Public Information Centre Presentation Transcript

Slide 1 – Title Slide

Hello and welcome to the Public Information Centre for the Class Environmental Assessment for Additional Sanitary Sewage Capacity to Service Sunderland in the Township of Brock.

A transcript of this presentation and PDF copy of the slides are available on the Region's website. Also, on the Region's website, you will find the contact information for the project leads.

We welcome your comments, suggestions and feedback.

Slide 2 – Land Acknowledgement

We are currently located on land which has long served as a site of meeting and exchange among the Mississauga Peoples, and is the traditional and treaty territory of the Mississaugas of Scugog Island First Nation. We honour, recognize and respect this nation and Indigenous Peoples as the traditional stewards of the lands and waters on which we meet today.

Slide 3 – Why Are We Here?

The Region is undertaking a Municipal Class Environmental Assessment, or Class EA for short, to complete infrastructure upgrades for the Sunderland Water Pollution Control Plant.

The main objectives of this virtual Public Information Centre are:

- To learn about the Municipal Class EA Process being followed for this project
- To review the results of the activities completed to date and the solutions being recommended
- To outline how you can provide your feedback on the information presented and stay informed and involved.

Slide 4 – What is the Purpose of the Study?

The purpose of this Class EA study is to:

- To identify the preferred solution to provide wastewater servicing in Sunderland to 2031 and beyond.

Slide 5 – Municipal Class EA Process

This study follows the Municipal Class EA process.

The Municipal Class EA process is a consistent, objective and transparent way to plan public infrastructure.

The process provides opportunities for the public, government agencies, First Nation and Metis communities, and other interested persons to give feedback and guide decision making.

In simple terms, the Municipal Class EA process consists of **5** steps:

In Step 1 we define the problem. This means understanding the existing challenges in the system and identifying future needs. Having a clear problem definition allows us to come up with appropriate solutions.

A Notice of Study Commencement is issued at this stage to announce the official start of the project and to invite comments and feedback. The Notice of Commencement for this project was published in the Brock Citizen on October 24 and October 31, 2019.

The second step involves identifying alternatives to address the problem and selecting the preferred solution.

The third step dives deeper into the preferred solution and evaluates alternative design concepts. Each concept is then evaluated in detail based on its impact to the natural environment, social and cultural impacts, technical merits and financial cost. The preferred concept is not necessarily the one with lowest cost, but the one that combines technical performance with reduced or minimal impact to the natural and social environments.

This Public Information Centre presents the findings of the first two steps and gives a preview of our progress toward step 3. We want to get feedback from you: the residents and business owners of Sunderland.

The fourth step of the process is to document the findings of the Study. The findings are summarized in an Environmental Study Report which will be available on the Region's website and sent to those that expressed interest in the project. A Notice of Study Completion will be published when the Report is available. After a 45-day review period, the Class EA Study will be considered complete.

After completing the Class EA process, the project will proceed to design and construction.

Slide 6 – Study Area

The community of Sunderland is located in the Township of Brock, to the south-east of Lake Simcoe, west of the City of Kawartha Lakes and south of Cannington.

Wastewater produced by existing development is conveyed by a sanitary collection system consisting of a network of gravity sewers discharging to the River Street Sewage Pumping Station, abbreviated as SPS. The River Street SPS pumps the wastewater to the Sunderland Water Pollution Control Plant located at the northeast corner of the community.

Residential development is planned in the areas shown in yellow, west of Highway 12 on the north side of the Sunderland urban area. This development area will need to be connected to the sanitary collection system and the wastewater will need to be adequately treated.

Slide 7 – Future Population Estimates

Preliminary estimates for Sunderland indicate that the service population within the existing urban boundaries could potentially reach approximately 4,400 by 2041, approximately 3 times the existing serviced population.

Slide 8 – Projected Flow for Sunderland WPCP

Based on historical average day flows from 2014 to 2021, the Sunderland Water Pollution Control Plant, or WPCP for short, is operating at capacity.

It is standard practice for municipalities in Ontario to start planning for upgrades when a treatment plant reaches between 75 and 80% of its rated capacity and additional growth is projected.

To accommodate the projected growth in the community, a wastewater treatment capacity of 2,000 m^3/d would be required. Additional capacity is also required in the sanitary collection system to convey flows to the WPCP.

Slide 9 – Problem/Opportunity Statement

Sunderland is growing.

Infrastructure improvements to the Sunderland wastewater system are required to service growth in the community.

Slide 10 – Study Breakdown

For this study, we need to answer two questions:

1) How do we convey wastewater flows generated by new growth in the community?

and,

2) How do we treat those wastewater flows?

So where do we begin?

Slide 11 – How do we select the preferred option to convey flows?

To select the preferred treatment option we need to consider a few criteria:

1. Does the option allow **meeting the long-term capacity needs?**
2. Does the option **efficiently use existing infrastructure**?
3. Can the servicing strategy be implemented **without major disruption** to current sanitary sewage servicing?

If the answer to any of these questions is “no,” then the alternative is considered inadequate and is eliminated. We have three different options to address the first question.

Slide 12 – Pumping Option 1 – New SPS and Forcemain, Decommission Existing SPS

Pumping Option 1, involves constructing a new SPS and forcemain and decommissioning the existing River Street SPS.

This option meets long-term capacity needs. However, it does **not** efficiently use existing infrastructure and cannot be implemented without major disruption to the existing sanitary sewage system.

Slide 13 – Conveyance Option 2 – New SPS and Forcemain, Twin Forcemain for Existing SPS

Pumping Option 2, involves constructing a new SPS and new forcemain to operate concurrently with the existing River Street SPS. All new development would be directed to the new SPS, while the existing development would continue to be directed to the River Street SPS.

This option would meet long-term capacity needs. It could be implemented without major disruption to the existing sanitary sewage system. However, it does **not** efficiently use existing infrastructure

Slide 14 – Conveyance Option 3 – Expand Existing SPS and Twin Forcemain

Pumping Option 3, involves expanding the existing River Street SPS on the existing site and constructing a new forcemain.

This option:

- Would meet long-term capacity needs
- It efficiently uses existing infrastructure and
- It can be implemented without major disruption to the existing sanitary sewage servicing

Slide 15 – How do we Convey Flows? Comparison of Options

In summary, we have three conveyance options. Options 1 and 2, do not meet all three mandatory criteria. Option 3, expanding the existing SPS and constructing a new forcemain, is the only one that meets all the criteria. Therefore, it is the preferred option.

Slide 16 – Figures

This slide shows the site of the River Street SPS.

On the left is an aerial view of the site. The existing pumping station is shown in grey, and the area where the pumping station might be expanded is shown in blue. A new forcemain, shown as a dashed red line, would be constructed parallel to the existing forcemain shown in purple.

On the right is the street view of the River Street SPS, showing the existing pumping station and what the pumping station expansion might look like.

Slide 17 – Proposed Alignment for New Forcemain

This figure shows an aerial view of the River Street SPS and Sunderland WPCP, with the existing forcemain shown in purple and the new forcemain shown as a red dashed line.

Slide 18 – Study Breakdown

If you recall, this study needs to address two questions:

1) How do we convey wastewater flows? And

2) How do we treat those wastewater flows?

We just showed you the options for conveying wastewater flows. Now, we will address the second question: how do we treat the wastewater flows from Sunderland?

Slide 19 – How do we select the preferred option to treat flows?

To select the preferred treatment option we need to consider a few criteria:

1. Does the option allow **meeting the long-term capacity needs?**

2. Does the option allow the treated discharge to consistently **meet effluent quality objectives and discharge policies**?
3. Does the option **efficiently use existing infrastructure**?
4. Is this option **compatible with existing treatment processes and operational practices**, such that implementation will **not significantly impact existing operations**? and
5. Can the servicing strategy be implemented **without major disruption** to current sanitary sewage servicing?

If the answer to any of these questions is “no,” then the alternative is considered inadequate and is eliminated.

Slide 20 – Treatment Option 1

Treatment Option 1, involves constructing a new treatment plant to operate concurrently with the existing Sunderland WPCP. All new development would be directed to the new plant, while the existing development would continue to be directed to the existing plant.

This option:

- Would meet long-term capacity needs
- It would allow consistently meeting effluent quality objectives
- It could be implemented without major disruption to the current sanitary sewage servicing
- However, it does **not** efficiently use existing infrastructure and is **not** compatible with existing treatment processes and operational practices

Slide 21 – Treatment Option 2

Treatment Option 2, involves constructing a new treatment plant and decommissioning the existing Sunderland WPCP.

This option:

- Meets long-term capacity needs
- It allows meeting effluent quality objectives consistently and can be implemented without major disruption to the current sanitary sewage servicing
- However, it does **not** efficiently use existing infrastructure and is **not** compatible with existing treatment processes and operational practices

Slide 22 – Treatment Option 3

Treatment Option 3, involves decommissioning both the existing Sunderland and Sunderland WPCPs and constructing a new Central WPCP to treat wastewater from both communities.

Like the previous options, this option:

- Meets long-term capacity needs
- It allows the discharge to consistently meet effluent quality objectives and can be implemented without major disruption to the current sanitary sewage servicing
- But it does **not** efficiently use existing infrastructure and it is **not** compatible with existing treatment processes and operational practices

Slide 23 – Treatment Option 4

Treatment Option 4, involves expanding the existing Sunderland WPCP.

This option:

- Meets long-term capacity needs
- Consistently meets effluent quality objectives
- Efficiently uses existing infrastructure as it is compatible with existing treatment processes and operational practices and
- It can be implemented without major disruption to the current sanitary sewage servicing

Slide 24 – How do we Treat Flows? Comparison of Options

In summary, we have four treatment options. Options 1, 2 and 3, do not meet two of our mandatory criteria. Option 4, expanding the existing Sunderland WPCP, is the only one that meets all the criteria. Therefore, it is the preferred option.

Slide 25 – Next Steps for Evaluation of Treatment Alternatives

There are still questions we need to answer. Namely, what are the treatment objectives?

What is the preferred approach or strategy to expand the WPCP?

What is the preferred treatment technology? and

What is the preferred design concept for the WPCP expansion?

In the next few slides, we will discuss how we propose to tackle each of these questions.

Slide 26 – What are the Treatment Objectives for Sunderland WPCP?

What are the Treatment Objectives for the Sunderland WPCP expansion?

To figure this out, the Region completed an Assimilative Capacity Study of the Beaver River – where treated effluent from the WPCP is discharged.

To minimize impacts to the River, it was concluded that the Sunderland WPCP expansion will need to meet more stringent treatment requirements for ammonia and for total phosphorus.

Slide 27 – What are the Treatment Objectives for Sunderland WPCP? (Continued)

This table shows the treatment objectives and limits proposed for the Sunderland WPCP. These are proposed to minimize impacts to the water quality of the Beaver River.

Slide 28 – How Can we Expand the Existing Plant?

What are the possible strategies for expanding the WPCP?

We could add more facultative lagoons like the existing ones. Facultative lagoons rely on the natural activity of microorganisms to remove pollutants from the wastewater.

We could build a new mechanical treatment plant, or we could add mechanical equipment to the existing lagoons.

All these options would be designed to meet the treatment objectives, but each has advantages and disadvantages.

Slide 29 – Difference Between Facultative, Mechanical, and Aerated Systems

Facultative lagoons use a natural, passive treatment process that is simple to operate but requires a large footprint. These lagoons are typically designed to discharge only twice a year which means that the incoming flows must be stored for up to 6 months. Facultative lagoons are typically found in smaller rural communities.

Mechanical treatment plants use mechanical equipment such as air blowers, pumps and mixers, to accelerate biological treatment processes to remove organic matter and solids from the wastewater. These processes require smaller footprint but are more operationally complex. These facilities are typically designed to discharge continuously, eliminating the need for large storage tanks or lagoons. Given their smaller footprint, these plants are used where there are site constraints.

Finally, an aerated lagoon system combines the benefits of a lagoon with those of a mechanical plant. Aerated lagoons do not require as much space as facultative lagoons as they use mechanical equipment to accelerate the rate of treatment. Thus, they are a good option to expand the capacity of existing lagoon plants without the need for new lagoons.

Aerated lagoon systems can be found all across southern Ontario. Examples include the Waterford WPCP, southwest of Hamilton, and the Castleman and Russell WPCPs, near the City of Ottawa, among many others.

There are four different feasible strategies to expand the Sunderland WPCP and meet the treatment objectives using the systems we just described.

Slide 30 – Expansion Strategy 1 – New Lagoons, Post-Treatment and Filtration with Seasonal Discharge

Expansion Strategy 1, involves constructing two new lagoons next to the two existing ones and building new treatment systems for ammonia removal and filtration.

The plant would continue to discharge to the Beaver River only in the spring and in the fall.

To build the two new lagoons, the site boundaries would need to be extended as the site would require more than twice the existing footprint.

Slide 31 – Expansion Strategy 2 –New Aerated Lagoons, Post-Treatment and Filtration with Seasonal Discharge

Expansion Strategy 2, also involves building new lagoons. However, some of the lagoons would be aerated to accelerate the treatment process. This would make the lagoons smaller and reduce the total land required for the plant. New facilities to remove ammonia and provide filtration would be also required, but the plant would continue to discharge seasonally.

Slide 32 – Expansion Strategy 3 – New Mechanical Plant with Continuous Discharge

Expansion Strategy 3, consists of decommissioning the existing lagoons and building a new mechanical WPCP. The new plant would be designed to allow continual discharging to the Beaver River. This strategy would result in a significantly smaller footprint, but this would increase the capital cost of the project.

Slide 33 – Expansion Strategy 4 –Retrofit Existing Lagoons w/ Aeration, Post-Treatment and Filtration with Continuous Discharge

Expansion Strategy 4, involves adding an aeration system to one of the existing lagoons and building new systems for ammonia removal and filtration. Under this strategy, the WPCP would be designed to continually discharge to the Beaver River.

Slide 34 – How do we select the preferred expansion strategy?

To choose among the four strategies, we used the same criteria we previously considered. We want to select an option that meets the long-term capacity needs, meets effluent quality objectives, efficiently uses existing infrastructure, is compatible with existing processes and can be implemented without significant impact to existing operations or disruptions to existing services.

Slide 35 – Comparison of Expansion Strategies

This chart provides an overview of the evaluation completed for the four different expansion strategy options. Since Expansion Strategy 4 is the only one that meets all the criteria, it was selected as preferred.

Slide 36 – Preferred Expansion Strategy

To summarize, the preferred option to treat wastewater flows from the community is to expand the existing Sunderland WPCP. The preferred strategy to achieve this is to retrofit the existing lagoons with an aeration system and add new treatment processes for ammonia removal and filtration. This strategy would provide the required capacity to treat future flows while meeting all water quality requirements, efficiently using existing infrastructure and minimizing operation disruptions while reducing land acquisition requirements and capital costs.

But there are still questions left to answer.

Slide 37 – Treatment Technology Options

For example, there are several available technologies to remove ammonia and to provide filtration. Each technology has its advantages and disadvantages and has an impact on how much land is needed for the plant, how much construction will cost and how much the plant will cost to operate in the future.

In the next stages of this Study, we will evaluate each of these technologies in detail and will consider not only their cost and technical features but also their impacts on the social, cultural, and natural environments.

Next, we will show you a possible design concept for the preferred expansion to the Sunderland WPCP.

Slide 38 – Design Concept 1

This design concept shows that capacity expansion could be accommodated on the existing plant site. Property acquisition would **not** be required.

There is still work to be done as we need to conduct field investigations and a detailed evaluation of this concept.

Slide 39 – Envision

To support the evaluation, the project team will use the Envision framework from the Institute for Sustainable Infrastructure.

The Envision framework is becoming a standard to demonstrate environmental stewardship for public infrastructure. The framework will be used to evaluate how the project contributes to social, economic, and environmental sustainability.

Slide 40 – Thank you for Participating

Before we make any big decisions, we need to hear from you, the residents and business owners of Sunderland.

We want to know your concerns and preferences so that we can take them into account when evaluating options.

Get involved by emailing Kelly Murphy, the Region's project manager with any questions and comments by March 31, 2023. You can stay informed by checking our website: durham.ca/BrockSewageCapacity

Thank you for your time.