

Village of Westport

**Proposed Rehabilitation/ Expansion of the
Westport WWTS Municipal Class EA
Environmental Study Report**

Report

Village of Westport

Proposed Rehabilitation/ Expansion of the Westport WWTS Municipal Class EA Environmental Study Report

Prepared by:

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Project Number:

60427206

Date:

December 18, 2015

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This Statement of Qualifications and Limitations is attached to and forms part of the Report and any use of the Report is subject to the terms hereof.

December 18, 2015

Mr. Scott Bryce
Clerk/Treasurer
Village of Westport
30 Bedford Street
Westport, ON K0G 1X0
sbryce@villageofwestport.ca

Dear Mr. Scott Bryce:

Project No: 60427206
**Regarding: Rehabilitation/Expansion of the Westport WWTS Municipal Class EA –
Environmental Study Report**

AECOM is pleased to provide the Village of Westport Council with the Environmental Study Report (ESR) for the proposed Rehabilitation / Expansion of the Westport Wastewater Treatment System (WWTS). This document provides a summary of the activities completed to date, according to the Municipal Class Environmental Assessment process.

We sincerely appreciate the level of interest and engagement that the Village of Westport has had in this process. In particular, we would like to thank all participants on the Technical Steering Committee who took the time to participate, provide input, and feedback into this study.

Sincerely,
AECOM Canada Ltd.



Marissa Mascaro, P. Eng.
Project Manager
Marissa.Mascaro@aecom.com

Encl. Environmental Study Report Proposed Rehabilitation or Expansion of the Westport WWTS Municipal Class EA –
Environmental Study Report

Distribution List

# of Hard Copies	PDF Required	Association / Company Name
1	1	Scott Bryce, Village of Westport

Revision Log

Revision #	Revised By	Date	Issue / Revision Description
0	/	/	ESR – December 21, 2015

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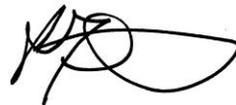
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Antony Aruldoss, P.Eng.
 Senior Wastewater Engineer



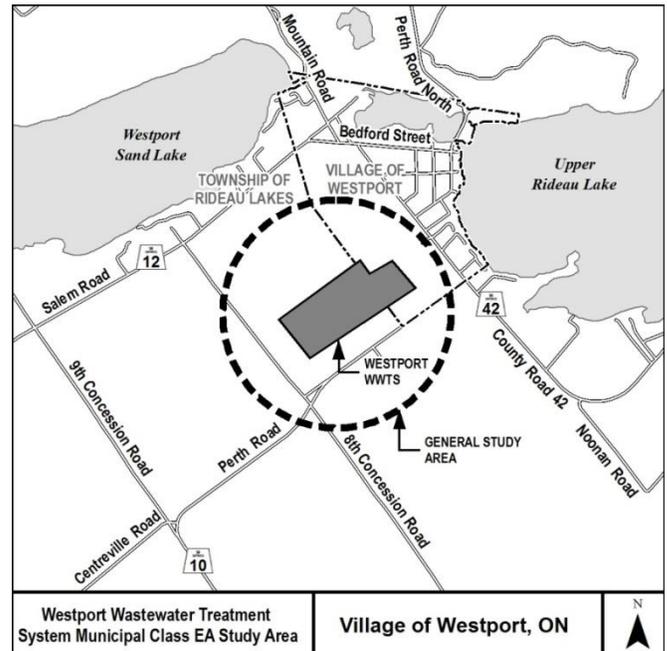
Executive Summary

In May 2015, AECOM was retained by the Village of Westport (Village) to undertake a Municipal Class Environmental Assessment for the proposed Rehabilitation / Expansion of the Westport Wastewater Treatment System (Westport WWTS). The project involved completion of a Schedule “C” Municipal Class Environmental Assessment (2000, as amended in 2007 and 2011) in accordance with the requirements of the Municipal Engineer’s Association Class Environmental Assessment (Class EA) process.

This document represents the Environmental Study Report (ESR), prepared as part of Phase 4 of the Class EA planning process. The ESR provides a record of the activities completed as part of Phases 1, 2 and 3 of the Class EA process, as well as consultation activities carried out towards reaching the preferred alternative design concept.

The ESR describes the:

- Rationale / Need for improvements;
- Various alternative solutions and design concepts considered for the treatment system expansion;
- Evaluation of alternative solutions and design concepts;
- Anticipated potential impacts;
- Proposed mitigation measures associated with the alternatives; and
- Rationale for the selection of the preferred solution and associated design concept as well as associated and implementation plans.



At the outset of this project, a number of constraints were identified. Among them, the Village of Westport currently possesses a lack of available land for possible expansion of the existing Westport WWTS. Initial discussions with the Ministry of the Environment and Climate Change (MOECC) identified that a staged approach could be taken to address near-term issues (Stage 1) while additional land can be considered to address longer-term capacity constraints. This ESR document addresses Stage 1 works.

An extensive public engagement process was followed for this project, which included monthly council meeting updates, and a dedicated Technical Steering Committee (TSC) which met monthly and included representation from residents, and organizations including the Township of Rideau Lakes, the United Counties of Leeds and Grenville, Rideau Valley Conservation Authority, and the Upper Rideau Lake Association. In addition, notification included all required notifications, two Public Information Centre meetings, and use of the Village of Westport website to post materials. A record of consultation is provided in **Appendix A**.

A series of technical memoranda (TM) were prepared to address the evolving technical understanding of the project, and provided material for review in the monthly TSC meetings. Results and recommendations identified in the technical memoranda and supporting documents are carried forward into the ESR. These documents are attached to the ESR in **Appendix B**.

The Assessment of the Phase 2 Alternative Solutions was conducted in Technical Memorandum #5, based on initial technical memorandum information (TM #1 to #4), as well as an inventory of the Social, Economic and Natural Environment (TM #5). A list of eight Alternative Solutions was identified, however no surface water discharge Alternatives were carried forward for further assessment based on initial discussions with MOECC and the TSC. The remaining subsurface discharge options were assessed in a comparative evaluation table and resulted in the selection of a recommended Alternative Solution (Alternative 3 – Upgrade/Expand Existing Facility and Continued Subsurface Disposal) which was brought to Public Information Centre #1 for comment.

Feedback obtained at PIC #1 resulted in some additional considerations, most notably concern from adjacent land owners about odour and aesthetic effects from the existing Snowfluent and spray irrigation systems. Based on this feedback, these systems were screened out as primary effluent disposal methods and are kept as provisional systems only and left in place on site. Each of the Phase 3 Design Concepts considered in the Assessment of Alternative Designs utilize a Large Subsurface Disposal System (LSSDS) to disperse effluent as an alternative disposal method that is 1) not seasonally dependant and 2) reduces the potential for odour and aesthetic effects as effluent is not sprayed into the air.

Pre-consultation meetings with MOECC discussed the potential for flow capacity increases based on empirical data. Further calculations were conducted and were found to be supportive of a request for a capacity increase from 310 m³/day (the current Certificate of Approval) to 350 m³/day. Additional information is provided in TM #6A.

Additional questions were raised about site groundwater characteristics and the protection of groundwater resources, such as municipal and private wells. An additional groundwater and site characteristics investigation program was launched prior to the Phase 3 Assessment of Alternative Designs to obtain more information about the existing WWTS site. The results of these investigations are found in TM #6B.

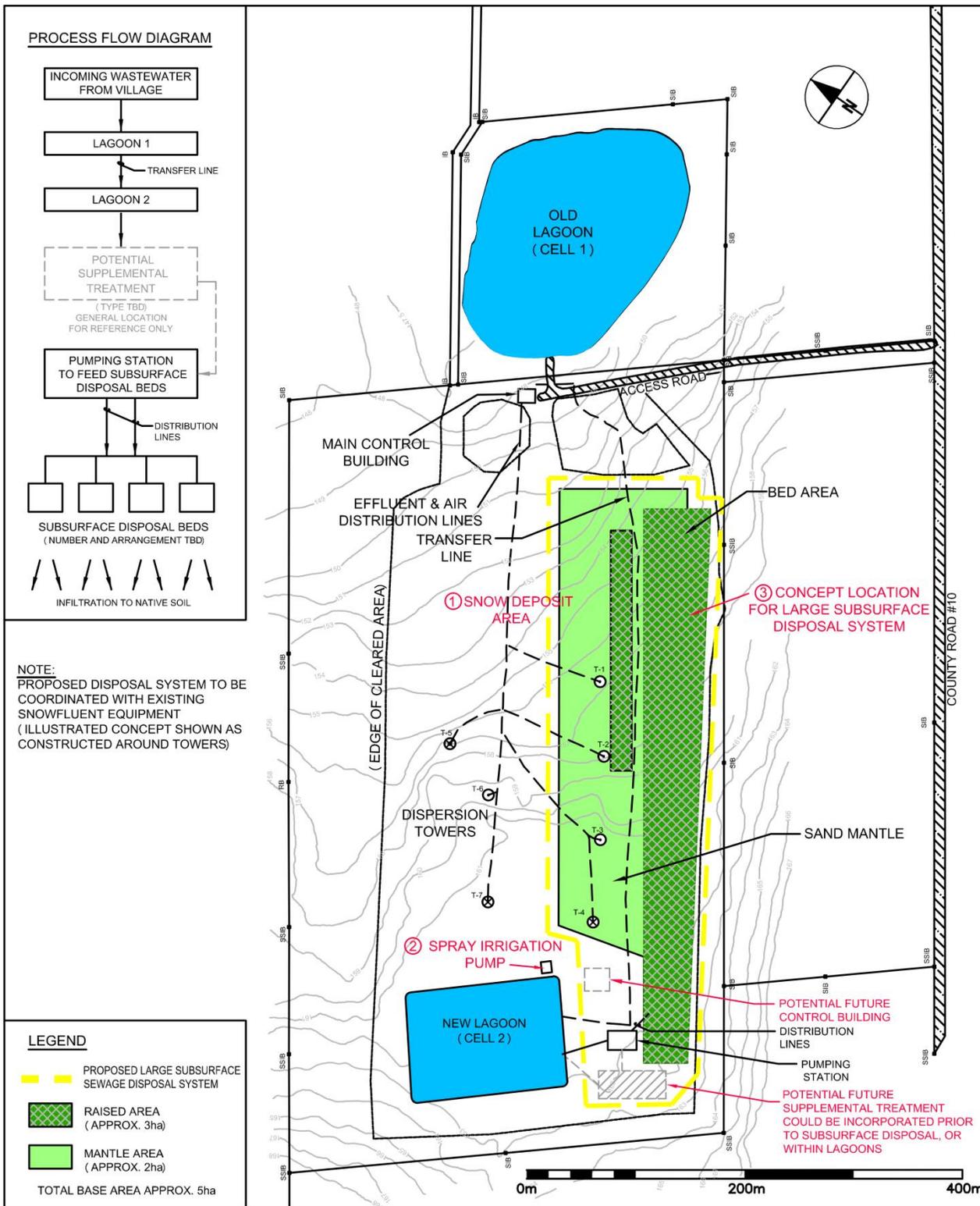
A comparison of Alternative Design Concepts 'A' and 'B' was undertaken in TM #6, drawing on the results of the above noted additional soils and site characteristics investigation, and supporting documents for natural heritage and the Stage 1 archaeological assessment. The comparative assessment identified that either Alternative Design Concept could be used on the existing site and are anticipated to meet MOECC requirements, however, the assessment identified that Design Concept 'A' should be selected, as it more closely aligns with the Village of Westport needs and funding constraints, among other considerations. "Design Concept 'A' - Facultative Lagoon Treatment and Subsurface Bed Disposal" was presented at PIC #2 as the Preferred Alternative Design Concept, with no dissenting comments received.

Design Concept 'A' was selected based on the following rationale:

- It is closest to the current funding available to the Village of Westport, as compared to Concept 'B';
- It can be implemented without discharge to Upper Rideau Lake;
- It utilizes easily understood technology that can be implemented on the existing site;
- It has the potential to be implemented to meet the timing requirements of the current OCIF funding,
- It can be implemented with minimal impact to area residents with mitigation; and
- It does not preclude the Village from choosing/implementing supplemental treatment at a later date, or proceeding with other Stage 2 works.

This ESR provides a description of the preferred design concept, expected mitigation and approval requirements, as well as an opinion of probable costs. This information is subject to change during the Detailed Design Phase following the Class Environmental Assessment.

The Class EA process also gives members of the public, interest groups and review agencies a chance to review the ESR during a 30-day review period. The 30-day review period gives individuals an opportunity to raise outstanding concerns regarding the project with the Village of Westport. If issues cannot be resolved by the Village during this period, an individual may request that Minister of Environment and Climate Change take action. The Minister will make an order for the project to comply with Part II of the *Environmental Assessment Act* by requiring the project to follow the requirements of an individual environmental assessment. The request must be submitted in writing to the Minister. If no Part II Order requests are received within the 30-day review period, the project will proceed through the detailed design and construction phases outlined in the ESR.



Stage 1 Design Concept Plan Location

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- A7: Municipal Class EA Process Diagram
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- Appendix B4: Technical Memorandum #4
- Appendix B5: Technical Memorandum #5
- Appendix B6: Technical Memorandum #6
- Appendix B6A: Technical Memorandum #6A
- Appendix B6B: Technical Memorandum #6B

Appendix C: Other Supporting Documents

- C1: Stage 1 Archaeology Assessment
- C2: Natural Heritage Constraints Analysis
- C3: Built Heritage Screening

1 Introduction and Study Background

1.1 Background

In May 2015, AECOM was retained by the Village of Westport (Village) to conduct a Municipal Class Environmental Assessment for the proposed rehabilitation / expansion of the Westport Wastewater Treatment System (Westport WWTS). The project involved undergoing a Schedule “C” Municipal Class Environmental Assessment (2000, as amended in 2007 and 2011) to meet the requirements of the Municipal Engineer’s Association Class Environmental Assessment (Class EA) process (Refer to Section 1.3).

This document represents the Environmental Study Report (ESR), prepared as part of Phase 4 of the Class EA process. The purpose of the ESR is to provide a record of the activities completed as part of Phases 1, 2 and 3 of the Class EA process, as well as consultation activities carried out towards reaching the Preferred Alternative Design Concept. The ESR describes the:

- Rationale/ Need for Improvements;
- Various alternative solutions and design concepts considered for the plant expansion;
- Evaluation of alternative solutions and design concepts;
- Anticipated potential impacts;
- Proposed mitigation measures associated with the alternatives; and
- Rationale for the selection of the preferred solution and associated design concept as well as associated and implementation plans.

The Class EA process also gives members of the public, interest groups and review agencies a chance to review the ESR during a 30-day review period. The 30-day review period gives individuals an opportunity to raise outstanding concerns regarding the project with the Village of Westport. If issues cannot be resolved by the Village during this period, an individual may request that Minister of the Environment takes action. The Minister will make an order for the project to comply with Part II of the *Environmental Assessment Act* by requiring the project to follow the requirements of an individual environmental assessment. The request must be submitted in writing to the Minister. If no Part II Order requests are received within the 30-day review period, the project will proceed through the detailed design and construction phases outlined in the ESR.

1.2 Study Area Scope and Location

The existing Westport WWTS is located partially within the Village of Westport and the Township of Rideau Lakes. The site is wholly owned by the Village of Westport. **Figure 1.1** identifies the existing site and municipal boundaries, as well as the general study area for the project.

The general study area identified in the figure is not a boundary or “buffer” area. Rather, it was identified in response to comments received early in the consultation process to emphasize consideration of elements beyond the site boundaries (e.g. for potential impacts). The general study area provides an area of focus around the site, but has no legislative or planning function beyond scoping for this Class EA.

The existing Westport WWTS and the general study area are shown in **Figure 1.1**.

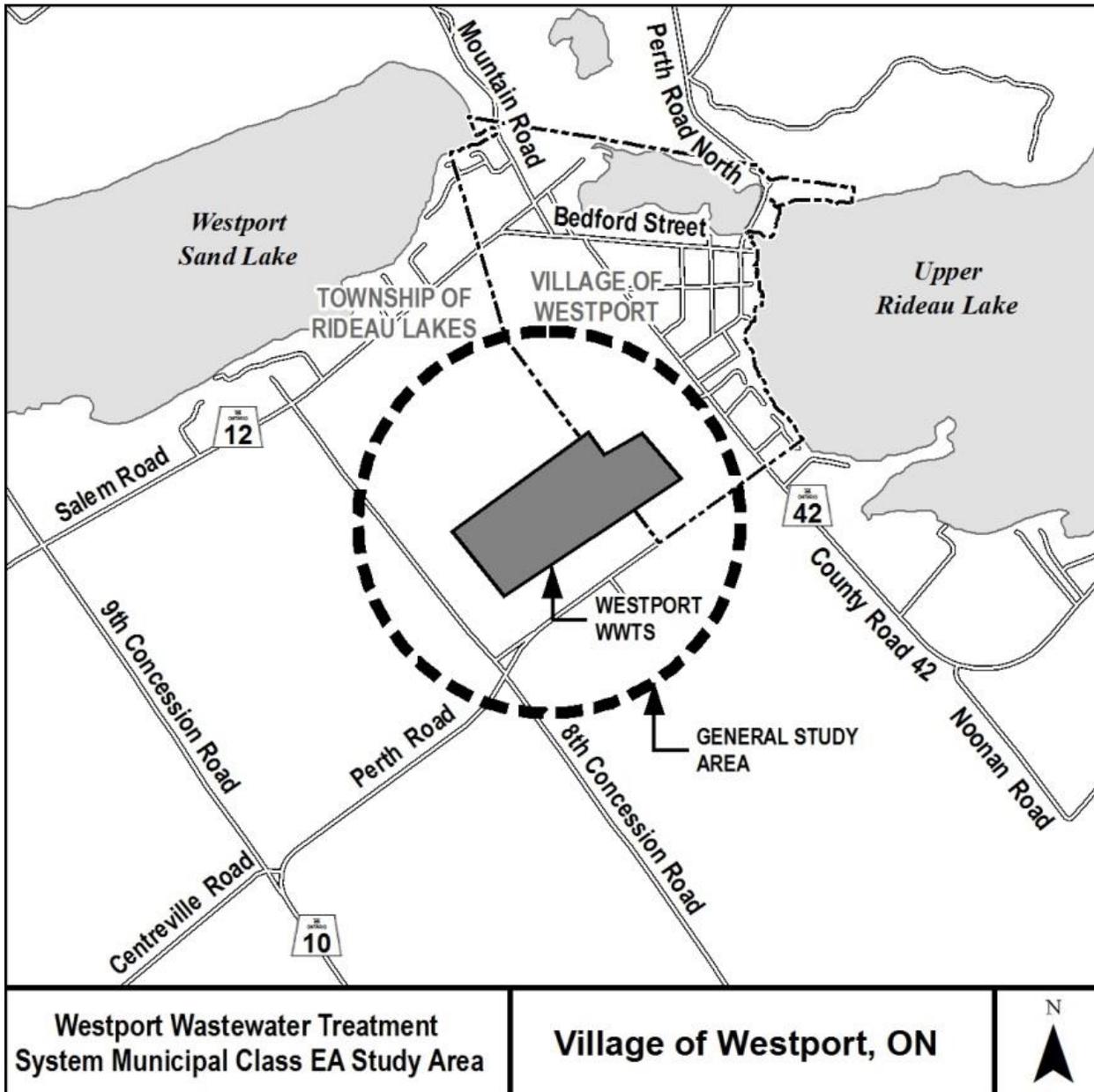


Figure 1.1 Westport Wastewater Treatment Municipal Class EA General Study Area

1.3 Municipal Class Environmental Assessment Process

All municipal infrastructure projects in Ontario must follow the Municipal Class Environmental Assessment (Class EA) process (Municipal Engineers Association, October 2000 as amended in 2007 and 2011) in order to meet the requirements of the *Environmental Assessment Act (EA Act)*.

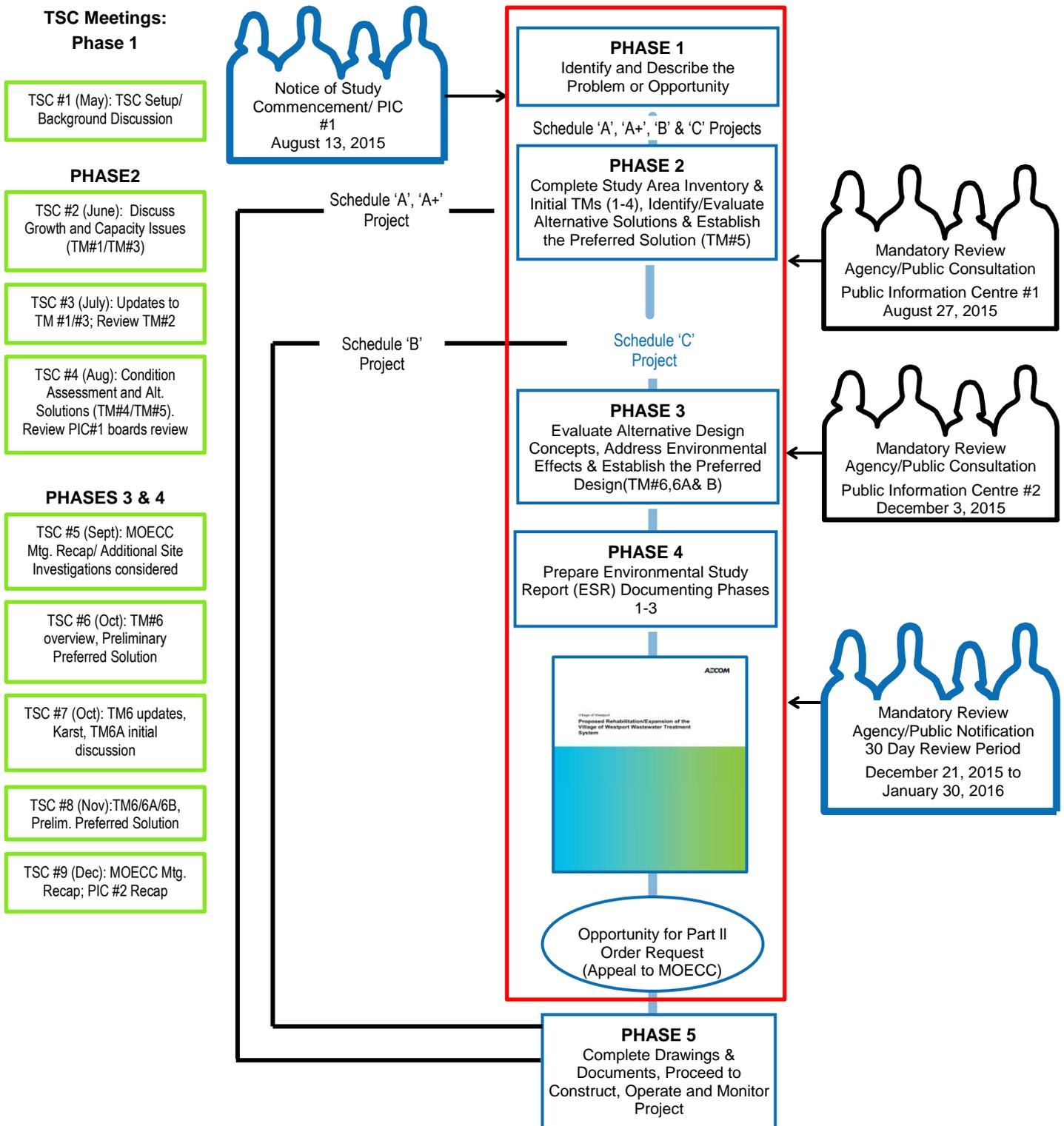
The Municipal Class EA process is a planning and consultation process that covers all aspects of the environment that should be considered during the planning and implementation phases of a project. Projects are categorized depending on their degree of environmental impact.

The project team identified that expansion of an existing wastewater treatment plant beyond the existing rated capacity is considered to be a “Schedule C” project. Schedule C projects must satisfy all five phases of the Class EA planning process. The phases are described below:

- **Phase 1 - Problem or Opportunity:** Identify issues, problems or opportunities
- **Phase 2 - Alternative Solutions:** Identify alternative solutions to address problem or opportunity by taking into consideration the existing environment, and establish the preferred solution with public and review agency input.
- **Phase 3 - Alternative Design Concepts for Preferred Solution:** Examine alternative methods of implementing the preferred solution, based upon the existing environment, public and review agency input, anticipated environmental effects and methods of minimizing negative effects and maximizing positive effects.
- **Phase 4 - Environmental Study Report (ESR):** Document in an Environmental Study Report a summary of the rationale, as well as the planning, design and consultation process of the project. Make the documentation available for scrutiny by review agencies and the public.
- **Phase 5 - Implementation:** Complete contract drawings and documents, and proceed to construction and operation; monitor construction for adherence to environmental provisions and commitments. Where special conditions dictate, also monitor operation of the completed facilities.

Figure 1.2 identifies the Municipal Class Environmental Assessment Process.

Figure 1.2 Municipal Class Environmental Assessment Planning Process



1.4 The Westport WWTS Class Environmental Assessment Process

The Westport WWTS project followed the Municipal Class EA Process for a Schedule “C” project, as outlined in **Section 1.3** and shown in **Figure 1.2**.

The Village indicated at the outset of the project that there is some interest in investigating the potential for increasing the capacity of the Westport WWTS given possible new developments in the area. However, early in the project, a number of constraints were identified, notably a lack of available land for additional increases to the WWTS capacity for future development.

In consultation with the Ministry of the Environment and Climate Change (MOECC), a “staged” approach was developed wherein the Village can identify near-term project works to address and upgrade the existing site (Stage 1), while concurrently pursuing the consideration for additional suitable lands for future anticipated growth (future stages). This ESR addresses the Stage 1 works.

There is no specific timeline for future stage works, however the Village could progress toward identifying and purchasing land concurrently with Stage 1 in anticipation of future growth needs. If additional land is obtained, an amendment to the ESR may be required to assess the selected/new site. The staged approach is explained further in the Project Description found in **Section 7**.

1.5 Consultation and Communication Program

As part of the Municipal Class EA process, several steps have been undertaken to inform government agencies, area landowners and the local community/general public of the project and to solicit any comments.

The MEA Municipal Class EA document outlines specific mandatory public and agency consultation contact points and methods. Recognizing the importance and sensitivity of this study, the Village of Westport has voluntarily included several enhancements to this project’s consultation and communication program. This included formation of a Technical Steering Committee (TSC) that included residents, municipal staff, and representatives from the Township of Rideau Lakes, Rideau Valley Conservation Authority, United Counties of Leeds and Grenville, and Upper Rideau Lake Association. The purpose of the TSC was to provide insight and input to the planning process. This included nine (9) meetings at key points in the process, and engagement in between meetings, for reviews of background documents, technical memoranda, and draft display materials for Public Information Centre (PIC) #1 and #2.

The following activities were undertaken:

- Developed the study mailing list comprised of residents within the Village and adjacent Township of Rideau Lakes land owners, as well as agencies, and Aboriginal communities;
- Formation of a Technical Steering Committee (TSC);
- Holding two Public Information Centres;
- Seven presentations to at Village of Westport Council meetings (open meetings);
- Direct mailing to stakeholders, area land owners and review agencies regarding the Notice of Commencement / Notice of PIC #1, Notice of PIC #2, and Notice of Completion;
- Posting project documents, including Technical Memoranda, Notices and PIC display boards on the Village of Westport website; and
- Newspaper notices for the Notice of Commencement/ Notice of PIC #1, Notice of PIC #2, and Notice of Completion.

The consultation and communications program outputs are discussed further in **Section 8**, with correspondence and other materials found in **Appendix A**.

1.6 Technical Memoranda

Technical Memoranda were developed through the course of the EA process which provided supporting information to this ESR. This documentation was developed at key milestones in the Phases of the Class EA process, with input from and review by the TSC, and subsequently issued to the public through the Village’s website, and to Council, during the course of the project. This documentation is included in Appendix B and referenced throughout the ESR.

Table 1.1 provides a brief description of the technical memoranda in the context of the development of the project:

Table 1.1 Technical Memoranda Summary

<p>Technical Memorandum #1 Wastewater Servicing Characterization Reviews and presents design populations, and wastewater flows and characteristics; provides summarized planning and design basis information for the Village of Westport’s existing and projected future wastewater servicing and treatment needs.</p>	<p>Class EA Process: Phase 1</p>
<p>Technical Memorandum #2 Upper Rideau Lake Water Quality Characteristics Presents and reviews Upper Rideau Lake background water quality characteristics; provides summarized information characterizing the Upper Rideau Lake water quality and provides technical comment related to the concept of the lake being a potential receiving water body for the Westport WWTS.</p>	<p>Class EA Process: Phase 2</p>
<p>Technical Memorandum #3 Existing Subsurface Disposal Site Capacity Considerations Provides a review of existing site conditions / operational data and an estimate of existing subsurface disposal capacity at the Westport WWTS; provides input to and forms the basis for further discussions pertaining to the Village’s existing and projected future wastewater servicing and treatment needs.</p>	
<p>Technical Memorandum #4 WWTS Condition Assessment and Functional Capacity Overview Provides a condition assessment and functional capacity overview of the Westport WWTS; provides input to further discussions and review pertaining to potential rehabilitation and/or enhancement to the functional capability and operations of the existing Westport WWTS.</p>	
<p>Technical Memorandum #5 Wastewater Servicing Alternatives – Phase 2 Summary Report Considers wastewater servicing alternatives for the Westport WWTS, and presents a Class EA Phase 2 Summary Report; identifies and evaluates alternatives solutions, and identifies a preliminary recommended preferred solution for review agency and public consultation purposes.</p>	
<p>Technical Memorandum #6 Evaluation of Stage 1 Alternative Design Concepts Evaluates the alternate design concepts as part of Phase 3 of the EA process.</p>	<p>Class EA Process: Phase 3</p>
<p>Technical Memorandum #6A Capacity and Approval Considerations Provides supporting discussion for TM #6.</p>	
<p>Technical Memorandum #6B Additional Site Characterization and Information Provides supporting discussion for TM #6.</p>	

1.7 Public Review of the Report and Next Steps

This Environmental Study Report (ESR) comprises the documentation for this Schedule “C” Municipal Class EA study. Placement of the ESR for public review completes the planning stage of the project.

This ESR is available for public review and comment for a period that is a minimum of 30 calendar days. For this study, the review period starts on December 21, 2015 and ends on January 30, 2016. A public notice (Notice of Completion) was published to announce commencement of the review period. To facilitate public review of this document, copies are available at the following locations:

Village of Westport Town Hall

30 Bedford Street, P.O. Box 68
Westport, Ontario K0G 1X0
Phone: 613-273-2191

Hours:

Monday-Friday 8:30am to 4:30pm

Westport Public Library

3 Spring Street,
Westport, Ontario, K0G 1X0
Closed Wednesdays/ Sundays.

Hours:

Monday, Friday 1 pm - 5 pm
Tuesday, Saturday 10 am - 2 pm
Thursday 10 am-12 pm & 2 pm - 5 pm
Wednesday, Sunday - Closed

If, after reviewing this report, you have questions or concerns, please follow this procedure:

1. Contact Mr. Scott Bryce and AECOM at the addresses below to discuss your questions or concerns:

Scott Bryce
Village of Westport Clerk/Treasurer
Village of Westport
30 Bedford Street, P.O. Box 68
Westport, Ontario K0G 1X0
Phone: 613-273-2191
Email: sbryce@villageofwestport.ca

David Kielstra
Environmental Assessment Coordinator
AECOM
654 Norris Court, 2nd Floor
Kingston, ON K7P 2R9
Phone: 613-634-2830
E-mail: david.kielstra@aecom.com

2. Arrange a meeting with Mr. Bryce if you have significant concerns that may require more detailed explanations;
3. If you have major concerns, the Village will attempt to negotiate a resolution of the issue(s). A mutually acceptable time period for this negotiation will be set.
4. If the concerns cannot be resolved, the person may submit a Part II Order request to the Minister of the Environment at 135 St. Clair Avenue West, 12th Floor, Toronto, ON, M4V 1P5 and the Minister, Ministry of the Environment and Climate Change, Floor 11, 77 Wellesley St W, Toronto ON M7A 2T5 **no later than January 30, 2016**, with a copy of the request being sent to the Village of Westport and AECOM.
5. After reviewing the Part II Order request and the project documents in detail, the Minister may make one of the following decisions:
 - Deny the request;
 - Refer the matter to mediation; or
 - Require that the Village comply with Part II of the EAA by undertaking one of the following:

- Set out directions with respect to the Terms of Reference and preparing an Individual EA for the undertaking;
- Declare that the Village has satisfied requirements for the preparation of an EA, as are specified in the order; or
- Impose additional conditions, in addition to those implied upon approval of the Class EA.

If no Part II Order requests are received, the Village may proceed with implementation of the recommended works as presented in this report.

Information will be collected in accordance with the *Municipal Freedom of Information and Protection of Privacy Act*. All comments, with the exception of personal information, will become part of the public record.

2 Description of the Existing Westport Wastewater Treatment System (WWTS)

2.1 Existing Wastewater Treatment System Description

A network of sanitary sewers, a sewage pumping station on Glen Street, as well as a facultative lagoon and Snowfluent-based wastewater treatment system currently serves the Village of Westport. All sewage from the collection system discharges to the main Westport Sewage Pump Station on Glen Street for subsequent pumping to the wastewater treatment system. After facultative lagoon treatment and storage, effluent from the facility is dispersed as Snowfluent (ice crystallized effluent) during winter months.

The wastewater treatment system, in its current form (lagoon/ Snowfluent), was approved under MOE Certificate of Approval (CofA) No. 3-1308-95-967 issued on May 24, 1996. The most current amendment to the CofA is approval number 8927-89AHET, issue date October 5, 2010.

Recently, under Provincial Officer's Order, the Westport WWTS has also used effluent spray irrigation in the summer months to provide additional effluent disposal capacity.

Wastewater Treatment System

The Westport WWTS was first operated in 1974 as a single cell facultative lagoon treatment facility with seasonal discharge via an outfall ditch leading east towards Upper Rideau Lake. In the 1990's, the Village undertook a review of several options for upgrades, and implemented a system employing lagoon treatment and storage, with winter land application of effluent by EVC® Processing Plant (also known as Snowfluent). In 1995, the original lagoon (3.5 ha – 55,000 m³) system was upgraded with a second lagoon (1.35 ha – 25,000 m³), the Snowfluent system was commissioned, and the former outfall ditch was abandoned. The Snowfluent system allowed for increased storage/treatment of wastewater in a new, second lagoon, and uses high pressure effluent water and air to produce ice crystallized effluent (Snowfluent) during winter months. The dispersion system presently includes seven (7) towers producing snow over a cleared field deposit area.

The approved rated capacity of the Westport WWTS is presently 113,150 m³/year (per C of A), which equates to an annual average day flow of 310 m³/day. Major components of the facility include:

- Lagoon Collection / Treatment / Storage;
- Effluent Transfer Well (Primary Pumping Wet Well);
- Main Control (Snowfluent) Building;
- Distribution Valve House; and
- Dispersion Towers and Snow Deposit Area.

More information on the major components is provided in **Appendix B, TM #4**.

Figure 2.1 is a plan layout of the existing wastewater treatment system.

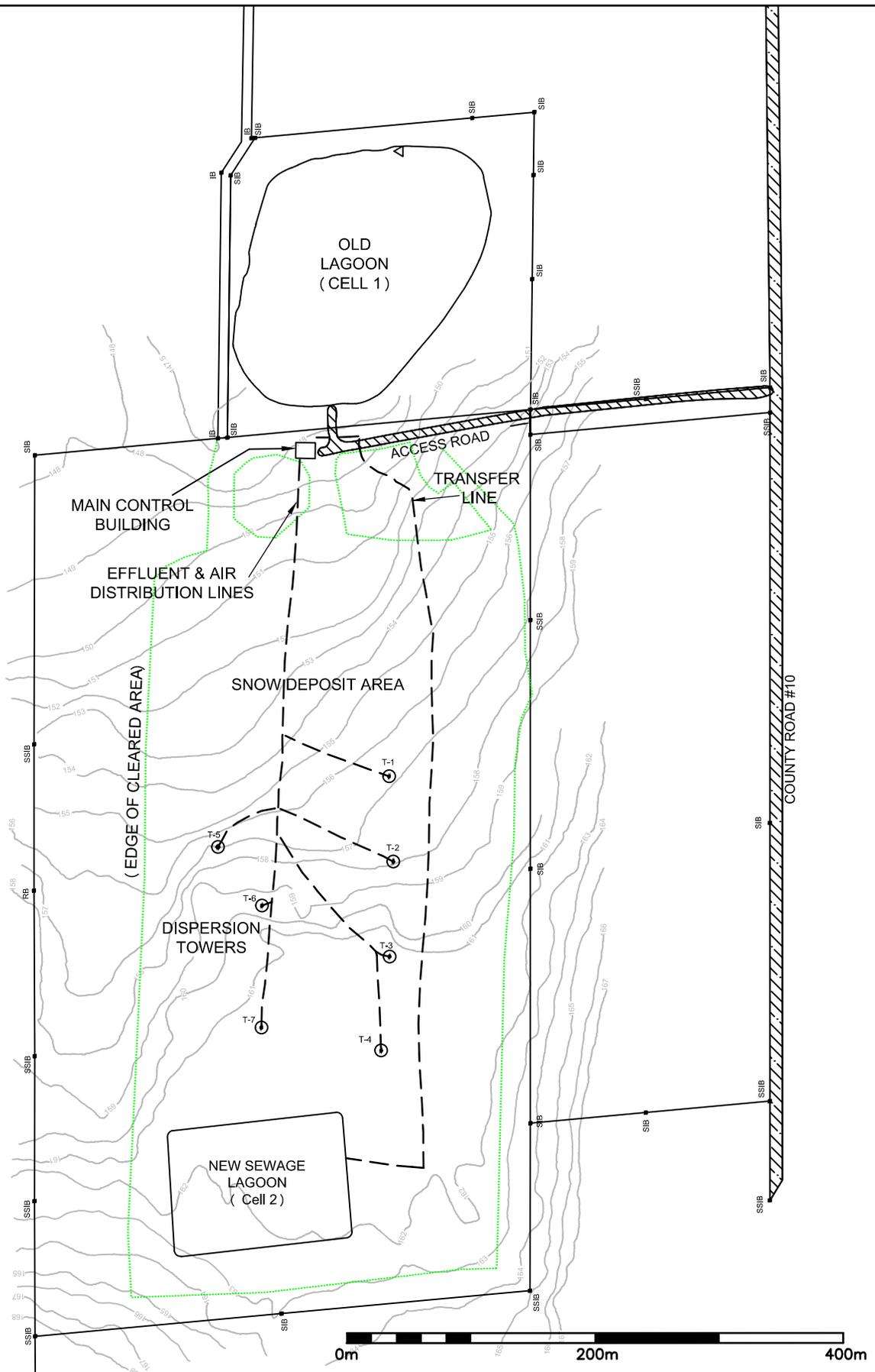
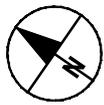


Figure 2.1 - Layout of Westport Wastewater Treatment System



2.2 Projected Wastewater Servicing Requirements

The projected wastewater servicing information and requirements provided below are described in more detail in **Appendix B, TM#1 – Wastewater Servicing Characterization and Information**. Please refer to TM#1 for additional planning and design basis information.

2.2.1 Current and Projected Future Population

Projected future populations were developed in conjunction with the Village of Westport and the Technical Steering Committee. Future growth projections are considered valid for the Class EA study, but are noted as being greater than the existing Official Plan information. **Table 2.1** presents the current and projected future (10-year and 20-year) equivalent populations.

Table 2.1 Current and Projected Future Population

Current and Projected Future Population	
Period	Equivalent Population
Current	585
10 year (2025)	913
20 year (2035)	1,356

2.2.2 Current and Projected Future Wastewater Flows

Based on the projected future populations, **Table 2.2** presents the current and projected future (10-year and 20-year) wastewater flows.

Table 2.2 Current and Projected Future Wastewater Flows

Current and Projected Future Wastewater Flows			
Period / Item	Avg Day Flow (m ³ /d)	Avg Day Flow (m ³ /yr)	Max Day Flow (m ³ /d)
Historic Period Average	289	105,485	1,156
10 Year (2025)	437	159,359	1,704
20 Year (2035)	636	232,168	2,417
Existing Rated Capacity	310	113,150	

The 10 year and 20 year projected future flows are approximately 1.5x and 2.2x greater than the current flows. The historic period average day flow (ADF) is approximately 95% of the existing wastewater treatment facility rated capacity. However, there have been individual calendar year occurrences of the annual average day flow being greater than 310 m (e.g. year 2014 – 334 m³/d annual ADF).

2.2.3 Historical and Projected Future Influent Concentrations

Historical (as period average 2011-2014) and suggested future average day flow (ADF) and wastewater / influent concentrations are provided in **Table 2.3**.

Table 2.3 Influent Concentrations

Influent Concentrations				
Item	BOD (mg/L)	TSS (mg/L)	P-Total (mg/L)	TKN (mg/L)
Period Average	182	181	3.6	32
Suggested Average Day Flow (ADF) Design Values	200	210	5.0	36

3 Problem/Opportunity Statement

The Westport WWTS Problem/Opportunity Statement:

The current Village of Westport WWTS is experiencing operational constraints, and is at its approved capacity limit for average day influent flows (currently rated at 310 m³/day). Additional WWTS capacity is needed to adequately service existing and projected future wastewater flows. The objective of this study is to identify a preferred alternative(s) to meet existing and future community needs for wastewater servicing. To address this, the Village of Westport is undertaking a Schedule “C” Municipal Class Environmental Assessment for the rehabilitation / expansion of the Village of Westport’s Wastewater Treatment System.”

Key Considerations

The following are the key considerations related to the development of the alternative solutions for this study:

- **Existing Infrastructure:** Consider ways to maximize the use of and optimize the existing WWTS to recognize previous investments in site infrastructure.
- **Staged Approach:** Consider options that may allow for a staged approach to meet the Village of Westport’s growth objectives and the Village’s Ontario Community Infrastructure Fund (OCIF) program funding requirements (while still maintaining regard for effluent quality).
- **Zero Discharge to Upper Rideau Lake:** Consider that any alternative must have zero discharge to Upper Rideau Lake to have a favourable review by the regulatory approval agency - Ministry of the Environment and Climate Change.
- **Source Water and Groundwater Protection:** Consider that any rehabilitated or new system should minimize potential risks to source water and groundwater.
- **Financial Sustainability and Timing:** Consider potential financial viability, WWTS sustainability and/or associated constraints related to alternative options. Available resources and other funding support can significantly affect implementation timelines.

4 Inventory of Natural, Social and Economic Environment

An Inventory of the Natural, Social and Economic Environment was completed, along with consideration of other factors such as land use policy objectives, the physical characteristics of the site and the cultural environment. The inventory was prepared as part of Phase 2 Alternative Solutions activities and recorded in TM #5 in **Appendix B**.

The inventory includes consideration of the following, generally within 400m of the existing Westport WWTS site:

- **Land Use Planning Objectives:** Provincial Policy Statement and Official Plans;
- **Physical Environment:** Landforms and geology, groundwater quality, surface water quality;
- **Natural Environment:** terrestrial vegetation and wetlands, terrestrial and aquatic wildlife and habitat, and connections provided by, or between these resources;
- **Social and Economic Environment:** Existing communities, residential areas and recreational areas, as well as commercial and industrial land uses and activities and property impacts.
- **Cultural Environment:** Archaeological resources, areas of archaeological potential, built heritage resources, cultural heritage landscapes, cultural heritage resources, First Nations/ Aboriginal Peoples

The following provides a summary of key items relevant to the Westport WWTS project. Key recommendations from associated reports such as the Stage 1 Archaeology Report (**Appendix C1**) and the Natural Heritage Constraints Analysis report (**Appendix C2**) are included in this ESR and were considered as part of the Comparative Evaluation of Alternative Design Concepts.

4.1 Land Use Planning Objectives

The Westport WWTS is located on land within the Village of Westport and Village-owned land within the Township of Rideau Lakes. The project site is already zoned for the existing land use (i.e. municipal sewage disposal) based on definitions of the Village of Westport Official Plan (2008) and the Township of Rideau Lakes Official Plan (2004, consolidated 2010).

The project maintains separation distances identified as part of the Province's Guideline D-2 "Compatibility between Sewage Treatment and Sensitive Land Use."

The proposed project is also in keeping with the Provincial Policy Statement (2014) as the project considered:

- Ways to make efficient use of existing infrastructure and the site;
- Financial limitations and potential funding;
- Potentially sensitive natural environmental features (such as the Upper Rideau Lake); and
- Seeking to address municipal growth considerations.

The Village of Westport is also considering water conservation and water use efficiency improvements outside of this Municipal Class Environmental Assessment to seek opportunities to reduce inflow and infiltration to the wastewater system.

4.2 Source Water Protection Considerations

Technical Memorandum #2 (TM #2) was prepared to review and present Upper Rideau Lake background water quality characteristics. TM #2 summarized information characterizing the Upper Rideau Lake water quality, as well as technical comments towards the concept of the lake being a potential receiving water body for the Westport WWTS.

The report included ambient water quality information for Upper Rideau Lake, and identified the lake's policy status and water quality parameters for the following:

- Total Phosphorus (TP)
- Un-ionized Ammonia
- Biochemical Oxygen Demand (BOD)
- Dissolved Oxygen (DO)
- Total Suspended Solids (TSS)
- E. coli

No surface water discharge alternatives were carried forward into the comparative evaluation of Alternative Solutions. Upper Rideau Lake is Policy 2 lake with respect to total phosphorus and the MOECC position is that there should be no effluent discharge to Upper Rideau Lake from the Westport WWTS. "Continued No Discharge to Upper Rideau Lake" was identified within the Comparative Evaluation of Alternative Solutions to further demonstrate that surface water discharge is not being considered.

The Village of Westport is served by two water supply wells (Well #2 and Well #3) located approximately 500 m from the site, as identified in TM #3 in **Appendix B**. Additional fieldwork completed and recorded in TM #6B in **Appendix B** which included a Karst Hazard Assessment, a consideration of municipal Wellhead Protection Areas (WHPA), a Supplemental Subsurface Investigation and Seepage Water Sampling Program. These investigations and discussions regarding the Municipal Wellhead Protection Area (WPA) identified no surface water or groundwater concerns due to site activities.

4.3 Physical Environment

Background information regarding the physical environment of the Westport WWTS site and the surrounding area is provided in TM #5. Information from additional site characterization studies took place in Phase 3 of the Class EA and was included in TM #6B. This information was also carried into TM #6 and the assessment of the Alternative Design Concepts.

4.4 Natural Environment (Natural Heritage Features)

A focused Natural Heritage Constraints Analysis was completed by Ecological Services Inc. on September 30, 2015 to provide information about the potential presence of typical natural heritage elements, such as: landforms, groundwater, surface water and fisheries, terrestrial vegetation and wetlands, wildlife and habitat, as well as connections provided by, or between these resources. The Natural Heritage Constraints Analysis report was prepared on November 11, 2015.

Ecological Services Inc. considered the existing site of the Westport WWTS as well as the potential for off-site impacts. Ecological Services Inc. assessed Ecological Land Classification (ELC) data for the area and considered species that are of special concern, threatened, rare, or common in Ontario as identified in the National Heritage Information Centre (NHIC) database. The database includes information from the Committee on the Status of

Species at Risk in Ontario (COSSARO) and Committee on the Status of Endangered Wildlife in Canada (COSEWIC).

The Ecological Services Inc. Natural Heritage Constraints Analysis Report (**Appendix C2**) includes recommendations for an additional bird study to be conducted to assess the presence or absence of potential species at risk, as well as considerations for vegetation and tree removals and mitigation measures. It is recommended that these measures be discussed with the Ministry of Natural Resources and Forestry (MNRF) at the onset of detailed design to confirm MNRF's requirements, develop a workplan amenable to MNRF, giving consideration to the desired construction timing, and identify additional mitigation measures as applicable.

The sub-consultant identified that there is a relatively low potential for impacts to natural heritage features or functions given that the study area is identified as a cultural landscape based on ELC mapping. In addition, the sub-consultant identified that, based on their understanding of the proposed land use, there is low potential for off-site impacts such as to surface waters in the surrounding area. Furthermore, they are of the opinion that the proposed development of these lands will be consistent with the natural heritage policies of the Provincial Policy Statement when following the recommendations identified. (Ecological Services Inc., 2015).

Refer to **Section 9** for proposed mitigation measures and monitoring to be considered during detailed design.

4.5 Social and Economic Environment

A Socio-Economic profile was prepared which considered residential, commercial and industrial uses near the Westport WWTS, as well as community institutional/recreational facilities. The area surrounding the existing site is predominately rural, with a variety of mixed land uses. The presence of these areas are identified in TM #5 to reside generally within 400m of the existing Westport WWTS site, and possible adverse impacts to adjacent landowners and land use planning considerations were included in the comparative evaluation table for Alternative Solutions.

Following determination of the Preferred Design Concept, the suggestions and findings from these inventories are developed into a mitigations strategy. Please refer to **Section 9** for the mitigation strategies for nuisance effects such as noise and odour.

4.6 Cultural Environment

4.6.1 Archaeology

The Cultural Environment refers to cultural heritage and archaeological resources in the environment. The Cultural Environment was considered in TM #5. The following provides a summary of the recommendations resulting from the consideration of the Cultural Environment.

A Stage 1 Archaeological Assessment was prepared, for the Westport WWTS site to describe the geography, land use history, and current condition of the lands, as well as to evaluate archaeological potential. The Stage 1 Archaeology Assessment considered:

- Ministry of Tourism, Culture and Sport (MTCS) - Archaeological Sites Database (ASDB) for a listing of registered archaeological sites within a 1 kilometre (km) radius of the study area;
- Reports of previous archaeological assessment within 50 metres (m) of the study area;
- Visual inspection of the subject area lands
- Recent and historical maps of the study areas; and
- Archaeological management plans or other archaeological potential mapping, where available.

The results of the Stage 1 Archaeological Assessment indicated that while portion of the lands within the existing study area have been disturbed by past construction and use of the Westport WWTS, the study area still contains archaeological potential for both historic Euro-Canadian and pre-contact archaeological resources. This is based on the early Euro-Canadian settlement known to have occurred within the study area, and the presence of natural environmental features such as water bodies and historic roads. A Stage 2 Archaeological Assessment is recommended, consisting of test pitting where impacted by proposed works, as indicated in the report. The Stage 2 Archaeological Assessment will be considered as part of the detailed design phase following the Municipal Class EA. It is recommended that this proceed immediately upon confirmation of the specific locations of the works and proposed disturbances.

The Stage 1 Archaeological Assessment is provided in **Appendix C1** and includes recommendations and advice on compliance with legislation considered within this ESR.

4.6.1 Built Heritage and Cultural Heritage

A screening was conducted for potential features using the MTCS checklist “Criteria for Evaluating Potential for Built Heritage Resources and Cultural Heritage Landscapes” as a guide, in addition to communication with staff from the Village of Westport, The Township of Rideau Lakes and Parks Canada.

There are no adverse impacts anticipated to built heritage or other cultural heritage aspects. This project will remain within the boundaries of the existing WWTS, and there will be no adverse impacts to the valued views and visual landscapes identified within the Parks Canada Rideau Corridor Landscape Strategy, or any built heritage or cultural heritage features such as heritage plaques. Although the existing Westport WWTS is present within the Rideau Waterway watershed, no surface water discharge is required for the Preferred Alternative Design Concept and the project is not adjacent to the waterway.

TM #5 provides background information pertaining to built heritage and cultural heritage in the context of the Westport WWTS.

5 Phase 2: Wastewater Servicing Alternative Solutions

5.1 Identification of Alternative Solutions

Based on the established ‘problem statement’ for the Westport WWTS, the general Alternative Solutions were considered as follows:

- **Alternative 1 – Do Nothing**
- **Alternative 2 – Reduce Wastewater Flows to the Westport WWTS**
- **Alternative 3 – Upgrade/Expand Existing Facility and Continued Subsurface Disposal**
- **Alternative 4 – Additional/New Facility at Existing Site with Surface Water Discharge**
- **Alternative 5 – Additional/New Facility at Existing Site with Subsurface Disposal**
- **Alternative 6 – New Facility at a New Site with Surface Water Discharge**
- **Alternative 7 – New Facility at a New Site with Subsurface Disposal**
- **Alternative 8 – Convey Wastewater to Another Wastewater Treatment Facility**

5.2 Description of Alternative Solutions and Initial Screening (Long List)

The existing Westport WWTS currently services the majority of the built up residential and commercial area of the Village. The recent historical period average flow is near or at the existing rated capacity for the site, and currently sufficient effluent disposal capacity is only achieved with use of supplemental spray irrigation.

An initial screening of the alternative planning solutions considers the ability or likelihood of the planning solution to address the Problem Statement and associated principle considerations; meet the community's existing and future wastewater servicing needs; and have adequate regard to current status and key issue factors. The following list provides more details about the Alternative Solutions considered for this project:

Alternative 1 – Do Nothing

Under this alternative, no changes would be made to the existing Westport Wastewater Treatment System, and no proactive action is taken to improve the current situation. The 'Do Nothing' alternative does not address the Westport WWTS Class EA study Problem Statement or any of its principle considerations.

This alternative was presented as a comparative 'Do Nothing' option in the evaluation of screened Alternative Solutions.

Alternative 2 – Reduce Wastewater Flows to the Westport WWTS

The alternative of reducing wastewater flows to the Westport WWTS as a possible solution is based on the premise that existing wastewater flows could be reduced, and potentially provide some additional capacity for future growth. Under this alternative, water use reduction measures as well as extraneous flow reduction strategies (such as mitigation of inflow and infiltration into sanitary sewers and/or manholes) would be undertaken and potentially achieve reduced sewage flow volumes to the Westport WWTS.

This alternative alone does not address the Westport Wastewater System Class EA study Problem Statement or adequately address other principle considerations and key issues. Therefore, this alternative was not evaluated further as a standalone alternative. However, flow reduction opportunities should be considered as a best practice measure and be continued/adopted as an on-going initiative. Reductions in average day flows could benefit the wastewater servicing capability, and may extend the capacity planning horizon of other potential solutions.

Alternative 3 – Upgrade/Expand Existing Facility and Continued Subsurface Disposal

Under this alternative, the existing system (lagoon treatment and storage, Snowfluent and spray irrigation) would be upgraded / expanded with continued use of existing disposal systems, or use of a replacement subsurface disposal system(s).

It is envisioned that a first stage of this alternative would be undertaken to address the immediate operational priority of improving and increasing subsurface disposal capabilities, and potentially provide some increase in the Westport WWTS rated capacity. These near-term works are to recognize the Village's identified financial and timeline constraints. Future stage(s) would look to maximize treatment and subsurface disposal capacity within the existing site, however additional suitable land is needed to enable the Westport WWTS capacity to be sufficiently increased to meet the community's projected future wastewater servicing needs.

Assuming additional suitable land availability – this alternative, or future stages of this alternative have the potential to service future flows and could adequately address the Problem Statement.

This Alternative Solution was added to the short list for further consideration.

Alternative 4 – Additional/New Facility at Existing Site with Surface Water Discharge

For this alternative, an additional or new wastewater treatment facility would be constructed on site, and treated effluent discharge would be to surface water (i.e. new outfall to Upper Rideau Lake).

A new facility and surface water discharge could potentially address the Problem Statement. However, in consideration that Upper Rideau Lake is Policy 2 with respect to total phosphorus, and the MOECC position is that there should be no surface water discharge to the Upper Rideau Lake from the Westport WWTS; this alternative was not evaluated further.

Alternative 5 – Additional/New Facility at Existing Site with Subsurface Disposal

This alternative option is to add or construct a new wastewater treatment facility at the existing site, and continue subsurface disposal with upgraded/replacement disposal system(s). One or both of the existing lagoons would remain to provide storage and equalization of wastewater flows for the additional/new treatment facilities. It is unlikely that a new wastewater treatment facility in combination with upgraded subsurface disposal capabilities can be implemented within the identified financial and timeline constraints. As functional effluent disposal capacity is identified as the priority operational constraint, improving and increasing subsurface disposal capabilities should be undertaken at the first opportunity (similar to Alternative 3). Future stage(s) would look to add or construct a new treatment facility and maximize subsurface disposal capacity within the existing site. Additional and enhanced tertiary treatment facilities may offer opportunities for some benefit in terms of subsurface disposal capacity. However, additional treatment levels may not necessarily translate to a subsurface disposal capacity benefit, due to site specific 'reasonable use concept' groundwater criteria considerations.

This alternative is considered to be able to service existing flows, but its potential to service future flows or a portion of future flows is not certain and requires assessment. Assuming additional suitable land availability – this alternative, or future stages of this alternative have the potential to service future flows and could adequately address the Problem Statement.

This Alternative Solution was added to the short list for further consideration.

Alternative 6 – New Facility at a New Site with Surface Water Discharge

Under this alternative, a new wastewater treatment facility would be constructed at a new site, and treated effluent discharge would be to surface water (i.e. new outfall to Upper Rideau Lake).

A new facility at a new site with surface water discharge could potentially address the Problem Statement. However, in consideration that no existing municipal land or other land/site is identified as potentially available, and the MOECC position is that there should be no surface water discharge to the Upper Rideau Lake from the Westport WWTS; this alternative was not evaluated further.

Alternative 7 – New Facility at a New Site with Subsurface Disposal

Under this alternative, a new wastewater treatment facility would be constructed at a new site, and treated effluent discharge would be to a subsurface disposal system(s).

A new facility at a new site with subsurface water discharge could potentially address the Problem Statement. It is noted that no existing municipal land or other land/site is identified as potentially available. In the event that a new site and suitable additional land is identified in the future, this alternative can be further evaluated.

This Alternative Solution was added to the short list for further consideration.

Alternative 8 – Convey Wastewater to Another Wastewater Treatment Facility

This alternative would involve conveying all or a portion of Westport's wastewater flows to another wastewater water treatment facility.

Assuming additional capacity would be available at another receiving wastewater treatment facility, under a mutually acceptable agreement, this alternative could potentially address the Problem Statement. Municipal wastewater treatment facilities in the vicinity are Perth, Sydenham and Smiths Falls. Given the significant conveyance distances involved (30 km, plus) and the associated magnitude of construction, operation, and treatment costs, this alternative's costs are considered not economically feasible, and prohibitive. Therefore, this alternative was not evaluated further.

5.3 Evaluation of Screened Alternative Solutions (Short List)

The description of alternatives in **Section 5.2** also identifies the rationale for not evaluating certain Alternative Solutions, due to technical, environmental and/or economic considerations. This preliminary screening step resulted in a short list of Alternative Solutions listed below:

Alternative 1: Do Nothing - Included as a comparative 'Do Nothing' scenario, this option represents maintaining the status quo, with no proactive action taken.

Alternative 3: Upgrade/Expand Existing Facility and Continued Subsurface Disposal

Alternative 5: Additional/New Facility at Existing Site with Subsurface Disposal

Alternative 7: New Facility at a New Site with Subsurface Disposal

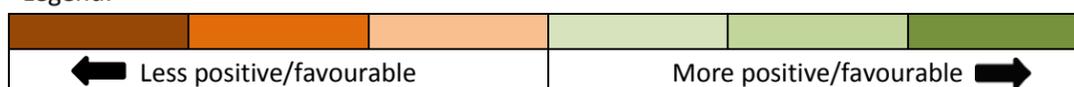
The Alternative Solutions were assessed as part of Phase 2 of the Municipal Class Environmental Assessment in a comparative evaluation table. The table was developed to consider comparative technical aspects of the Alternatives, as well as potential effects related to the Natural, Social and Economic Environment as well as cultural heritage based on research for the Inventory of the Natural, Social and Economic Environment as well as cultural heritage, as found in TM #5.

Table 5.1 provides the Comparative Evaluation Table for Alternative Solutions.

Table 5.1 Comparative Evaluation of Alternative Solutions

Item / Issue Consideration	Alternative Solutions			
	Alternative 1 Do Nothing	Alternative 3 Upgrade/Expand Existing + Subsurface Disposal	Alternative 5 Additional/New Facility, Existing Site + Subsurface Disposal	Alternative 7 Construct New Facility at New Site + Subsurface Disposal
Alternative Concept Description	Maintain Status Quo	Upgrade/Expand existing WWTS at existing site, and continue subsurface disposal with upgraded/replacement disposal system(s). Maximize treatment and disposal capacity at site – but future additional land requirement assumed.	Additional/New treatment facility at existing site, and continue subsurface disposal with upgraded/replacement disposal system(s). Maximize treatment and disposal capacity at site – but future additional land requirement assumed.	Construct a new treatment and subsurface disposal facility on a new site. Suitable land availability and potential for new site to meet future wastewater servicing needs assumed.
Technical				
Address existing WWTS operational constraints	No	Yes, able to resolve	Yes, able to resolve	Yes, able to resolve
Use and optimize existing site infrastructure	Partially	Yes	Partially	No
Adequately service existing flows	No	Yes	Yes	Yes
Adequately service future flows	No	No - existing site Yes – assumed additional land availability	Potentially (Yes – assumed additional land availability)	Yes – assumed potential
Anticipated WWTS Performance	Marginal	Improved	Improved	Most Improved
Staged WWTS Implementation Potential	Not Applicable	Yes	Potentially	Unlikely
Ease of Implementation	Not Applicable	Good – integrated to existing	Requires new facility design	Requires new land/site and new facility design
Additional land required / [currently available]	Not Applicable	Future – Yes / [Available – No]	Future – Yes / [Available – No]	Yes / [Available – No]
Staged Implementation Opportunity	Not Applicable	Yes	Potentially	Unlikely
Social				
Meet existing community servicing needs	No	Yes	Yes	Yes
Meet community growth servicing needs	No	No – existing site Yes – assumed additional land	Potentially (Yes – assumed additional land)	Yes – assumed potential
Potentially affect surrounding residences	No	Yes – assumed additional land	Yes – assumed additional land	Yes – new site
Affect surrounding lands / landuse planning	No	Yes – assumed additional land requirement	Yes – assumed additional land requirement	Yes – new site
Cultural/Heritage resources impact	No	Potential – assumed future additional land	Potential – assumed future additional land	Potential – new site / additional land
Recreation resources impact	No	No impact anticipated	No impact anticipated	No impact anticipated
Economic				
Capital Cost	Not Applicable	Moderate	High	Highest
Operating Cost	Moderate	Moderate	High	High
Financial viability / sustainability	Yes	Yes	Potentially	Unlikely
1 st Stage (cost/schedule) ability to fall within OCIF funding program limits/requirements	Not Applicable	Likely – near term No – future stage	Unlikely – near term No – future stage	No
Additional 3 rd party funding required for future stage(s) / [source secured]	Not Applicable	Likely / [Secured – No]	Yes / [Secured – No]	Yes / [Secured – No]
Environmental				
Continued zero discharge to Upper Rideau Lake	Yes – assuming adequate subsurface disposal functional capacity or alternate arrangements	Yes	Yes	Yes
Surface water quality	Monitored – potential impact from failing systems	Monitored – less potential impact	Monitored - less potential impact	Monitored – least potential impact
Ground water quality and Well Head Protection Area (WHPA)	Monitored – potential impact from failing systems (site within WHPA-Area D)	Monitored – less potential impact (existing site remains within WHPA-Area D)	Monitored - less potential impact (existing site remains within WHPA-Area D)	Monitored – least potential impact (assumed relocated out of WHPA Area D)
Terrestrial habitat impact	No	Potential – assumed future additional land	Potential – assumed future additional land	Potential – new site / additional land
Aquatic habitat impact	Potential impact from failing systems	Less potential impact	Less potential impact	Least potential impact

Legend:



5.4 Comparative Evaluation of Alternative Solutions Discussion

The comparative evaluation table presented the three alternatives short-listed, and the “Do Nothing” scenario.

The “Do Nothing” scenario was not carried forward. Each of the remaining Alternative Solutions #3, #5 and #7 were compared. Each Alternative Solution also considered a staged approach to address near-term issues, with consideration to financial, land and timeline constraints. Alternative #7 could be staged, however the first stage would be beyond the Village of Westport’s financial constraints and would require assessing additional environmental impacts. Alternative #7 was not selected.

Alternative #3 and #5 each proposed the use of the existing site in an effort to ease land availability and environmental considerations. The suggested use of effluent disposal methods/capacities other than Snowfluent freeze-crystallization also provides benefits as neither alternative would be seasonally dependant. The creation of a new facility on-site (Alternative #5), however, carried additional costs without clarity on whether the new site could improve effluent disposal capacity. Alternative #3 proposed to continue the use of subsurface disposal on the existing site with the intent to use existing infrastructure where possible.

Alternative Solution #3 aligns most closely with or has the ability to address the elements of the Problem / Opportunity statement and key considerations identified in **Section 3** such as use of existing system components, staged approach, financial considerations, source water and groundwater considerations and no discharge to Upper Rideau Lake. Alternative Solution #3 was selected as the Preliminary Preferred Alternative Solution as identified in the comparative evaluation table.

5.5 Preferred Solution: Alternative #3 – Upgrade/Expand Existing Facility and Continued Subsurface Disposal

Based on the evaluations presented in Technical Memorandum #5, the Preliminary Preferred Solution was established as:

Alternative #3: ‘Upgrade/Expand the Existing Facility with Continued Subsurface Disposal’

The first stage of this alternative is to address the immediate operational priority of improving and increasing subsurface disposal capabilities, adequately service existing flows, and potentially provide some increase in the Westport WWTS rated capacity. Future stage(s) may look to maximize treatment and subsurface disposal capacity within the existing site, however additional suitable land is anticipated to be needed to enable the Westport WWTS capacity to be sufficiently increased to meet the community’s projected future wastewater servicing needs for the full 20-year planning period.

The staged approach to implementation is explained further in subsequent sections as part of the Alternative Design Concepts.

Stage 1 works consider upgrades to the existing effluent disposal systems (snow making), a new large subsurface disposal system (LSSDS), and/or some combination of these disposal systems; and utilizing the existing lagoons for wastewater treatment. Considerations were given to the existing systems and a new LSSDS:

- The Snowfluent (due to freeze-crystallization) operation can only operate during suitable winter operations.
- Effluent spray irrigation is prohibited when the ground is frozen, and can only operate during suitable weather and site conditions. Furthermore, spray irrigation is not presently part of the Village's WWTS Certificate of Approval for the current facility; this work has been proceeding under a Provincial Officer's Order.
- Conversely, a large subsurface disposal system (LSSDS) can operate on a continuous basis throughout the year, and is not subject to the same climatic constraints as the existing systems.
- The LSSDS is identified as a lower energy use application, whereas the existing systems are identified as moderate to high energy use applications, with high operating and maintenance costs.
- Preliminary site considerations suggest a partially raised or fully-raised engineered large subsurface disposal system may be the most appropriate for the existing site, for continued subsurface disposal.

Figure 5.1 (Figure 8.1 in Technical Memorandum #5) provides locational information of the existing effluent disposal systems, and a concept location for a large subsurface disposal system.

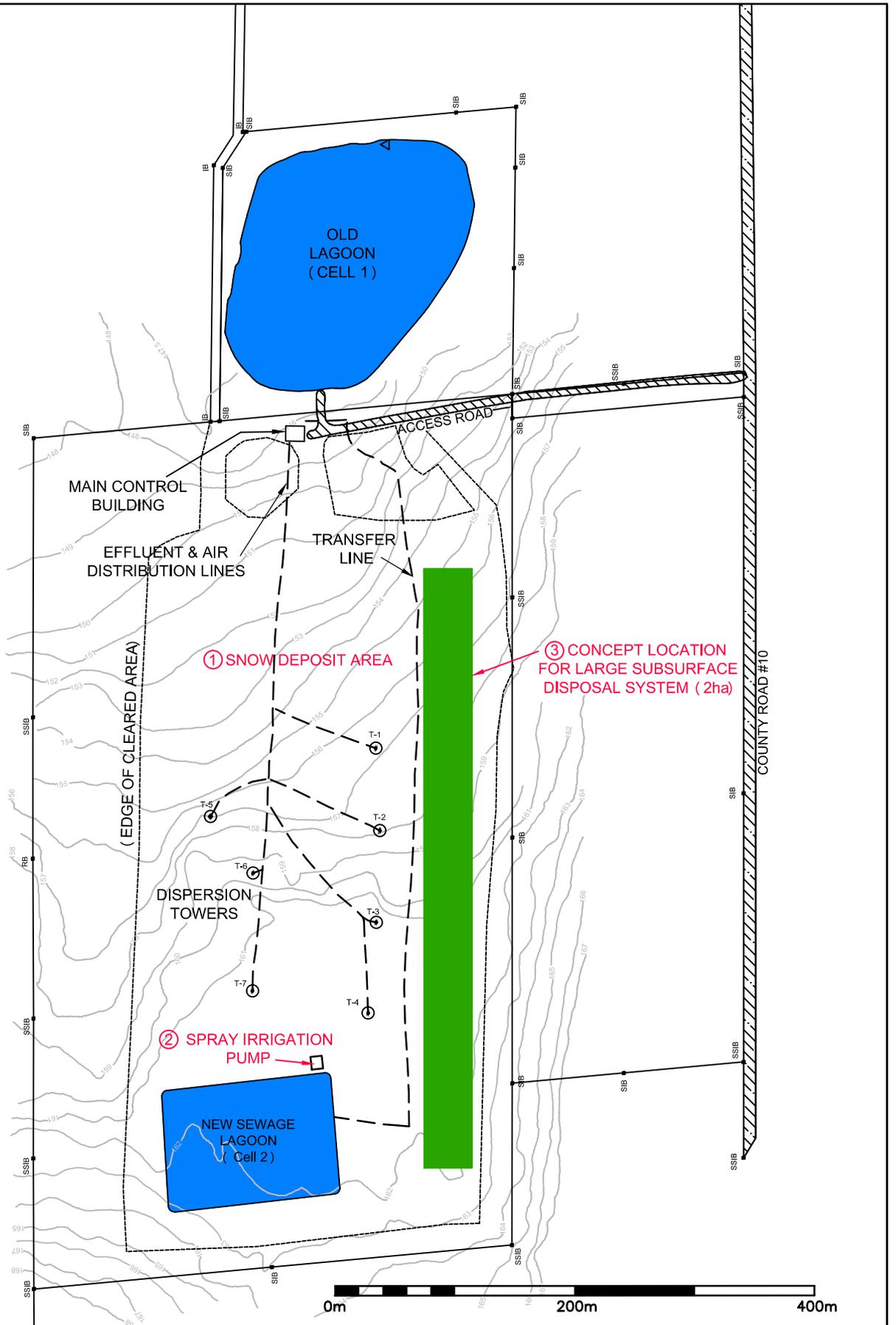


Figure 5.1 - Alternative #3 Initial Concept



6 Phase 3: Overview of Alternative Design Concepts

6.1 Alternative Design Concepts

In Phase 3 of the Class EA Process, Alternative Design Concepts were developed for evaluation based on the identified Preferred Alternative Solution. This further refines the design, and gives consideration to the comments received in Phase 2.

The Alternative Design Concepts that were identified as potential options to achieve our Stage 1 objectives are:

Design Concept 'A'

- Facultative Lagoon Treatment; and
- Upgraded/replacement subsurface disposal.

Design Concept 'B'

- Facultative Lagoon Treatment;
- Supplemental Treatment; and
- Upgraded/replacement subsurface disposal.

The following provides a description of the alternative design concept components:

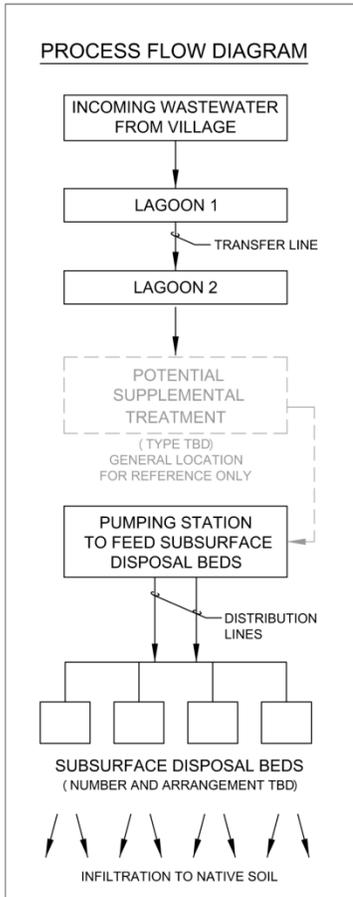


Figure 6.1 Process Flow Diagram - Alternative Design Concepts

Facultative Lagoon Treatment (Design Concept 'A' and Concept 'B')

- Two lagoon cells operate in series:
 - Flow enters Lagoon 1 first;
 - Effluent is later sent to Lagoon 2 for further facultative treatment based on required detention time / loading rates.
- This is a proven treatment option with a lower relative cost to larger mechanical treatment systems in larger municipalities.
- This component makes use of the two (2) existing lagoon cells and affiliated lagoon infrastructure to provide secondary biological treatment as part of Design Concept 'A' and 'B'.

Supplemental Treatment (Design Concept 'B' Only)

- Additional treatment processes can be incorporated within or following the existing lagoon treatment process aimed at further improving effluent quality above lagoon and subsurface disposal treatment systems.
- The existing lagoon cells would continue to provide biological treatment and flow equalization:
 - Supplemental treatment measures offer a potential for further improved quality effluent through addressing specific contaminants of concern if identified through operation and future monitoring (not yet present or observed).
 - Incorporation of additional treatment measures in future also promotes longevity of the subsurface disposal system.

Upgraded/ Replacement Subsurface Disposal (Subsurface Bed Disposal) (Design Concept 'A' and Design Concept 'B')

- Large subsurface disposal systems gradually dispose of effluent underground, where soil functions as a biological and physical treatment system. It also allows the treated effluent to disperse in the receiving groundwater over time and be monitored.
 - In Stage 1, a subsurface bed disposal field would be constructed to improve site conditions to enhance treatment, drainage and infiltration.
 - Sampling and monitoring programs will be a continued requirement. These requirements will be set out through the Ontario Ministry of the Environment and Climate Change (MOECC) approval process to ensure continued protection of the environment.
 - The bed disposal system is a non-seasonally dependent option, which has the potential to ease the peak periods of loading through gradual disposal/dispersion.

6.2 Feedback on Approach to Evaluation

The comparative evaluation table in TM #6, and included in this ESR as **Table 6.1**, evaluated the Alternative Design Concepts against technical, social, economic and environmental considerations. Based on feedback received following PIC #1, additional issues were added or further explained within the Alternative Design Concepts Comparative Evaluation table. These additions included the following:

- Expanded the potential “effect on surrounding residents” to also consider the potential effect on residents, businesses and property;
- Expanded the consideration of cultural heritage to include archaeology information obtained from Stage 1 archaeological assessment;
- Revised the land use planning considerations to consider more broadly “legal, jurisdictional and land use planning”;
- Revised the “Recreational Resource” issue to also include a consideration of institutions near the Westport WWTS; and
- Expanded the “groundwater quality” issue to also consider more broadly “the effect on private and municipal wells groundwater quality and the Wellhead Protection Area.”

Additional technical details were included in the comparative evaluation table to provide information necessary to adequately compare the Design Concepts. The comparative evaluation table for the Assessment of Alternative Designs was provided to the TSC for feedback as part of discussions regarding the two Alternative Design Concepts.

6.3 Evaluation of Alternative Design Concepts

As identified in **Section 6.1**, the two main alternative Stage 1 design concepts are:

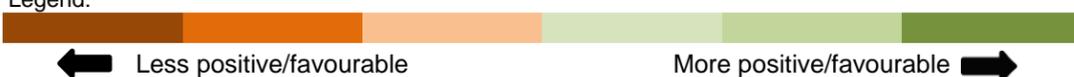
- **Design Concept - A:** use existing facultative lagoon treatment and upgraded/replacement subsurface disposal; and,
- **Design Concept - B:** use existing lagoon treatment, plus supplemental treatment, and upgraded/replacement subsurface disposal.

Table 6.1 on the following page presents a comparative evaluation of the two Stage 1 design concepts.

Table 6.1: Comparative Evaluation of Alternative Stage 1 Design Concepts

Item / Issue Consideration	Stage 1 - Alternative Design Concepts	
	Design Concept -A Facultative Lagoon Treatment + Subsurface Bed Disposal	Design Concept - B Facultative Lagoon Treatment + Supplemental Treatment + Subsurface Bed Disposal
Technical		
Address Priority WWTS Operational Constraint; Remove Seasonal Effluent Disposal Constraints	Yes	Yes
Use and Optimize Existing Site Infrastructure	Yes	Yes
Subsurface Bed – Base Area	5.0 ha	5.0 ha
Proposed System Rated Capacity (ADF-annual)	350 m ³ /d	350 m ³ /d
Proposed System Capacity (ADF-max. month)	525 m ³ /d	525 m ³ /d
Adequately Service Existing Flows	Yes	Yes
Adequately Service Future Flows	No – not Stage 1	No – not Stage 1
Anticipated WWTS Performance	Improved Performance Improvements are Generally Operational and not due to Environmental Constraints	More Improved with Increased Longevity of Subsurface Disposal System due to Higher Quality Effluent Performance Improvements are Generally Operational and not due to Environmental Constraints
Wastewater Effluent Quality	(Equiv. to) Level II (OBC), 30 mg/l Total Suspended Solids, 25 mg/l CBOD ₅ , No Nutrient Removal. NOTE: Empirical data for the current site and lagoon operations have not identified additional nutrient removal requirements	(Equiv. to) Level IV (OBC), 10 mg/l Total Suspended Solids, 10mg/l CBOD ₅ , Capable of Nutrient Removal (Nitrogen and Phosphorus) NOTE: Empirical data for the current site and lagoon operations have not identified additional nutrient removal requirements
Staged WWTS Implementation Potential	Yes	Yes
MOECC Approval Application – Complexity / Timing	Low complexity – based on being replacement system for existing approved subsurface disposal system. Pre-consultation efforts targeting opportunity for expedited approval.	Higher complexity – based on being replacement subsurface system with additional supplemental treatment. Pre-consultation efforts targeting opportunity for expedited approval.
Potential for future rated capacity increase, subject to performance monitoring and supporting data	Yes – potential (subject to supporting data).	Yes – potential (subject to supporting data).
Effect on potential future increase of WHPA of existing municipal wells	May impact locational site suitability considerations in future.	May impact locational site suitability considerations in future.
Social		
Ability to meet existing community wastewater servicing needs	Yes – existing rated capacity.	Yes – existing rated capacity.
Ability to meet future community growth wastewater servicing needs	No – not with Stage 1, future stages to address capacity increases.	No – not with Stage 1; future stages to address capacity increases.
Effect on existing and/or future nearby residences, businesses or property	Anticipated to lessen impact with no or minimal snow making or spray irrigation.	Anticipated to lessen impact with no or minimal snow making or spray irrigation.
Legal / Jurisdictional / Land Use Planning	Stage 1 – generally status quo (use of existing site, no additional lands).	Stage 1 – generally status quo (use of existing site, no additional lands).
Effect on Cultural Heritage Landscapes and Built Heritage Resources	None anticipated – use of existing site.	None anticipated – use of existing site.
Effect on Potential Archaeological Resources	Minor, limited disturbance expected on site. Stage 2 assessment required.	Minor, limited disturbance expected on site. Stage 2 assessment required.
Effect on Community Institutional or Recreation Facilities	None anticipated – use of existing site.	None anticipated – use of existing site.
Economic		
Overall Capital Cost ¹	\$3.2 to 3.5 million	\$5.8 million to \$6.5 million
Operating & Maintenance Costs ²	Lower than existing, in range of approx. \$105k /yr	Moderate – approx. \$150k to \$190k /yr
Financial Viability / Sustainability	Greater than Concept 'B'	Less so than Concept 'A'
Stage 1 Cost/Schedule: ability to fall within OCIF funding program limits/requirements	> 45% above existing received OCIF-1 funding / anticipated requirement for expedited design & approvals for implementation to meet timelines.	>160% above existing received OCIF-1 funding / anticipated requirement for expedited design & approvals (greater schedule pressures for incorporation of design and approvals of supplemental treatment system.)
Environmental		
Effect on Sensitive Resource: Continued zero discharge to Upper Rideau Lake	Yes	Yes
Effect on Surface Water Quality	Stage 1: Anticipated improved subsurface treatment/disposal performance. Monitored as part of site approval. Natural Heritage Constraints Analysis noted low potential for off-site impacts, such as to surface waters in the surrounding area.	Stage 1: Anticipated improved subsurface treatment/disposal performance. Monitored as part of site approval. Supplemental treatment offers greatest anticipated treatment performance generally concerning operations and subsurface disposal system longevity and not environmental concerns. In future, supplemental treatment may offer greater treatment/disposal performance, to address any additional treatment needs if identified through site monitoring. Natural Heritage Constraints Analysis noted low potential for off-site impacts, such as to surface waters in the surrounding area.
Effect on Private and Municipal Wells (ground water quality and Well Head Protection Area (WHPA))	Anticipated improved subsurface treatment/disposal performance. Monitored – potential impact from failing systems (site within WHPA-Area D). No anticipated additional effects without supplemental treatment when compared to Design Concept 'B'.	Greatest treatment performance, subsurface treatment/disposal performance and improved longevity. Monitored – least risk of impact from failing systems (site within WHPA-Area D).
Effect of Terrestrial Habitat: Construction and Operation	Minimal – use of existing site and previously cleared area. Natural Heritage Constraints Analysis noted low potential for impacts to natural heritage features and functions.	Minimal – use of existing site and previously cleared area. Natural Heritage Constraints Analysis noted low potential for impacts to natural heritage features and functions.
Effect of Aquatic Habitat: Construction and Operation	No/minimal - use of existing site Natural Heritage Constraints Analysis noted low potential for impacts to natural heritage features and functions.	No/minimal – use of existing site Natural Heritage Constraints Analysis noted low potential for impacts to natural heritage features and functions.
Notes:	<p>1. Overall capital cost is an opinion of probable cost (2015 \$) – includes allowances for equipment, installation, contractor's and engineering services, and 10% contingency. HST not included. Probable costs are based on understandings and assumptions at this time, and are subject to future considerations and changes.</p> <p>2. Operating & maintenance costs are an order of magnitude opinion of probable costs (2015 \$), based on understandings and assumptions at this time. Opinion of probable costs are subject to future considerations and changes. Existing snowfluent and spray irrigation system O&M cost estimated as \$200k (based on Village 2014 cost information, and assuming standard sampling and reporting requirements).</p>	

Legend:



6.3.1 Assessment of Alternative Design Options Discussion

The following presents comparative observations and comments, as provided in TM #6:

Similarities with Design Concept - 'A' and Design Concept - 'B'

- The operational priority is to remove the seasonal effluent disposal constraint and disposal loading variations presently experienced. The implementation of the subsurface bed disposal system is the critical path scheduling need with either Design Concept 'A' or 'B', in considering the timing constraints imposed by the Village's current OCIF funding.
- Both design concepts are the same in terms of Stage 1 initial system rated capacity and LSSDS subsurface bed sizing.
- Performance monitoring of Design Concept 'A' or 'B' would allow future evaluations and determinations to be made on capacity re-rating opportunities.

Cost Comparisons

- The overall opinion of probable capital cost for Design Concept 'B' is significantly greater than that of Design Concept 'A'. Design Concept 'A' aligns more closely with the Village's existing secured OCIF Intake 1 funding program (in terms of cost and timelines).
- Design Concept 'B' presents a substantive financial burden to the Westport community. It is acknowledged as a beneficial future consideration.
- Operating and Maintenance costs of Design Concept 'A' are estimated to be less than Design Concept 'B'. This is subject to variances such as the optimized supplemental treatment system, and preventative maintenance efforts. The higher range of estimated operating and maintenance costs for Design Concept 'B' are similar to those estimated for the existing system. The range of costs estimated for Design Concept 'A' are lower than the estimated existing costs.

Technical and Environmental Considerations

- Sampling parameters for the discharge effluent are: carbon, nitrogen and phosphorous. The constraining parameter at this site is nitrogen, which is monitored by the Village as part of the current C of A requirements. Historical nitrate levels measured at the property boundary are well below the Ministry's requirements, and well below the typical supplemental treatment capabilities for further nitrate reductions. Thus, the additional cost for implementation of supplemental treatment is not identified at this time, but is acknowledged as a beneficial future consideration.
- An enhanced monitoring program is recommended to be implemented as part of the site improvements. Enhanced data collection and analysis will allow for monitoring for additional treatment needs/opportunities towards nitrates.
- Incorporating future improved treatment measures can potentially offer extended lifespan of the subsurface disposal system, thus lowering the lifecycle cost and protecting initial investment.
- Design Concept 'B' can be implemented within the proposed Design Concept 'A' WWTS at a future date.
- Important considerations for the preservation and performance of the LSSDS include; selection of the sand bed media and further filtration of the lagoon effluent before discharging into the disposal bed, bed size design and dosing strategies.

- The recommended enhanced monitoring program can also include the installation of standpipes to monitor the bed condition.

From an environmental perspective, Design Concept 'B' is considered to produce a high quality effluent with low nitrate-nitrogen concentration and thus offers a higher degree of ground water protection and less potential to affect local private and municipal wells. It is ranked higher in the environmental category of the evaluation matrix, and lower in the economic category. With that considered, and based on historical data, parameters have not been observed that would require supplemental treatment to meet MOECC requirements. Typical supplemental treatment targets nitrate reduction, however, based on the historical site data, nitrate levels observed at the property boundary under existing operations are already at or below the lower range of the expected supplemental treatment system's capabilities. An enhanced monitoring program based on MOECC's requirements will be recommended for implementation as part of the site improvements. Extensive data collection and analysis from this program will allow for considerations for additional treatment needs/opportunities at the Westport WWTS. As part of the enhanced monitoring program, monitoring devices (eg. standpipes) are also recommended to allow for periodic assessment of the bed conditions, and to allow for prompt action, when required, to improve the conditions. Enhanced monitoring requirements for the proposed works were supported in pre-consultation discussions with the MOECC.

6.4 Preferred Alternative Design Concept – Concept 'A'

Based on the above considerations and **Table 6.1** comparative evaluation results, Design Concept 'A' has been identified as the recommended "Preferred Design Concept" for Stage 1. Design Concept 'B' is recognized as a beneficial consideration for future, and can be implemented at a later date within the proposed Design Concept 'A' WWTS.

Design Concept 'A' was selected based on the following rationale:

- It is closest to the current funding available to the Village of Westport compared to Concept 'B';
- It can be implemented without discharge to Upper Rideau Lake;
- It utilizes easily understood technology that can be implemented on the existing site;
- It has the potential to be implemented to meet the timing requirements of the current OCIF funding,
- It can be implemented with minimal impact to area residents with mitigation; and
- It does not preclude the Village from choosing/implementing supplemental treatment at a later date, or proceeding with other Stage 2 works.

Figure 6.2 shows the Stage 1 Design Concept Plan Location (Design Concept 'A').

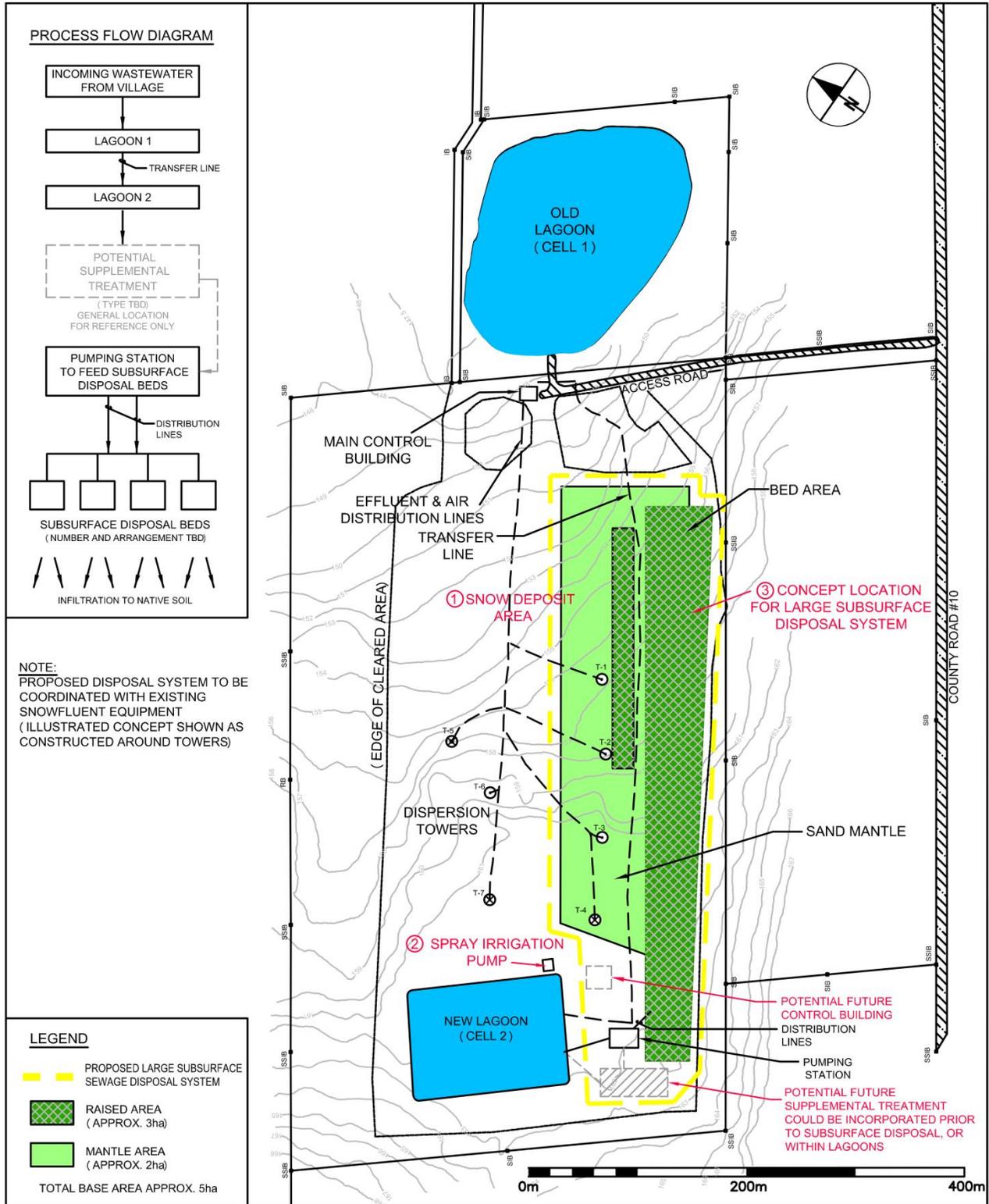


Figure 6.2 Stage 1 Design Concept Plan Location

7 Project Description

7.1 Stage 1 Works

General Description

The preferred design concept for Stage 1 (Design Concept 'A') utilizes existing facultative lagoon treatment and incorporates a new large subsurface disposal system (LSSDS) within the existing site. The rated capacity of Stage 1 works is 350 m³/d (annual average day flow), 525 m³/d (maximum month average day flow), and 600 m³/d (maximum day flow). Monitoring of the system performance and data collection may have the potential to support a future application for an increase to the Westport WWTS rated capacity.

Facultative Lagoon Treatment

The existing lagoon treatment system includes two (2) lagoon cells to provide primary and secondary treatment, as well as balancing and storage of peak flow events. The cells operate in series: flow first enters Cell 1, having a volume of 55,000 m³ and a surface area of 3.5 ha; then Cell 1 flow is pumped to Cell 2, having a volume of 25,000 m³, and a surface area of 1.35 ha. Based on existing sewage/wastewater characteristics, the existing lagoon treatment system would operate within typical design parameters (detention times and loading rates) at an average day flow rate of up to 500 m³/d or higher.

Historical average Cell 2 effluent concentrations of 25 mg/l for CBOD₅ and 30 mg/l for TSS reflect achieving secondary treatment typical effluent quality (as per MOECC Procedure F-5-1 Table 1, without P removal), and meet the Level II (2) effluent quality criteria as published in the Ontario Building Code (2012) for 'Other Treatment Units'.

Stage 1 works consider making use of the existing two (2) existing lagoon cells and affiliated lagoon infrastructure to provide facultative lagoon treatment. A normal operating level of 85% of full working volume provides approximately 12,000 m³ of available storage capacity to attenuate maximum day flows, and maximum month flow periods.

Subsurface Disposal

A representative Stage 1 design concept envisions a fill-based subsurface disposal system, with the following features:

- Treated wastewater (effluent) flow fed to the subsurface disposal system, and pressure dosed within individual cells;
- Storage tank, pumps and connecting piping (if required);
- Electrical and control systems;
- A Large Subsurface Disposal bed system constructed using imported sand fill (minimum 500 mm thickness below initial infiltration surface);
- Multiple disposal beds with pressure distribution and dosing within gravelless leaching chambers or distribution pipe contained within a stone layer;
- Representative total soil infiltration area of 5.0 ha;
- Appropriate cover material, grading and vegetation; and
- Associated utilities and civil works.

The infiltration area sizing considers a maximum flow of 600 m³/d and a soil infiltration unit area hydraulic loading rate of 12 L/m².d. System sizing should be sufficiently conservative relative to annual and maximum month average day flows (350 m³/d and 525 m³/d, respectively).

Design considerations to ensure satisfactory long-term performance will include shallow placement of the initial infiltration surface, bed length parallel to surface contours (as possible), sufficient levels of pre-treatment (e.g. filtering/screening of flows prior to discharge into the beds), flow equalization/storage for attenuating peak flows, uniform distribution/application and dosing, and multiple beds/cells to provide sufficient disposal capacity for periodic resting and/or maintenance operations.

Figure 6.2 (Figure 7.1 in TM #6) illustrates a concept location plan for the Stage 1 preferred design concept.

Property Requirements

Implementation of the new LSSDS and related works are located within the existing Westport WWTS site. No property requirements are associated with the Stage 1 design concept.

Site Services & Utilities

Lagoon Cell 2 access road improvements, 600V power supply (from Main Control Building to vicinity of Cell 2), electrical and controls components and standby power provisions, are expected as required site utilities/services.

Approvals & Monitoring

Application for approval of Stage 1 works for a replacement alternate subsurface disposal system at a rated average day capacity 350 m³/d (127,750 m³ annual volume) is anticipated to require application to the MOECC to amend the existing Certificate of Approval, Number 8927-89AET, issue date October 5, 2010.

The current WWTS involves approval monitoring and recording through the existing Certificate of Approval. The approval monitoring and recording requirements for the proposed improvements will be set forth by the MOECC through the amended Certificate of Approval. Through pre-consultation discussions with the MOECC, it is anticipated that this will include an enhanced monitoring regime. General information is summarized below; additional detail of proposed approvals and monitoring is provided in TM#6A: Westport WWTS Stage 1 Capacity and Approvals Considerations.

- Lagoon Cell 2 content historical and continued objectives: CBOD5 – 25 mg/L, and Total Suspended Solids (TSS) – 25 mg/L.
- Groundwater at the downgradient site boundary – Reasonable Use Concept criteria/limits: Nitrate – 2.5 mg/L, and Chloride – 125 mg/L.

Provisional and Contingency Operations

It is recommended that the application for the amended C of A from the MOECC include existing Snowfluent and spray irrigation effluent disposal methods as provisional system operations.

To facilitate operation of the Westport WWTS during a sustained power outage, provisions for connection of a backup power supply should be considered.

7.2 Stage 2 Works

Stage 2 works are considered in **Section 7.4.1**.

7.3 Project Cost Estimate and Funding

Project Cost Estimate

The overall opinion of probable cost to complete the Westport WWTS Stage 1 upgrade to implement a replacement large subsurface disposal system is in the order of **\$3.2 to \$3.5 million**.

Notably, the overall opinion of probable capital cost for Design Concept 'B' is significantly greater than that of Design Concept 'A' (the preferred Design Concept). Design Concept 'A' aligns more closely with Village's existing secured OCIF Intake 1 funding program (in terms of cost and timelines). Despite the costs, Design Concept 'B' is acknowledged as a beneficial future consideration.

The Village of Westport is seeking additional funding as part of the next intake of OCIF funding, and will be reviewing its capital works budget as required. Nevertheless, at this time, Design Concept 'B' presents a substantive financial burden to the Westport community.

Table 7.1 Project Cost Estimate

Probable Project Cost	Cost (Estimate)
New Large Subsurface Disposal System	\$1.9M to \$2.0M
Site - Civil, Services and Utilities	\$260k to \$350k
Contractor's PM, Insurance & Bonds, Overhead & Profit	\$320k to \$350k
Contingency (10%)	\$250k to \$270k
Sub-Total Construction Cost (rounded)	\$2.7M to \$3.0M
Allowance (Engineering) (15%)	\$400k to \$450k
Allowance (Owner) (3%)	\$80k to \$90k
Total Project (Rounded)	\$3.2M to \$3.5M
1. Overall capital cost is an opinion of probable cost (2015 \$) – includes allowances for equipment, installation, contractor's and engineering services, and 10% contingency. HST not included. Probable costs are based on understandings and assumptions at this time, and are subject to future considerations and changes.	

Project Operations and Maintenance (O&M) Cost Estimate

The opinion of probable costs for annual operations and maintenance efforts associated with operating the proposed LSSDS at 350 m³/d (annual average daily flow) is estimated at approximately **\$105,000 annually**.

Operating and maintenance costs of Design Concept 'A' (the preferred Design Concept) are estimated to be less than Design Concept 'B'. Both costs are subject to variances such as the optimized supplemental treatment system, and preventative maintenance efforts. The higher range of estimated operating and maintenance costs for Design Concept 'B' are similar to those estimated for the existing system. The range of costs estimated for Design Concept 'A' are lower than the estimated existing costs.

In addition, Design Concept ‘A’ Operation & Maintenance cost estimates are lower than the existing Snowfluent system (existing Operation & Maintenance costs were estimated at approximately \$200,000 annually).

Table 7.2 Project Operations and Maintenance Cost Estimate

Probable O&M Costs	Estimate/ Allowance		Comment
	Concept ‘A’	Concept ‘B’	
Management & Reporting	\$10,000	\$10,000	Standard reporting for operation of system.
O&M (labour)	\$55,000	\$80,000	Approx. 0.5 - 0.7 of full time equivalent, based on existing operation labour, not in addition to it.
Lab Analysis	\$15,000 to \$20,000	\$15,000 to \$25,000	Monitoring requirements.
Chemicals	\$0	\$5,000 to \$25,000	Dependent on selection of supplemental treatment system/ processes.
Power/ Electricity	\$7,500	\$20,000 to \$25,000	\$0.15 per kWhr
Grounds Maintenance	\$2,000	\$2,000	Grass, snow plowing, etc.
Power Outage/ Contingency	\$3,000	\$6,000	Subject to backup power supply type and costs.
Annual Allowance for Equipment Replacement/ Major Repairs (incl. minor repairs and consumables)	\$5,000	\$10,000	Potential annual costs for minor repairs, and annualized potential costs for equipment repairs over longer lifespan (20 years).
Miscellaneous/ Small Items	\$5,000	\$5,000	Contingency for unforeseen items.
Total – Opinion of Probable O&M Cost	~\$105,000	~\$150,000 to \$190,000	Annual cost range (rounded).

1. Operating & maintenance costs are an order of magnitude opinion of probable costs (2015 \$), based on understandings and assumptions at this time. Opinion of probable costs are subject to future considerations and changes, and vary based on characteristics of individual supplemental treatment systems.
2. The above noted costs are noted to vary depending upon preventative maintenance, chosen treatment systems (chemicals, energy use), etc.
3. Existing WWTS O&M costs were estimated as \$200k.

7.4 Schedule and Approvals

7.4.1 Staging

During and following implementation of Stage 1, other Stage 2 and future potential initiatives can be initiated:

Concurrent with Stage 1

The Village can consider potential availability of additional land(s); forcemain conveyance of treated effluent to an additional site (appropriate for subsurface disposal system) could allow additional increases in the Village's overall WWTS capacity.

If potential additional land(s) are of adequate size, new treatment (lagoon based with supplemental treatment, or other treatment) and subsurface disposal systems could be implemented in stages to provide up to the full 20-year project additional flow. This could occur in combination with the improvements to the existing Westport WWTS site. Maintaining use of the existing lagoons is expected to be advantageous in terms of providing primary and secondary treatment, as well as providing flow balancing and storage for peak flow events.

The Village of Westport is encouraged to maintain open dialogue with the Township of Rideau Lakes on the boundary and jurisdictional considerations in planning for future stages.

Following Stage 1

A performance monitoring program is recommended to assess opportunities for increasing the rated capacity of the existing WWTS. If not initially supported, the monitoring program information may identify limiting constraints or parameters that potentially could be addressed with supplemental treatment or other measures. Consideration and assessment of potential rerating opportunities of the WWTS would involve consultations with, and input from regulatory authorities.

The Village of Westport is also concurrently proceeding with other initiatives (e.g. water conservation, reduction of inflow and infiltrations, lagoon desludging) which may reduce and/or otherwise improve the wastewater inflows, benefit future operations and performance capabilities of the Westport WWTS.

8 Consultation Approach

8.1 Communication Methods

The public consultation and communication program included a wide range of strategies to ensure that local residents and interested parties are informed about the project activities:

As part of EA process, consultation included:

- **Project Mailing List:** The master project contact list included residents, members of community groups, representatives from relevant government and regulatory agencies, business, landowners within 400 m of the existing Westport WWTS, and a number of technical review agencies and organizations. Interested members of the public were added to the project mailing list if requested and individuals and groups on the list will be kept informed about project developments using direct mail outs. A copy of the Project Mailing List is included in **Appendix A** for further reference.
- **Technical Steering Committee (TSC):** A Technical Steering Committee (TSC) was established by the Village of Westport to provide comments about technical memoranda, as well as feedback as the study progressed. The TSC met monthly and remained engaged through the course of the project.

The TSC mandate, as identified in a Terms of Reference discussion at the first TSC meeting, was to serve in an advisory role on matters related to the project rather than as a decision making body. This was identified to protect the interest of those serving on the committee as they could not speak directly for their respective organizations, while also providing an opportunity for debate and comment. Recommendations could be made, however ultimately the consultant would be providing a recommended solution and design concept for Council consideration.

The TSC was facilitated by AECOM along with the Village of Westport Clerk/ Treasurer. Members of the TSC included a representative from each of the following:

- Village of Westport Residents (two representatives)
- Township of Rideau Lakes
- Upper Rideau Lake Association
- United Counties of Leeds and Grenville
- Rideau Valley Conservation Authority

The following TSC meets were held, with the following general focus of discussions:

- TSC #1 (May): TSC Setup / Background Issues
- TSC #2 (June): Discuss Growth and Capacity Issues (TM#1/TM#3)
- TSC #3 (July): Updates to TM #1/#3; Review TM #2
- TSC #4 (Aug): Condition Assessment and Alt. Solutions (TM#4/TM#5). Review PIC#1 boards
- TSC #5 (Sept): MOECC Mtg. Recap/ Additional Site Investigations considered
- TSC #6 (Oct): TM#6 overview, Preliminary Preferred Solution discussion
- TSC #7 (Oct): TM6 updates, Karst, TM #6A initial discussion
- TSC #8 (Nov): Review TM6/6A/6B Updates, Preliminary Preferred Solution discussion
- TSC #9 (Dec): MOECC Mtg. Recap; PIC #2 Recap

TSC meeting minutes are included in **Appendix A**.

- **Project Website:** The Village of Westport provided notices on its website, PIC display boards following the meeting, as well as copies of the Technical Memoranda following Technical Steering Committee review. The website is located at: <http://village.westport.on.ca/town-hall/water-and-waste-water-infrastructure>
- **Monthly Council Meetings:** AECOM presented at the monthly Village of Westport council meetings on progress of the EA.

8.2 Notifications and Public Meetings

The following notifications and public meetings were held for this project:

- **Notice of Study Commencement/ Notice of Public Information Centre (PIC) #1:** A combined notice was prepared for the Notice of Commencement and PIC #1. The notice was placed in the Village of Westport Review Mirror on August 13, 2015 as well as on the Village of Westport website on August 13, 2015. Copies of the notice were sent to the individuals and groups on the project mailing list, as well residents and businesses within 400m of the existing Westport WWTS. A copy of the notice is provided in **Appendix A**.
- **Public Information Centre (PIC) No.1:** The first public meeting was held in the Village of Westport at the North Crosby Community Centre on August 27, 2015 from 5:00 to 8:00 p.m. Forty Four (44) people signed the record of attendance for Public Information Centre (PIC) #1.
- **Public Information Centre (PIC) No.2:** The second public meeting was held in the Village of Westport at the Westport Free Methodist Church on December 3, 2015 from 5:00 to 8:00 p.m. Thirty Eight (38) people signed the record of attendance for Public Information Centre (PIC) #2. The notice was placed in the Village of Westport Review Mirror on November 19, 2015 as well as on the Village of Westport website on November 19, 2015. Copies of the notice were sent to the individuals and groups on the project mailing list, as well residents and businesses within 400m of the existing WWTS. A copy of the notice is provided in **Appendix A**.



Figure 8.1 Public Information Centre #2

- **Notice of Study Completion:** A “Notice of Study Completion” was issued, notifying the public and agencies that the ESR will be published at study completion for the public record. The Notice advises the general public about where to find the ESR, as well as their ability to place a Part II Order request with the Minister of the environment if they have outstanding concerns about the project that cannot be resolved by the Region during the given review period. The Notice of Study Completion will be advertised on the Village of Westport website on December 21, 2015, and with notices in the Westport Review Mirror on December 17, 2015 and in January 2016. A copy of the Notice of Study Completion will also be sent to the project mailing list and available at the front of the ESR.

8.3 Public Information Centre Format

The two PICs made use of a drop-in centre format featuring display panels which visually displayed project information. Project team members from the Village of Westport and AECOM’s consulting team were available to speak one-on-one with the public during the meetings. The PIC materials can be found in **Appendix A**.

8.4 Summary of Public Issues, Comments and Concerns

8.4.1 Summary of Public Information Centre #1 Comments

Input received from the public consultation process (e.g. Public Information Centre # 1 – August 27, 2015), Technical Steering Committee, and review agency discussions is summarized below:

- **Nearby/surrounding residences:** some residents, and the Township of Rideau Lakes, reported occurrences of noise, odour, and snow/spray/mist drifting off-site from snowmaking and spray irrigation operations. The Township suggested considering ways to expand the study area and reduce off-site impacts to adjacent land owners.
- **Township of Rideau Lakes:** The Township acknowledged interests in property boundaries, impacts to residents, ongoing protection of groundwater/ source water protection and cross-boundary (jurisdictional) nature of the current facility, and provided input for consideration.
- **No discharge to lake:** Residents and interested parties were supportive of the decision not to consider surface water discharge to the Upper Rideau Lake as an alternative.
- **Well protection/ groundwater monitoring:** Further study of the existing site characteristics was suggested as the site is not considered ideal in terms of generally desired characteristics for effluent disposal, and lies mainly within the identified 25 year Wellhead Protection Area (WHPA – Zone D) of the Village of Westport municipal wells.
- **Cost considerations:**
 - Costs of the options should be considered, including capital and life cycle/operation and maintenance (though this should not be the only consideration in the evaluation).
 - In terms of comparative energy requirements for the existing site and proposed Westport WWTS alternatives, it was identified that power usage and assumed utility costs for Snowfluent generation are significant:
 - Snowmaking is identified as the highest energy usage;
 - Spray irrigation is considered to be a mid-range energy usage application;
 - The proposed subsurface bed disposal is identified to be the lowest energy usage system.
- **Supplemental treatment:** The option of 'supplemental treatment' prior to disposal was suggested to be considered as an alternative design concept for the proposed Stage 1 works.
- **Community growth and wastewater servicing capacity:** remains an important consideration for the future.

Comment Cards: Ten comment cards were received from PIC#1. One comment received suggested another alternative (Alternative #5), while all others were supportive or provided suggestions within the preferred alternative (Alternative #3). The comment cards can be found in **Appendix A**.

8.4.1.1 Consideration of Round #1 Comments

- ✓ **Upgrades/improvements to snowmaking/ spray irrigation are not preferred**
The preferred alternative solution identified from PIC #1 is continued subsurface discharge (with an upgraded/expanded facility). The alternative design concepts presented today incorporate a large subsurface disposal system. A subsurface disposal bed/system reduces potential off-site impacts to nearby residents from noise, odour, snow/spray/mist, in place of spray irrigation or snow making. Subsurface disposal also enhances treatment of the discharge, further protecting groundwater resources.
- ✓ **Site Characterization**
Additional studies were conducted on-site (boreholes, karst examination) and through assessment of additional background and supporting documentation, to further detail the site characteristics. This information was considered as part of the evaluation of the alternative design concepts.
- ✓ **Study Area**
The study area map was widened to the limits shown in Figure 1.1, to give consideration to the site in greater context (nearby residents/ businesses/ institutions, cumulative effects from nearby quarry operations). The Evaluation of the Alternative Design Concepts included further studies of the site characteristics, considerations for groundwater, as well as adjacent landowner/ impacts.

✓ **Cost and Climatic Considerations**

The Operating and maintenance costs for the existing and proposed Westport WWTS were considered in the evaluations of the alternative design concepts. The existing Westport WWTS components are considered mid to high energy use applications. The subsurface disposal system identified as the preferred solution is considered to have lower energy use, less operational complexity and is less sensitive to climatic variables.

✓ **Consideration of Supplemental Treatment**

Supplemental treatment of lagoon effluent (before subsurface discharge) for lagoon effluent was considered in the evaluation of alternative design concepts. Based on the evaluations discussed in the following panels, the inclusion of supplemental treatment is identified as a future consideration.

✓ **Staging**

As discussed in Section 7.4, this project is following a staged approach, which was identified to address existing issues now (Stage 1), while allowing time to find the necessary land for longer-term growth/ wastewater servicing capacity needs.

8.4.1 Summary of Public Information Centre #2 Comments

Input received from the public consultation process (e.g. Public Information Centre #2 – December 3, 2015), Technical Steering Committee, and review agency discussions is summarized below:

- **Supportive of Option 'A' and the EA Process:** Comment Cards provided many positive comments as identified below:
 - Option 'A' appears positive. Suggest in future looking at extending system south along lake if having increases (for further lake protection and help support system financially)
 - Feels like I understand both historic perspective and future of wastewater in Westport. Like the positive attitude of all involved; learned a lot.
 - Looking Good; cost and system reasonable and workable.
 - Found PIC very informative, now understand that new system will operate all winter so that sewage does not collect in the lagoons until the following spring. Support the proposed alternative as main concern remains that absolutely no sewage be discharged into the Upper Rideau Lake. In ideal world, would like to see the supplementary processing be part of stage one, but understand need to proceed with the available funds.
- **Surface Water Runoff:** Stakeholders were interested in the potential for surface water runoff from the site.
- **Karst:** Stakeholders were interested in the location of karst and its influence on the Westport WWTS.
- **Study Area/ Property Boundaries:** Some questions were raised about the role general study area.
- **Enhanced Monitoring Approach:** A comment was received that enhanced monitoring should go beyond being recommended and should instead be required. The commenter also identified that lagoon leak protection, monitoring and quality control should be important elements.
- **Integration with the Snowfluent System** – questions were asked about the whether the annual average flow volume accounts for the Snowfluent system as a contingency, site suitability if Snowfluent was not included as a contingency, the operating capacity of the existing Snowfluent system, and how changes to operating costs were considered.

Comment Cards: Five comment cards were received from PIC #2 and two email comments were provided after the event. There was no opposition to the Alternative Design Concept 'A' as presented at the PIC. The comment cards can be found in **Appendix A**.

8.4.1.1 Consideration of Round #2 Comments

- ✓ **Supportive of Option 'A' and the EA Process:** Many positive comments were received, and there were no comments opposed to the selected Design Concept 'A'.
- ✓ **Surface Water Runoff:** An AECOM hydrogeologist was at PIC #2 and answered questions from stakeholders; the preferred design concept is utilizing subsurface disposal, and is not intended to generate surface water runoff. A series of monitoring wells at site boundaries are in place to monitor groundwater and surface water parameters.
- ✓ **Karst:** The presence of karst was noted in the Karst Hazard Assessment and considered in this study within Technical Memorandum #6B. A letter from Malroz Engineering, the authors of the Wellhead Protection Area (WHPA) modeling, confirmed that the potential for karst was considered within the modeling and there are no anticipated impacts to the WHPA as a result.
- ✓ **Study Area/ Property Boundaries:** The general study area was for scoping purposes only and is not a buffer or prohibition on development. All project works for Stage 1 will occur within the existing project boundaries.
- ✓ **Enhanced Monitoring Approach:** Enhanced Monitoring features are recommended as part of this study, however MOECC sets the requirements for ongoing monitoring, quality control, and reporting in the Certificate of Approval (C of A). The monitoring program will be required to meet the requirements of the C of A. The Village's existing C of A sets out requirements for monitoring and reporting on the existing system, including the lagoons.
- ✓ **Integration with the Snowfluent System:** It is recommended that the Snowfluent system and effluent irrigation be identified as provisional items in the C of A amendment application. The snowfluent and spray irrigation operations were not considered to be required to achieve the proposed 350m³/day rated capacity; it is intended that the LSSDS would achieve this. The site's permissible subsurface disposal operations and flows would be required to adhere to the rated capacity set forth by the MOECC in the C of A, regardless of which effluent disposal method is used. Operating and maintenance costs for the existing Snowfluent and spray irrigation systems were included in the notes section of the lifecycle costs in Section 7; this operation and maintenance is estimated to be approximately \$200,000 annually. The Preferred Solution is expected to have lower overall operational and maintenance costs.

8.5 Agency Consultation

Agency notification was carried out through providing notices to agencies listed on the mailing list, and follow up information was provided if requested.

Ministry of the Environment and Climate Change

Pre-Consultation activities were carried out with the review agency the Ministry of the Environment and Climate Change (MOECC). A meeting was held on July 21, 2015 to review technical memoranda #1-3. The meeting included, among other statements, the MOECC position that there should be no discharge to Upper Rideau Lake. MOECC also indicated that the project can conduct a staged Municipal Class EA until additional land is available to meet growth requirements.

MOECC released memoranda on July 27, 2015 (in response to draft Technical Memorandum #3) and July 28, 2015 (in response to draft Technical Memorandum #2) to provide feedback related to the draft reports. These memoranda are included in **Appendix A** as correspondence.

A second meeting with the MOECC was held on October 20, 2015 at their Kingston office to provide details regarding Technical Memorandum #6, as well as to discuss the results received for the Karst Assessment. The question was raised of whether the WHPA study considered karstic features as described in the current assessment, and the Village agreed to contact the authors of this study/model to confirm this. The Alternative Design Concepts were discussed; Alternative Design Concept 'B' includes supplemental treatment, and, based on the weighting of the environmental considerations in the evaluation matrix and in consideration of the presence of the Well-head protection area near the site, it was identified as a Preliminary Preferred Design Concept. There were discussions on the constraining parameters at the site; nitrates and chlorides. It was noted that chlorides are a constraining parameter, however, not a health parameter, and the presence of background chlorides in the Village was noted. With the consideration of nitrates as the (traditional) constraining, health related parameter, it was noted that the empirical data for the site may support the consideration for an increase to the site's rated capacity (from 310 m³/day to 350m³/day); this would be considered as a monitoring based approach, with the available additional supporting data.

A third pre-consultation meeting with the MOECC took place on November 25, 2015 at their Kingston office. The meeting provided an opportunity to discuss TM #6, #6A and #6B, updated with additional data from the karst assessment, test pit soil characteristics, and calculations related to a proposed capacity increase to 350 m³/day based on empirical data. It was discussed that Alternative Design Concept 'A' satisfied the current requirements for the site (giving consideration to the constraining parameters), and Alternative Design Concept 'B' is a beneficial future consideration, but is a significant cost as compared to Alternative Design Concept 'A' and it was not identified as requirement at this time based on the current/historical site data. It was discussed that empirical data/proposed monitoring based approach is a recognized approach in the MOECC Sewer Design Guidelines. There were discussions on the monitoring requirement; it was agreed that a robust monitoring program is desirable to support the operations, and it was noted that this would be set forth by the MOECC in the new Environmental Compliance Approval (ECA) (previously known as C of A). Features of the LSSDS were discussed, including considerations for screening/filtering of the treated effluent prior to discharge into the beds, to preserve the beds, sizing considerations (a conservative approach), and dosing strategies to distribute the loading to the beds. It was noted that approaches to limit/lower organic loading into the disposal bed are desirable.

Other agency correspondence is included in **Appendix A**.

8.6 First Nation and Métis

Aboriginal Rights and Treaty Rights are enshrined in the Canadian Constitution. The Crown has a duty to consult and accommodate if it contemplates decisions that may have the potential to affect Aboriginal Rights or Treaty Rights. In practice, the Crown delegates many of the procedural aspects of Consultation to proponents to ensure that aboriginal interests are identified and potential impacts addressed.

First Nation and Métis groups were added to the project mailing list and provided notices throughout the project. These communities were asked to provide information about their Aboriginal or Treaty rights pertaining to a project. The Ontario Ministry of Aboriginal Affairs (MAA) and the Aboriginal Affairs and Northern Development Canada (AANDC) were also included on the mailing list to seek information. The Aboriginal and Treaty Rights Information System (ATRIS) was consulted to assist in developing the mailing list for this project.

The following Aboriginal communities were provided with notifications:

- Algonquins of Ontario Consultation Office
- Hiawatha First Nation
- Mohawks of the Bay of Quinte
- Mississaugas of Scugog First Nation
- Métis Nation of Ontario
- Chippewas of Georgina Island First Nation

- Curve Lake First Nation
- Alderville First Nation
- Chippewas of Rama First Nation
- Beausoleil First Nation

This project is not anticipated to have any adverse effects following mitigation based on the following considerations:

- The current site has been used for the last 20 years (former EA completed in 1995) for the purposes of a municipal wastewater disposal system. There is no proposed change to the use of the site for this purpose, and it will continue to be the site of a municipal wastewater disposal system.
- The boundaries are anticipated to remain unchanged. No new lands have been identified for stage 1 (the focus of the Environmental Study Report for this Environmental Assessment).
- Project siting will remain within the previously cleared area, and wooded areas will be avoided to maintain ecological integrity.
- A Stage 1 archaeological assessment was completed on this site. The assessment did not identify known archaeological sites within 1km of the study area, but recommended a Stage 2 archaeological assessment prior to construction.
- The preferred alternative gives the site better groundwater management and reduces nuisance effects due to odour/ spray irrigation by disposing treated effluent below ground using a large sub-surface disposal system. The site will continue to be monitored by MOECC through regular reporting.

First Nations and Métis communities were provided notifications as part of the project mailing list seeking information related to their Aboriginal or Treaty interests.

The Mohawks of the Bay of Quinte provided general information about its traditional territory, an area which includes Southern Ontario and the northern shore of Lake Ontario. The community identified they would be interested if the preliminary archaeological investigations identified the potential for artifacts or burial remains.

As requested, the Mohawks of the Bay of Quinte were provided a project summary letter, a copy of the Stage 1 archaeological report and other documents including Technical Memorandum #5, the Natural Heritage Constraints Analysis report, and the Notice of PIC #2. Should artifacts be uncovered that may have Aboriginal origin, the Village of Westport may seek to provide the Stage 2 archaeological assessment report to the Mohawks of the Bay of Quinte based on their expressed interest in the project.

Hiawatha First Nation responded to the PIC #2 notice to thank the project team for the information. No further information was provided.

First Nation and Métis correspondence is listed in **Appendix A**.

9 Proposed Mitigation Measures and Monitoring

Table 9.1 Commitments and Mitigation Measures

Category	Possible Effect	Mitigation Measures
Social and Economic Environment	Effect on existing and/or future nearby residences, businesses or property	<ul style="list-style-type: none"> • Operation of the Large Subsurface Disposal System (LSSDS) will dispose of effluent below ground, a method expected to result in reduced nuisance effects (noise, dust, odour, aesthetics) to residents, businesses and other receptors near the site. • Snowfluent and spray irrigation are recommended to be kept as provisional/ contingency systems following construction of the LSSDS, and would be subject to any monitoring requirements under the Certificate of Approval. • During construction, the Contractor will be required to abide with standard noise restrictions, as applicable, for the Township of Rideau Lakes and the Village of Westport. These restrictions will be confirmed during the detailed design phase. • Contractors will be required to keep equipment in good working order, with effective muffling devices to reduce noise from construction activities. • Any noise or vibration complaints will be logged and investigated by the Contractor, with appropriate action to be taken as necessary to address the issue. • Entrances to existing residents, businesses and facilities will remain open during construction. All construction activities are anticipated to occur within the boundaries of the existing Westport WWTS.
	Effect on Community Institutional or Recreation Facilities	
	Legal / Jurisdictional / Land Use Planning	<ul style="list-style-type: none"> • No property boundary changes are anticipated for Stage 1 works. • The Village of Westport and the Township of Rideau Lakes are encouraged to have ongoing dialogue regarding future stages.
Cultural Environment	Effect on Cultural Heritage Landscapes and Built Heritage Resources	<ul style="list-style-type: none"> • Design and construction of the Stage 1 works will be sited so infrastructure will not adversely impact the heritage attributes of the cultural landscape, by: <ul style="list-style-type: none"> ○ Minimizing the project footprint on the site ○ Maintaining Stage 1 works within the existing Westport WWTS site boundaries (no boundary changes for Stage 1). • If deeply buried cultural deposits are discovered, the Contractor will be required to stop work immediately and notify the Ministry of Tourism, Cultural and Sport (MTCS).
	Effect on Potential Archaeological Resources	<ul style="list-style-type: none"> • A Stage 2 archaeological assessment will be conducted on the existing WWTS site to provide further information about the potential for archaeological resources. The study will occur during the detailed design phase. • Adhere to the recommendations of the Stage 2 archaeological assessment. • If unmarked human remains are discovered, the Contractor will be required to stop work immediately and notify the Ministry of Tourism, Cultural and Sport (MTCS) and the Cemeteries Branch of the Ministry of Consumer and Corporate Relations as per the <i>Cemeteries Act</i>.
Natural Environment	Effect on Sensitive Resource: Continued zero discharge to Upper Rideau Lake	<ul style="list-style-type: none"> • No discharge is required to Upper Rideau Lake system.
	Effect on Surface Water Quality	<ul style="list-style-type: none"> • There are no surface water features located on site. • The Natural Heritage Constraints Analysis Report identified there is a low potential for off-site impacts, such as to surface waters in the surrounding area.

	<p>Effect on Private and Municipal Wells (ground water quality and Well Head Protection Area (WHPA))</p>	<ul style="list-style-type: none"> • Monitoring will continue on site according to the requirements of the Certificate of Approval as established by the Ministry of the Environment and Climate Change (MOECC). • Regular reporting will take place according to intervals set by MOECC. • Additional monitoring requested by MOECC will be incorporated into the site monitoring, as required.
	<p>Effect of Terrestrial Habitat: Construction and Operation</p>	<ul style="list-style-type: none"> • Conduct a bird study in the appropriate season to assess the presence or absence of potential species at risk, particularly grassland species known to be in the region. MNRF’s requirements should be confirmed. • If any Species at Risk are encountered, the Contractor will contact the Contract Administrator who will notify the appropriate agencies including RVCA, and the Ministry of Natural Resources to identify the appropriate procedures to implement. • Woodland areas will be avoided by selecting an area to situate upgrades. • If woodland areas are unavoidably included in a candidate development area, the area should be assessed for potential significance for the purposes of the Provincial Policy Statement. This would include assessing the woodland areas during green leaf season (generally May to September). • If any tree or shrub removal is required, ensure that this work is not done during the prohibition period (April 15 to July 15) to be in compliance with the <i>Migratory Birds Convention Act</i>. • Nest on structures must be removed prior to May 1. Active nests may not be disturbed. • Employ erosion and sediment controls, as needed. • Minimize the amount of area of vegetation removal to the greatest extent possible. • Protect vegetation adjacent to the working area from construction traffic and/ or materials storage using tree protection fences or barriers. • Replace any trees that are accidentally damaged with similar size species following construction. • Preventative bird nesting measures may be considered during detailed design based on construction timing requirements.
	<p>Effect of Aquatic Habitat: Construction and Operation</p>	<ul style="list-style-type: none"> • There are no aquatic habitat features located on site. • The Natural Heritage Constraints Analysis report identified there is a low potential for off-site impacts, such as to surface waters in the surrounding area.
<p>Other: Construction and Operations</p>	<p>Sediment and Erosion Control</p>	<ul style="list-style-type: none"> • Sediment and Erosion Control Measures will be identified as part of the construction tasks during the detailed design phase, and will be identified in the tender package. These may include the following: <ul style="list-style-type: none"> ○ Prior to commencement of the work, install sediment and erosion control measures as needed (e.g., silt fences, or other methods necessary to prevent silt or sediment from entering forested areas). ○ Leave sediment and erosion control measures in place until all work has been completed, and any disturbed soils are permanently stabilized. ○ All sediment and erosion control measures should be inspected regularly to ensure that they are functioning properly, and maintained and upgraded as necessary. ○ Remove accumulated sediments, if any, prior to removal of the erosion control measures. ○ Following completion of the work, and prior to removal of sediment and erosion control measures, all disturbed surfaces and shorelines should be stabilized and re-vegetated with native species only.

Staging	<ul style="list-style-type: none"> The proposed works are in the vicinity of existing WWTS operations. Staging considerations are recommended to be identified in the construction tender package and on the contract drawings.
Odour Management	<ul style="list-style-type: none"> Record all complaints. Take corrective actions, as required, including notification of concerned public.
Utility Impacts	<ul style="list-style-type: none"> Liaison with utilities will take place during detailed design.

10 Approvals

The following approvals are anticipated as part of the implementation of the Stage 1 Preferred Design Concept identified herein:

- Regulatory:** MOECC – Amendment to the current Certificate of Approval (C of A) (note: references are made to “C of A”, however this is replaced by “Environmental Compliance Approval” (ECA) in 2011)
- Archaeology:** Stage 2 Archaeological Assessment and clearance from MTCS.
- Natural Environment:** Potential approval requirements should be identified with MNRF based on detailed design.

11 Schedule

Subject to the completion of this Class EA, a tentative Stage 1 works implementation timeline is presented below. The schedule identifies the proposed project milestones, based on a Class Environmental Assessment Notice of Completion submitted on December 21, 2015.

Table 11.1 Stage 1 Works Schedule

Item	Tentative Date
Class EA	
<ul style="list-style-type: none"> Class EA Notice of Completion 	December 21, 2015
<ul style="list-style-type: none"> 30-day Review Period 	January 30, 2015
Detailed Design for Improvements	
<ul style="list-style-type: none"> Detailed Design and MOECC Approval Application 	February 2016 - March 2016
<ul style="list-style-type: none"> MOECC Review and Approval 	March - April 2016
<ul style="list-style-type: none"> Preparation of Tender Documents 	March - April 2016
(Tentative) Tender and Construction of Improvements	
<ul style="list-style-type: none"> Construction Contract Tender & Award 	May 2016 - June 2016
<ul style="list-style-type: none"> Construction Period 	July - December 2016
<ul style="list-style-type: none"> System Commissioning / Startup 	November - December, 2016
<ul style="list-style-type: none"> Stage 1 Works Operational / Substantial Performance 	December 2016
Notes:	
1. Projected timelines are shown based on desired December 2016 completion. Timelines are subject to finalization of Class EA study, approvals, future considerations and changes, and 3 rd party activities.	
2. Tentative projected timelines are considered ‘aggressive’, and require expedited project activities and MOECC C of A amendment application review and approval.	

It should be noted that the Village's current OCIF funding completion requirement is the end of December 2016, and therefore maintaining the project schedule is critical. Approval timelines are considered aggressive and may be subject to delays outside of the control of the project team. Through pre-consultation with the MOECC, it's been suggested that the MOECC identify this as a priority, and their assistance will be needed in requesting priority status prior to submission of the C of A amendment application. Further discussions with the MOECC are recommended during development of the application and prior to submission.

12 Conclusion and Recommendations

This Class EA covers the processes required to ensure that the proposed study and associated proposed work meets the requirements of the *Environmental Assessment Act*. The Class EA planning process requires initial screening for a project of this type, and this initial screening has not identified any significant concerns that cannot be addressed by incorporating established mitigation measures during construction.

The preferred Design Concept resolves the problems identified in this report and indicates only minor and predictable impacts, which are addressed by recommended mitigation measures presented in **Section 9**.

Considering the above, it is recommended that:

1. Following EA documentation filing and clearance, the preferred municipal servicing options proceed to detailed design and obtain the required temporary and permanent easements, remaining approvals as per Section 7; and
2. Mitigation measures including erosion and sedimentation controls, identified in **Section 9** be expanded upon during detailed design and implemented as part of construction.

References

- AECOM, (2015). Village of Westport Sewage Treatment Plant 2013-14 Annual Report.
- AECOM. (2015). Stage 1 Archaeological Assessment. Village of Westport Wastewater Treatment System Project.
- ASC Environmental, November 2015. *Subsurface Investigation – Village of Westport Waste Water Treatment System (WWTS), 9934 County Road 10, Westport, Ontario.*
- Caduceon Environmental Laboratories, October 2015. *Certificate of Analysis # B15-28441 (Seepage Water).*
- Armstrong, D.K. and Dodge, J.E.P. (2007). Paleozoic geology of southern Ontario; Ontario Geological Survey, Miscellaneous Release--Data 219.
- Brown, Alan L. (2015). Ontario's Historical Plaques: The Perth Road. Accessed on July 16, 2015 from http://ontarioplaques.com/Plaques/Plaque_Leeds50.html
- Chapman, L.J. and D.F. Putnam, (1984). The Physiography of Southern Ontario. Ontario Geological Survey, Special Volume 2, 270 pp. Accompanied by Map P.2715 (coloured), scale 1:600 000.
- Chapman, L., & Putnam, F. (1984). The Physiography of Southern Ontario. Ontario Geological Survey, 2. Toronto, Ontario: Ontario Ministry of Natural Resources.
- Chapman, L.J. and Putnam, D.F. (2007). Physiography of Southern Ontario; Ontario Geological Survey, Miscellaneous Release--Data 228.
- Frontenac Arch Biosphere Website. (2015). Accessed on August 10, 2015 from: <http://www.frontenacarchbiosphere.ca/about-us/what-is-the-frontenac-arch-biosphere>
- Daryl W. Cowell & Associates Inc., October 2015. *Karst Hazard Assessment, Municipal Sewage Works, Village of Westport, Ontario.*
- Delta Engineering, (1993). ESR Information for Westport Snowfluent® Wastewater Treatment System.
- Ecological Services Inc. (2015). Focused Natural Heritage Constraints Analysis. Village of Westport Wastewater Treatment System Project.
- Energy, Mines and Resources Canada (EMRC), (1994). Topographic Map 31 C/9 (Ed. 6): Westport, Ontario.
- Geo-Canada Ltd., (1991). Geotechnical Investigation Village of Westport Sewage Works Programme (M.O.E. Project No. 3-0629).
- Geo-Canada Ltd., (1993). Report on Hydrogeological Study Village of Westport Sewage Works Program Snowfluent Process (M.O.E. Project No. 3-0629).
- Kingston Field Naturalists. (2015). Online information about Opinicon Road at: <http://kingstonfieldnaturalists.org/birding/opiniconroad.pdf>

- Lee, H.T., W.D. Bakowsky, J. Riley, J. Bowles, M. Puddister, P. Uhlig and S. McMurray. (1998). Ecological Land Classification for Southern Ontario. First Approximation and Its Application. Ontario Ministry of Natural Resources, Southcentral Science Section, Science Development and Technology Transfer Branch. SCSS Field Guide FG-02. 225 pp.
- Malroz Engineering Inc., May 2009. *Village of Westport, Wellhead Protection Study*.
- Malroz Engineering Inc., November 2015. *Karst Hazard Review Response Letter*.
- McGill University. (2001). In Search of Your Canadian Past: The Canadian County Atlas Digital Project. 1880 Map of the Village of Westport. Accessed July 29, 2015 from:
<http://web.library.mcgill.ca/countyatlas/Images/Maps/TownshipMaps/lee-m-crosby-n.jpg>
- Ministry of Municipal Affairs and Housing. (2015). Places to Grow Initiative.
https://www.placestogrow.ca/index.php?option=com_content&task=view&id=1&Itemid=8
- Ministry of Municipal Affairs and Housing. (2014). Provincial Policy Statement 2014. www.ontario.ca/PPS
- Ministry of Tourism, Culture and Sport. (2011). Standards and Guidelines for Consultant Archaeologists. Cultural Programs Branch, Ministry of Tourism, Culture and Sport, Toronto.
- Mississippi-Rideau Source Protection Region (MRSPR), (2008). Watershed Characterization Report (DRAFT).
- Mississippi-Rideau Source Protection Region (MRSPR), (2011). Assessment Report: Rideau Valley Source Protection Area.
- Natural Heritage Information Center. (2015). Web site maintained by the Ontario Ministry of Natural Resources and Forests, with species rarity rankings in Ontario, and information on reported element occurrences.
<http://www.giscoeapp.lrc.gov.on.ca/web/MNR/NHLUPS/NaturalHeritage/Viewer/Viewer.html>
- Natural Resources Canada. (2015). Canadian Landscapes Fact Sheet: Moraines. Accessed on July 16, 2015 from
http://elibrary.sd71.bc.ca/subject_resources/science/7_support_files/chapter_9/moraines_e.pdf
- Ontario Geological Survey (OGS), (2000). Quaternary geology, seamless coverage of the Province of Ontario; Ontario Geological Survey, Data Set 14-Revised.
- Ontario Geological Survey (OGS), (2010). Surficial geology of Southern Ontario; Ontario Geological Survey, Miscellaneous Release--Data 128-REV
- Ontario Ministry of the Environment, (2008). Design Guidelines for Sewage Works 2008. PIBS 6879.
- Parks Canada. (2012). Rideau Corridor Landscape Strategy. Final Report. Accessed September 16, 2015 from:
http://www.rcls-sacr.ca/en_report.html
- Rideau Valley Conservation Authority, (2014). Rideau Lakes Subwatershed Report 2014 – Upper Rideau Lake Catchment.
- Soilrock Consultants Inc., (1995). Geotechnical analysis to evaluate soil and bedrock conditions at the location of the existing sewage lagoon located at the Village of Westport, Ontario.

- Statistics Canada. (2011). Census Profile: Village of Westport. Accessed: August 19, 2015 from:
<http://www12.statcan.gc.ca/nhs-enm/2011/dp-pd/prof/details/page.cfm?Lang=E&Geo1=CSD&Code1=3507033&Data=Count&SearchText=westport&SearchType=Begins&SearchPR=35&A1=All&B1=All&Custom=&TABID=1>
- Statistics Canada. (2011). National Household Survey: Village of Westport. Accessed: August 19, 2015 from:
<http://www12.statcan.gc.ca/nhs-enm/2011/dp-pd/prof/details/page.cfm?Lang=E&Geo1=CSD&Code1=3507033&Data=Count&SearchText=westport&SearchType=Begins&SearchPR=35&A1=All&B1=All&Custom=&TABID=1>
- Township of Rideau Lakes Official Plan (2004, 2010 consolidation) <http://www.twprideaulakes.on.ca/zoning/zn-a1.pdf>
- Township of Rideau Lakes, (2015a). Heritage Map. Accessed July 29, 2015 from:
<http://www.twprideaulakes.on.ca/heritage/rideaulakes-heritage-map.pdf>
- Township of Rideau Lakes. (2015). Heritage of the Township: North Crosby Ward. Accessed July 16, 2015 from
<http://www.twprideaulakes.on.ca/heritage/northcrosby-ward.html>
- Township of Rideau Lakes. (2015). Heritage of the Township: Rideau Canal. Accessed September 16, 2015 from
<http://www.twprideaulakes.on.ca/heritage/rideau-worldheritage.html>
- United Counties of Leeds and Grenville, (2015). Official Plan.
http://www.leedsgrenville.com/en/govern/councildepartments/Official-Plan.asp?_mid_=31833
- Village of Westport. (2010). Our Heritage. Accessed July 29, 2015 from: <http://village.westport.on.ca/our-heritage>
- Village of Westport (2008). Official Plan, Consolidated 2008. http://village.westport.on.ca/wp-content/Westport_OP_130206.pdf
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Appendix

Appendix A: Record of Consultation

- A1: Project Notifications
- A2: Project Mailing List
- A3: Public Information Centre Display Boards
- A4: Public Information Centre Comment Cards and Other Materials
- A5: Technical Steering Committee Notes
- A6: Record of Correspondence
- A7: Municipal Class EA Process Diagram
- A8: Village of Westport Council Updates

Appendix B: Technical Memoranda

- Appendix B1: Technical Memorandum #1
- Appendix B2: Technical Memorandum #2
- Appendix B3: Technical Memorandum #3
- Appendix B4: Technical Memorandum #4
- Appendix B5: Technical Memorandum #5
- Appendix B6: Technical Memorandum #6
- Appendix B6A: Technical Memorandum #6A
- Appendix B6B: Technical Memorandum #6B

Appendix C: Other Supporting Documents

- C1: Stage 1 Archaeology Assessment
- C2: Natural Heritage Constraints Analysis
- C3: Built Heritage Screening