GSS ENGINEERING CONSULTANTS LTD

Schedule 'C' Environmental Study Report

Upgrading of Paisley Wastewater Treatment Plant

Municipality of Arran-Elderslie

(24-060)

Problem Statement

The Municipality of Arran-Elderslie is experiencing high utilization of the rated capacity of Paisley Wastewater Treatment Lagoons. Arran-Elderslie completed Paisley Wastewater Treatment Plant Capacity Assessment in 2021 and again in 2024. While 2021 assessment confirmed availability of significant surplus capacity, 2024 assessment indicates capacity utilization beyond rated capacity of plant.

The factors affecting the plant capacity relate to increased infilling of vacant lots, replacement of existing single-residential units with multi-residential units, recent Provincial Policy that allows the existing homeowner to convert garages, etc. into dwelling units, several developments by way of draft plan approval applications. It is further noted that water supplied to Paisley is much lower than sewage collected and supplied to Wastewater Treatment Plant, thereby indicating inflow and infiltration into sewage collection system.

It is therefore necessary to undertake a study to address the above referenced capacity issues and follow up on the recommended alternative.

Identification of Alternative Solutions

The municipal class EA process recognizes that there are several ways to solve the problem and requires that all reasonable alternatives solutions are considered. The list of the alternative solution that are being considered are as follows:

1. Do nothing
2. Limit Growth
3. Reduce inflow/Infiltration and improve water conservation
4. Re-rate the Capacity of Existing Treatment Plant
5. Upgrade existing Wastewater Treatment Capacity by adding additional treatment units
6. Redirect Wastewater Flow to a neighboring Wastewater Treatment Plant and abandon existing Wastewater Treatment Plant
7. Redirect Excess Wastewater flow to a neighboring Wastewater Treatment Plant and maintain existing Wastewater Treatment Plant

A brief description of each alternative and applicable comments are provided in **Table 1** and screening of alternatives is provided in **Table 2**.

Glossary of Terms

EA	Environmental Assessment
WWTP	Wastewater Treatment Plant
MECP	Ministry of The Environment, Conservation & Parks

Table 1 – Alternative Solution to Upgrading Paisley WWTP

	Alternative	Description	Comments
1.	Do Nothing	• No improvements or changes would be undertaken to address problem statement	• The 'Do Nothing' alternative represents what would likely occur if none of the alternative solutions were implemented
2.	Limit Growth	• Maintain existing WWTP and associated sewage collection system and limit future development • Serviced population will not be allowed to increase • Requires a change to municipal planning documents	• It is not a viable option due to the difficulty associated with Provincial Policy or change the planning process at municipal level
3.	Reduce inflow/Infiltration and improve water conservation	• Continue to utilize current WWTP; • Address inflow and infiltration problems through ongoing sewer maintenance and water conservation programs • Continue implementation of Water conservation/wastewater flow reduction measures	• Will require extensive flow monitoring, CCTV inspection of sewers • Smoke testing, at times don't provide concrete information • Any of infiltration which is due to foundation drain/sumps connection to sanitary sewers as well as poor condition of sewer laterals, is very difficult & expensive to address and impractical socially • This alternative is a long term solution with no guarantees of reduction in sewage flow to plant

Table 1 – Alternative Solution to Upgrading Paisley WWTP

	Alternative	Description	Comments
4.	Re-rate the Capacity of Existing Treatment Plant	• Focus on increasing plant capacity by re-rating rather than significant capital upgrade • Will require stress testing of plant to determine if additional flow can be treated • Stress testing is accomplished by artificially increasing the flow and organic loading under controlled conditions and test the plants performance • Will require MECP approval to undertake it which is critically assessed by the Ministry	• If 15 to 20% additional sewage flow can be treated in existing plant, it will be less expensive solution as the capital upgrade shall be minimal and new treatment units may not be required • It is likely a short term solution and may not allow sufficient increase in rated capacity of plant.
5.	Upgrade existing Wastewater Treatment Capacity by adding additional treatment units	• Upgrading existing wastewater treatment plant is anticipated to require the following: ▪ Replace raw sewage low lift pumps ▪ Addition of a new oxidation ditch or a different type of aeration system & tank ▪ Addition of a new clarifier ▪ Likely replacement of UV reactor with larger unit ▪ Additional return sludge pump & piping system ▪ Miscellaneous Civil, mechanical, electrical & instrumentation upgrades • Upgraded plant could be at the current site or a new treatment plant site, which is least desirable due to excessive capital cost	• This alternative, at the initial stage, appears to be an expensive option, and will likely be a multi-million dollar solution

Table 1 – Alternative Solution to Upgrading Paisley WWTP

	Alternative	Description	Comments
6.	Redirect Wastewater Flow to a neighboring Wastewater Treatment Plant and abandon existing Wastewater Treatment Plant	• Construct a transfer station to direct sewage from Paisley to an existing WWTP for treatment (e.g. Hanover, Paisley or Tara) • Construct a forcemain between Paisley and neighboring WWTP • May also require upgrades/expansion of neighboring WWTP • Requires negotiation/agreements with neighboring municipality and may result in schedule implications.	• Generally neighboring municipalities are reluctant to offer their treatment plant capacity as it affects growth within that municipality • Tara & Chesley both are at a significant distance, thereby making this alternative very expensive
7.	Redirect Excess Wastewater flow to a neighboring Wastewater Treatment Plant and maintain existing Wastewater Treatment Plant	• Maintain current facility • Construct a transfer station to direct sewage from Paisley to an existing WWTP for treatment (e.g. Hanover, Paisley or Tara) • May also require upgrades/expansion of existing WWTP in the neighboring municipality; • Requires negotiation/agreements with neighboring municipality and may result in schedule implications.	• Generally neighboring municipalities are reluctant to offer their treatment plant capacity as it affects growth within that municipality • Tara & Chesley both are at a significant distance, thereby making this alternative very expensive

Table 2 - Screening of Long List Alternative Solutions

	Alternative Solution		Rationale for not carrying Forward
1	Do Nothing	✓	Carried forward – must be considered
2	Limit Growth	✗	Screened – does not address the problem
3	Reduce Inflow/Infiltration and improve water conservation	✗	Screened – does not address the problem
4	Re-rate the Capacity of Existing Treatment Plant	✓	Carried forward – feasible alternative
5	Upgrade existing Wastewater Treatment Plant	✓	Carried forward – addresses the problem but is an expensive alternative
6	Redirect wastewater flow to a neighboring Wastewater Treatment Plant and abandon the existing Wastewater Treatment Plant	✗	Screened –address the problem but time consuming & expensive
7	Redirect wastewater flow to a neighboring Wastewater Treatment Plant and maintain the existing Wastewater Treatment Plant	✗	Screened –address the problem but time consuming & expensive

PRELIMINARY RECOMMENDED ALTERNATIVE(S)

Based on the information outlined in Table 1 & Table 2, Arran-Elderslie proposes to undertake further steps to complete Alternative 4 and Alternative 5 simultaneously.

Alternative 4, though attractive and feasible, is likely a short-term solution. It may not allow re-rating of capacity in sufficient quantity to allow servicing of planned growth, including current draft plan of approvals and applications.

Alternative 5 shall focus on long-term solution to address rated capacity issue. In this alternative, different treatment concepts shall be analyzed to determine the most suitable alternative that will satisfy nature, economic, social and environmental criteria as well as technical issues.

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