

2.0 The Undertaking

2.1 Project Title

Wastewater Treatment Plant, Town of Oromocto, Oromocto, NB.

2.2 Project Overview

The Department of National Defence (DND) operates the existing 5CDSB Gagetown Wastewater Treatment Plant (WWTP) which serves 5CDSB Gagetown (the Base) and most of the Town of Oromocto (the Town). The site location is presented on **Figure 2-1**. The original plant was built between 1953 and 1956 and has seen upgrades and expansion to the treatment process over the years.

The existing WWTP is currently owned and operated by DND. There is an existing memorandum of understanding (MOU) in which DND agrees to provide, and the Town agrees to accept and pay for, wastewater services. In 2002, it was recognized by DND that the WWTP consumes a great deal of personnel and financial support that would be better directed to the operational side of the DND. Under the Vote 10 Capital Assistance Program (CAP), Land Force bases can implement projects to transfer control and responsibility of their WWTPs to municipal and/or provincial government agencies, which are better suited to provide these essential services.

Under the CAP, DND is investigating the potential for a new WWTP which will service both the Base and the Town and will ultimately be owned and operated by the Town. The WWTP would be located adjacent to the Base Gagetown, Oromocto, NB as presented on **Figure 2-2**. Currently, the proposed project location for the WWTP is owned by DND. As part of the agreement and CAP, the land will be transferred to the Town prior to the start of the construction.

The existing Base Gagetown WWTP provides service to about 80% of the Town's population and to the Base. Within the Town, there is a smaller WWTP plant that provides the remaining 20% service to the western community of Oromocto (i.e., "Oromocto West"). The two existing WWTPs will be decommissioned once the new facility is operational. Decommissioning of these existing WWTPs are not included as part of this EIA Registration.

In addition to the construction of a new WWTP, new collection lines will connect from the Town collection system to the new proposed facility. All ancillary facilities (i.e., lift stations and effluent connection lines) are beyond the project scope for this EIA registration. These facilities will be addressed under separate projects.

The treatment process is also beyond the scope of this project. The process will be identified by the Town when the project is transferred from DND. Two process options are being considered by the Town and regardless which is adopted; the particular treatment system will be operated in accordance with the provincial Certificate of Approval to Operate.

2.3 Purpose/Rationale/Need for the Undertaking

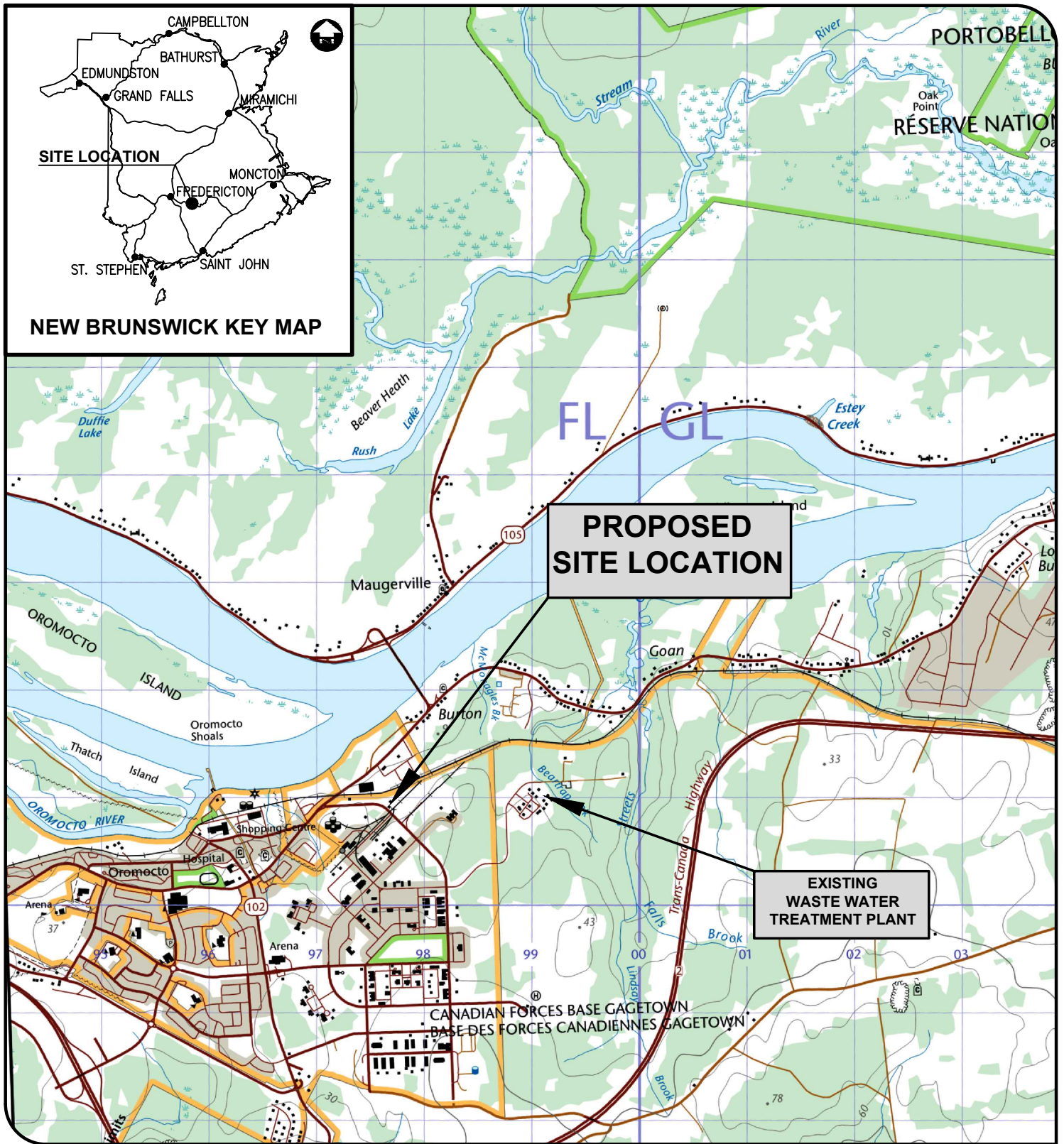
The WWTP was historically developed to support the armed forces at the Base. Over time, with the development of the Town, the WWTP was used to support the Town as well as the Base. In 2002, it was recognized by DND that the wastewater treatment system consumes a considerable amount of time and money to operate and maintain.

It was determined that it would require a great deal of personnel and financial support to upgrade the equipment and processes to meet the present regulatory and standard requirements.

Land Forces bases have the ability to initiate projects to transfer the responsibility of providing ancillary services to municipal and/or provincial governments. The Town has signed a letter of intent with the Base which outlines the interest to evaluate the potential of transferring ownership of the WWTP to the Town. Through the CAP, the DND is able to provide the funding necessary to the Town to design and develop a new plant. However, prior to the release of the funding, DND must prepare a business case, including the assessment of potential environmental impacts, to allow for the evaluation of the feasibility of transferring ownership and responsibility. For the purposes of this EIA registration, the Town is the Proponent.

The existing WWTP at the Base is almost 60 years old. In developing the predesign for the upgrade and expansion, CBCL consulted with DND/DCC before deciding that a new site and process layout was in the best interests of the project moving forward (CBCL, 2012). Refer to Appendix A for the detailed pre-design report. The decision to build a new WWTP on a new site will yield the following benefits:

- Allow for treatment at the existing plant to be maintained during construction;
- The new site will simplify design, construction, commissioning and start-up;
- The new WWTP facilitates ownership transfer to the Town;
- A new treatment process is more flexible with regard to upgrade alternatives; and,
- A new WWTP offers a more cost effective solution.



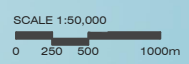
TOWN OF OROMOCTO
Waste Water Treatment Facility

SITE LOCATION MAP
FIGURE 2-1

MAP/DRAWING INFORMATION
National Topographic System Mapsheet 21G/16.

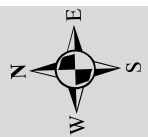
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Proposed Site Location - Aerial View
Figure 2-2

-  PROPOSED FACILITY
-  PROPOSED BOUNDARY
-  EXISTING SANITARY LINE
-  BASE BOUNDARY



MAP CREDITS: ESRI, NRCAN, GEOBASE, DND
MAP CREATED BY: SCM
MAP CHECKED BY: RWD
MAP PROJECTION: NAD 1983 UTM Zone 18N



Since major upgrades or replacement are imminent and DND is preparing to transfer ownership and responsibility for the WWTP to the Town, there is incentive for DND to investigate options for complete WWTP replacement with support from Vote 10 CAP.

The alternatives to the project are to upgrade the existing WWTP or do nothing. Upgrading the existing WWTP, rather than completely replacing the aging facility, could result in a failure to reach an agreement with the Town to take ownership and responsibility.

DND may also be unable to transfer ownership if the “do nothing” alternative is chosen. Failing to upgrade or replace the existing facility could prevent adequate waste water treatment in the future in the event of process or equipment failures.

2.4 Project Location

The existing WWTP is located on property owned by DND in the Town and is identified by Service New Brunswick Parcel Identifier (PID) number: 60102092 for the WWTP. The existing WWTP at the Base is located along the northwest boundary of the DND property at latitude N45° 51' 26.1" and longitude W66° 25' 53.9" (UTM 19 T 699383 5081396). The proposed new WWTP will be situated approximately 1.7 kilometers (km) west of the existing WWTP at latitude N45° 51' 13.4" and longitude W66° 27' 11.2" (19 T 697728 5080949) on land currently owned by DND and the new connecting effluent line will be situated south and parallel to the NB Trail (former CN rail line) in Oromocto, Burton Parish, Sunbury County, New Brunswick, as illustrated on **Figure 2-2**.

2.5 Siting Considerations

The current project footprint is based on preliminary design. Presently, only the WWTP facility has been confirmed and the effluent connector line and access roads have yet to be determined. A project boundary has been outlined on **Figure 2-2** which identifies the general locations of the access road and the new effluent connector line.

As part of the siting considerations, DND considered adjacent land use and the surrounding biophysical environment when selecting the project boundary and where possible, selected a location that avoids interaction with watercourses and wetlands, species at risk, protected drinking water wellfields and watersheds, 1:20 year floodplains, environmentally significant areas (ESAs), First Nations land, and DND facilities. Terrain constraints such as accessibility, slope and intensity of land use were also key factors in site selection. Land availability was another constraint. Environmental information was collected during background and biophysical investigations in 2014. Aerial photographs, digital GIS mapping resources, as well as field investigations (further discussed in Section 3.0) were used to assist with the identification of potential constraints within the proposed project area.

While respecting the environmental constraints, DND repositioned the project footprint to avoid a potential small unmapped wetland area and watercourse, reducing the projects impact on the local environment.

In addition to the environmental constraints, several engineering constraints were considered when selecting the proposed project location. The new WWTP needs to be accessible from a newly constructed access road to civilians outside of the Base, especially once the ownership and responsibility are transferred to the Town. This new access road will connect with Lewis Street and Lutes Street located south of Waasis Road (Route 102), thus providing access outside of the Base boundaries. Refer to **Figure 2-2**. The proposed location of the road is not currently defined and will be provided during the design phase of the project.

Siting also needs to consider the length of the new sanitary line connecting the new WWTP to the existing sanitary lines. Since WWTP effluent will discharge to the Saint John River, the WWTP must be in relatively close proximity to the river and/or the existing outfall. The location must also have access to an adequate power supply (CBCL, 2012). During field investigations, it was discovered that Bell Aliant has a fibre optic line located within close proximity to the NB Trail therefore; the potential location of the effluent connector line requires coordination with Bell Aliant to ensure the appropriate setbacks are realized.

2.6 Regulatory Framework

Based on a review of the Canadian Environmental Assessment Act, 2012 (CEAA) this project is not on the Designated Projects List and therefore does not require an EA subject to review by the Canadian Environmental Assessment Agency (Agency). However, for projects on federal lands that are not designated projects, CEAA 2012, s.67(a) requires that before federal authorities make any decision that would allow a project to proceed, they must determine whether a project is likely to cause significant adverse environmental effects.

In addition to the above CEAA requirements and because the lands proposed for the WWTP will be transferred to the municipality (the Town), the Town is required to complete an Environmental Impact Assessment (EIA) in accordance with the NB Environmental Impact Assessment Regulation (87-83) as per Schedule A, - "(n) all sewage disposal or sewage treatment facilities, other than domestic, on-site facilities" under the New Brunswick Clean Environment Act. This EIA will also be used to satisfy DND's obligations under the Vote 10 CAP transfer and provide documentation and guidance required for the Town when proceeding with the design and implementation. The WWTP is subject to a variety of federal, provincial and municipal regulatory requirements and may include those as summarized in **Appendix B**.

2.7 Physical Components and Dimensions of the Project

The description of the project components and activities is based on a pre-design level of information. A preliminary site plan for the proposed WWTP is provided in **Figure 2-2**. The new WWTP development will have an approximate area of 100,000 m² (10 ha). The proposed development will include:

- the new WWTP building and required access road, parking, outbuildings, and fencing will be approximately 73,749 m² (183 m by 403 m);
- a new effluent connector line to connect with the existing line that runs adjacent the NB Trail through an easement in Burton; and,
- a new collection pipe from the Town collection system to the new proposed facility.

As noted, this project is for the siting and construction of a new WWTP. There will be a connection to the existing already installed effluent line. For the purposes of this EIA registration, the project description does not include the existing effluent line and does not include a discussion of the treatment methodology. The quality of the effluent will be clearly defined by the Environment Canada guidelines for municipal effluent and will be regulated through the Certificate of Approval to Operate process administered by the Department of Environment and Local Government (NBDELG).

2.7.1 WWTP Design Criteria

As indicated, the existing facility serving the Town and the Base has been operational for over 60 years. Originally designed for an average daily flow of 5,540 m³/day, the facility served the majority of the Town without significant event. With the expansion of the Town to the west, another facility was added to the system to provide a total average daily flow capacity of 6,395 m³/day. The engineering analysis completed in 2012 (CBCL, 2012) concluded, based on population projections to 2036 of an increase of 1.2% annually to 12,421 inhabitants, that the maximum monthly flow for the new facility should be 15,600 m³/day. This volume includes sewage collected from Oromocto West, Oromocto and the Base. The present day combined maximum monthly flow (2012) is recorded as 11,570 m³/day. The detailed engineering design information is provided in the CBCL (2012) report in **Appendix A**.

2.8 Construction Phase Details

Once the treatment building, administrative building and effluent connector line design has been finalized and upon approval from the regulatory agencies, construction of the undertaking will involve the following phases:

- Construction Phase (Site Preparation and Civil Works, Access Road Construction, Facilities Construction, Effluent Connector Line Construction)

- Operations and Maintenance

The site preparation and civil works, access road construction, facilities construction and effluent connector line construction components have been grouped together under the Construction Phase of the project. A brief description of the construction phases is provided below. A description of the operation is provided in Section 2.9. Accidents and malfunctions are identified in Section 2.10.

2.8.1 Site Preparation and Civil Works

The first construction stages involve preparing the proposed project site and will include clearing and grubbing, excavation and grading, surface preparation, paving and gravel access roads, and pipework (CBCL, 2012). The following sub-sections describe these activities in detail. Site civil works also include fencing, site finishes and reinstatement, and environmental protection and testing (CBCL, 2012).

Site preparation activities will be conducted to accommodate the WWTP project footprint area and are expected to consist of:

- Minor vegetation clearing – the majority of the project footprint exists within a field and would require minimal forest harvesting
- Excavation and Site Grading
- Surface Preparation (roads, parking areas)

The majority of the project will be accessed off Lutes and Lewis Street located north of the proposed project. These roads may require some improvements which will be identified following the final design. The NB Trail system may also be used as a temporary access road for the construction and installation of the new effluent connector line.

2.8.1.1 Clearing and Grubbing

Clearing and grubbing will be limited at the proposed WWTP site due to the nature of the existing conditions at the proposed site. The proposed WWTP site has been previously cleared and consists primarily of tall grasses and low lying scrub vegetation which will be removed through grubbing. In addition, the proposed effluent connector line will follow existing roads, trail and easements resulting in limited clearing of trees and brush. Clearing activities will adhere to applicable regulatory requirements and will only be done on an as required basis.

Clearing activities will be completed during the winter months and outside of the migratory birds breeding season (April 1 to August 31). Clearing activities within 30 m of any watercourse and wetland will be minimized and will not occur prior to obtaining necessary permits and

authorizations. Vegetation removal will be done in compliance to the conditions outlined in the permits/authorizations and the undertakings outlined in the Environmental Management Plan (EMP).

After clearing, the site will be grubbed. Prior to grubbing activities, sedimentation/siltation fencing will be set up around the perimeter of the project site. Grubbing will involve the removal of all organic material and unsuitable soil including all stumps, roots, felled timber, embedded logs, and root mat from the proposed WWTP area. Bulldozers will be used to scrape the organic material off the underlying soil. If the grubbed material (spoils) cannot be used on site and requires removal, disposal will be located to a natural opening on the respective property and flattened and covered with soil. This material will not be piled into standing timber and will not be located within 30 m of a watercourse.

2.8.1.2 Excavation and Grading

Materials excavation and storage includes the removal, placement, disposal or stockpiling of any type of material from the work area, as well as excavating for the WWTP footprint. The required cut and fills from the project footprint will be managed so that the material, if suitable, can be used onsite. If fill is required, it will be obtained from approved local aggregate and fill sources and trucked to the site using the existing road network. Topsoil and subsoil will be stockpiled in approved locations at least 30 m from watercourses and wetlands and will be adequately covered and protected to prevent erosion of the stockpiles. Anticipated construction equipment that will be used during the materials excavation work include: excavators, bulldozers, graders, loaders and dump trucks.

2.8.1.3 Surface Preparation, Paving and Gravel Access Roads

Surface preparation refers to the placement and compaction of aggregate material required for parking lots and access road bed preparation (i.e. cut and fill operations), and the establishment of final grades to provide a riding surface for vehicular movement. It is expected that the surface preparation work will be completed using machine excavation and ripping and blasting will not be required.

The surface preparation will consist of the placement and compaction of the granular sub-base material. After the placement of the sub-base, the aggregate base course will be placed. The paving surface consists of hard crushed stone particles free from clay, cement and organic material. Some roads and parking areas on the property may be paved while others, such as the existing access road may be topped with pit run gravel or crushed rock, crowned, and compacted to minimize erosion and road dust emissions.

2.8.2 Facilities Construction

The WWTP building will have an approximate footprint of 73,749 m², and will include at a minimum a parking area, outbuildings, clarifiers, ultraviolet (UV) sludge bending and administration building, as well as facilities necessary for the treatment process. Effluent Lines

The new effluent connector line is proposed to connect with the existing effluent line that runs through an easement in Burton. New collection lines will connect from the Town collection system to the new proposed facility. A new collection line and lift station will also be required to convey the sewage from Camp Argonaut (on Base) back to the new sewage plant.

In 2013, a new outfall was installed for the existing WWTP which extends approximately 100 m away from the south shore of the Saint John River to a depth of 2.5 m below water. The outfall extension was designed to improve mixing and dilution and prevent shoreline attachment of treated effluent. This portion of the effluent line is not included in this EIA Registration as it was previously developed and approved through regulatory requirements under a separate project.

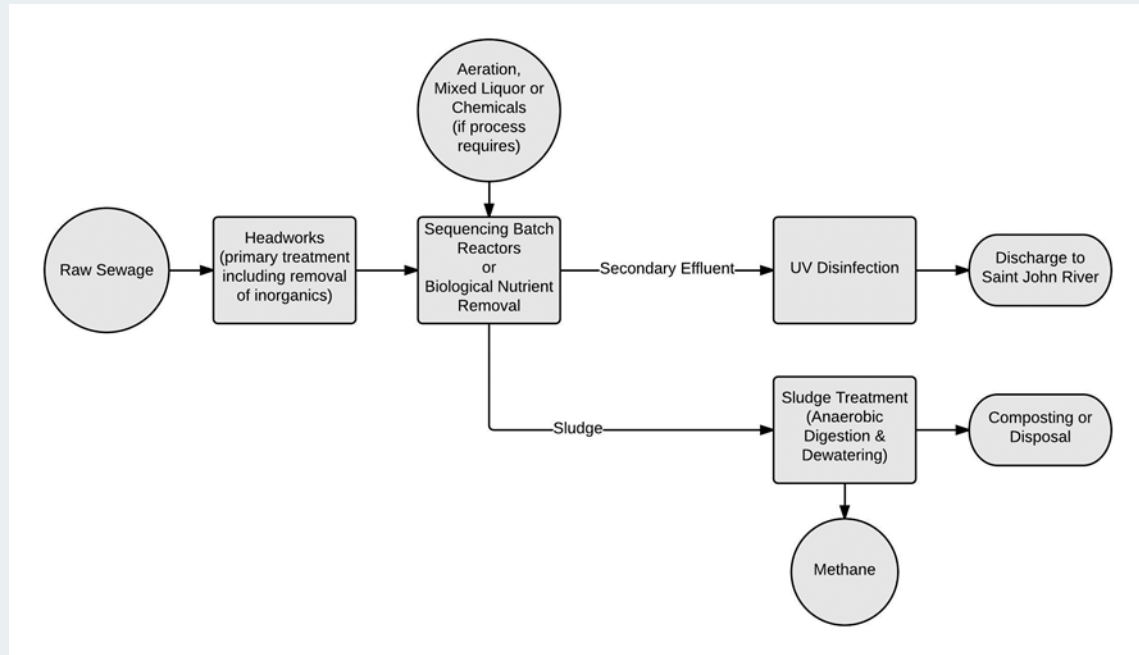
2.9 Operation and Maintenance Details

Although the operation of the WWTP is not included as part of this EIA registration, it has been briefly described below to provide context to the pre-design considerations.

The design flows (i.e. production capacity) for the proposed WWTP determine the design capacity of various aspects in the treatment process. The design flows are based on the design year 2036 with combined flows from the Base and the Town, including Oromocto West and population growth. The average daily flow, used for process tankage design, is estimated to be 8600 m³/day. The maximum daily flow, used for process aeration requirements, is estimated to be 30,900 m³/day. The maximum monthly flow, used for overall process design, is 15,600 m³/day and the peak instant flow is 500 L/second (CBCL, 2012).

Proposed WWTP effluent must meet applicable National Performance Standards (NPSs) and site-specific Effluent Discharge Objectives (EDOs) set out by the Canada-wide Strategy for the Management of Municipal Wastewater Effluent (CCME, 2009) as well as *Fisheries Act* Wastewater Systems Effluent Regulations requirements and criteria to be defined in future Provincial Approvals to Operate. Specifically, the proposed WWTP effluent, ultimately discharged to the Saint John River, must meet criteria for parameters such as carbonaceous biochemical oxygen demand (CBOD5), total suspended solids (TSS), total residual chlorine (TRC), and un-ionized ammonia (CBCL, 2012). Two processes are being considered, both of which can be designed for the design flows and meet the applicable effluent criteria. SBR is a batch process whereas BNR is a continuous process. The generalized (and simplified) process is illustrated in **Figure 2-3**.

FIGURE 2-3: GENERALIZED WWTP PROCESS



SBR and BNR processes produce a solid waste, known as sludge. The fate of treated sludge cake from the proposed WWTP will be determined through the approvals process. Once operational, the project will be monitored for performance, in accordance with the Certificate of Approval to Operate for the facility issued by the NBDELG.

2.10 Future Modifications, Extensions or Abandonment

The WWTP is being designed to meet the foreseeable needs of the Town and its wastewater customers. The decommissioning of the new facility is not anticipated in the foreseeable future. Repair and maintenance is intended to support the operation of the WWTP indefinitely. Incremental replacement, upgrades of the infrastructure may be required in future years for continued effective operation of the facility or to conform to standards at the time and maintain regulatory compliance. The demolition of the existing WWTP will not be included as part of this EIA registration and will be addressed under a separate project once the new WWTP is operational.

2.11 Accidents and Malfunctions

The project components will be designed or implemented in accordance with applicable Acts, regulations, codes and standards for industrial plants; however, accidental events may still occur and some accidents may have significant consequences. To minimize environmental emergencies and health and safety risks, an EMP and Emergency Response Plan (ERP) will be

developed and implemented as part of the pre-construction planning. Accidental events may include but are not limited to:

- Hazardous Material, Chemical and Fuel Spills;
- Discovery of Archaeological Resources or Human Remains;
- Traffic Control and Vehicle Accidents; and,
- Fires.

2.11.1 Hazardous Material, Chemical and Fuel Spills

Malfunctions or accidents may result in spills of petroleum hydrocarbons, hazardous materials, or other substances during construction and operation of the project. Such spills may contaminate soils and groundwater and, through runoff, contaminate watercourses and wetlands. Contaminants may adversely affect surface water quality, fish and fish habitat, wetlands, and wildlife habitat, including species at risk and of conservation concern.

2.11.1.1 Potential Risk

Chemical and accidental hazardous materials release and fuel spills may enter the environment, a watercourse or wetland directly as a result of a motor vehicle accident, leaks from storage tanks or a release during construction or maintenance operations. The effect on fish and their habitat would depend upon the nature and quantity of the material released. Impacts could range from a small localized spill, which is contained and remediated quickly, to a large release of a highly soluble material that affects the receiving watercourse and downstream watersheds. Possible negative effects to surface water/fish and fish habitat include direct mortality of fish and aquatic organisms that fish feed upon, and degradation of surface water quality.

2.11.2 Discovery of Archaeological Resources or Human Remains

A potential unexpected discovery of archaeological artifacts or human remains during construction has the potential to occur during construction and excavation activities.

2.11.3 Traffic Control and Vehicle Accidents

The potential for a vehicle accident or the interaction with local residents and recreational users during construction and operation have the potential to occur during the project.

2.11.3.1 Potential Risk

Public Health and Safety: During the construction and operational phases there will be an increase in traffic in and on the roads in vicinity of the project. Traffic related to the construction of the WWTP will consist of vehicles carrying works, dump trucks transporting fill, flatbed trucks and floats transporting equipment, supplies and materials.

Increased traffic in the area around the project during construction and operation could lead to a higher risk of traffic related accidents. These accidents may cause injury or death to persons involved and may damage property (vehicles or equipment) that could be costly to repair/replace.

2.11.4 Fire

Accidental fires could potentially be caused during construction. During construction, sources of fire include hot exhaust or equipment, discarded cigarettes, or sparks. Potential causes of fire during the operational phase include those listed above as well as from motor vehicle accidents (more likely during construction), which may result in fire.

2.11.4.1 Potential Risk

Terrestrial Environment: Fire may result in a loss of vegetation which has the potential to impact important riparian areas, wetland habitat, and migratory bird nesting areas as well as cause temporary and localized reduction in air quality.