PIC#2 Transcript

Project: LAWSS Master Plan Update

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Presented by: Lambton Area Water Supply System (LAWSS) and CIMA+

Video Link: Link posted on the **LAWSS Website**

Slide 1 - Title Slide

Hello and welcome to the second Public Information Centre for the Lambton Area Water Supply System (or LAWSS for short) Master Plan Update Municipal Class Environmental Assessment Study. My name is Matt Phillips, the consultant project manager from CIMA+, and I will be presenting on behalf LAWSS.

A transcript of this presentation and PDF copy of the slides are being made available on the LAWSS website.

At the end of this presentation, you will find the contact information for the project leads. Please reach out to us, we welcome your comments, suggestions and feedback.

Slide 2 – Lambton Area Water Supply System (LAWSS)

The Lambton Area Water Supply System (LAWSS) supplies water to over 100,000 customers within three subsystems or pressure zones. LAWSS is owned by:

- City of Sarnia
- St. Clair Township
- Town of Plympton-Wyoming
- Municipality of Lambton Shores
- Township of Warwick
- Village of Point Edward

LAWSS also supplies water to the municipality of Brooke-Alvinston. During emergencies, LAWSS can also supply water to Petrolia and Chatham-Kent.

LAWSS is responsible for the treatment and distribution of water to municipalities and customers. The water system consists of the LAWSS Water Treatment Plant, and a network of water distribution pipes called watermains.

The system is geographically divided into three areas or pressure zones.

- The Water Treatment Plant (WTP) subsystem (Zone 1) primarily includes Sarnia, Point Edward, and St. Clair
- The Forest subsystem (Zone 2) includes Forest and parts of Plympton-Wyoming
- The Watford subsystem (Zone 3) includes Warwick-Watford and parts of Plympton-Wyoming

LAWSS is responsible for the treatment and distribution of drinking water in much of Lambton County. The County is growing, and communities need sustainable water servicing for the future. In 2021, LAWSS completed a Water System Master Plan. The Master Plan establishes a 20-year strategy to provide reliable drinking water infrastructure in the LAWSS service area. LAWSS is reviewing and updating its 2021 Master Plan with an updated 20-year planning horizon (2026–2046).

Slide 3 – Projected Growth in LAWSS Service Area

Population growth has accelerated since the last Master Plan and is expected to continue, which means higher water demand. In addition to population growth within the existing service areas, there is the possibility of a new municipal customer connecting to the system. These trends drive the need for system upgrades and strategic planning.

Slide 4 – Municipal Class EA Process - Master Plans

The Municipal Class EA is a regulated process to guide the planning of public infrastructure. It provides opportunities for the public, government agencies, First Nation and Métis communities, and other interested persons to give feedback and guide decision making.

In simple terms, the Municipal Class EA process approach #1 for Master Plans consists of 4 steps:

Step 1 involves defining 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 comment and feedback. The Notice of Commencement for this project was first issued via email and made available on the LAWSS website on Wednesday, July 16, 2025.

The second step involves considering opportunities and overall strategies to address identified system challenges and developing a list of evaluation criteria to assess alternative solutions. The criteria should assess project impacts to the natural environment, social/cultural impacts, technical merits and financial costs.

The first Public Information Centre presented the findings of the first two steps to get feedback from you: the residents, business owners and visitors of Lambton County, especially those who are users of or otherwise interested in the Lambton Area Water Supply System.

The third step involves narrowing broad strategies down to more specific potential solutions and evaluating each alternative solution based on the identified criteria. The preferred solution will not necessarily be the one with lowest cost, but the one that combines technical performance with reduced or minimal impact to the natural and social environments. The preliminary preferred solutions for this study are presented in this second Public Information Centre. Feedback received from the public and other interested parties will be incorporated into the final assessment and selection of preferred alternatives.

The fourth step of the process is to document the findings of the Study. The findings are summarized in a Master Plan Report which will be made available on the LAWSS website and sent to those that have expressed interest in the project. A Notice of Master Plan will be published when the Report is available. After a 30-day review period, the Class EA Master Plan Study will be considered complete.

After completing the Master Plan, any projects defined as Schedule A and A+ may proceed to design and construction. Schedule B and C projects will still need to undergo separate detailed EA studies before being implemented.

Slide 5 – Objectives

This Master Plan follows the Municipal Class Environmental Assessment process, or Municipal Class EA for short. More specifically, this study will follow Approach #1 for Master Plans. This means that the study will complete a preliminary evaluation of the high-level impacts of broad project alternatives identified under the Master Plan, but projects falling under Schedule B or C, as defined in the Municipal Class EA process, will undergo separate EA studies at a later time.

The primary goal of this EA is to carry out meaningful consultation with the public and other interested parties, then apply feedback in Master Plan development.

This second virtual Public Information Centre (PIC) presents:

- Updates on planned upgrades (EA studies already complete)
- Servicing challenges and alternative solutions identified in this EA study
- Evaluation of alternative solutions
- Preliminary preferred solutions and phasing plans

Slide 6 – We Want to Hear from You

The project team wants to get your input after you view this public information centre. Here we've indicated some topics that interested persons may want to comment on, but we welcome all feedback.

A transcript and PDF copy of the slides are also being made available on the LAWSS website. If you would like access to PIC materials in an alternate format, such as a hard copy, please reach out to LAWSS at the phone number shown here or by email.

Slide 7 – Planned Upgrades

Past studies and master plans have recommended upgrades to components of the LAWSS system. Several of these projects are already in the design stages and the EA studies have been completed. These projects include:

- The West Lambton Pump Station improvements.
- East Lambton Booster Station (ELBS) Fill Constraints
- Watermain Grid Reinforcement and Twinning

As part of this Master Plan update, we revisited these projects and confirmed that the upgrades are still needed to meet servicing targets in a similar timeline. Our analysis of future scenarios therefore assumed that these upgrades will have been implemented.

Notably, and we'll discuss this in more detail later but, the twinning and grid reinforcement projects, which were originally developed from a resiliency standpoint, have been found to be now needed to support regional growth in this iteration of the Plan. We also found that it was necessary to propose a modified plan in place of what had been previously established to combat Watford tower fill constraints in Zone 3. The new project better aligns with current SCADA flow data and the indicated growth factors.

Slide 8 – Planned Upgrades - Cost

For the Zone 1 planned upgrades, current cost estimates were obtained, or previous high level cost estimates were updated to account for inflation. The interior pumping improvements at the West Lampton Pump Station are projected to cost between $7 million and $10 million. These upgrades will be initiated after the ongoing reservoir rehabilitation. The grid reinforcement and twinning projects are projected to cost roughly $114.6 million, and the East Lambton Booster Station (ELBS) Fill Constraints project is projected to cost roughly $5.1 million.

Slide 9 – Zone 1 Grid Reinforcement and Twinning

The previous Master Plan proposed grid reinforcement and twinning projects which involve the construction of new watermains to increase supply to St Clair and the West Lambton Reservoir, as well as improve system redundancy.

While previously planned for implementation with a later time horizon, analysis of the current day situation shows that the grid reinforcement and twinning project upgrades are now needed the short-term to support system growth and potential emergency water usage by large industrial customers. It is recommended that LAWSS establish and refine water taking agreements with all new and current large industrial & commercial customers based on supply limitations while it works towards the implementation of these large scale and expensive upgrades.

Slide 10 – Forecasted Servicing Challenges in 2046 (1)

Hydraulic analysis of future demands and conditions help to anticipate some of the servicing challenges the system may face. Modelling of the LAWSS system under 2046 conditions has identified:

- The opportunity and need for pump optimization at LAWSS water treatment plant.
- Fill constraints at West Lambton Pumping Station Reservoir in Zone 1, specifically when large users are taking their maximum demands
- Low pressures in Forest if additional customers connect in Zone 2.
- Fill constraints and low pressures in Watford for Zone 3.

The alternative solutions evaluated in this EA study were developed with the objective of addressing these servicing challenges.

Slide 11 - Other Forecasted Servicing Challenges

Based on our hydraulic analysis, there were also recommendations for additional minor upgrades or investigation that are not directly evaluated in this Environmental Assessment. This includes pumping capacity increases at the East Lambton Booster Station to improve redundancy, as well as a capacity study at the LAWSS Water Treatment Plant. It is projected that by 2046, total demands will be approaching 80% of the LAWSS water treatment plant capacity. Upgrades for the treatment plant will need be considered in the near future.

Slide 12 – What is the evaluation process?

The evaluation process for this Master Plan assesses alternative solutions using the following steps:

1. First, the team used hydraulic modelling to simulate current and future scenarios with and without implementation of alternative solutions. This allows for an understanding of how the system will change under future conditions and after the implementation of alternative solutions.

2. Next, the team conducted a comparative assessment of the alternative solutions using a list of evaluation criteria shaped by public feedback. These criteria consider environmental, social, technical, and financial factors. Alternatives are given a grade depending on how effectively they satisfy these criteria.
3. The team then selected the highest scoring alternative solutions and uses them to develop the preliminary Master Plan which looks over a 20-year planning horizon (to 2046). The selection of alternatives and the details included in the plan are not finalized at this point.
4. The fourth step, which is where we are at the time of this presentation, involves confirming the preferred alternative solutions, completion of costing analysis, mitigation plans, and project sequencing. This fourth step also includes presenting the results at PIC 2.
5. Lastly, the final step in the evaluation process involves refining the Master Plan document. This includes incorporating feedback from the public and other interested parties received at PIC#2 and providing recommendations for future investigations and EA studies needed for each project in the Master Plan. The Master Plan report will be made publicly available for a 30-day review period once complete.

Slide 13 – Long Listed Alternatives

Before the evaluation process could take place, the team developed a long list of proposed solution alternatives for each respective zone of the system. As a reminder, Zone 1 is the Water Treatment Plant subsystem, Zone 2 is the Forest subsystem, and Zone 3 is the Watford subsystem.

Slide 14 – Screening Process

These long-listed alternatives went through an initial screening process where those alternatives that didn't meet the three mandatory criteria were eliminated. These mandatory criteria were:

1. That maximum day water demands can be met over the 20-year planning horizon;
2. An appropriate range of service pressures can be provided across the service area in a maximum day demand scenario; and
3. Proposed upgrades are compatible with existing facility capacities, processes, and key operations.

Slide 15 – Forecasted Servicing Challenges in 2046 (2)

Now we will look at the possible solution alternatives to address the forecasted servicing challenges that will face the system over the Master Planning horizon. The first is the need for optimization at the LAWSS Water Treatment Plant, specifically at the high lift pump station.

Slide 16 – Optimization of Pumps at WTP

By 2046, the LAWSS Water Treatment Plant will approach 80% of its capacity and upgrades will be needed to meet increased demand.

Firstly, pumps at the existing WTP High-Lift Pumping Station are not optimally sized for current system operations. Pump optimization could improve the handling of demand variability, increase energy efficiency, reduce greenhouse gas emissions, and simplify operations.

The suggested treatment plant design flow of at least 2100 L/s is being considered to meet future demands and match the WTP capacity. For each of the following recommendations, pump upgrades could be phased in over time.

Recommendations include:

1. Install a variable frequency drive (VFDs) on existing pump HLP2
2. Install a second backwash pump for redundancy
3. Systematic pump replacement to achieve design flow and pressure

Slide 17 – Forecasted Servicing Challenges in 2046 (3)

Next, we will look at the solution alternatives proposed to address the primary projected service challenge for Zone 1.

Slide 18 – Zone 1 Short Listed Alternatives (1)

The first Zone 1 short-listed alternative includes increasing pressure at the WTP slightly, while lowering the pressure needed to allow an increased reservoir filling flow rate at the West Lambton Pump Station. The second alternative involves upsizing the pipes between the WTP and West Lambton Pump Station. The path and extent of the pipes proposed for alternative 2 is shown in the figure on the right as a solid black line.

Slide 19 – Zone 1 Short Listed Alternatives (2)

Additional Zone 1 alternatives involve replacing the Indian Road elevated tank, which is located upstream of the West Lambton Reservoir, with a larger tank. The new tank could be constructed at the same location, a new location, or at the East Lambton Booster Station site in Plympton-Wyoming. Increased elevated storage can help improve operational flexibility when filling the West Lambton Reservoir.

Slide 20 – Zone 1 Short Listed Alternatives (3)

The final alternative considered for Zone 1 is constructing a direct feedermain from the WTP to West Lambton Pump Station. This would involve approximately 12 kilometers of new 900mm pipe as shown on the figure.

Slide 21 – Zone 1 Preliminary Cost Estimates

The preliminary cost estimates for the Zone 1 short-listed alternatives are as shown. A comparison of estimated operational costs is also provided. Capital and operational costs were two criteria factored into the comparison of alternatives.

Slide 22 – Evaluation Criteria (1)

During the evaluation process, the team compared project alternatives based on five categories of criteria: Social, Natural, Financial, Technical and Land-related factors.

The preferred solution is one that reduces overall impacts and provides the required technical performance while minimizing lifecycle costs.

For each project alternative, its resilience to, or potential to contribute to environmental risks or climate change will be considered.

Slide 23 – Evaluation Criteria (2)

The alternatives were given a score in each of the five categories, which were equally weighted. Scores are indicated with circles. The fuller the circles in each category are, the higher the alternative was scored. The alternatives with the highest overall score across all categories were then selected as the preliminary preferred solutions

Slide 24 – Zone 1 Alternative Evaluation

The following table presents the comparative evaluation results for Zone 1, showing how alternatives scored against the criteria.

Alternative 1A which increases the pressure at the WTP and increases the fill rate at the West Lambton Pump Station Reservoir scored the highest out of all the Zone 1 alternatives.

Slide 25 – Forecasted Servicing Challenges in 2046 (4)

Next, we will look at the solution alternatives proposed to address the primary projected service challenge for Zone 2. Notably, these upgrades would only be required by 2036 in the event that an additional municipal customer, Kettle and Stony Point First Nation, decide to connect to this subsystem.

Slide 26 – Zone 2 Short Listed Alternatives (1)

The first alternative proposed for Zone 2 was extensive upsizing of the feedermain from the East Lambton Booster Station to the community of Forest. The construction of a watermain along Lakeshore Rd from Towsend Line to the north edge of the subsystem is also proposed in order to reduce head losses in the north end of the system. This new northern main is included as part of all alternatives for Zone 2 and so was not directly considered in the evaluation.

Slide 27 – Zone 2 Short Listed Alternatives (2)

Alternatives 2A and B involve balancing the strategies of upsizing of the existing feedermain with implementing pump upgrades at East Lambton Booster Station to meet required service pressures.

Slide 28 – Zone 2 Short Listed Alternatives (3)

The last set of alternatives for Zone 2 includes the construction of a 300mm twinned watermain. The first option proposes a full twin feedermain from the East Lambton Booster Station to the intersection of Lakeshore Rd and Townsend Line, where it would tie into the new main proposed as a part of all Zone 2 alternatives. Alternatively, a partial twin combined with minor pump upgrades at the East Lambton Booster Station could also be implemented maintain service levels.

Slide 29 – Zone 2 Preliminary Cost Estimates

The preliminary cost estimates for the Zone 2 short-listed alternatives are as shown. Capital and operational costs were both factored into the comparison of alternatives.

Slide 30 – Zone 2 Alternative Evaluation

The results of the comparative evaluation for Zone 2, which address servicing challenges if the new customer connection occurs, are shown here.

Alternative 3A which plans a full twin to the subsystem north end scored the highest out of all the Zone 2 alternatives.

Slide 31 – Forecasted Servicing Challenges in 2046 (5)

Lastly, we will look at the solution alternatives proposed to address the primary projected service challenge for Zone 3. Notably, the entire demand growth associated with proposed development in Alvinston was accounted for in this analysis.

Slide 32 – Zone 3 Short-Listed Alternatives

Zone 3 alternatives include 1) upsizing of much of the existing feedermain from the East Lambton Booster Station to Warwick, or 2) constructing a new booster pump station and reservoir to facilitate transmission to the east side of the system. This option would also involve some feedermain upgrades.

Slide 33 – Zone 3 Preliminary Cost Estimates

The preliminary cost estimates for the Zone 3 short-listed alternatives are as follows. Capital and operational costs were both factored into the comparison of alternatives.

Slide 34 – Zone 3 Alternative Evaluation

Lastly, we have the comparative evaluation results for Zone 3, showing how alternatives scored against the criteria.

Alternative 2 which plans a new booster pump station and reservoir, scored the highest out of the two alternatives for Zone 3.

Slide 35 – Summary – Planned Upgrades

This slide presents a summary of the updated cost estimates and timelines for previously planned upgrades to the LAWSS system. It is recommended that the grid reinforcement and twinning projects be initiated before 2046 alongside establishing and refining water taking agreements with new and existing large industrial and commercial customers.

Slide 36 – Summary – Assessment Recommendations

This slide presents a summary of the Master Plan preferred alternatives for each respective Zone of the system, as well as additional recommendations for pump upgrades at the East Lambton Booster Station and a Water Treatment Plant Capacity Study.

Recommendations from the study of the water treatment plant capacity are planned to be included in the next iteration of the Master Plan.

Slide 37 – Next Steps and Project Timeline

Following PIC2:

- The team will review and consider input received during the Public Information Centre #2.
- The team will finalize the preferred solution and develop the final recommendation.
- We will prepare a report and satisfy the documentation requirements of the Class EA process.
- And lastly, the report will be made available for public comment.

The timeline shown here illustrates where we are in this project. Most steps have been completed and the last major milestone that remains will be to complete the final Master Plan document and make it available to the public. The team aims to complete this final step within the first quarter of 2026.

Slide 38 – Thank You

Before we proceed further, we want to hear from you, the residents and business owners of Lambton County, LAWSS customers and all interested persons.

We want to know your concerns and preferences, so that we can plan ahead. You are invited to get involved by reaching out to our project team. You can stay informed by checking our website or through the project Notices posted on the website.

We will review all feedback and comments received during the project. These are important as they will help us make sure the preferred solution considers your concerns and preferences. Once we have done that, we will confirm the preferred solution.

Thank you for helping us shape the future of drinking water infrastructure in Lambton County.

END OF TRANSCRIPT