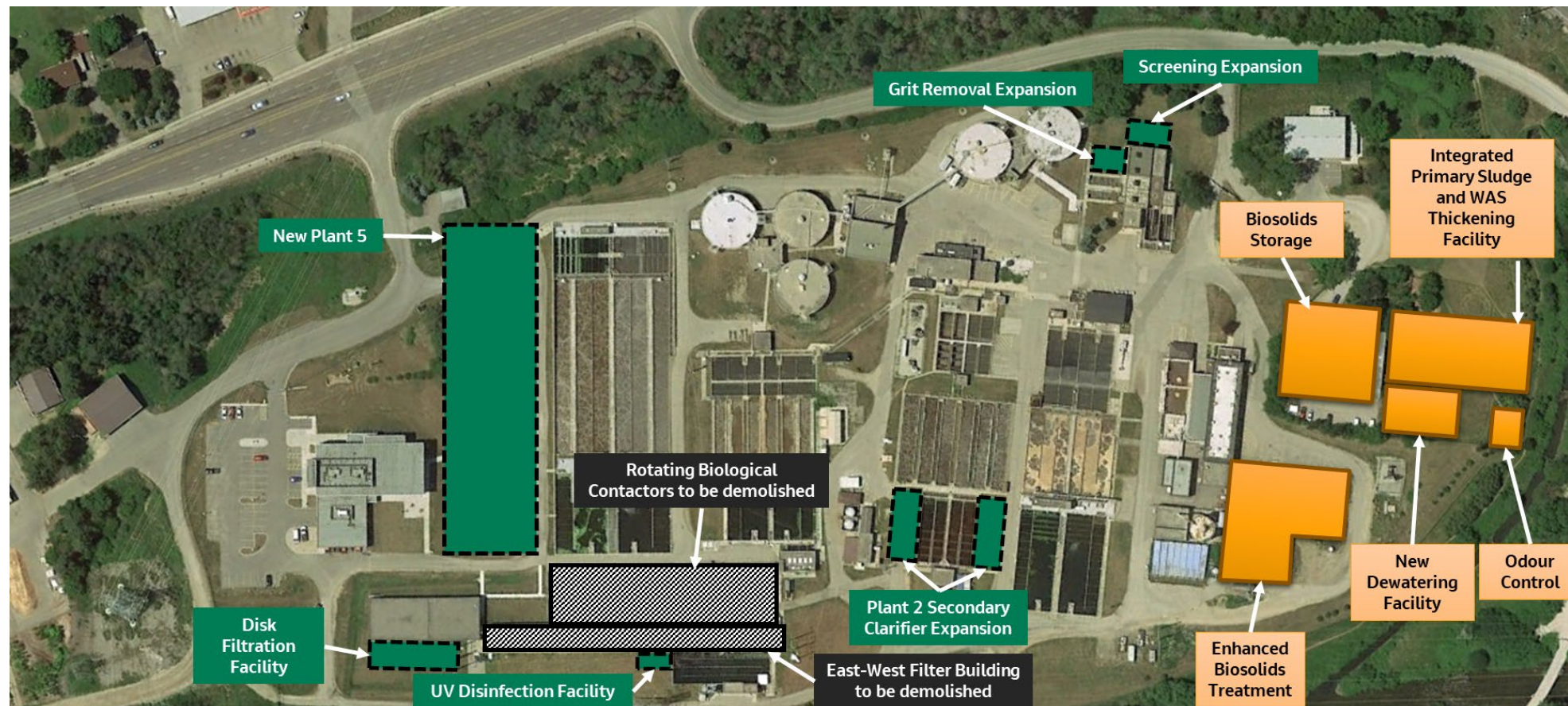


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Guelph WRRC Future Site Plan

This figure presents a preliminary concept for the projected site plan in 2051. It is noted that there is the potential for process intensification within the existing plants that could defer the need for a new Plant 5.



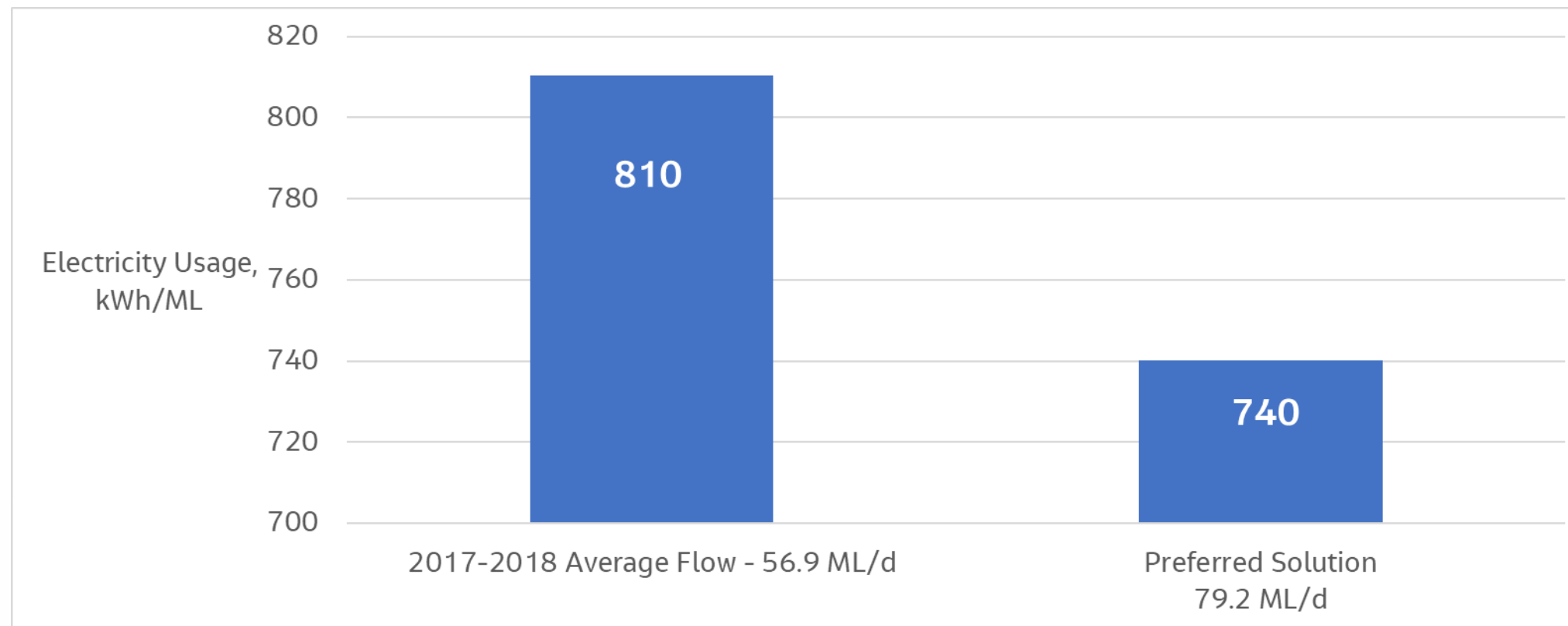


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Future Energy Consumption

The figure on this slide presents the future energy usage resulting from the recommendations of this Class EA. The energy consumption at the Guelph WRRC in 2017 and 2018 was 810 kWh per million litres (ML) of wastewater treated. By 2051, it is expected to be reduced to 740 kWh per million litres of wastewater treated, which is approximately a 9 percent decrease. This is primarily due to the installation of new, more energy efficient processes.



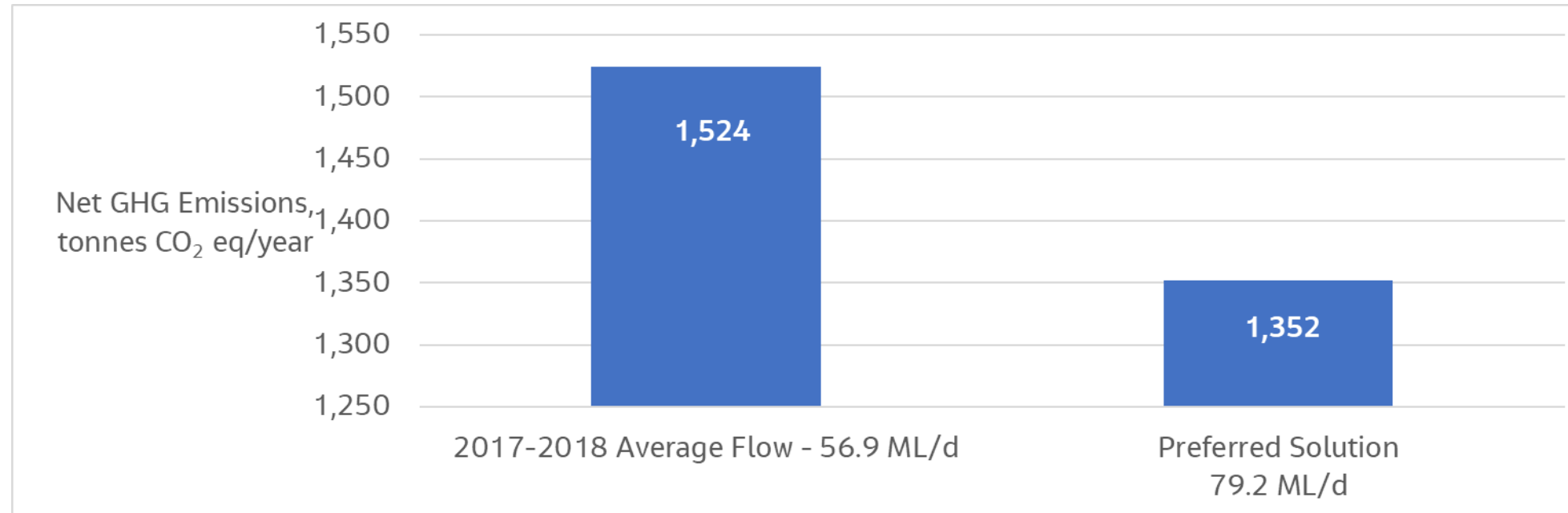


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Future Greenhouse Gas Emissions

The net greenhouse gas emissions at the Guelph WRRC are predicted to decrease significantly in the future. Implementing primary sludge thickening will increase biogas production in the anaerobic digesters, which will increase heat and power production from the cogeneration system and reduce the digester heating demand.





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Assimilative Capacity Study Results

An assimilative capacity study was completed to identify future effluent concentration limits and objectives that will maintain or improve the health of the Speed River as the flows from the Guelph WRRC increase. These limits will be confirmed through further consultation with the Ministry of Environment, Conservation and Parks (MECP).

Effluent Parameter	Current Concentration Limit	Current Concentration Objective	Future Concentration Limit	Future Concentration Objective
BOD ₅	22 mg/L (April 1 st to October 31 st)	19.8 mg/L (April 1 st to October 31 st)	-	-
cBOD ₅	7.4 mg/L (November 1 st to March 31 st)	6.7 mg/L (November 1 st to March 31 st)	5 mg/L	3 mg/L
TSS	10 mg/L	7 mg/L	5 mg/L	3 mg/L
TP	0.38 mg/L (April 1 st to October 31 st) 0.7 mg/L (November 1 st to March 31 st)	0.34 mg/L (April 1 st to October 31 st) 0.63 mg/L (November 1 st to March 31 st)	0.3 mg/L	0.2 mg/L
TAN	3.4 mg/L (November 1 st to March 31 st)	3.0 mg/L (November 1 st to March 31 st)	1 mg/L (June 1 st to September 30 th) 3 mg/L (October 1 st to May 30 th)	0.75 mg/L (June 1 st to September 30 th) 2 mg/L (October 1 st to May 30 th)





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Benefits of the Class EA Recommendations for the Guelph WRRC

The following are benefits from the recommended upgrades at the Guelph WRRC:

- Capacity to service growth to 2051 will be provided.
- Use of existing infrastructure will be maximized to avoid expansion where possible and reduce capital cost.
- Overall reliability will improve by replacing infrastructure that is nearing its end of life.
- Energy use will reduce due to selection of newer, more efficient technologies, and by maximizing energy recovery from biogas; both reducing GHG emissions.
- Resource (nutrient and organics) recovery from biosolids will be maximized by continuing beneficial re-use of biosolids as a fertilizer product.





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Impact Mitigation Measures at the Guelph WRRC

The following measures will be taken to minimize impacts resulting from the Class EA recommendations:

- **Odour:** Existing odour control and treatment facilities will continue to operate, and a new odour control facility will be constructed to mitigate potential odours from the new solids handling area.
- **Speed River:** An assimilative capacity study was completed to identify recommended new treated effluent loading limits that will maintain the health of the Speed River with increased effluent flows. Treatment technologies were selected so that the Guelph WRRC effluent will continue to provide a high-quality effluent.
- **Noise:** The technologies that were selected for upgrades are not expected to result in off-site noise impacts on the surrounding community, and measures will be taken during construction to minimize noise.
- **Traffic:** In general, Guelph WRRC traffic has not been a notable issue given the location of the facility entrance off a main road (Wellington Road) near Highway 6.





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Next Steps

Your feedback is an important part of the Class EA study process and will be considered in completing the Environmental Study Report. Here are the ways for you to participate:

- Register, join the conversation and share your thoughts on the Have Your Say website at www.haveyoursay.guelph.ca
- Project information will continue to be updated on the Project website at www.guelph.ca/wastewater
- Join the project mailing list to receive project updates. Please provide your contact information (name and email) to the contacts below.
- Follow the conversation on Twitter at www.twitter.com/cityofguelph and Facebook at www.facebook.com/cityofguelph

Please contact the project team with any additional comments or questions that you may have:

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Thank you for your interest in the City's Wastewater Treatment and Biosolids Management Master Plan Class EA. Following City Council endorsement, the ESR will be available for 30-day public review in spring 2022.

