

# Municipal Class Environmental Assessment Study – Norwich Wastewater Treatment Plant Capacity Expansion

PUBLIC CONSULTATION CENTRE # 1  
VIRTUAL MEETING  
JUNE 23, 2022  
5:00 PM – 7:00 PM



# OUTLINE



Presentation by Project Teams



Question and Answer Period “Raise Your Hand”



Presentation and Question and Answer Summary will be available at <http://www.oxfordcounty.ca/NorwichWWTP-ClassEA>



To assist in the ongoing Class Environmental Assessment Study, please provide any comments by July 8, 2022

# PURPOSE OF THIS MEETING

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Introduce you to the study

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Provide an overview of the study process

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Identify the reason for this study

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Summarize the alternative solutions considered and the preferred solution

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Next steps

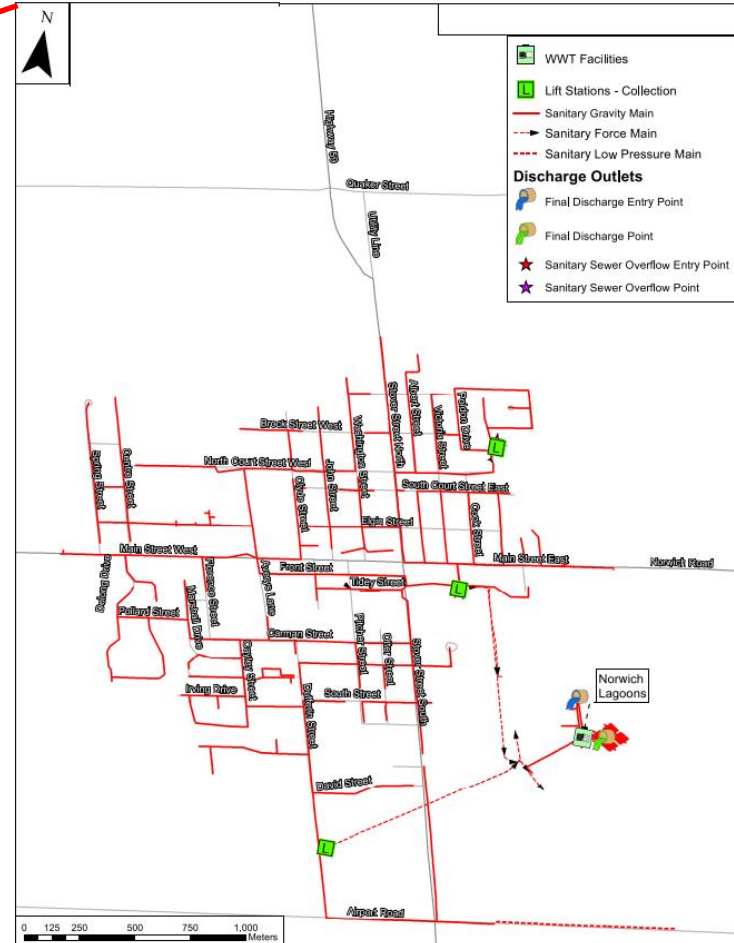
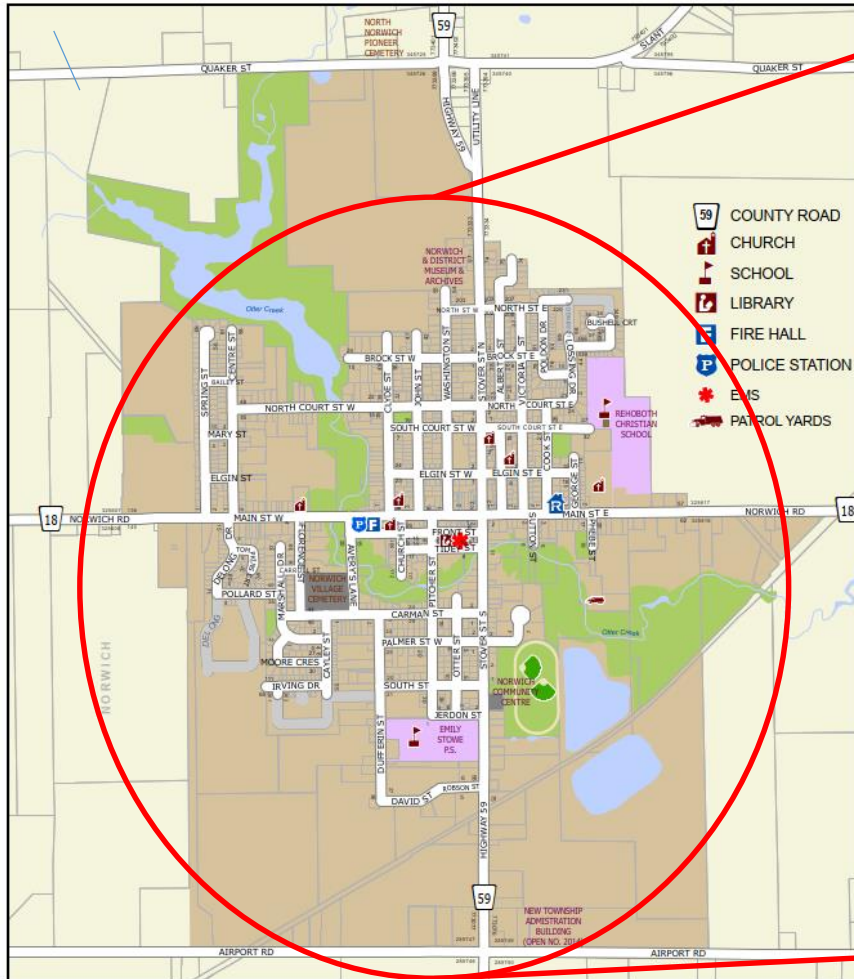
## **We want to hear from you!**

- Do you have any observations that you would like to share?
- Do you have any questions regarding the study?
- Do you have any questions regarding the Class EA Study process?

# STUDY AREA AND BACKGROUND

- The Community of Norwich has a current service population of approximately 4,328
- The current Norwich Wastewater Treatment Plant (WWTP) was originally constructed in 1974 and expanded in the mid-1990's
- Norwich WWTP consists of
  - North lagoon (facultative) with 89,160 m<sup>3</sup> volume
  - South lagoon (facultative) with 92,880 m<sup>3</sup> volume
  - four (4) intermittent sand filters
  - Average Day Flow (ADF) capacity of 1530 m<sup>3</sup>/day
- WWTP discharges intermittently to Otter Creek with annual average daily discharge less than ADF capacity

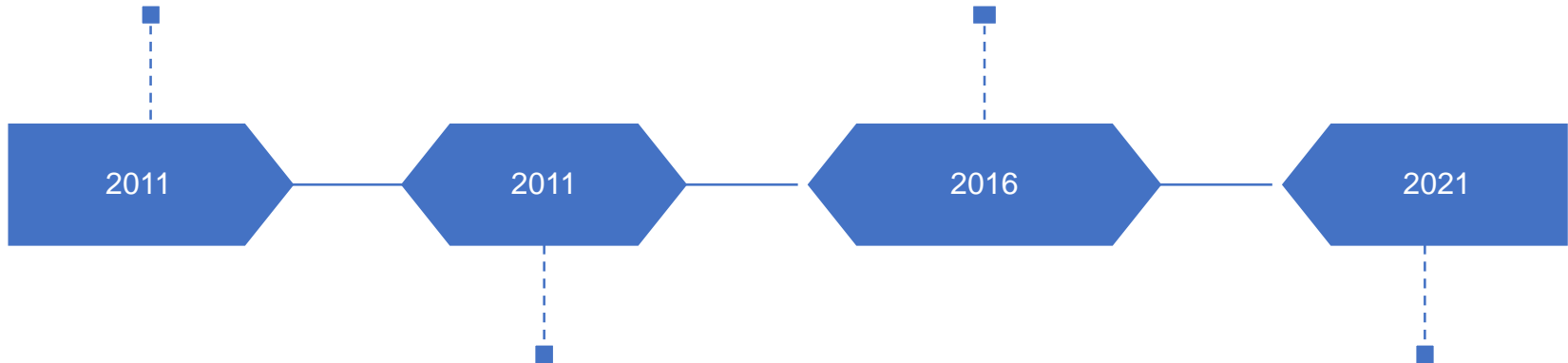
# NORWICH SETTLEMENT AND SERVICE AREA



# STUDY AREA AND BACKGROUND

County began a Class EA Study to expand the Norwich WWTP in 2011

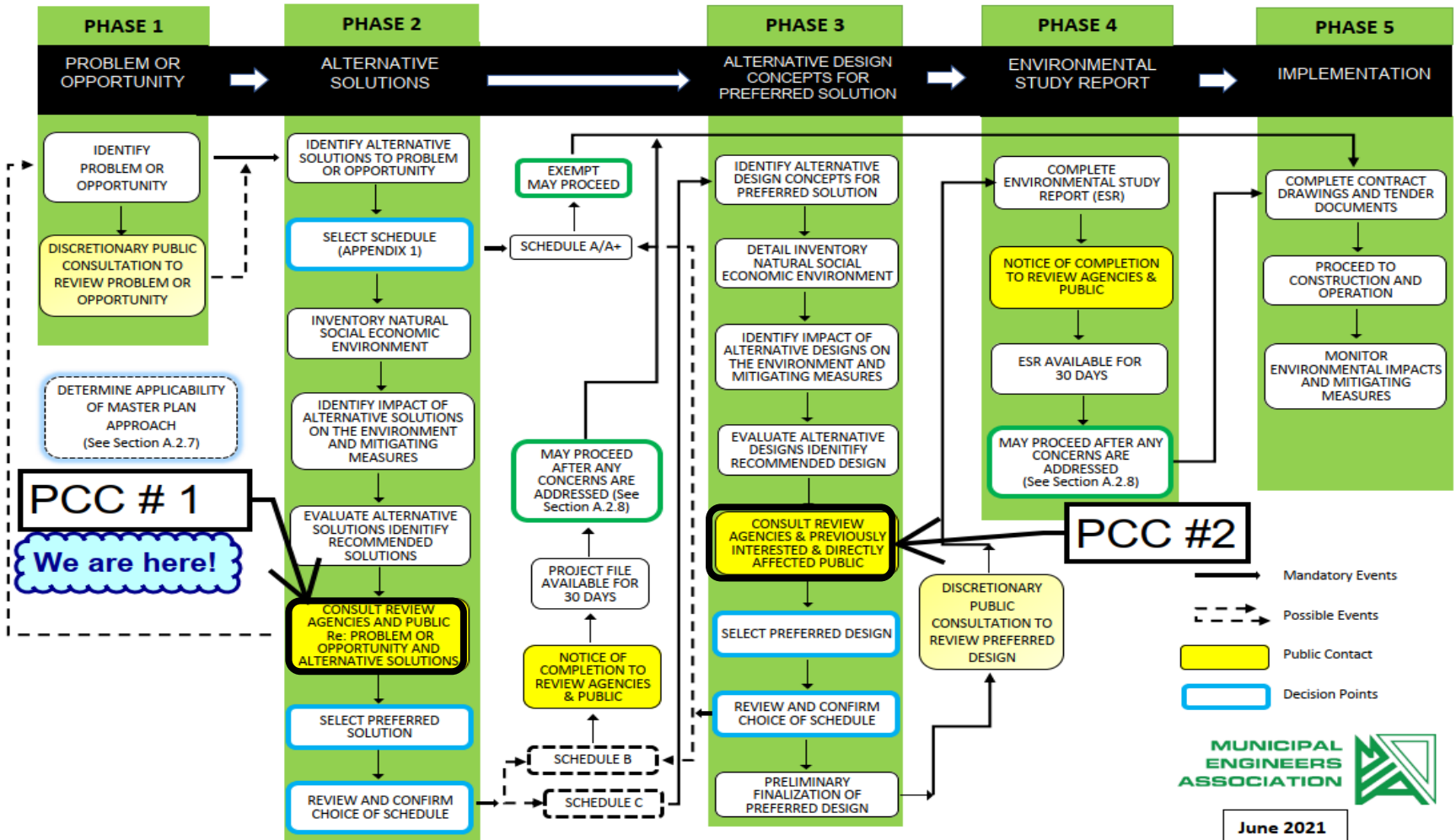
Process was halted in 2016 due to reduced water usage by residents in the community, and Council approved that the Study be put on hold



This included a Public Consultation Centre (PCC) held in 2011, undertaking an Assimilative Capacity Study (ACS) in 2012

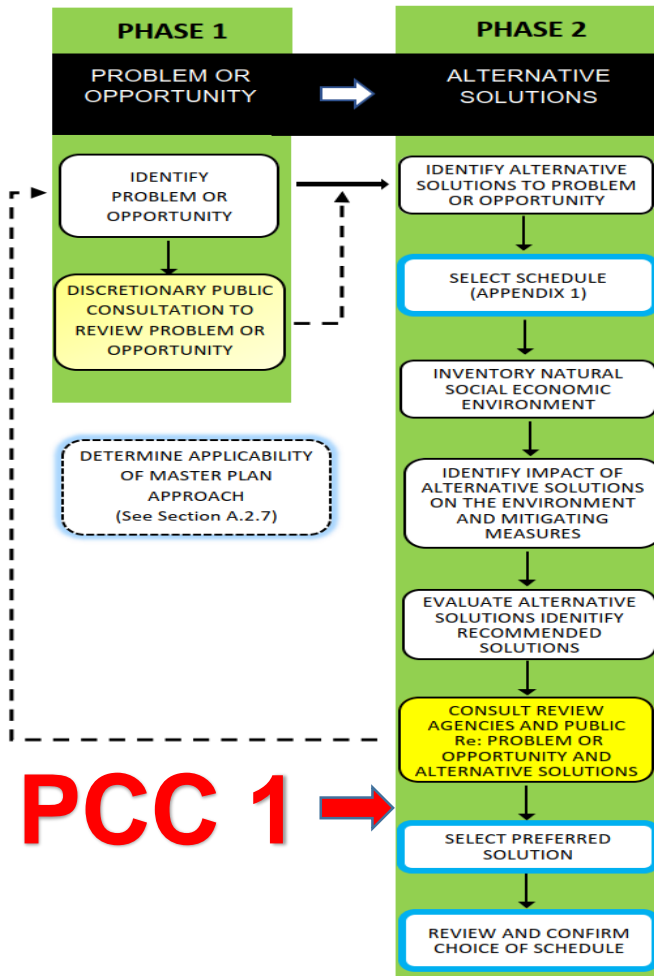
In 2021, the County recommenced the study based on anticipated future growth beyond current capacity

# CLASS EA PROCESS





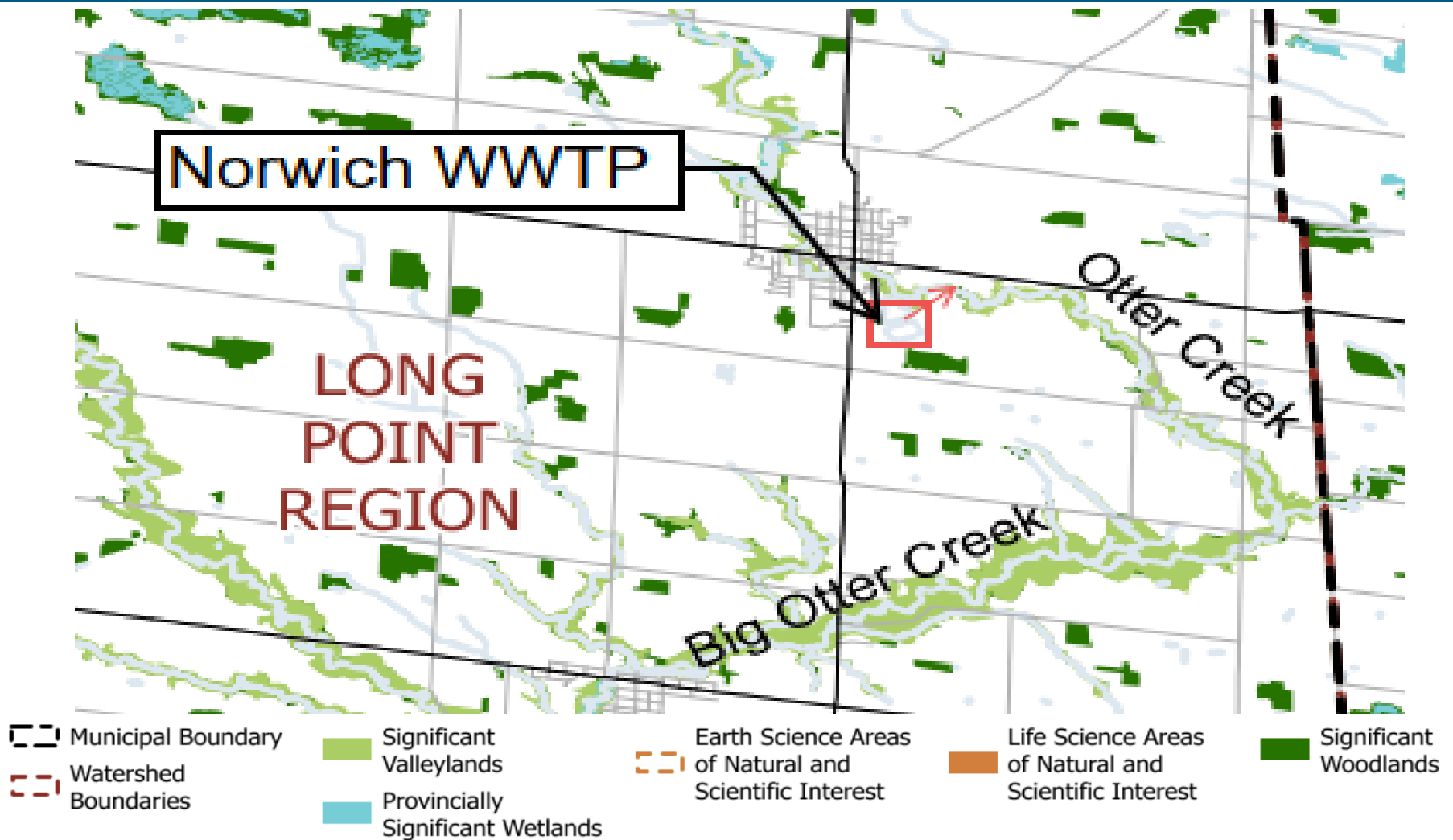
# PHASE 2 OF CLASS EA STUDY – ALTERNATIVE SOLUTIONS



- This study is being undertaken in accordance with the Municipal Class Environmental Assessment process for a Schedule C Project
- Phase 2 of the process ensures all **reasonable alternatives** including ‘Do Nothing’ are considered and that a preferred alternative will have **minimal impact on the natural, cultural, social and economic environment**



# NATURAL ENVIRONMENT



# NATURAL ENVIRONMENT

Through review of background data and field investigations, the following constraints and considerations were identified:

- Otter Creek, its aquatic community, and the Significant Valleyland that conveys it
- Significant Woodland immediately south of the Study Area
- Local wildlife, including the potential for Species at Risk (SAR) protected under the *Endangered Species Act* (ESA, 2007)
- Invasive Phragmites Reed



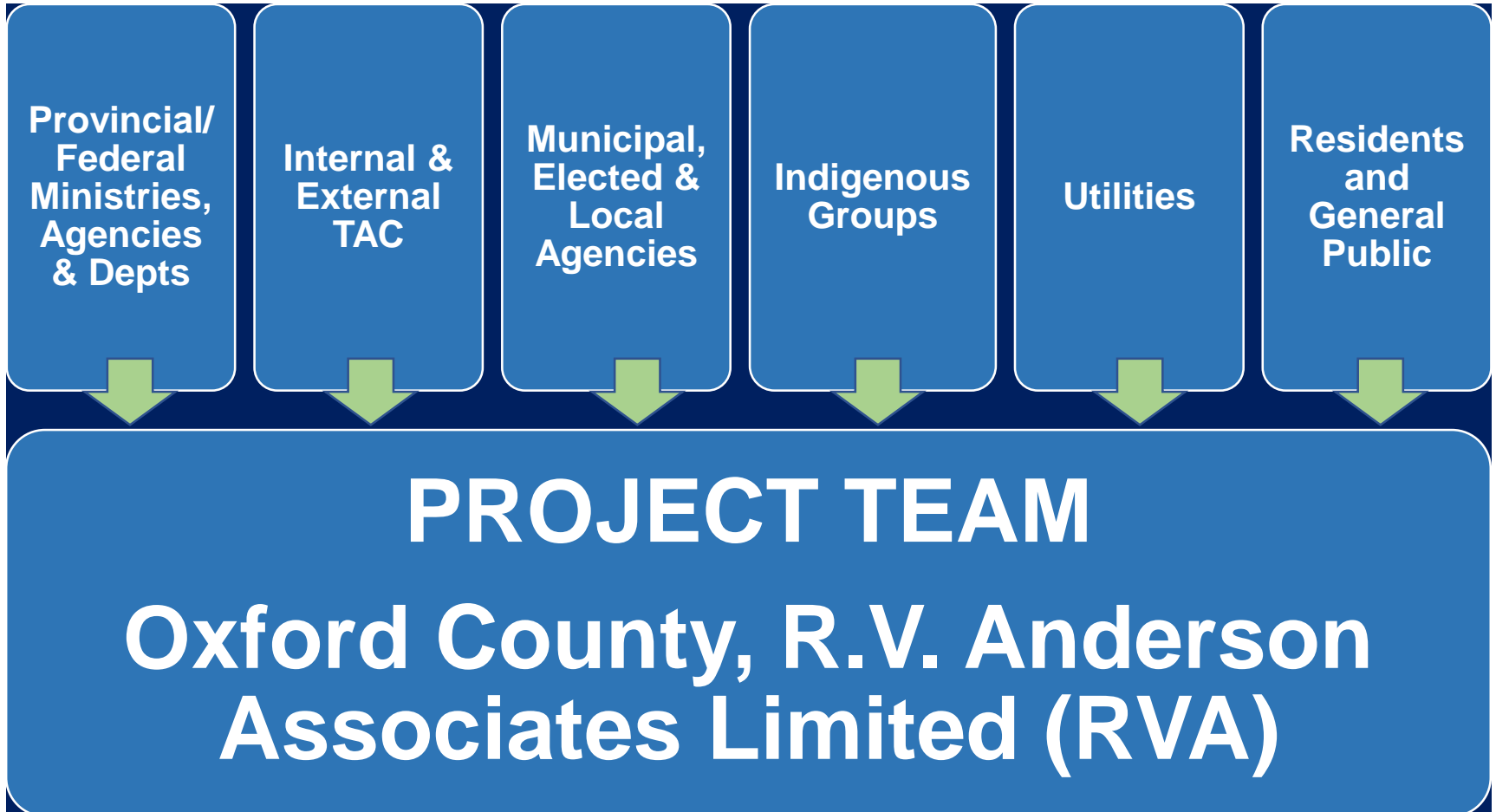
# PROBLEM/OPPORTUNITY STATEMENT

To comprehensively develop, evaluate and select a preferred long-term wastewater servicing solution and wastewater treatment plant design alternative to service future projected population and employment growth (to 2046) in the community of Norwich



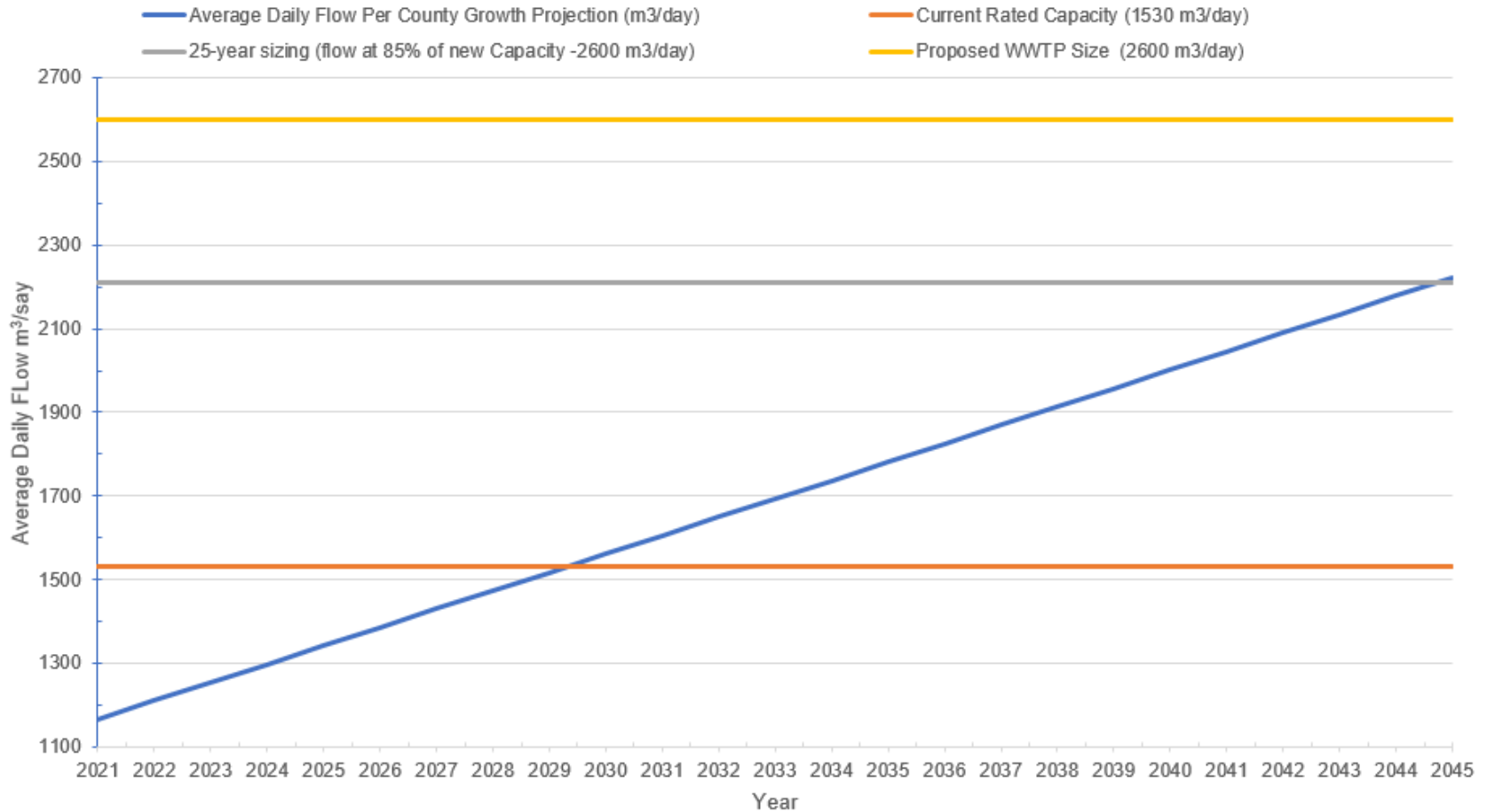


# INPUT INTO CLASS EA PROCESS



# WASTEWATER FLOW PROJECTIONS

## Norwich WWTP Flow Projections (2021 to 2046)



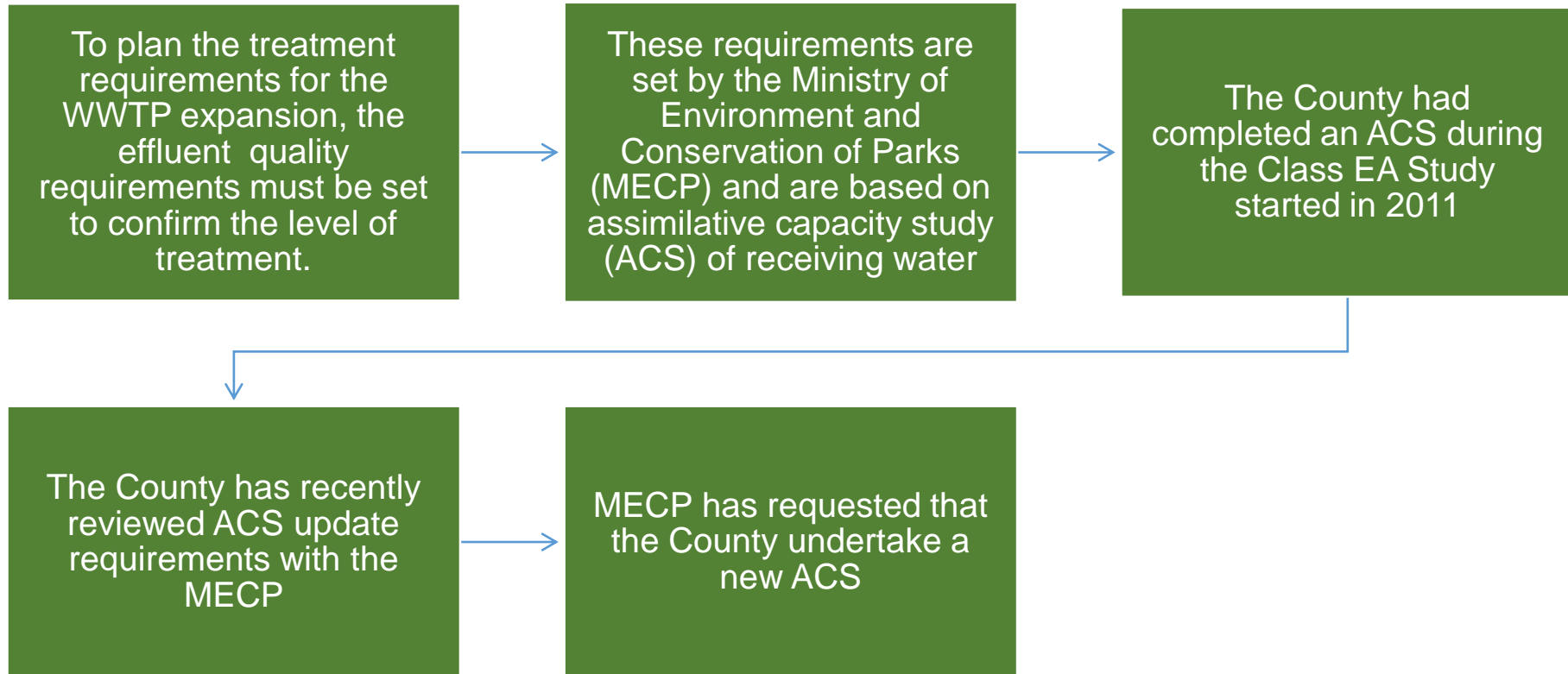
# WWTP EFFLUENT QUALITY REQUIREMENTS – CURRENT

Effluent Parameters	Limits		Objectives	
	Monthly Average Conc. (mg/L)	Average Loading (kg/d)	Monthly Average Conc. (mg/L)	Average Loading (kg/d)
<b>cBOD<sub>5</sub></b>	10.0	23.7	5.0	11.8
<b>TSS</b>	10.0	23.7	5.0	11.8
<b>Total Phosphorus</b>				
Non-Freezing Period	0.5	1.2	0.3	0.7
Freezing Period	1.0	2.4	0.8	1.9
<b>Total Ammonia Nitrogen</b>				
Non-Freezing Period	3.0 (5.0)	11.8	2.0	7.1
Freezing Period	5.0 (8.0)	18.9	4.0	11.8
Total Chlorine Residual	0.002 (0.01)	0.005	0.000	0.000
Dissolved Oxygen	> 4	N/A	> 5	N/A
E. Coli	200 CFU/100 mL	N/A	150 CFU/100 mL	N/A
<b>Notes:</b> <ol style="list-style-type: none"> <li>1. Values in brackets indicate daily concentration limits.</li> <li>2. In addition to Total Ammonia Nitrogen concentrations noted above, the un-ionized ammonia concentration in the effluent shall not exceed 0.1 mg/L for monthly average values and 0.2 mg/L for any individual sample</li> <li>3. The loadings are based on average daily flow of 2,366 m<sup>3</sup>/d over 236-day discharge period</li> </ol>				

- Limits represent the effluent compliance values that must be achieved, whereas objectives represent the values that the system is designed to achieve and should be achieved mostly
- Freezing period means the period during which the water temperature of the receiving stream is equal to or below 5 degrees Celsius, normally from December 1 to April 30



# WWTP EFFLUENT QUALITY REQUIREMENTS – FUTURE



# WWTP EFFLUENT QUALITY REQUIREMENTS – FUTURE

- The County began sampling program of Otter Creek in February 2022
- Sampling of Otter Creek will continue until December 2022
- Following the sampling program, analysis will be completed, and the County will propose the effluent concentration and load limits for the expanded WWTP
- MECP and the County will negotiate and agree upon these limits
- Based on these limits a design level solution will be confirmed and Phases 3 and 4 of the Class EA Study completed



# ALTERNATIVE SOLUTIONS FROM 2011 CLASS EA STUDY

1. Do nothing
2. Limit growth
3. Reduce wastewater flows through water efficiency measures and extraneous flow reduction
- 4. Decommission the existing plant and build a new mechanical WWTP on the existing site**
5. Decommission the existing plant and build a new mechanical WWTP on a new site
6. Decommission the existing plant and transfer wastewater from Norwich to the Woodstock WWTP for treatment
7. Decommission the existing plant and transfer wastewater from Norwich to the Tillsonburg WWTP for treatment
- 8. Build a new mechanical treatment plant to treat additional flows related to community growth and maintain the existing lagoon-based system to treat existing flows**
- 9. Optimize, upgrade and/or expand the existing lagoon-based system to treat projected future flows**

The bolded were shortlisted



# CURRENT ALTERNATIVE SOLUTIONS

We are going to carry forward the following alternative solutions:

- #1 – (2011 Alternative 1) Do nothing – mandatory to review for a Class EA Studies
- # 2 – (combination of 2011 Alternatives 4 and 8) Build a new mechanical WWTP on the existing site and repurpose existing lagoons
- #3 – (2011 Alternative 9) Optimize, upgrade and/or expand the existing lagoon-based system to treat projected future flows

# EVALUATION OF ALTERNATIVE SOLUTIONS

- We are going to review the solutions based upon the following criteria:
  - Financial
  - Technical
  - Environmental
  - Social
  - Cultural and Archaeological
- This will be a qualitative review as the high level options do not require a detailed quantification of benefit, cost or impact to short list.
- The Phase 3 review of Alternate Design Concepts will be based on a quantitative review criteria

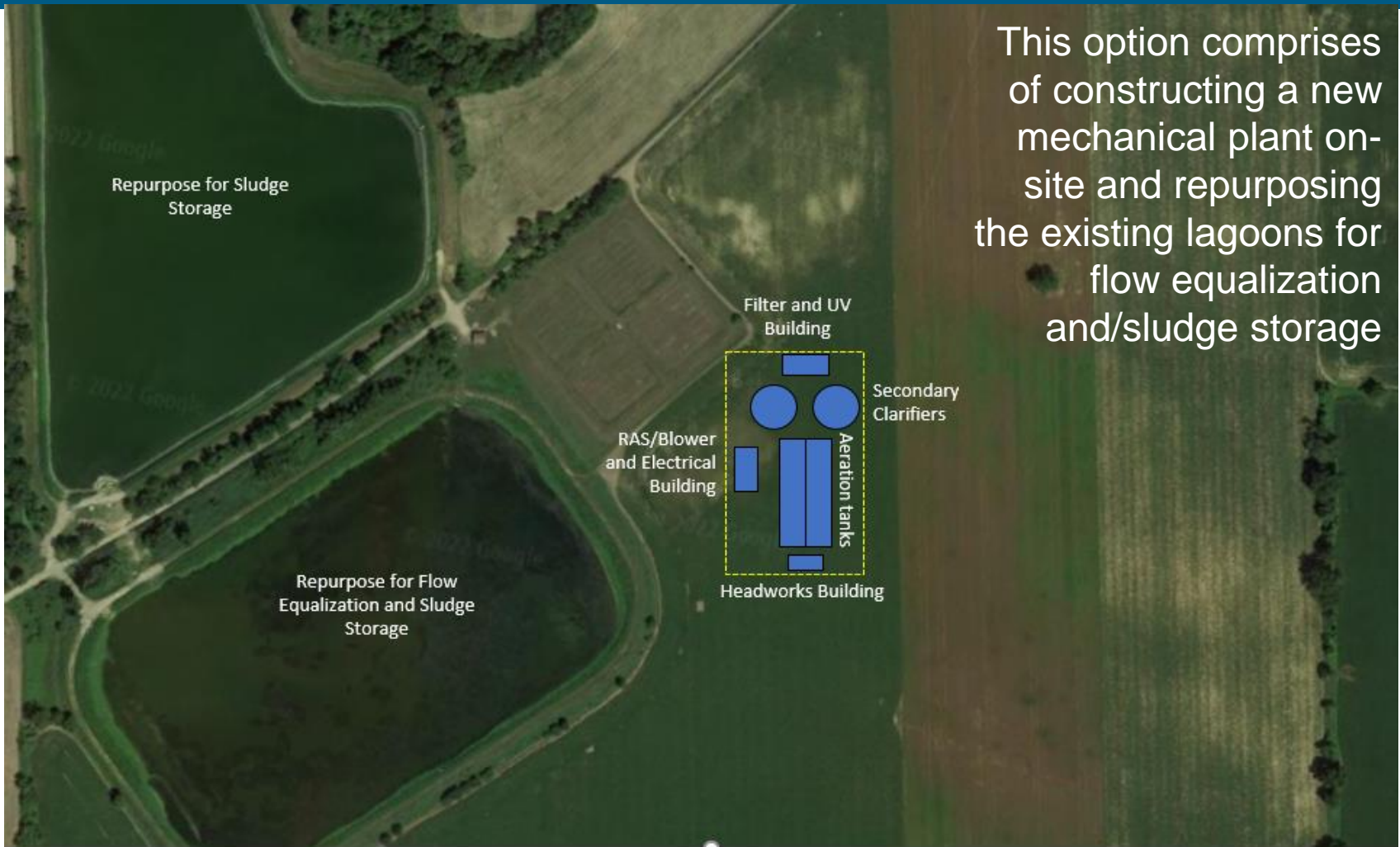
# ALTERNATIVE 1 – DO NOTHING

This alternative includes no measures for improving the performance of Lagoons:

- Financial – No Capital Cost
- Technical - MECP approval will limit the growth up to the current rated capacity of the WWTP
- Environmental - Adverse effect on water, soil and air quality
- Social Cultural and Archaeological – No cultural or archaeological impact but “Do Nothing” does not support future growth for full planning horizon up to 2046 which is part of the County’s strategic direction.

**Therefore, this option is discarded as it does not allow the County to achieve the goals of this project’s Problem/ Opportunity Statement**

# ALTERNATIVE 2 – CONSTRUCT A NEW MECHANICAL WWTP



This option comprises of constructing a new mechanical plant on-site and repurposing the existing lagoons for flow equalization and/sludge storage



# ALTERNATIVE 3 – UPGRADE OF THE EXISTING LAGOON SYSTEM



# EVALUATION OF ALTERNATIVES 2 AND 3



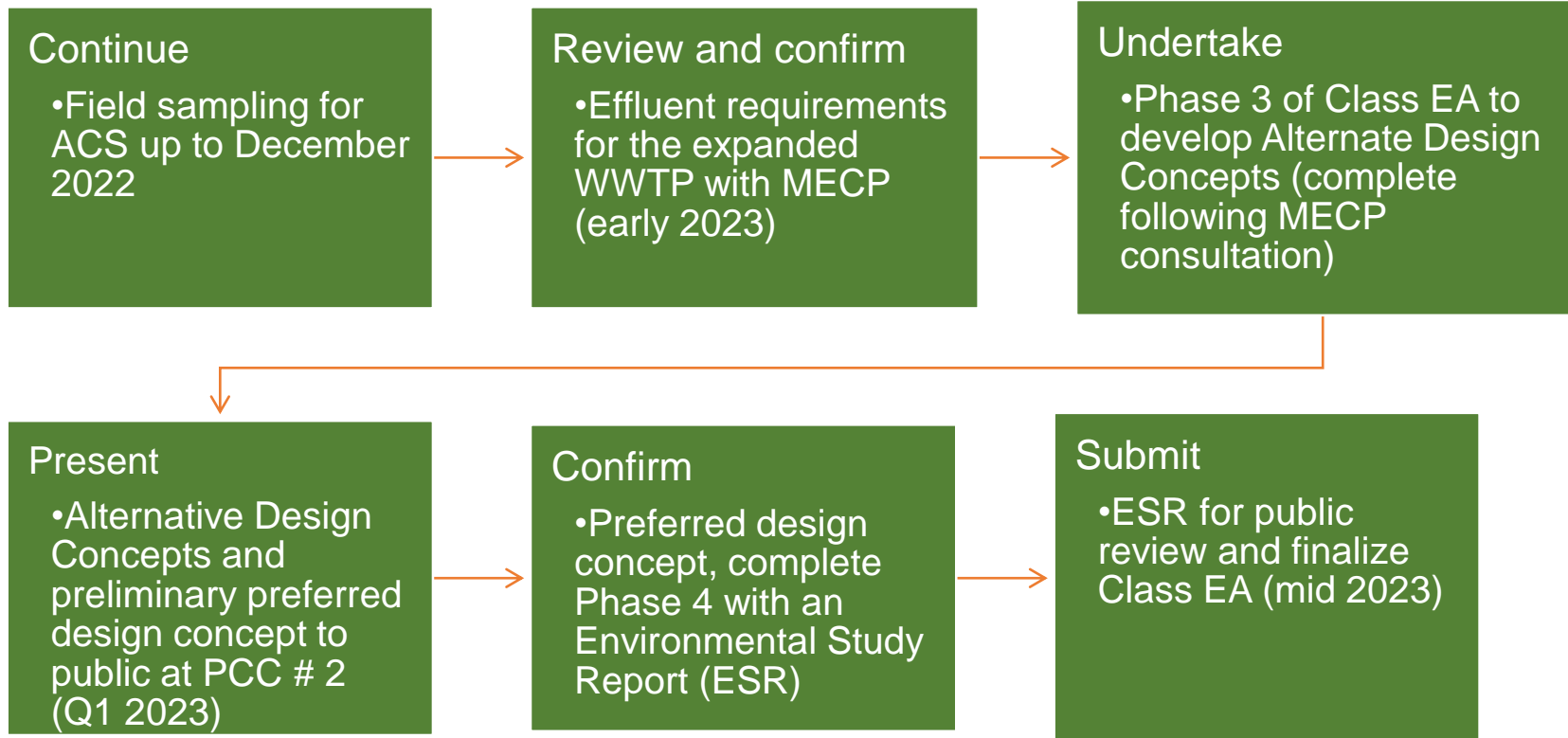
Evaluation Criteria	Alternative 2 – Construct a New Mechanical WWTP	Rating	Alternative 3 – Upgrade the Existing Lagoon System	Rating
<b>Financial</b>	<ul style="list-style-type: none"> <li>Capital cost range for a new mechanical WWTP at Lagoon site is \$20M - \$26M</li> <li>Additional capital cost associated with cleaning of lagoons and their conversion to equalization ponds</li> <li>Higher operation and maintenance (O&amp;M) cost due to increased operational effort, equipment maintenance, and monitoring/control requirements</li> </ul>		<ul style="list-style-type: none"> <li>Capital cost range for upgrade of existing Lagoon WWTP is \$8M - \$11M</li> <li>Lower operation and maintenance cost compared for the new WWTP compared to a mechanical WWTP (Alternative 2) due to due lower operational effort, fewer equipment to operate and maintain, and fewer processes to monitor and operate</li> </ul>	
<b>Technical</b>	<ul style="list-style-type: none"> <li>Capable of meeting the projected wastewater servicing needs by proving the required level of treatment and meeting the effluent quality requirements</li> <li>Can be designed with required redundancy and modularity for additional capacity in future</li> <li>Relatively low compatibility with the existing lagoon system and allows only a moderately efficient use of the existing lagoon system</li> <li>Higher operational complexity needing higher O&amp;M and control effort than a lagoon system</li> </ul>		<ul style="list-style-type: none"> <li>Capable of meeting the projected wastewater servicing needs by proving the required level of treatment and meeting the effluent quality requirements</li> <li>Can be designed with required redundancy and modularity for additional capacity in future</li> <li>High compatibility with the existing lagoon system facilitating an efficient use of the existing lagoon system for future wastewater treatment</li> <li>Low operational complexity with significantly lower O&amp;M and control effort compared to a mechanical plant</li> </ul>	
<b>Environmental</b>	<ul style="list-style-type: none"> <li>This alternative has a relatively higher carbon footprint for both construction and operation</li> <li>The proposed solution would be resilient to climate change with the use of existing lagoon cells as equalization and/or sludge storage ponds</li> <li>This alternative is likely to have a moderate impact on wildlife and vegetation due to higher amount of excavation and construction compared to a lagoon upgrade</li> </ul>		<ul style="list-style-type: none"> <li>This alternative has a low carbon footprint for construction as well as operation</li> <li>The proposed solution would be resilient to climate change with the retention of existing lagoon cells as a key treatment process facilitating attenuation of peak wet weather flows</li> <li>This alternative is likely to have a low impact on wildlife and vegetation due to lower amount of excavation and construction activity compared to a mechanical plant</li> </ul>	
<b>Social, Cultural and Archeological</b>	<ul style="list-style-type: none"> <li>Alternative can support existing developed areas and future growth</li> <li>Moderate visual, noise, and potential archaeological impacts due to high degree of construction</li> <li>Odour and noise impacts during operation minimized due to use of aeration and other control means</li> <li>Longer construction duration compared to Alternative 3</li> </ul>		<ul style="list-style-type: none"> <li>Alternative can accommodate for future growth and support existing developed areas</li> <li>Low visual, noise, and archaeological impacts due to low degree of construction</li> <li>Odour and noise impacts during operation minimized due to use of aeration and other control means</li> <li>Shorter construction duration compared to Alternative 2</li> </ul>	
<b>Overall Conclusion</b>				

# PREFERRED ALTERNATIVE

Based upon the County/RVA review:

- Alternative 3 “Optimize, upgrade and/or expand the existing lagoon-based system to treat projected future flows” has been deemed most cost effective, environmentally sound, and sustainable approach to servicing the Norwich WWTP and meeting the wastewater servicing needs of the community to 2046

# NEXT STEPS







# DISCUSSION



# THANK YOU FOR ATTENDING!

- Please feel free to submit your comments via email, phone a member of the study team or visit the study website on <http://www.oxfordcounty.ca/NorwichWWTP-ClassEA>

**Jesse Keith, P.Eng.**

Project Engineer

Oxford County

519-539-9800 x3194

[jkeith@oxfordcounty.ca](mailto:jkeith@oxfordcounty.ca)



**John Tyrrell, MSc, P.Eng.**

Senior Project Manager

R.V. Anderson Associates Limited

519-681-9916 x 5038

[jtyrrell@rvanderson.com](mailto:jtyrrell@rvanderson.com)