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Council-In-Committee Meeting – February 09, 2021

Subject: The Path Forward for Norfolk County's Water Supply
Report Number: PW 21-11
Division: Public Works
Department: Administration
Purpose: For Decision

Executive Summary:

Norfolk County is faced with some difficult choices on its path towards the establishment of a secure supply of water ensuring the continued growth and strength of the community. This report is intended to ensure that the path forward is establish on a secure foundation that both Council and its residents will be able to understand and support. This foundation began to be formed with the completion of the Integrated Sustainable Master Plan (ISMP) in 2016. The ISMP considered an inter-urban water supply (IUWS) system, wherein all urban communities would be interconnected. This was recognized as an intensive capital commitment that was not recommended at the time. However, given the projected growth and existing constraints in each community, the County has decided to re-evaluate the IUWS option. The goal was to identify water quantity and quality issues, develop alternatives to mitigate these issues, and provide recommendations on next steps to provide the County with a secure, inter-urban water supply servicing strategy. This report is intended to renew discussion and help to facilitate the early stages of the development of the IUWS and lead to the initial steps on which the County will build upon the foundation. It will also present recommendations of the IUWS and seek Council direction on the next steps

Discussion:

PW 20-63, Introduction to the Inter Urban Water Supply, was presented to Norfolk County Council on November 17, 2020. This report provided an introduction to the issues currently facing Norfolk County's municipal drinking water systems, as well as a high-level overview of the Inter Urban Water Supply study (IUWS).

WSP has since completed the study and provided numerous potential long term solutions and recommendations for the County's consideration. It is a lengthy study, a copy of which has been made publically available on the County's website.

The project staff at WSP completed a review of previous studies as part of the foundation of the work they undertook. These included the following :

- Integrated Sustainable Master Plan (ISMP)
- Nanticoke Grand Valley Area Water Supply (NGVAWS)
- Long Point Region Source Protection Area – Approved Source Protection Plan
- Haldimand/Norfolk Regional Water Supply Study Draft Report

In parallel to the work undertaken by WSP, County Staff has also undertaken the following studies:

- Completion of 2021 Rate Supported Operating Budget and 2021 – 2030 Capital Plan which also contained placeholders for required funding of the IUWS,.
- Comparison of actual water production as compared to the theoretical water. This included a review of both the groundwater systems as well as the lake based water plant at Port Rowan. A further report to Council will provide the results of this analysis. This report is anticipated to be presented in March or April 2021.
- Norfolk County Water Rate Study

The IUWS report is rather lengthy and looked at several factors that would lead to a strong and healthy foundation for Norfolk's water system. These included:

- Security and redundancy of water supply for each of the County's municipal drinking water systems
- Addressing current and future water supply needs for each of the County's municipal drinking water systems
- Capital and operating costs

The report also consider several alternatives for water supply and interconnections with each of the urban centers within the County and arrived at recommendations for consideration by Council. It also considered the supply of water to Norfolk by it's neighbor Haldimand County. The preferred alternatives can be found on Pages 100 and 101 of the IUWS report, and are briefly described below:

- If the timeline is the greatest concern the recommended option would be upgrading Port Dover WTP to meet its local 2041 Maximum Day Demand. Simcoe would be supplemented by both Delhi and Nanticoke WTP in the short term and would eventually be fully supplied by Nanticoke WTP. Waterford would

also be supplied by Nanticoke WTP. The option is noted as Alternative 2.4 and has an estimated timeline for this option is 6 years.

- From a more balanced perspective wherein timeline is not the greatest priority, there are four other options which are estimated to take approximately 8 years. However as noted in the recommendations Alternative 2.3 is the preferred option. This involves supplying Port Dover, Simcoe, and Waterford from an upgraded Nanticoke WTP. Two (2) connections, one from Nanticoke to Port Dover, and one from Townsend to Simcoe, are recommended. Port Dover would be receive supplementary capacity from Nanticoke WTP in the short term. A Simcoe-Delhi connection would allow Simcoe to be supplemented by Delhi, and Simcoe would eventually be fully supplied by Nanticoke WTP. Port Rowan WTP would be upgraded independently.
- It should be noted that Alternative 2.4 has the highest forecasted life cycle cost at over \$246 million. The capital costs is estimated to represent approximately \$77 million of this amount. Alternative 2.3 has a slightly lower life cycle cost of \$233 million, with capital costs estimated at \$66.2 million. A large portion of the life cycle costs does not relate to capital but rather operational costs which is directly tied to the cost of the water production in Haldimand. This amounts could vary materially depending on the results of further discussions with Haldimand.
- If cost was the critical driver Alternative 1.3 would have the lowest life cycle costs at approximately \$180 million. This option would see the development of an expanded Port Dover water treatment plant.

There is a complete risk and analysis matrix developed that led to the preferred alternatives.

Staff Discussions with Haldimand County:

Norfolk County Staff have been in regular communication with Haldimand County Staff as the work on the IUWS has progressed. This was confined to discussion surrounding the necessary technical and organizational requirements for the supply of water to Norfolk. This discussion has been productive and necessary to support the deliberations that will occur as Council considers its options moving forward. Work undertaken by staff at Haldimand and supporting recommendations by their Council included the following:

- Haldimand County Water Rate Study
- On January 26 2021, Haldimand County Council approved their 2021 Rate-Supported Capital and Operating Budget, which includes funding to complete the Nanticoke WTP Class EA Update. This update is required in order for Haldimand to proceed with a treatment capacity expansion at the Nanticoke WTP.

- Haldimand staff have engaged a consultant to assist with completing stress testing and possible re-rating of the existing Nanticoke WTP over the next few months. This process is intended to increase the rated capacity of the facility, which may lead to Haldimand County being able to immediately provide Norfolk County with additional water. Current commitment from Haldimand County is 2800m³ per day, which has been used in all the IUWS calculations. If successful, Haldimand may be in a position to provide up to 5800m³ per day.
- Haldimand County Council Support was given on December 14 2020 through the following resolutions:
 1. THAT Report ECW-10-2020 Norfolk County/Six Nations Water Supply Project Update be received;
 2. AND THAT Haldimand County Council agrees to supply water to Norfolk County and Six Nations subject to the successful negotiation of the draft water supply agreements;
 3. AND THAT staff be directed to negotiate a draft Water Supply Agreement with Norfolk County relating to the supply of potable water from Haldimand County;
 4. AND THAT staff be directed to report back to Council with the draft Water Supply Agreements.

Moving Forward:

Implementation of the IUWS represents the most complicated and costly capital investment plan that Norfolk County has undertaken. There are various items that need to be addressed in order to move forward. In order to maintain forward progress, staff are recommending the following

1. Initiate the required updates to the Integrated Sustainable Master Plan based on the findings of the Inter Urban Water Supply study, the results from the water production optimization studies in Port Rowan and Simcoe, the data from the establishment of Delhi Wells 3A and 3B and potential for Simcoe NE Well. Updating the Master Plan document will provide further guidance as to the County's strategic direction for the future of our water supplies and will serve to satisfy certain provisions of the Municipal Class EA process.
2. Complete Port Dover WTP upgrades to increase plant capacity to 7.3MLD. This is in line with the IUWS Alternative 2.4, and represents the fastest alternative to address the water supply deficiencies in the community of Port Dover. WTP capacity expansion will address the immediate needs of Port Dover, and based on the current development and growth estimates, will meet the needs of Port

Dover until 2041. This course of action is consistent with the recommendations of the ISMP.

The engineering design for Port Dover WTP clarifier replacement includes a number of items required to address potential future capacity expansion, however these items are not included in the current construction tender. They can be completed at a later date should plant expansion be the desired course of action. The engineering design for capacity expansion (UV disinfection and high-lift pumping upgrades) was started in 2018 and is at the 90% completion stage. This work is currently on hold to address the clarifier concerns. Should the decision be made to proceed with a capacity increase at the Port Dover WTP, the engineering team can proceed with finalization of the engineering design in anticipation of beginning the required construction upon completion of the clarifier replacement.

3. Continue with optimization of Simcoe groundwater supplies based on recommendations from on-going review. Based on the results of this optimization, the staff may be able to alleviate some of the current development pressures in Simcoe until new water supplies are added. This course of action is consistent with the recommendations of the ISMP.

Full reports on the optimization of the existing Simcoe supplies, as well as details that are related to the potential for establishment of the Simcoe Northeast Well will be available in mid-2021. This will allow staff to provide a more fulsome analysis of the needs in the community of Simcoe.

4. Proceed to negotiate a draft Water Supply Agreement with Haldimand County relating to the supply of potable water from the Nanticoke Water Treatment Plant, and work with Haldimand County in the development of grant applications for available infrastructure funding programs.

Establishment of a mutually agreeable and mutually beneficial water supply agreement is required prior to the completion of any additional engineering work relating to the establishment of a Nanticoke-based water solution. If an agreement cannot be obtained within a short window, Norfolk County will then look to move to another alternative such as Alternative 1.3.

5. Initiate detailed water quality studies relating to the impact of blending different water sources. The IUWS has highlighted the potential impacts of blending water from different sources. Although the source water in Port Dover and Nanticoke are generally similar since they are both drawn from Lake Erie, it is important to understand the impacts of combining water from different sources, especially when considering blending a lake-based water supply with a groundwater-based supply (ie. Nanticoke water blended with Simcoe water).

Additionally, staff will continue working on the following active projects:

1. Simcoe Northeast Well Development – the required volumetric pumping tests and aquifer monitoring have been completed. Detailed analysis is now being performed by the hydrogeologist. It is anticipated that more detailed information will be available in the late summer of 2021. This information will be used to further refine short term solutions to address concerns with the existing water supply in Simcoe.
2. Port Rowan Water Treatment Plant – investigations are ongoing relating to the water treatment plant intake. This information will be used to determine one of the following simplified options:
 - a. Rehabilitate the existing intake and perform water treatment capacity upgrades
 - b. Replace the existing intake and perform water treatment capacity upgrades
 - c. Establish a groundwater source and perform water treatment capacity upgrades
 - d. Construct a watermain connection to another municipal drinking water system
3. Port Dover Water Treatment Plant Clarifier Replacement – this project is currently on schedule for completion in the fall of 2021.

Financial Services Comments:

The Inter-Urban Water Supply report has financial costing outlined within it. Full Financial Services comments and analysis will be provided subsequent to the completion of a water supply agreement with Haldimand County. However it should be noted that conservative costing estimated for these options were considered in our water and wastewater rate forecast and budgets.

Interdepartmental Implications:

None.

Consultation(s):

Public Works Engineering Department, Public Works Environmental Services Department, Chief Administrative Officer, Haldimand County, WSP, WT Infrastructure

Strategic Plan Linkage:

This report aligns with the 2019-2022 Council Strategic Priorities "Build Solid Foundations", "Build and Maintain Reliable, Quality Infrastructure", "Create an Optimal Place for Business" and "Foster Vibrant, Creative Communities".

Explanation:

Conclusion:

The implementation of the IUWS will re-shape the County's drinking water systems and provide a long term financially viable solution built on a solid foundation for the provision of safe and secure drinking water for the County.

Staff recognize that the recommendations of the IUWS come at a high cost. There is an immediate need to rapidly address current deficiencies in the County's water systems. Efforts to locate and establish suitable groundwater supplies over the past decade have been slow and generally yielded poor results. Connection to the Nanticoke Water Treatment plant will reestablish security of water supply in Norfolk County and will create an environment that encourages further development across the County. It will provide stability for many years. The interconnection of communities forms the 'spine' of a County-wide system. With these interconnections completed, the option also remains for the County to re-examine the possibility of constructing a Norfolk County owned water treatment facility sometime in the future. Establishment of a mutually agreeable and mutually beneficial water supply agreement is required prior to the completion of any additional engineering work relating to the establishment of a Nanticoke-based water solution. If Council supports, in principle, Alternative 2.4 from the IUWS, staff will bring forward the details on the costs and timelines associated with performing the upgrades to the Port Dover Water Treatment Plant.

If approved staff would be required to report back within 60 days as to the progress on the discussions for a water supply agreement with Haldimand. If at this time difficulties are identified, staff may provide an alternative recommendation to Council for a different approach.

Recommendation(s):

THAT Staff Report PW 21-11, Introduction to the Inter Urban Water Supply, be received as information;

AND THAT Staff be directed to initiate the required updates to the Integrated Sustainable Master Plan;

AND THAT Staff be directed to negotiate a draft Water Supply Agreement with Haldimand County relating to the supply of potable water from the Nanticoke Water Treatment Plant

AND THAT Staff be directed to present an update to Council within 60 days as to the draft Water Supply Agreement with Haldimand County to Norfolk County Council for approval;

AND THAT Staff be directed to work with Haldimand County in the development of grant applications for available infrastructure funding programs;

AND THAT Staff be directed initiate detailed water quality studies relating to the impact of blending different water sources;

AND THAT Staff be directed to provide the additional details related to upgrading the Port Dover Water Treatment Plant as outlined in this report;

AND THAT Staff be directed to provide additional details related to the optimization of the Simcoe groundwater supplies and the potential development of the Simcoe Northeast Well;

Attachment(s):

None.

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