Township of Russell

Water and Wastewater Master Plan Update

Final

Thursday, November 14, 2024

C000-22000 / A001389

CIMA+

600-1400 Blair Towers Place
Ottawa, ON K1J 9B8
T 613 860 2462 **F** 613 860 1870
cima.ca

Contact

Bradley Young, Ph.D., P.Eng.
Bradley.Young@cima.ca
T 647 614 2462

Engineering for **people**

Municipalité de
RUSSELL
Township

Water and Wastewater Master Plan Update

C000-22000 | A001389

Prepared by:

Peter Brooks, EIT

Michelle Scott, P.Eng.

Amy Seymour, P.Eng.

Philippe Létourneau, CPI

Verified by:

Gustavo Arvizu, M.Eng., P.Eng., ENV SP

PM Signoff by:

Bradley Young, Ph.D., P.Eng.

Executive Summary

Introduction

The Township of Russell (Township), a lower-tier municipality of the United Counties of Prescott Russell (UCPR), retained CIMA Canada Inc. (CIMA+) to complete a Water and Wastewater Master Plan Update. The objective of the Master Plan is to review the capacity of the Township's water and wastewater systems, to determine infrastructure needs, and to establish a strategy to provide water and wastewater services to accommodate growth during the 2023 to 2046 planning horizon. The Master Plan builds upon the findings of the Township's 2016 Master Plan (WSP, 2016) and other studies that have been completed since.

The Master Plan study area includes the geographical boundaries of the Township, corresponding to an area of approximately 200 square kilometres with four urban communities: Embrun, Russell, Marionville and Limoges. The Master Plan focuses on water servicing for the communities of Embrun, Russell, and Marionville, and wastewater servicing for the communities of Embrun and Russell.

The scope of the Master Plan also evaluated if the current water supply feedermain had capacity should the 417.4 acres (approximately 170 ha) of future serviced lands identified for the Highway 417 Industrial Park receive water servicing. Wastewater servicing of the Highway 417 Industrial Park was not evaluated as part of this Master Plan.

Master Plan Approach

This Master Plan was completed as outlined in the Municipal Class Environmental Assessment (MCEA) document framework for Approach 1 Master Plans. Master Plans complete the first two phases of the MCEA Process, including Phase 1: Problem or Opportunity, and Phase 2: Alternative Solutions. Projects identified classified as MCEA Schedule B or C projects during the Master Plan would require additional MCEA studies.

The alternative solutions developed during the Master Plan were evaluated with environmental, social, technical, and financial criteria to determine their relative benefits and impacts.

Problem and Opportunity Statement

The Township of Russell is building out within the Urban Boundaries of Russell, Embrun and Marionville in accordance with the Township's and the UCPR's Official Plans. Existing water and wastewater infrastructure will need upgrading to accommodate the immediate challenges and long-term growth. The preferred solutions to address the capacity deficits must comply with applicable regulations, mitigate social, cultural and environmental impacts and strive for financial sustainability.

Water Supply

The Township has a water supply agreement with the City of Ottawa that commits up to 11,860 m^3/d to supply the Township. The City of Ottawa supplies drinking water to the Township from the Leitrim Road Pumping Station through an approximately 30 km long, 450 mm diameter feedermain connecting to the Eadie Road Metering Station and extending to the Embrun Reservoir. The Township re-chloraminates water at the Embrun Reservoir prior to distribution to Embrun, Russell, and Marionville (via Russell distribution system).

Existing average day demands (ADDs) and maximum day demands (MDDs) for the Township's municipal water supply from the past 5 years (2019-2023) are as follows.

Table ES-1: Historical Water Average and Maximum Day Demands (2019 – 2023)

	Embrun		Russell		Marionville		Township	
	ADD	MDD	ADD	MDD	ADD	MDD	ADD	MDD
5-Year ADD/MDD (Peaking Factor)	2,127	4,052 (1.9)	1,310	3,019 (2.3)	83	531 (6.4)	3,520	7,602 (2.2)

The historical per capita water usage for Embrun, Russell, and Marionville is relatively low compared to other municipalities benchmarked. The previous 2016 Township Water and Wastewater Master Plan used a per capita water demand of 230 L/c/d for planning purposes. In discussions with the Township, this Master Plan increased the water demand to 250 L/c/d for future growth. This value captures the majority of the historical demands and is more in line with other benchmark communities.

The following water servicing population projections were developed for each village and the Township as a whole. There are approximately 300 existing households in Russell and Embrun that are not serviced by municipal water services that have

recently reaffirmed their intent to remain disconnected from water services; therefore, these units are not included in future water servicing population projections.

- Embrun: 17,746 persons by 2046
- Russell: 13,719 persons by 2046
- Marionville: 558 persons by 2046
- Township: 32,023 persons by 2046

Projections for Township MDD up to 2046 in comparison to the current water supply agreement with the City of Ottawa (11,860 m^3/d) and the capacity of the existing feedermain (20,612 m^3/d) are shown below. The current water supply agreement is projected to be insufficient to meet the Township's projected MDD by approximately the end of 2031. However, the feedermain has sufficient capacity to accommodate the 2046 MDD.

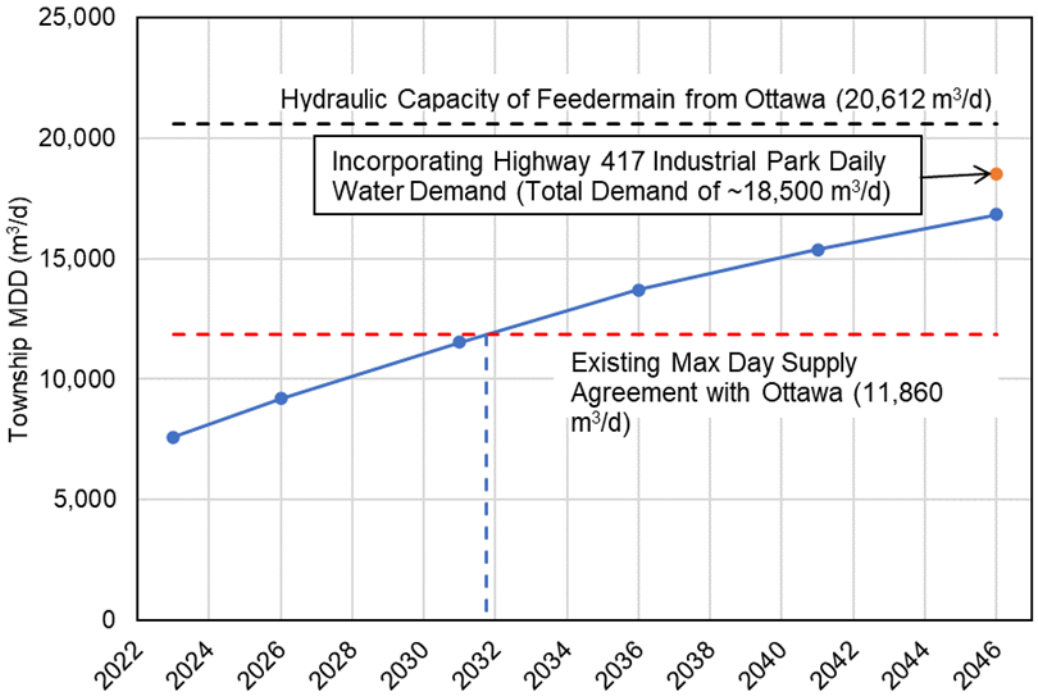


Figure ES-1: Projected Township MDD vs. Existing City of Ottawa Supply Agreement and Feedermain Capacity

The following alternative solutions for the Township's water supply were developed:

- Alternative 1: Do Nothing
- Alternative 2: Limit Growth
- Alternative 3: Reduce Water Consumption
- Alternative 4: Construct a Local Water Treatment Plant

- Alternative 5: Expand the Existing Service Capacity from City of Ottawa
- Alternative 6: Obtain Water Supply from Clarence-Rockland

Alternatives 5 and 6 passed preliminary screening and were subjected to a detailed multi-criterion evaluation, which concluded that Alternative 5 – Expansion of Existing Service from City of Ottawa is the preferred water supply solution.

Water Storage and Booster Pumping

The Embrun Reservoir (1,400 m^3) is equipped with two sets of booster pumps which discharge to Embrun and Russell. The Embrun booster pumps (firm capacity of 57.5 L/s @ 52.34 m) are controlled by the level in the Embrun Water Tower (2,300 m^3), and the Russell booster pumps (firm capacity of 31.4 L/s @ 52.8 m) are controlled by the level in the Russell Water Tower (2,300 m^3). The Marionville Booster Pumping Station (BPS) (firm capacity of 7.18 L/s @ 38 m) draws water from the Russell distribution system to feed Marionville and to fill the Marionville Water Tower (1,135 m^3).

A desktop analysis using Ministry of Environment, Conservation and Parks (MECP) Guidelines for treated water storage requirements and water distribution system modelling were completed using anticipated 2046 peak demands and required fire flow for each village. The overall available storage in Embrun and Russell is sufficient to meet projected 2031 requirements per MECP Guidelines. However, additional storage capacity would be required to meet 2036 Embrun and Russell storage requirements and beyond. It should also be noted that storage requirements in Embrun in 2026 and in Russell in 2031 would exceed available floating storage, increasing the Embrun and Russell BPS capacity upgrade requirements. It is recommended that water modelling be updated during future Schedule B and/or detailed design projects to upgrade Embrun/Russell storage and BPSs to confirm storage volume and firm capacity requirements.

The available floating storage in Marionville is sufficient to meet 2046 demands per MECP Guidelines. However, the Marionville Tower is currently only filled to 50% to mitigate water quality issues. It is recommended that the Township consider rechloramination at the Tower or at the Marionville BPS, and/or looping to Embrun from the Tower to allow the full volume of the Tower to be available to provide adequate fire protection while mitigating water quality issues.

The following alternative solutions for the Township's water storage and booster pumping were developed:

- Alternative 1: Do Nothing
- Alternative 2: Limit Growth

- Alternative 3: Reduce Water Consumption
- Alternative 4: Expansion of Reservoir Storage and Upgrade BPS Capacities
- Alternative 5: Construct Additional Water Towers in Embrun and Russell and Upgrade BPS Capacities

Alternatives 4 and 5 passed preliminary screening and were subjected to detailed evaluation, which determined that Alternative 4 – Expansion of Reservoir Storage and Upgrade BPS Capacities is the preferred solution.

Water Distribution

Water distribution system modelling was completed for the Embrun, Russell, and Marionville distribution systems using the projected 2046 MDD and fire flow requirements.

Embrun

The existing 400mm/350mm watermain from the Embrun BPS to Notre Dame Street was found to experience headloss over 7 m/km indicating that this pipe is undersized for future demand conditions. High headloss occurred along most sections of Notre Dame Street, indicating limited east/west transmission capacity in the system. Pressures were below 50 psi in a large portion of the system under 2046 MDD conditions. In general, areas were found to experience low pressure during the peak hour period only, indicating that low pressures are a result of limited watermain capacity and high headloss.

Twinning the Embrun watermain from the BPS to Notre Dame as well as installing a new watermain along Route 300 (north of Embrun) are recommended to improve watermain capacity, system pressures, and to provide adequate fire flow for 2046 conditions, as described in Table ES-4 below.

Russell

The existing 400mm watermain from the Russell BPS to Eadie Road was found to experience headloss over 2 m/km indicating that this pipe is somewhat undersized for future demand conditions. However, this was not found to result in any significant capacity issues in terms of filling the Russell Tower or providing adequate system pressure. The maximum velocity in this pipe was 0.9 m/s. No other headloss or pressure issues were noted in the Russell system.

The available fire flow in Russell under 2046 MDD conditions is sufficient in most of the system, with the exception of Craig Street west of Mill Street. To improve fire flows in this area, the Township could consider upsizing the Craig Street watermain or looping

the watermain south of the Castor River to Craig Street, as described in Table ES-4 below.

Marionville

Under 2046 MDD conditions, a proposed pump station firm capacity of 8 L/s was found to be sufficient to maintain adequate distribution system pressure. No issues with watermain headloss, system pressure, or available fire flow were noted.

Wastewater Treatment

The Township services the villages of Russell and Embrun with two independent sanitary systems. Each system consists of gravity sewers, sanitary pumping stations, forcemains, and a wastewater treatment plant (WWTP). The Township does not provide wastewater services to the Highway 417 Industrial Park, Limoges or Marionville.

The Russell WWTP has an Environmental Compliance Approval (ECA) rated capacity of 2,675 m^3/d; however, per the ECA, the maximum operational capacity of the Russell WWTP is 2,000 m^3/d prior to the approval of a Total Phosphorus Management (TPM) Agreement with South Nation Conservation Authority. The ECA requires a detailed proposal for the TPM be submitted to the Regional Director for review and approval once the influent Average Day Flow (ADF) of the Russell WWTP reaches 1,700 m^3/d.

The Embrun WWTP has an ECA rated capacity of 3,865 m^3/d. The ECA does not impose the requirement for a TPM Agreement prior to reaching the rated capacity.

Historical average (2019-2023) influent daily flows (ADF) for the Township's two WWTPs are:

- Russell WWTP: 1,258 m^3/d
- Embrun WWTP: 1,947 m^3/d

The historical per capita wastewater generation for Embrun and Russell is low compared to benchmark municipalities. The previous 2016 Township Water and Wastewater Master Plan used a per capita generation rate of 230 L/c/d for planning purposes. In discussions with the Township, this Master Plan increased the wastewater generation rate to 250 L/c/d for future growth. This value captures the majority of the historical demands and is more in line with other benchmark communities.

The following wastewater servicing population projections were developed for each community. There are approximately 600 existing households in Russell and Embrun that are not serviced by municipal wastewater services that have recently reaffirmed their intent to remain disconnected from wastewater services; therefore, these units are not included in future wastewater servicing population projections.

- Russell: 12,680 persons by 2046
- Embrun: 17,735 persons by 2046

Two influent flow scenarios were considered during a capacity assessment for both WWTPs. Scenario 1: Low Flow, considered a per capita generation rate of 250 L/c/d, a commercial flowrate of 10 m^3/ha/d (inline with previous Township studies) and no inflow and infiltration (I&I) to the wastewater collection system. Scenario 2: High Flow, considered a per capita flowrate of 250 L/c/d, a commercial flowrate of 28 m^3/ha/d (City of Ottawa Design Guidelines), and an I&I rate of 0.025 L/ha/s. Scenario 1: Low Flow was adopted for the purposes of this Master Plan as it better reflects existing I&I conditions recorded through flow monitoring programs of the collection networks.

Operational challenges, due to storage limitations, will likely occur once influent flowrates reach approximately 80% for both WWTPs. The Russell WWTP is anticipated to experience operational challenges by 2034 and reach its rated capacity by 2042 (**Figure ES-2**). The Embrun WWTP is anticipated to experience operational challenges by 2029 and reach its rated capacity by the end of 2036 (**Figure ES-3**).

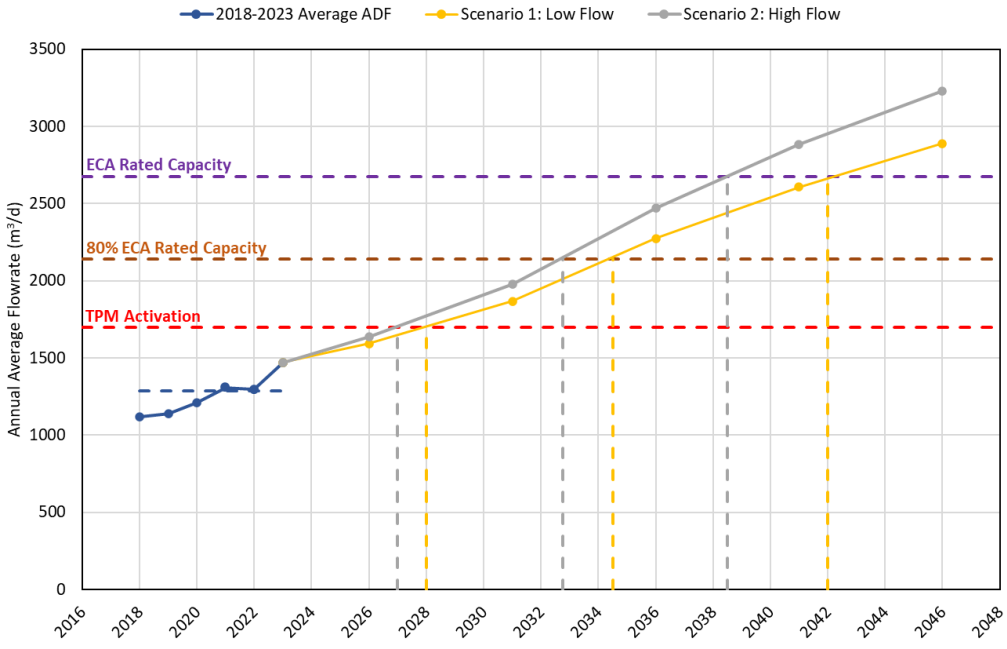


Figure ES-2: Russell WWTP Capacity Assessment

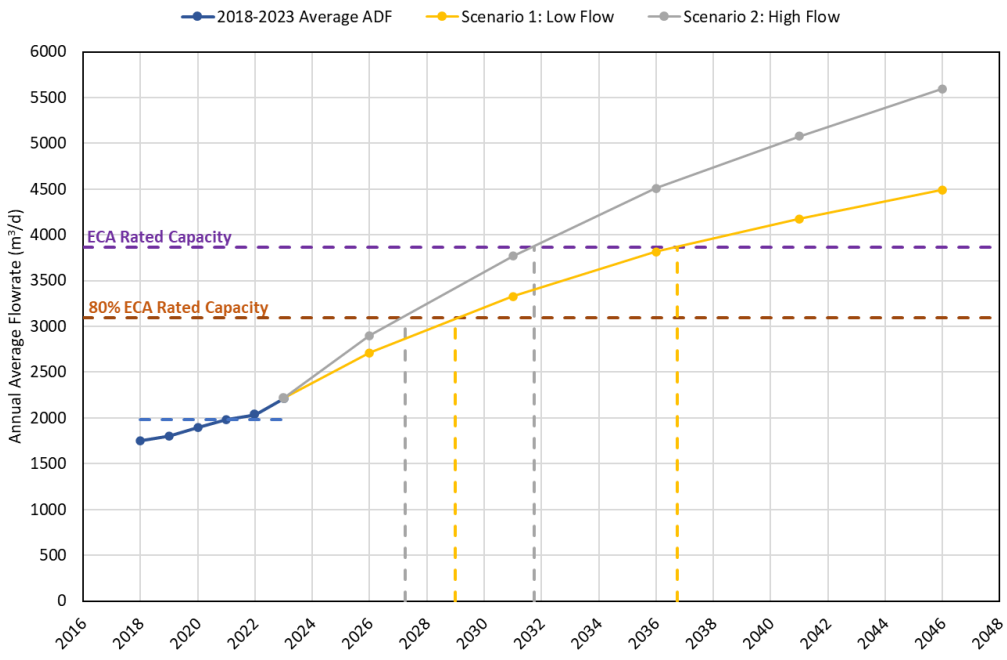


Figure ES-3: Embrun WWTP Capacity Assessment

In the short-term, process optimization is recommended for both Russell WWTP and Embrun WWTP to increase treatment efficacy up to the plants' rated capacities. If process optimization proves less effective, the preferred long-term solution timeline can be accelerated or construction of an effluent polishing process (i.e. Moving Bed Biofilm Reactor) could be considered as an interim measure. The preferred path will depend on housing market conditions and growth forecasts in Russell and Embrun. If a short-term effluent polishing process is constructed, it is estimated to cost $10M in capital per facility. An effort should be made to re-use infrastructure for the effluent polishing process with long lifetimes (i.e. MBBR's concrete structures) for the preferred long-term WWTP alternative solution.

The following long-term alternative solutions, applicable to both the Russell and Embrun WWTPs, were considered:

- Alternative 1: Do Nothing
- Alternative 2: Limit Growth
- Alternative 3: Upgrade/Expansion Existing System
- Alternative 4: New Wastewater Treatment Plant

Alternatives 3 and 4 passed preliminary screening and were subjected to detailed evaluation. Alternative 4 – New Wastewater Treatment Plant is the preferred solution for both Russell and Embrun.

A Combined WWTP was also considered for a Township wide long-term alternative. The Combined WWTP would be a mechanical WWTP which could be designed to meet strict effluent treatment criteria if required. Both Russell and Embrun would send wastewater to the Combined WWTP; while depending on the outcome of The Nation Wastewater Master Servicing Plan, Limoges could possibly send wastewater as well due to proximity to the Township.

Overall, the preferred wastewater treatment strategy for the Township was determined to be a new Combined WWTP located on the existing Embrun WWTP site, due to less capital and operational expenditure compared to individual new WWTPs for both Russell and Embrun.

Wastewater Collection Systems

The wastewater collection systems within both Russell and Embrun consist of gravity sewers, sanitary pumping stations, and forcemains. Hydraulic modelling of both collection systems was performed to better understand the existing capacity within the network, and to evaluate the available capacity with anticipated 2046 peak flows. The Russell and Embrun collection systems are independent from one another and were therefore evaluated independently.

Russell

Russell's wastewater collection system consists of 200 mm – 450 mm diameter gravity sewers, forcemains, and three (3) sewage pumping stations (SPSs). SPS 1 has the largest drainage area, which consists of most areas north of the Castor River, while also collecting a small area south of the Castor River. SPS 1 pumps directly to the distribution box at the Russell WWTP. SPS 2 collects the wastewater from the northwest of Russell. This pumping station discharges into a manhole on Craig Street, which is located within SPS 1 drainage area. SPS 3 is in the northeast of Russell, and discharges to the Russell WWTP distribution box.

A new SPS 4 is planned to service developments in the southwest of Russell and discharge to SPS 1. A new SPS 5 is planned to service developments in the northeast of Russell and discharge to SPS 3.

Based on the modelling results, the existing SPS 1 requires firm capacity upgrades to service projected 2046 peak flows. The Township has an ongoing detailed design project to upgrade SPS 1 which will confirm the future firm capacity requirements. SPS 2 and SPS 3 are sufficiently sized to accommodate the 2046 peak flows.

No gravity sewer capacity constraints were noted under existing or 2046 conditions within the Russell collection system. However, the sanitary sewers along Craig Street

appear to be approaching capacity and should be considered for upsizing during future road work projects on Craig Street.

Embrun

The Embrun sanitary sewer network consists of 200mm – 400mm diameter gravity sewers, forcemains, and nine (9) SPSs. **Figure ES-4** outlines wastewater flow through the Embrun SPSs.

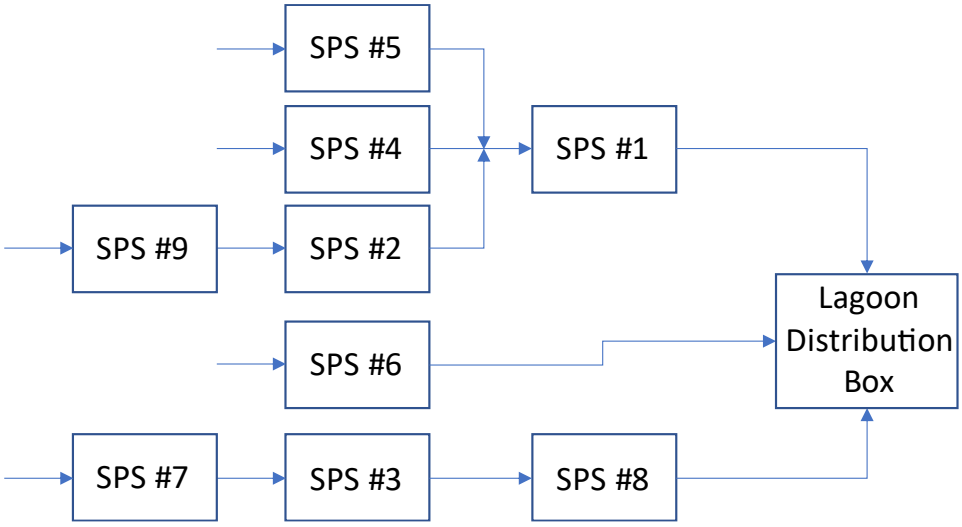


Figure ES-4: Village of Embrun Sewage Pumping Stations

The majority of SPSs within Embrun were determined to have sufficient capacity up to 2046**.** SPS 3 and SPS 7, however, are projected to require capacity increases by 2046 to accommodate planned commercial developments in the northwest of Embrun**.** Potential I&I contributions and uncertainty regarding the commercial wastewater generation in this area are factors in the SPS 7 drainage area, which then pumps flow to the SPS 3 drainage area. Minimizing I&I and quantifying proposed commercial wastewater generation in this area will minimize the upgrades required at SPS 7 and, by extension, SPS 3.

A new SPS 10 is planned to service developments in the southeast of Embrun and discharge to the Embrun WWTP. A new SPS 11 is planned to service developments in the north of Embrun and discharge to SPS 6.

The model was also used to identify potential sewage collection system capacity issues and surcharging. Hydraulic capacity issues were noted in the planned commercial development collection area for SPS 7. It is recommended that an I&I reduction effort be completed in the drainage area for SPS 7 to minimize the extent of sewer upgrades required as well as SPS capacity increases to accommodate the 2046 peak flows.

Future Projects

The tables below outline the future projects associated with the Township's Water Supply, Storage, Booster Pumping, Distribution, as well as Wastewater Treatment and Collection Systems.

Table ES-2: Water Supply Projects

Project No.	Year Required	Project Description	Estimated Capital Cost (2024 $CAD)(1)	Class EA Schedule	Trigger
WS_1	2026-2031	Increase water supply from City of Ottawa	$20M	N/A	To accommodate future growth to 2046

Note: (1) Cost estimates are Class "D" level, therefore, further cost estimation is recommended during detailed design

Table ES-3: Water Storage and Booster Pumping Projects

Project No.	Year Required	Project Description	Estimated Capital Cost (2024 $CAD)(1)	Class EA Schedule	Trigger
WSBP_1	2026-2031	Expand Embrun Reservoir storage and increase firm capacities of Russell and Embrun BPSs	$5M	Schedule B (Eligible for Screening)	To accommodate future growth to 2046
WSBP_2	2026	Implement chloramination boosting capabilities at the Marionville BPS	$0.5M	Exempt	To mitigate water quality issues

Note: (1) Cost estimates are Class "D" level, therefore, further cost estimation is recommended during detailed design

Table ES-4: Water Distribution Projects

Project No.	Year Required	Project Description	Estimated Capital Cost (2024 $CAD)(1)	Class EA Schedule	Trigger
WM_E_1a	2031	Option 1: Install 1200m of new 400mm diameter pipe parallel to existing 400mm/350mm diameter watermain from Embrun BPS to Valoris Street	$1.7M	Exempt	To accommodate future growth to 2046
		Option 2: Replace 1200m of existing 400mm/350mm diameter watermain from Embrun BPS to Valoris Street with 500mm diameter watermain	$2.3M		
WM_E_RT_300	2031 - 2036	Install 7600m of new 350mm diameter pipe on St Guillaume Road, Route 300, St. Pierre Road, St Augustin Road, and St. Thomas Road	$12M	Exempt	To accommodate future growth to 2046
WM_R_1	2031	Option 1: Replace existing 200mm with 300mm pipe on Craig Street west of Mill Street	$1M	Exempt	To improve fire flow
		Option 2: Loop watermain south of Castor River to Craig Street	$2M	Schedule B	

Note: (1) Cost estimates are Class “D” level, therefore, further cost estimation is recommended during detailed design

Table ES-5: Wastewater Treatment Projects

Project No.	Year Required	Project Description	Estimated Capital Cost (2024 $CAD)(1)	Class EA Schedule	Trigger
WWT_R_1	2025	Short-term process optimization	N/A	Exempt	To meet ECA limits for ammonia
WWT_E_1	2025	Short-term process optimization	N/A	Exempt	To meet ECA limits for ammonia
WWT_C_1	2025-2030(2)	Construct new Combined WWTP	$95M	Schedule C	To accommodate future growth to 2046

Note: (1) Cost estimates are Class "D" level, therefore, further cost estimation is recommended during detailed design, (2) This timeline represents the estimated time required for the Township to complete the process of planning, EA, design, and construction for the new Combined WWTP

Table ES-6: Wastewater Collection System Projects

Project No.	Year Required	Project Description	Estimated Capital Cost (2024 $CAD)(1)	Class EA Schedule	Trigger
WWRC_1	2031	Upgrade firm capacity of R-SPS-1	$7.2M(2)	Exempt	To accommodate future growth to 2046
WWEC_1	2026	I&I Reduction Study in E-SPS-7 Collection Area	$0.2M	Exempt	To reduce I&I in collection system and delay/reduce E-

Project No.	Year Required	Project Description	Estimated Capital Cost (2024 $CAD)(1)	Class EA Schedule	Trigger
					SPS-7 and E-SPS-3 upgrade requirements
WWEC_2 to WWEC_8	2031	Replace 250mm sewer with 300mm sewer from manhole 408_E to manhole MHSAE129 in E-SPS-7 collection area	$2.5M	Exempt	To accommodate future growth to 2046
WWEC_9	2031	Replace 250mm sewer with 300mm sewer from MHSAE106 to 407a	$0.2M	Exempt	To accommodate future growth to 2046
WWEC_10	2031	Replace 100mm E-SPS-7 forcemain with 150mm forcemain	$0.4M	Exempt	To accommodate future growth to 2046

Notes: (1) Cost estimates are Class “D” level, therefore, further cost estimation is recommended during detailed design, (2) Source: Russell SPS 1 Feasibility Study (TYLin, June 2023). To be confirmed during detailed design.

Table of Contents

List of Tables

List of Figures

List of Appendices

List of Acronyms

Description	Acronym/Abbreviation
Aesthetic Objective	AO
Assimilative Capacity Study	ACS
Average Daily Demand	ADD
Average Day Flow	ADF
Booster Pumping Station	BPS
Carbonaceous Biochemical Oxygen Demand	cBOD5
CIMA Canada Inc.	CIMA+
Dissolved Oxygen	DO
Embrun Wastewater Treatment	EWWT
Environmental Assessment Act	EAA
Environmental Compliance Approval	ECA
Fire Underwriters Survey	FUS
Greenhouse Gas	GHG
Growth Management Strategy	GMS
Hydraulic Retention Time	HRT
Impact Assessment Agency	IAAC
Industrial, Commercial, and Institutional	ICI
Inflow and Infiltration	I&I
Maximum Acceptable Concentration	MAC
Maximum Daily Demand	MDD
Ministry of Citizenship and Multiculturalism	MCM
Ministry of Environment, Conservation and Parks	MECP
Ministry of Transportation	MTO
Moving Bed Biofilm Reactor	MBBR
Municipal Class Environmental Assessment	MCEA

Description	Acronym/Abbreviation
Municipal Engineers Association	MEA
Official Plan	OP
Operational Guideline	OG
Peaking Factor	PF
Process Flow Diagram	PFD
Public Information Centre	PIC
Russell Wastewater Treatment	RWWT
Sewage Pumping Station	SPS
Species at Risk	SAR
Submerged Attached Growth Reactor	SAGR
The Nation Municipality	The Nation
Total Ammonia Nitrogen	TAN
Total Kjeldahl Nitrogen	TKN
Total Phosphorus	TP
Total Phosphorus Management	TPM
Total Suspended Solids	TSS
Township of Russell	Township
United Counties of Prescott Russell	UCPR
Wastewater Treatment Plant	WWTP
Water Storage and Booster Pumping	WSBP
Water Supply	WS
Water Treatment Plant	WTP
Watermain	WM

1 Introduction

The Township of Russell (Township) retained CIMA Canada Inc. (CIMA+) to complete a Water and Wastewater Master Plan Update. The objective of the Master Plan is to review the capacity of the Township's water and wastewater systems, to determine infrastructure needs, and to establish a strategy to provide water and wastewater services to accommodate growth during the 2023 to 2046 planning horizon. The Master Plan builds upon the findings of the Township's 2016 Master Plan (WSP, 2016) and other studies that have been completed since.

The conclusions and recommendations provided in this Master Plan report will help the Township prepare a Capital Plan and identify additional investigation and planning requirements to support the growth projected. It should be noted that the scope of the project did not include an assessment of repair, rehabilitation or replacement needs related to infrastructure assets reaching the end of their expected service lives. The Township maintains an Asset Management Plan, which defines a strategy to maintain infrastructure in good state of repair.

1.1 Study Area

The study area for the Master Plan is defined by the geographical boundaries of the Township of Russell as shown in **Figure 1-1.** The study area encompasses an area of approximately 200 square kilometres and is approximately 13 km wide (E-W) by 16 km long (N-S).

There are four urban communities within the study area:

- Embrun
- Russell
- Marionville
- Limoges

The communities of Embrun and Russell have municipal servicing for both water and wastewater. It is important to note that within Embrun and Russell approximately 300 existing households are not serviced by municipal water services and approximately 600 existing households are not serviced by municipal wastewater services.

The Township provides water services to the urban area of Marionville; however, municipal services are not provided for wastewater.

The community of Limoges extends into The Nation Municipality (The Nation). The Nation is currently providing services for water and wastewater to Limoges and is

expected to continue servicing Limoges during the next 20 years. Therefore, Limoges is not considered as part of this Master Plan.

The Industrial, Commercial and Institutional (ICI) contributions within the study area are located in Embrun, Russell, and the Highway 417 Industrial Park (see **Section 1.2**). The general ICI within the urban boundaries is currently serviced by water and wastewater and additional developments are to be serviced by water and wastewater.

Figure 1-1 – Study Area – Township of Russell Municipal Boundary

1.2 Highway 417 Industrial Park

The 417 Industrial Park does not have municipal water and wastewater services. The 2016 Township Water and Wastewater Master Plan considered servicing the 417

Industrial Park with municipal water and wastewater (WSP, 2016). The 2018 Township Official Plan (OP) Policies outlined design guidelines for Industrial Parks, including that new development shall take into consideration that water and wastewater services may be provided to the 417 Industrial Park in the future (Township of Russell, 2018).

The United Counties of Prescott and Russell (UCPR) updated their Growth Management Strategy (GMS) in March 2022 to inform the UCPR OP review process. The GMS identified that the Township needed additional land to accommodate forecasted growth. In 2022, the UCPR OP expanded the Settlement Area of the 417 Industrial Park to capture the extent shown in **Figure 1-1** (United Counties of Prescott and Russell, 2022).

Following the 2016 Water and Wastewater Master Plan and the ratification of the Township Strategic Plan, the Township completed a Municipal Class Environmental Assessment (MCEA) to evaluate providing municipal water and wastewater servicing to the 417 Industrial Park. The MCEA study was adopted by Council in March 2019. In June 2022, a survey was sent to all landowners and future landowners of land in the 417 Industrial Park to assess the need or desire to service the lands with water and wastewater in the Industrial Park.

On May 16, 2023, following discussions and consultations with internal and external stakeholders, Township Administration presented Council with three (3) options for consideration regarding servicing the 417 Industrial Park (Township of Russell, May 16, 2023):

- Option 1: Provide water and sewer services to the entire Industrial Park.
- Option 2: Provide potable water only to the Industrial Park.
- Option 3: Maintain the status quo for the existing section of the Park, but evaluate and move forward with full servicing for the sections of the Park, east of St Guillaume and North of Route 100.

Due to funding constraints, Option 3 was approved by Council as the preferred alternative for servicing the Industrial Park (**Figure 1-2**). Option 3 involves developing the existing Park ‘as is’ (i.e. without water and wastewater servicing), and further evaluating lands directly north of Route 100 and East of St Guillaume for both water and wastewater servicing. Industrial Park servicing is contingent on funding from future developers.

This Master Plan evaluated if the current water supply feedermain had capacity should the 417.4 acres (approximately 170 ha) of future serviced lands identified for the Industrial Park receive water servicing (pending developer funding). Wastewater

servicing of the Highway 417 Industrial Park was not evaluated as part of this Master Plan.

Figure 1-2 – Highway 417 Industrial Park Council Approved Servicing Plan

1.3 Master Plan Approach

This Master Plan evaluated the water and wastewater systems within Embrun, Russell, and Marionville to identify and justify individual projects that will be required over a long-term planning horizon. The Township reviewed urban areas individually and as a whole to consider a variety of perspectives and support decision making. The Master Plan evaluates infrastructure needs in 5-year increments starting in 2023 and ending in 2046. This time-period and approach are consistent with the Township's OP as well as Provincial Planning principles.

To achieve the goals of long-term planning, the scope of this Water and Wastewater Master Plan:

- Documents existing conditions for water and wastewater systems,
- Forecasts water and wastewater demands,
- Considers reasonable alternative solutions to address deficiencies,
- Provides a logical evaluation of alternative solutions, and
- Presents the study process, consultation, and results in a clear and transparent manner.

This Master Plan was completed as outlined in the MCEA document framework for Approach 1 Master Plans. An overview of the MCEA process is provided in **Section 2**.

2 Planning Context

This section describes the MCEA process and the specific requirements associated with this Master Plan Study.

2.1 Environmental Assessment Act

Ontario's Environmental Assessment Act (EAA), R.S.O. 1990, was passed in 1975 and proclaimed in 1976. The planning of major municipal projects or activities is subject to the EAA and requires the proponent to complete a MCEA, including an inventory and description of the existing environment in the area affected by the proposed activity (Government of Ontario, 1990 (last amended 2024)).

The EAA defines the environment broadly as:

- Air, land, or water;
- Plant and animal life, including human life;
- The social, economic and cultural conditions that influence the life of humans or a community;
- Any building, structure, machine or other device or thing made by humans;
- Any solid, liquid, gas, odour, heat, sound, vibration, or radiation resulting directly or indirectly from human activities; or
- Any part or combination of the foregoing and the interrelationships between any two or more of them.

The purpose of the MCEA is the betterment of the people in the whole or any part of Ontario by providing for the protection, conservation, and wise management of the environment.

As set out in the EAA, an Environmental Assessment document must include the following:

1. A description of the purpose of the undertaking including:
    - The undertaking,
    - The alternative methods of carrying out the undertaking, and
    - Alternatives to the undertaking.
2. A description of:
    - The environment that would be affected or that might reasonably be expected to be affected, directly or indirectly, by the undertaking or alternatives to the undertaking,

- The effects that would be caused or that might reasonably be expected to be caused to the environment by the undertaking or alternatives to the undertaking,
- The actions necessary or that may reasonably be expected to be necessary to prevent, change, mitigate or remedy the effects upon or the effects that might reasonably be expected upon the environment by the undertaking or alternatives to the undertaking, and
- An evaluation of the advantages and disadvantages to the environment of the undertaking, the alternative methods of carrying out the undertaking and the alternatives to the undertaking.

2.2 Principles of Environmental Planning

The MCEA sets a framework for a systemic, rational, and replicable environment planning process that is based on the following five key principles, as mentioned in **Section A1** of the MCEA:

1. **Consultation with affected parties (technical agencies, the public, property owners, interest groups, other municipalities, and Indigenous Communities)** – Proponents should seek to involve potentially affected parties as early as possible. In fact, early consultation allows for improved understanding of environmental concerns.
2. **Consideration of a reasonable range of alternatives** – Alternatives should include functionally different situations to the proposed undertaking and alternative methods of implementing the preferred solution. The "Do Nothing" alternative must be considered.
3. **Identification and consideration of the effects of each alternative on all aspects of the environment** – This includes the natural, social, cultural, technical, and economic environments. The level of detail will vary depending on the stage of the study.
4. **Systematic evaluation of alternatives** – Planning process include distinct points where the alternatives are evaluated, and the net environment effects must be identified.
5. **Clear and complete documentation** – Should set out the approach and allow traceability of decision-making with respect to the project. The planning process must be documented in such a way that it may be repeated with similar results.

2.3 MCEA Studies

The MCEA study process was approved by the Minister of the Environment in 1987 to satisfy the requirements of the EAA for municipal projects having predictable and preventable impacts. The MCEA approach streamlines the planning and approvals process for municipal projects which have the following characteristics:

- Are recurring,
- Are similar in nature,
- Are limited in scale,
- Have a predictable range of environmental impacts, and
- Involve environmental impacts that can be mitigated.

The MCEA document (Municipal Engineers Association, 2024) outlines the procedures to be followed to satisfy MCEA requirements for water, wastewater, and road projects. The process includes five phases:

- **Phase 1:** Problem or Opportunity
- **Phase 2:** Alternative Solutions
- **Phase 3:** Alternative Design Concepts for the Preferred Solution
- **Phase 4:** Environmental Study Report
- **Phase 5:** Implementation

Since projects undertaken by municipalities can vary in their complexity and potential environmental impacts, projects are classified as follows (Municipal Engineers Association, 2024), and summarized in **Figure 2-1** below:

- **Exempt:** Projects that fall into the exempt category, are usually various maintenance, operational, rehabilitation, and other small projects that are limited in scale. They also have minimal adverse effects on the environment. Proponents may choose to complete the appliable screening process, including archaeological screening, and determine if their project is eligible for exemption from the EAA. In these cases, the proponent is required to complete Phases 1 and 5 of the planning process.
- **Schedule B:** Projects that fall into this category have potential for some adverse environmental effects. Therefore, the Proponent is required to proceed with Phases 1, 2 and 5 of the planning process, a screening process, including archaeological screening, and consultation with those who may be affected prior to preparation of a Project File Report. These types of projects generally include improvements and minor expansions to existing facilities/infrastructure.

- **Schedule C:** These projects have potential for significant environmental effects and must proceed through the full planning and documentation process (Phases 1 to 5). Schedule C projects usually include the construction of a new facility or any major expansions to existing facilities. In this case, it includes mandatory consultation with those who may be affected, including Indigenous Communities and preparation of an Environmental Study Report.

Master Plans complete Phases 1 and 2 of the MCEA Process as outlined in **Figure 2-1**, and discussed further in **Section 2.4**. Projects identified during the Master Plan may require additional MCEA studies if they are determined to be classified as Schedule B or C.

The Minister of the Ontario Ministry of Environment, Conservation and Parks (MECP) has the authority and discretion to make an Order under Section 16 of the EAA. A Section 16 Order may require that the Proponent of a project going through MCEA process:

1. Apply for approval of the project before they proceed; or,
2. Meet further conditions in addition to conditions in the MCEA.

The public can ask the Minister to make a Section 16 Order if:

1. They have outstanding concerns that a project going through a MCEA process may have a potential adverse impact on constitutionally protected Aboriginal and treaty rights; and,
2. They believe that an Order may prevent, mitigate, or remedy this impact.

If the public wants to request a Section 16 Order for a project, on the grounds that an Order may prevent, mitigate, or remedy potential adverse impacts on constitutionally protected, Aboriginal and treaty rights, they must make the request before the public comment period is complete. Additional information on how to request an Order can be found under the following link:

https://www.ontario.ca/page/class-environmental-assessments-section-16-order

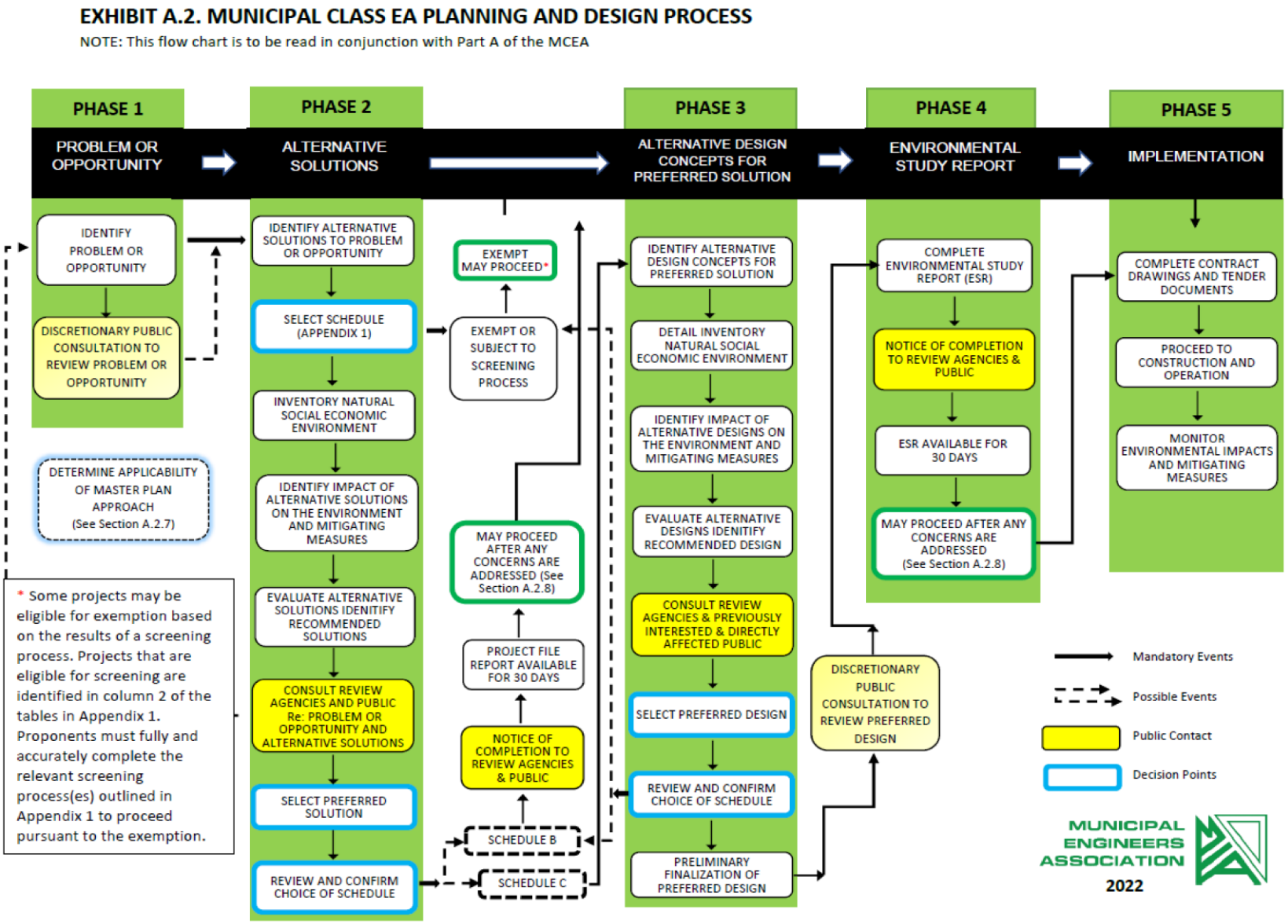


Figure 2-1: Municipal Class Environmental Assessment Process

2.4 Master Planning

Master Plans are long range plans that integrate infrastructure requirements for existing and future land use with MCEA planning principles. These plans examine infrastructure system(s) or group related projects in order to outline a framework for planning for subsequent projects and/or developments over the long-term. This approach recognizes that there are real benefits in terms of better planning when long range comprehensive studies are undertaken over logical planning units, such as at the regional level, and that proponents who undertake such studies can build on the recommendations and conclusions contained in them.

This Master Plan was completed as outlined in the MCEA document framework for Approach 1 Master Plans. An Approach 1 Master Plan is done at a broad level of assessment thereby requiring separate detailed investigations and further public engagement opportunities for projects identified within the Master Plan which have greater potential environmental and social impacts (i.e. Schedule B and C projects). The Master Plan would therefore become the basis for, and be used in support of, future investigations for the specific Schedule B and C projects identified within it. Schedule B projects would require completing Phases 1 and 2 including further public consultation and the filing of separate Project File Report(s) for public review. Schedule C projects would have to fulfil Phases 1 through 4 with further public consultation prior to filing an Environmental Study Report for public review.

2.5 Wastewater Treatment Effluent Limit Derivation

Wastewater treatment effluent limits are based upon following the MECP F-5-1 guidelines. Section 3.1 of the guidelines states:

“Receiving water assessments must be performed in all cases. Technical guidance for water assessment studies may be obtained from Regional staff or staff of the Science and Technology Branch. The carrying out of receiving water assessment studies and the interpretation of results will be the responsibility of the proponent of any new sewage treatment works or of any works undergoing expansion. Any relevant data in the possession of the Ministry will, upon request, be made available for such assessments. In certain cases, the necessary receiving water assessment may have already been carried out by the Ministry and, if so, all pertinent information will be made available to the proponent. If not the Ministry may at its discretion agree to do such assessments, or assist in their completion.”

The Castor River is a sensitive receiver and an Assimilative Capacity Study (ACS) was performed to determine the recommended wastewater effluent limits. The performed ACS can be found in **Appendix C**.

3 Township of Russell Growth Context

The population of the Township has consistently grown over the past five years and has been the fastest growing Municipality in the UCPR from 2001 to 2021. The County Wide GMS, updated in 2022, predicts this trend will continue with the Township projected to have the most housing growth and at a rate faster than historical trends (Hemson, 2022). Specifically, the GMS projected the Township to grow by 4,320 households with a net population increase of 10,580 people (2.45 persons/unit) from 2021 to 2046. It must also be noted that there are rural residents included in that population projection that are not serviced by municipal water and sewer. However, the projected growth would be predominantly within the Urban areas with only 4% of housing growth anticipated for rural areas in the Township (Hemson, 2022).

The population growth within the Urban areas has slightly outpaced the projected growth for the Township in the first two years of the projections (**Figure 3-1**). Additionally, in July 2023, the UCPR OP was amended. This amendment increased the Settlement Area in Russell by 72 hectares and in Embrun by 83 hectares. These lands were not accounted for in the 2022 GMS. However, they will be incorporated into the Township's upcoming OP Update. Proposed future developments for Embrun and Russell and presented in **Figure 3-2** and **Figure 3-3**, respectively.

The projected number of residential units was increased based on the new land added to the urban boundaries of Embrun and Russell through the UCPR OP. The corresponding population growth projections are based on a factor of 2.5 persons per unit to be consistent with the 2022 GMS.

The population growth allocated to Embrun, Russell, and Marionville was projected from historical serviced population. It is important to note that within the Urban areas of Russell and Embrun approximately 300 existing households are not serviced by municipal water services and approximately 600 existing households are not serviced by municipal wastewater services. These existing households have recently reaffirmed their intent to remain disconnected from water and wastewater services; therefore, these units are not included in future servicing population projections.

This Water and Wastewater Master Plan is structured to provide the necessary information for planning for water and wastewater separately for each community. Detailed population projections for water and wastewater servicing are discussed in **Section 6.6.1**, **Section 7.2.5**, and **Section 7.3.5**.

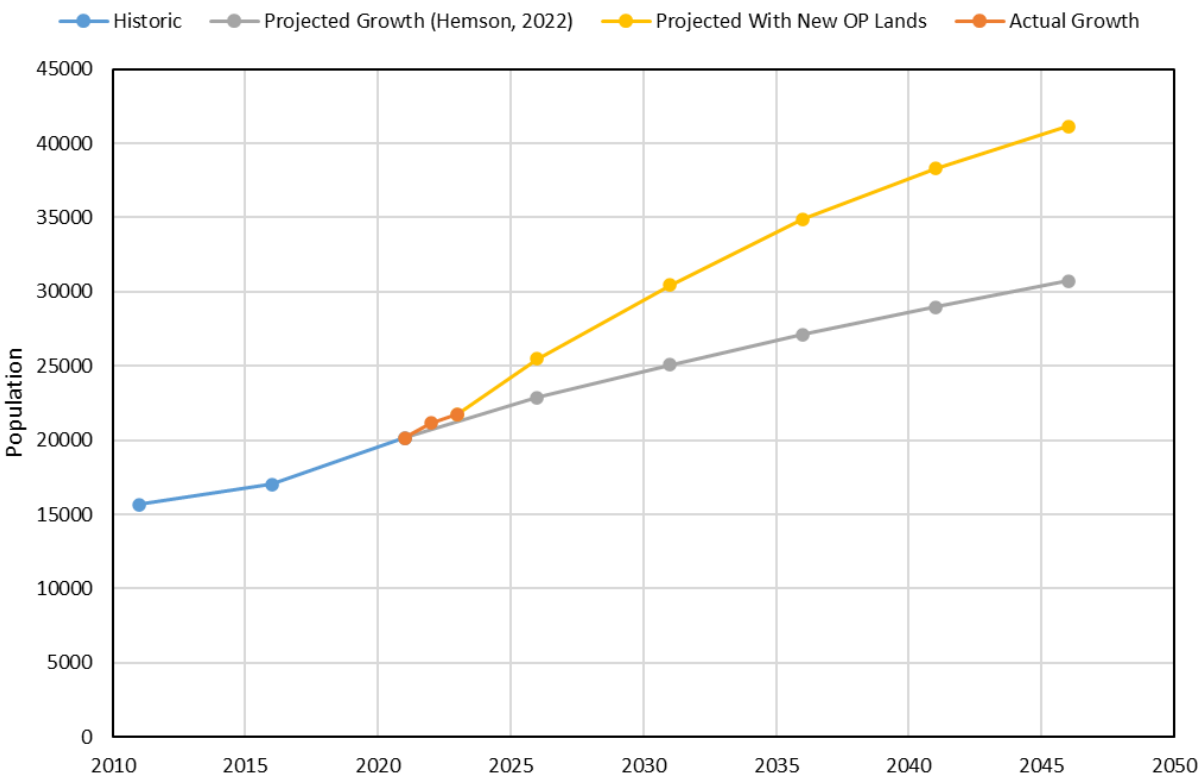
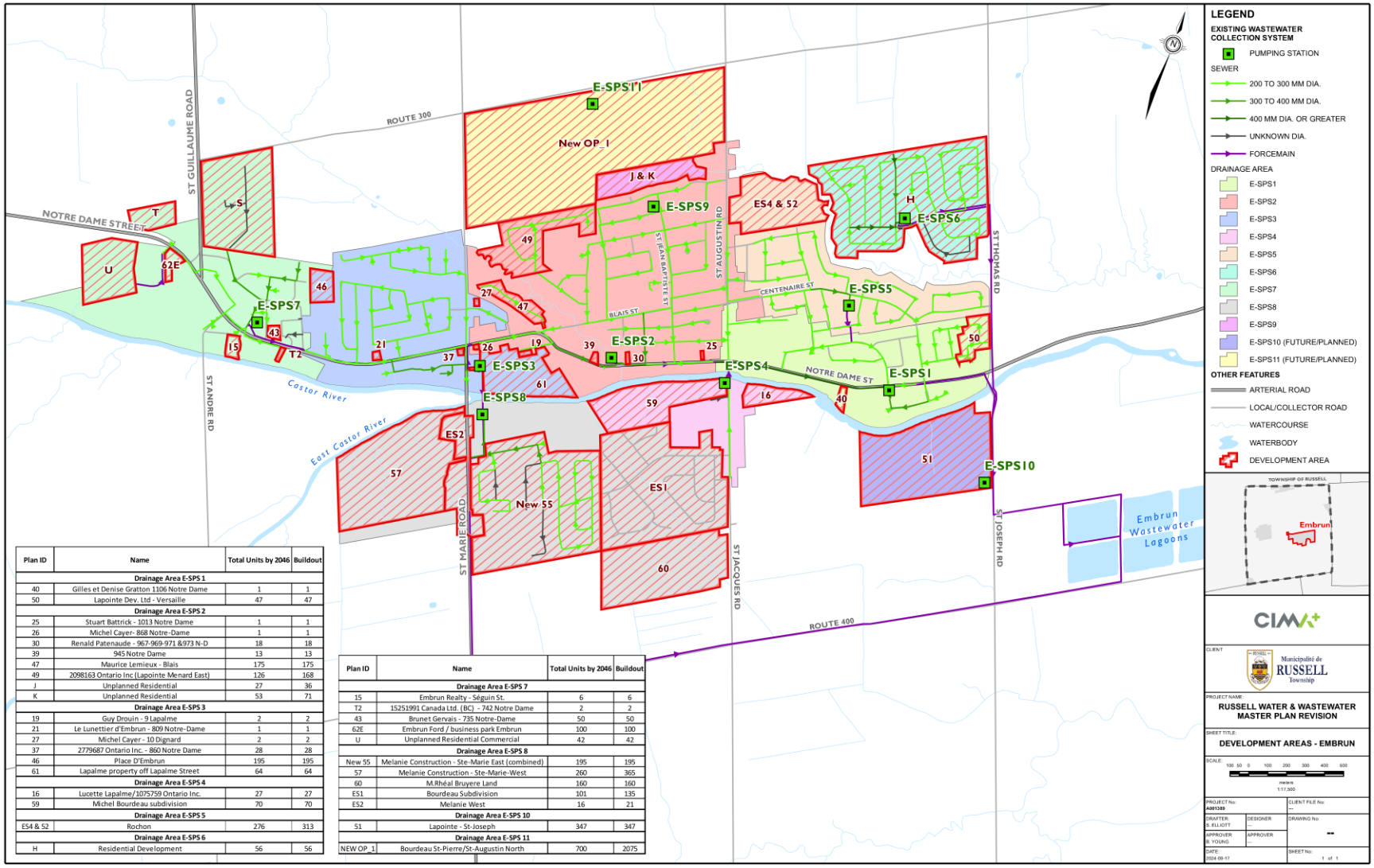


Figure 3-1 Township of Russell Projected Population compared to Actual Serviced Population Growth in Russell, Embrun and Marionville



Plan ID	Name	Total Units by 2046	Buildout
Drainage Area E-SPS 1			
40	Gilles et Denise Gratton 1106 Notre Dame	1	1
50	Lapointe Dev. Ltd - Versaille	47	47
Drainage Area E-SPS 2			
25	Stuart Battrick - 1013 Notre Dame	1	1
26	Michel Cayer- 868 Notre-Dame	1	1
30	Renald Patenaude - 967-969-971 &973 N-D	18	18
39	945 Notre Dame	13	13
47	Maurice Lemieux - Blais	175	175
49	2098163 Ontario Inc (Lapointe Menard East)	126	168
J	Unplanned Residential	27	36
K	Unplanned Residential	53	71
Drainage Area E-SPS 3			
19	Guy Drouin - 9 Lapalme	2	2
21	Le Lunettier d'Embrun - 809 Notre-Dame	1	1
27	Michel Cayer - 10 Dignard	2	2
37	2779687 Ontario Inc. - 860 Notre Dame	28	28
46	Place D'Embrun	195	195
61	Lapalme property off Lapalme Street	64	64
Drainage Area E-SPS 4			
16	Lucette Lapalme/1075759 Ontario Inc.	27	27
59	Michel Bourdeau subdivision	70	70
Drainage Area E-SPS 5			
ES4 & 52	Rochon	276	313
Drainage Area E-SPS 6			
H	Residential Development	56	56

Plan ID	Name	Total Units by 2046	Buildout
Drainage Area E-SPS 7			
15	Embrun Realty - Séguin St.	6	6
T2	15251991 Canada Ltd. (BC) - 742 Notre Dame	2	2
43	Brunet Gervais - 735 Notre-Dame	50	50
62E	Embrun Ford / business park Embrun	100	100
U	Unplanned Residential Commercial	42	42
Drainage Area E-SPS 8			
New 55	Melanie Construction - Ste-Marie East (combined)	195	195
57	Melanie Construction - Ste-Marie-West	260	365
60	M.Rhéal Bruyere Land	160	160
ES1	Bourdeau Subdivision	101	135
ES2	Melanie West	16	21
Drainage Area E-SPS 10			
51	Lapointe - St-Joseph	347	347
Drainage Area E-SPS 11			
NEW OP_1	Bourdeau St-Pierre/St-Augustin North	700	2075

Figure 3-2 Embrun Future Development Map

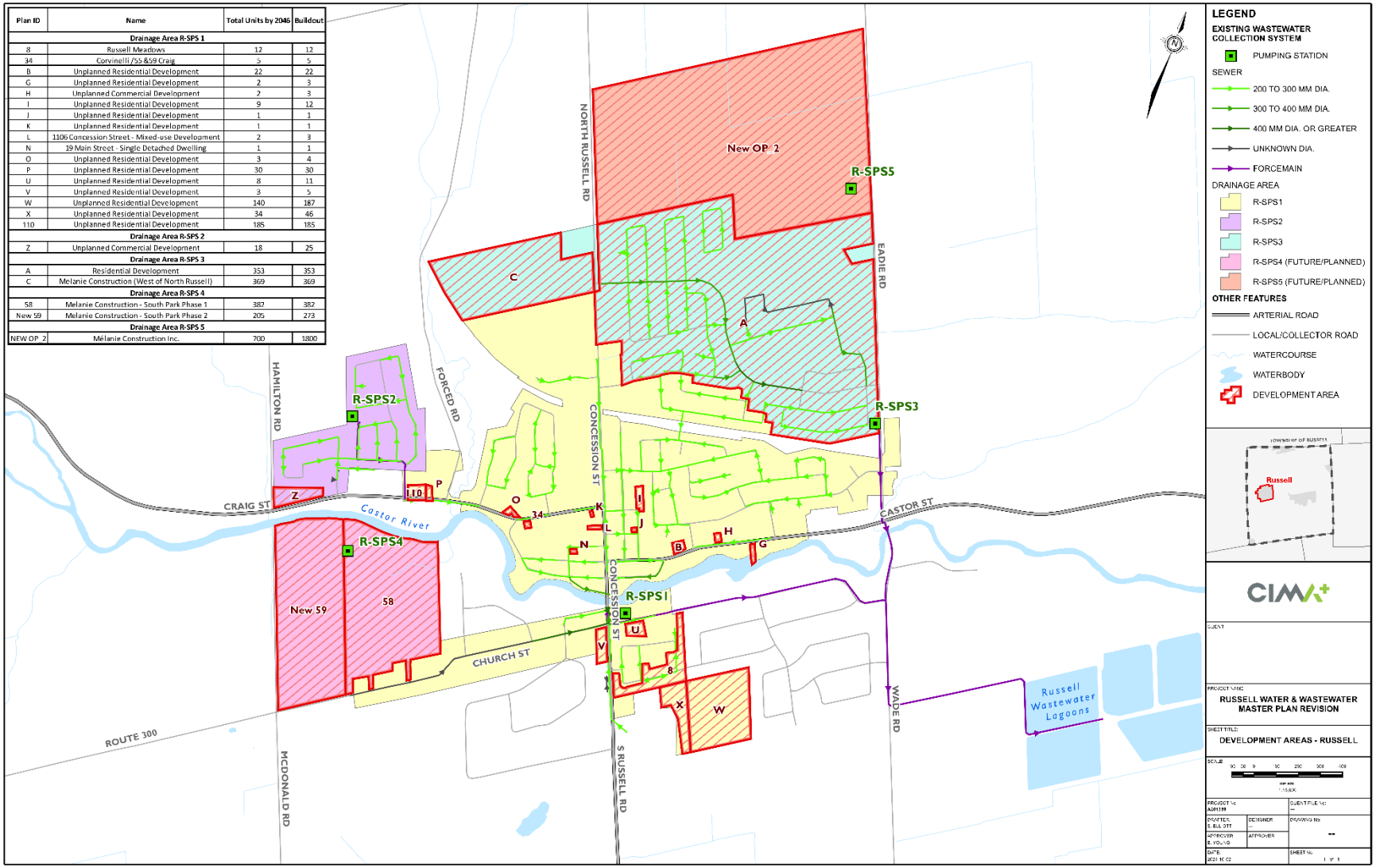


Figure 3-3 Russell Future Development Map

4 Problem and Opportunity Statement

The Township of Russell is building out within the Urban Boundaries of Russell, Embrun and Marionville in accordance with the Township's and the UCPR's Official Plans. Existing water and wastewater infrastructure will need upgrading to accommodate the immediate challenges and long-term growth. The preferred solutions to address the capacity deficits must comply with applicable regulations, mitigate social, cultural and environmental impacts and strive for financial sustainability.

5 Alternative Solution Development and Evaluation Methodology

5.1 Project Goals and Status

Project goals/objectives for the preferred design concept are outlined below:

- The preferred alternatives for the Township will be able to provide adequate and reliable water distribution for the Villages of Russell, Embrun, and Marionville, and wastewater collection and treatment for the Villages of Russell and Embrun that meet the proposed effluent objectives in a financially and technically responsible manner.
- The preferred alternatives will consider future water supply requirements to service the future developable lands within the 417 Industrial Park.
- The preferred alternatives will allow the Township to operate the water distribution network and wastewater collection system and treatment plants in a manner that utilizes available staff and resources effectively, minimizes added complexity, and maintains financial responsibility.

5.2 Evaluation Framework

The following evaluation framework was developed for this Master Plan:

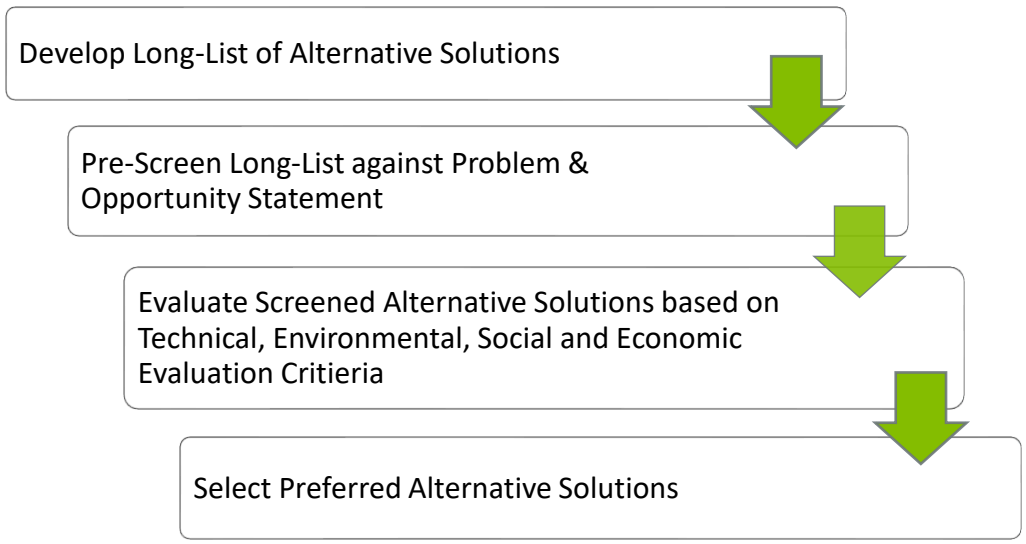
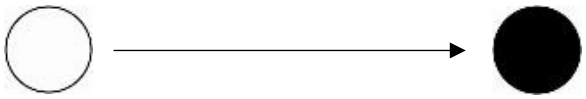


Figure 5-1: Evaluation Framework Schematic

5.3 Decision-Making Matrix

To strike a balance between qualitative and quantitative factors, the methodology to determine the preferred alternative was as follows:

1) A decision matrix was constructed including consideration of qualitative and quantitative factors or criteria. The matrix effectively measures a relative benefits and/or impacts offered by the alternative solution as compared to other alternatives. The ratings were displayed using “moons”; emptier moons indicating a lower benefit or higher impact score, while fuller moons indicating higher benefits or lower impacts.



Least Preferred Most Preferred

2) Planning level (Class D) capital costs were generated for each feasible option.

5.4 Technical Evaluation Criteria

The technical evaluation criteria are intended to capture the impacts/merits related to engineering and construction as well as the long-term operational challenges associated with the proposed alternative solution. Examples of factors considered are:

- **Capacity**: The infrastructure planned must be able to handle the current and projected water and/or wastewater needs of the Township. The infrastructure and treatment facilities must have sufficient capacity to meet these demands.
- **Quality**: The quality of the water produced and wastewater treated must meet the regulatory standards set by the MECP. The infrastructure planned must maintain the quality of water delivered to the consumers that is safe and meets required standards as well as the quality of wastewater effluent discharged to the Castor River that meets the Environmental Compliance Approval.
- **Sustainability**: The infrastructure planned must be sustainable and meet the resource constraints. This includes consumable resources (i.e. land, energy, chemicals, etc.) as well as the ability for the Township to staff and operate facilities.
- **Resilience**: The infrastructure planned must be resilient to changes in the environment such as natural disasters, climate change, and degradation of source/receiving water quality. Designs for the infrastructure must consider long term climate trends and potential threats such as flooding and drought.

5.5 Environmental Evaluation Criteria

The environmental evaluation criteria are intended to consider the impact of each alternative on the overall natural environment. A particular emphasis is given to areas identified as having key natural heritage features. Factors that were considered include:

- **Water quality**: Understanding the water availability and quality in the local environment, which involves assessing the quantity, quality, and sustainability of available water sources. With respect to the Castor River (receiver for the Embrun and Russell Wastewater Treatment Plants (WWTPs)), it is essential to consider the quality of water before implementing any wastewater treatment project, as the primary aim is to discharge treated wastewater that does not negatively impact water quality or create any future environmental issues.
- **Ecological impact**: Water and wastewater infrastructure projects can have a significant impact on the local ecology, including waterways, wetlands, and wildlife. The alternatives should consider the potential impact on the environment, including vulnerable or endangered species and habitats, is necessary to minimize any negative effects during construction and operation.
- **Conservation of natural resources**: The alternatives should aim to conserve natural resources and minimize the use of energy and chemicals where practical.
- **Climate change impacts**: Climate change has the potential to significantly impact the natural environment. The alternatives should consider how they can reduce greenhouse gas emissions.

5.6 Social Evaluation Criteria

The social evaluation criteria are intended to consider the impact on local residents, Indigenous communities, businesses, and the human environment. Factors that were considered include:

- **Potential archaeological and cultural heritage impacts:** Including impacts to undisturbed areas that may have archaeological potential or identified cultural heritage resources and landscapes. Archaeological and cultural heritage investigations shall be required in future MCEA studies for any preferred alternatives that may have impacts on archaeological and cultural heritage resources.
- **Construction impacts:** Construction can generate noise, dust, mud, traffic and road closures which may affect nearby residents and businesses. Construction impacts can be disruptive to daily activities and can affect mental and physical health.

- **Regular operation impacts:** The potential impact to neighbouring properties, such as project aesthetics, noise, dust, odours, truck traffic during operation, should be considered. The location of water and wastewater infrastructure should consider the existing land use patterns and zoning regulations.

5.7 Financial Evaluation Criteria

The financial evaluation criteria are intended to review the general affordability of the alternative solutions. Capital costs for each feasible alternative were estimated on a Class D basis (detailed breakdown provided in **Appendix A**). The capital costs were estimated with past project experience and vendor input when required. Operating and maintenance costs were performed at a high level to support the need for future staffing where required. Factors that were considered include:

- **Capital costs:** This includes the upfront costs of building new infrastructure or upgrading existing infrastructure, such as pipelines, treatment facilities, and storage tanks.
- **Operating and maintenance costs:** This includes ongoing costs associated with running and maintaining the infrastructure, such as electricity, chemicals, labour, and repairs.
- **Long-term sustainability and financial viability:** This includes ability to fund ongoing operations and maintenance of the infrastructure over the long-term and general affordability of the alternative.

6 Water Supply, Storage, Pumping and Distribution

6.1 Water System Overview

The Township has a water supply agreement with the City of Ottawa that commits up to 11,860 m^3/d to supply the Township. The City of Ottawa supplies drinking water to the Township from the Leitrim Road Pumping Station through an approximately 30 km long, 450 mm diameter feedermain connecting to the Eadie Road Metering Station and extending to the Embrun Reservoir.

Given the long distance and residence time in the feedermain from Ottawa, the water is rechloraminated at the Embrun Reservoir to achieve the required residual for secondary disinfection before distribution to Embrun, Russell and Marionville.

The Embrun Reservoir is equipped with two sets of booster pumps which discharge to Embrun and Russell, respectively. The Embrun booster pumps are controlled by the level in the Embrun Water Tower, and the Russell booster pumps are controlled by the level in the Russell Water Tower. The Marionville Booster Station (formerly the Russell Water Treatment Plant) draws water from the Russell distribution system to feed Marionville and to fill the Marionville Water Tower.

Supplying Embrun with water from Russell, and vice versa, in the event of loss of supply to either Village is possible; however, it is not possible for Marionville to supply Russell or Embrun. **Figure 6-1** illustrates the overall water distribution system for the Township of Russell.

The Township owns and operates the water facilities in the municipality subject to the Drinking Water Works Permit 184-201, issued on August 25, 2011, which describes the system and which together with Municipal Drinking Water License 184-101 sets the requirements for the operation and maintenance of the drinking water system.

The Limoges Water Treatment Plant located in The Nation Municipality feeds the water distribution systems serving the portion of the community of Limoges within the Township of Russell and the community of Le Baron Estate Development. Since the water system is under the responsibility of The Nation Municipality, the present Master Plan does not provide further details on this system.

The Highway 417 Industrial Park is currently not connected to the municipal systems. Existing development in the Industrial Park is serviced by private well systems.

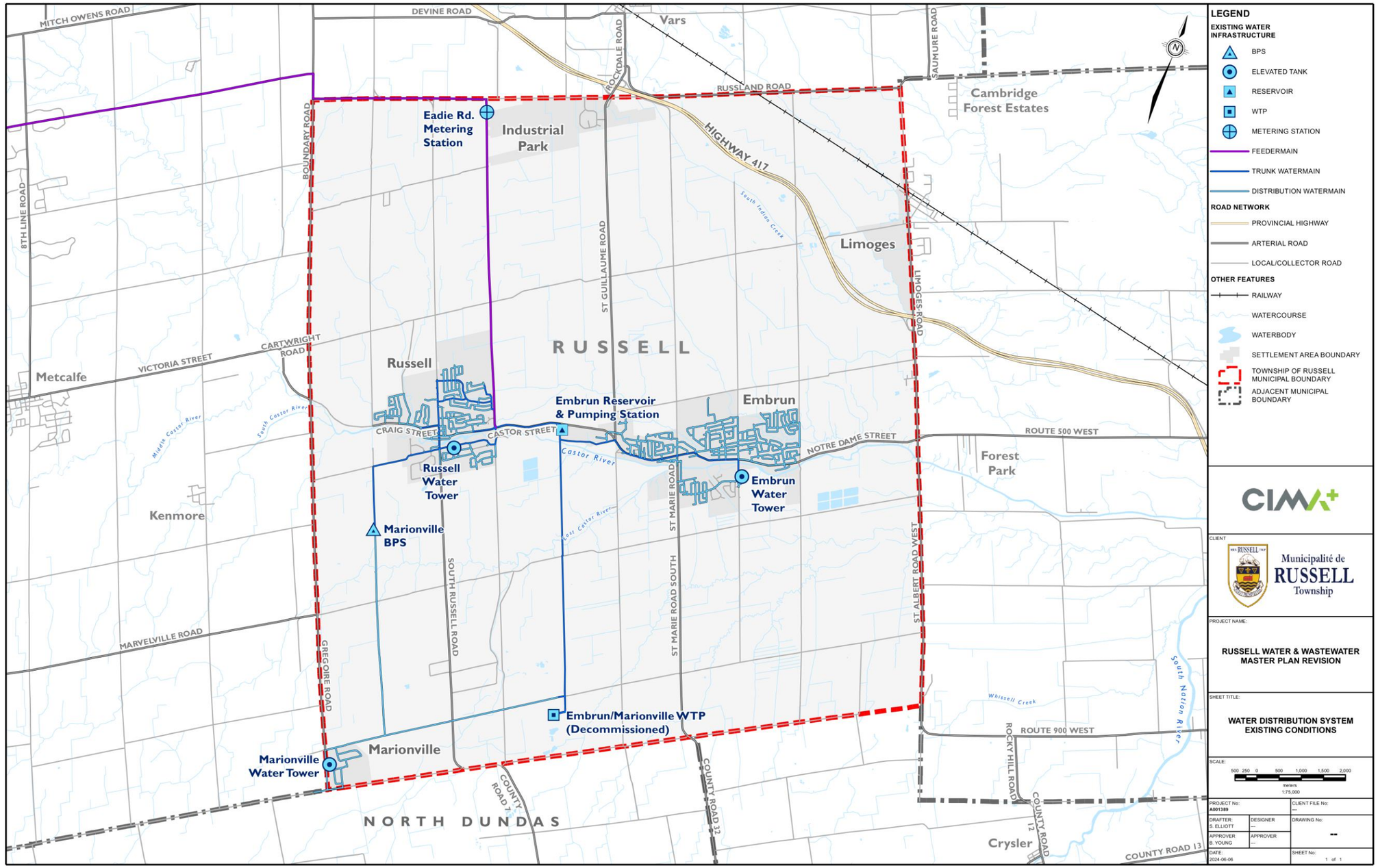


Figure 6-1: Township of Russell Water Distribution System

Table 6-1 summarizes the capacities of existing water storage infrastructure and booster pumps.

Table 6-1: Existing Water System Components Overview

Facility	Capacity	Description
Embrun Reservoir	1,410 m^3	Two-compartment concrete tank
Embrun Water Tower	2,300 m^3	Composite Elevated Tank
Russell Water Tower	2,300 m^3	Composite Elevated Tank
Marionville Water Tower	1,135 m^3	Composite Elevated Tank
Embrun Booster Pumping Station (BPS)	57.5 L/s @ 52.34 m Firm Capacity	Three pumps (two duty, one standby), each rated for 28.75 L/s. Located at the Embrun Reservoir. Pumps to Embrun Distribution System and Water Tower.
Russell BPS	31.4 L/s @ 52.8 m Firm Capacity	Two pumps (one duty, one standby) each rated for the firm capacity. Located at the Embrun Reservoir. Pumps to Russell Distribution System and Water Tower.
Marionville BPS	7.18 L/s @ 38 m Firm Capacity	Two pumps (one duty, one standby), each rated for the firm capacity. Pumps from the Russell Distribution system to the Marionville Distribution System and Water Tower.

6.2 City of Ottawa Water Supply Agreement

In 2008, the Township entered into an agreement with the City of Ottawa for the supply of up to 11,860,560 litres of Water per day via a new Leitrim Pumping Station and feedermain. The Leitrim Pumping Station also supplies some of the City's customers in Leitrim; however, the majority of the 450mm feedermain was designed to solely supply the Embrun Reservoir in the Township. The Township owns and operates the

feedermain within the City's right-of-way, whereas the Leitrim Pumping Station and Metering Chamber are owned and operated by the City.

The Term of the Water Supply Agreement is for a period of thirty (30) years, subject to the provisions for review and renewal as stipulated in the Agreement, such as:

"Commencing in the 15th year of this Agreement [2023], the parties will agree to examine and discuss the estimates and projections of the daily demands for Water by Russell for the 20th to the 30th year of the term of this Agreement to determine whether there is (i) any need by the Township and (ii) any available capacity in the City's Water System, to increase the supply of Water."

6.3 Historical Serviced Population

The 2019-2023 estimated population serviced by the municipal water works systems for Embrun, Russell and Marionville and the Township as a whole is presented in **Table 6-2.** The estimated population is determined by the Township and utilises the number of service connections, along with an assumed number of persons per unit, to estimate the serviced population. It must also be noted that approximately 300 existing households in Russell and Embrun are not serviced by municipal water services.

The equivalent total estimated population within the three communities serviced by the municipal water system increased by 3,594 people from 2019 to 2023. The majority of growth was in Russell and Embrun with population increases of 1,591 and 1,974 respectively. Marionville increased by 29 persons.

Table 6-2 : Water Serviced Population for the past 5 years (2019-2023)

Year	Embrun	Russell	Marionville	Township
2019	8,517	6,578	361	15,456
2020	9,068	7,052	364	16,484
2021	9,583	7,506	364	17,453
2022	10,136	7,922	376	18,434
2023	10,491	8,169	390	19,050

6.4 Historical Water Demand and Quality

Data on average daily demand (ADD) and maximum daily demands (MDD) for municipal water from the past 5 years (2019-2023) were reviewed. **Table 6-3** below shows water demand data for Embrun, Russell, and Marionville and the Township as a whole. In general, water demand has been increasing with increasing population over

the past 5 years. Peaking factors (PFs), based on the ratio between MDD/ADD ranged from 1.9 to 6.4 for the villages.

Table 6-3: Historical Water Average and Maximum Day Demands (2019 – 2023)

Year	Embrun		Russell		Marionville		Township	
	ADD	MDD	ADD	MDD	ADD	MDD	ADD	MDD
2019	1,889	3,028	1,196	1,889	67	364	3,160	4,996
2020	1,960	3,227	1,280	2,669	76	374	3,311	5,562
2021	2,126	3,105	1,291	2,304	96	407	3,531	5,652
2022	2,188	3,316	1,244	1,922	87	531	3,543	5,443
2023	2,474	4,052	1,541	3,019	89	457	4,105	7,528
5-Year Average/Max (Peaking Factor)	**2,127**	**4,052 (1.9)**	**1,310**	**3,019 (2.3)**	**83**	**531 (6.4)**	**3,520**	**7,602 (2.2)**

Annual water reports from the past 5 years (2019-2023) were reviewed and the relevant raw and treated water quality data are summarized in **Table 6-4,** as compared to applicable maximum acceptable concentration (MAC), Aesthetic Objective (AO), or Operational Guideline (OG) for each parameter. In general, treated water quality meets the MACs, AOs, and OGs.

Table 6-4: Historical Water Quality (Raw and Treated) (2019 – 2023)

Parameter (Units)	Ottawa Feedermain Raw Water Quality	Treated Water Quality				MAC / AO / OG for Treated Water
		Reservoir	Embrun	Russell	Marionville	
Turbidity (NTU)	-	0 – 0.70	0 – 0.58	0.04 – 0.43	0 – 0.75	1.0 (MAC)
pH	-	7.74 – 9.76	7.60 – 9.76	7.83 – 9.82	7.91 – 9.80	7.0 – 10.5 (OG)
Temperature (°C)	-	0 – 24.10	0 – 22.20	0 – 23.00	0 – 21.20	-

Parameter (Units)	Ottawa Feedermain Raw Water Quality	Treated Water Quality				MAC / AO / OG for Treated Water
		Reservoir	Embrun	Russell	Marionville	
Total Chlorine Residual (mg/L)	0.83 – 2.52	1.00 – 2.86	0 – 2.80	0.62 – 2.78	0.32 – 2.70	2.0 (OG)
Free Chlorine Residual (mg/L)	0 – 0.65	0 – 0.63	0 – 0.50	0 – 0.88	0 – 0.12	0.05 – 4.0 (MAC)
Combined Chlorine Residual (mg/L)	0.80 – 2.47	1.06 – 2.82	0.40 – 2.76	0.58 – 2.80	0.27 – 2.05	0.25 – 3.0 (MAC)

6.5 Historical Per Capita Water Demand

The historical per capita water usage for Embrun, Russell, and Marionville are shown in **Figure 6-2, Figure 6-3,** and **Figure 6-4.** The previous 2016 Township Water and Wastewater Master Plan used a per capita water demand of 230 L/c/d for planning purposes. In discussions with the Township, this Master Plan increased the water demand to 250 L/c/d for future growth. This value captures the majority of the historical per capita demands and is slightly more conservative than the previous Master Plan.

The intention in selecting a higher per capita demand versus the 2016 Water and Wastewater Master Plan is to decrease the risk of proposed infrastructure upgrades being insufficiently sized to meet increased flows in the Township (i.e. due to potential housing densification). The increase from 230 L/c/d to 250 L/c/d is not a substantial change and keeps the per capita water demand within the lower bounds of benchmark municipalities, which can range between 240-346 L/c/d. Using 250 L/c/d for the Township's projected per capita water demands remains within the historical range and allows for a factor of safety within the future projections, as these projections are subject to change.

The 250 L/c/d should be assessed in future Master Servicing Plans to reflect the per capita water demand of the population more closely at that time.

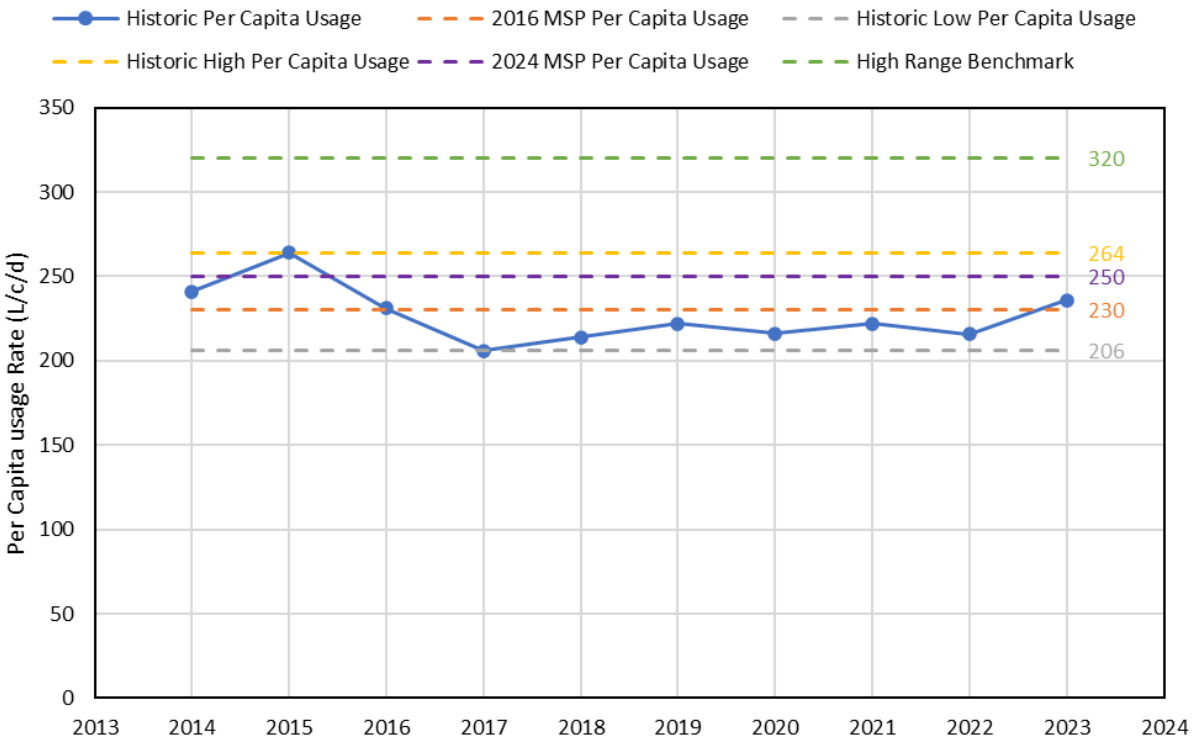


Figure 6-2: Embrun's Historical Per Capita Water Demand

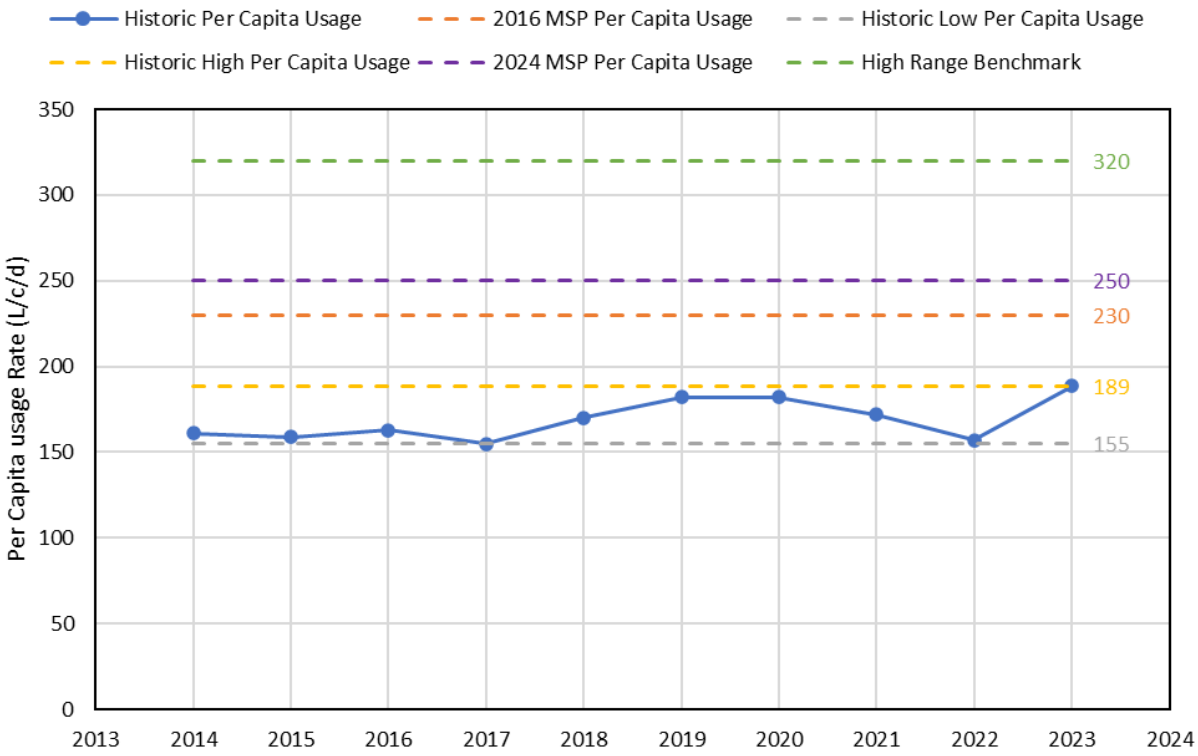


Figure 6-3: Russell's Historical Per Capita Water Demand

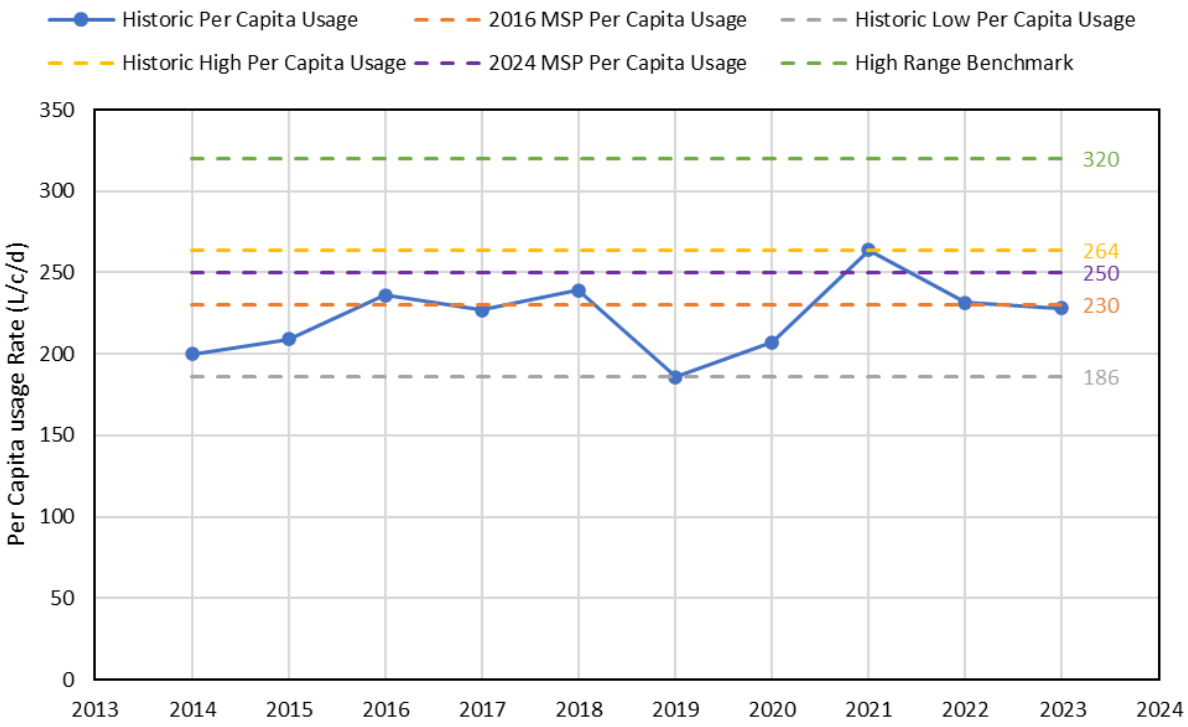


Figure 6-4: Marionville's Historical Per Capita Water Demand

6.6 Future Water System Requirements

6.6.1 Population Growth

The projected serviced population for the water system is anticipated to increase up to 2046 due to developer interest within the Township. Most of the growth is occurring on vacant land with some intensification occurring too. **Table 6-5** illustrates the development projections for Embrun, Russell, Marionville, and the Township as a whole.

In 2022, the Township retained Hemson to update their Growth Management Strategy. Within that report, Hemson assumed a persons per unit rate of 2.45. For this report population projections were rounded to 2.5 persons/unit. The Township's planning department provided a list of developments and the associated number of units.

Table 6-5: Projected Water Serviced Population (2023-2046)

Planning Period Interval	Embrun			Russell			Marionville			Township		
	Units Added	Pop. Added	Total Pop.	Units Added	Pop. Added	Total Pop.	Units Added	Pop. Added	Total Pop.	Units Added	Pop. Added	Total Pop.
2023 - 2026	667	1,668	12,159	181	453	8,622	32	80	470	880	2,200	21,251
2026 - 2031	870	2,175	14,334	423	1,058	9,679	35	88	558	1,328	3,320	24,571
2031 - 2036	614	1,535	15,869	643	1,608	11,287	0	0	558	1,257	3,143	27,714
2036 - 2041	409	1,023	16,891	529	1,323	12,609	0	0	558	938	2,345	30,058
2041 - 2046	342	855	17,746	444	1,110	13,719	0	0	558	786	1,965	32,023
Buildout	1,582	3,955	21,701	1,236	3,090	16,809	0	0	588	2,818	7,045	39,068

6.6.2 Future Water Supply Requirements

Projections for average daily and maximum daily water demands up to 2046 are shown in **Table 6-6.** Future residential demand projections consider the additional population contributing a per capita water demand of 250 L/c/d (as discussed in **Section 6.5**). Existing ADDs and MDDs (as shown in **Table 6-3**) for each village were used as the basis to which future ADD and MDD contributions were added. To determine future MDDs from additional residential and commercial ADD contributions, a peaking factor of 2.5 was applied to new developments in Embrun and Russell and a peaking factor of 4.0 was applied to new developments in Marionville per the City of Ottawa Design Guidelines.

An average daily demand of 10 m^3/ha/d was assumed for future commercial and industrial developments, which is in line with previous studies in the Township. A total land area of 38 ha in Embrun and 5 ha in Russell of commercial development is anticipated by 2046. No commercial developments are planned in Marionville. It was assumed that rate of commercial development would track with population growth. Therefore, the anticipated total commercial demand was dispersed evenly over the planning period intervals as shown in **Table 6-6.**

Table 6-6: Anticipated Average Daily and Maximum Daily Water Demands

Year	Embrun (m^3/d)				Russell (m^3/d)				Marionville (m^3/d)				Township (m^3/d)			
	Additional Residential ADD (1)	Additional Commercial ADD (2)	ADD (3)	MDD (4)	Additional Residential ADD (1)	Additional Commercial ADD (2)	ADD (3)	MDD (4)	Additional Residential ADD (1)	Additional Commercial ADD (2)	ADD (3)	MDD (4)	Additional Residential ADD (1)	Additional Commercial ADD (2)	ADD (3)	MDD (4)
2019-2023 (existing)	-	-	2,127	4,052	-	-	1,310	3,019	-	-	83	531	-	-	3,520	7,602
2026	417	76	2,620	5,273	113	10	1,434	3,322	20	-	103	611	550	86	4,156	9,206
2031	544	76	3,239	6,822	264	10	1,708	4,008	22	-	125	699	830	86	5,072	11,528
2036	384	76	3,699	7,971	402	10	2,120	5,037	-	-	125	699	786	86	5,943	13,707
2041	256	76	4,030	8,799	331	10	2,460	5,889	-	-	125	699	586	86	6,615	15,387
2046	214	76	4,320	9,522	278	10	2,748	6,608	-	-	125	699	491	86	7,192	16,829
Buildout	989	0	5.308	11,994	773	0	3,520	8,539	-	-	125	699	1,761	0	8,954	21,232

Table Notes:

1) Additional residential ADD was calculated using future population projections (**Table 6-5**) and a per capita demand of 250 L/c/d.
2) Additional commercial ADD was calculated using a 10 m^3/ha/d factor.
3) Existing ADDs were developed based on average demands from the past 5 years (**Table 6-3**). Future ADD was estimated as the sum of existing ADD and residential and commercial ADD contributions from growth.
4) Existing MDDs were developed based on the maximum demand recorded in the past 5 years (**Table 6-3**). The existing MDD was used as a basis to which additional residential and commercial ADD were multiplied by a peaking factor of 2.5, for Embrun and Russell, and a peaking factor of 4.0, for Marionville, and then added to the existing MDD to determine the anticipated future MDDs.

As shown in **Figure 6-5,** the current agreement for max day supply from the City of Ottawa (11,860 m^3/d) is projected to be insufficient for the Township's MDD by approximately the end of 2031. Therefore, the agreement will need to be renegotiated if the Township continues to use the City of Ottawa as its sole source of water.

According to City of Ottawa Design Guidelines, a watermain is designed to operate under normal conditions at a velocity of 1.5 m/s. Assessing the feedermain at the maximum normal operating velocity of 1.5 m/s, the current 450 mm diameter feedermain is able to supply up to 20,612 m^3/d without upgrades to the pipe, which would satisfy the Township's projected MDD to 2046 as shown in **Figure 6-5.** Increased velocities are possible, however, applying the City of Ottawa design guidelines it is not projected to be required prior to 2046. The design guidelines can be revisited in future planning documents to potentially extend the useful capacity of the feedermain if required.

As discussed in **Section 1.2,** Highway 417 Industrial Park water demands are dependent on developer interest and funding, therefore, development timing is currently unknown. However, to confirm if the existing feedermain has sufficient capacity to supply the Industrial Park, an ADD factor (10 m^3/ha/d) was multiplied by the approximately 170 ha of land that was identified for future servicing. The Industrial Park is not part of the demand allocation for this Master Plan, however, was assessed to support planning should the project move forward. The additional projected demands are shown **Figure 6-5** at 2046.

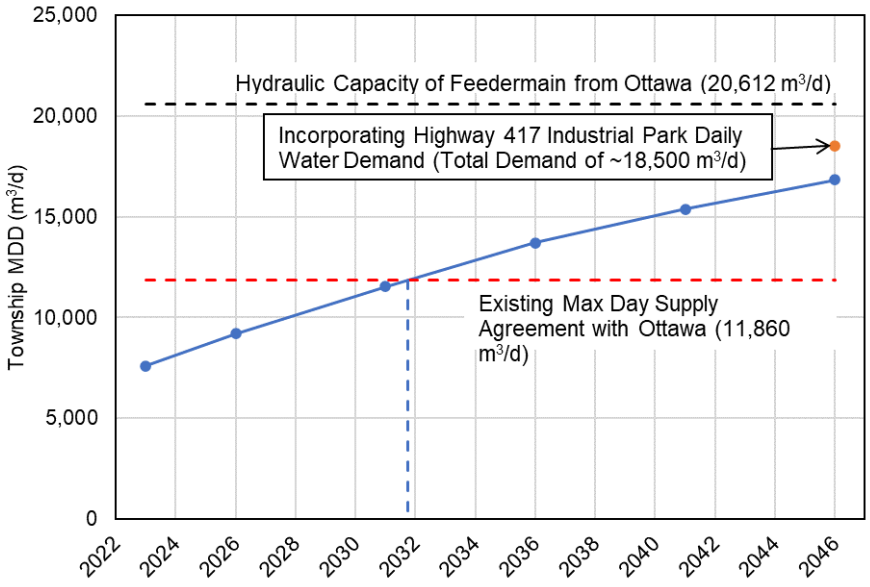


Figure 6-5: Projected Township MDD vs. Existing City of Ottawa Supply Agreement and Feedermain Capacity

6.6.3 Future Treated Water Storage Requirements

When the available treated water supply is sufficient to satisfy the maximum day demands of the distribution system, storage requirements are determined using the following formula from the MECP Guidelines (Ministry of the Environment, Conservation and Parks, 2008):

$$Storage = A + B + C$$

Where: A = Fire Storage, B = Equalization Storage = 25% of maximum day demand, and C = Emergency Storage = 25% of (A+B).

Fire storage is the product of the fire flow and fire duration based on Fire Underwriters Survey (FUS) requirements. As noted in the previous Master Plan (WSP, 2016), for planning purposes, fire flows of 8,000 L/min (133 L/s) were adopted for Embrun and Russell while 6,000 L/min (100 L/s) was used for Marionville, corresponding to the value recommended in the FUS Water Supply for Public Fire Protection document (FUS, 1999) for contiguous buildings. The corresponding fire duration is 2 hours.

Based on the projected MDD up to 2046 (as presented in **Table 6-6**), the storage requirements for Embrun, Russell, and Marionville were estimated using the MECP guidelines as summarized in the tables below.

Table 6-7: Water Storage Requirements – Embrun

Year	A – Fire Storage (m^3)	B – Equalization Storage (m^3)	C – Emergency Storage (m^3)	Storage Required (A+B+C) (m^3)	Storage Available (m^3) (1)
2026	958	1,318	569	2,845	3,428
2031	958	1,706	666	3,329	3,428
2036	958	1,993	738	3,688	3,428
2041	958	2,200	889	3,947	3,428
2046	958	2,381	835	4,173	3,428
Buildout	958	2,999	989	4,945	3,428

Table Notes:

1) Available floating storage in Embrun is 2,300 m^3. Sum of available storage capacity in Embrun includes the elevated tank and 80% of volume available at Embrun Reservoir.
2) The ground elevation of Embrun is approximately 59 – 70m. The bottom of the storage area of the Embrun Tower has an elevation of 97.5m. Therefore, the entire volume of the Embrun Tower is expected to be usable while maintaining system pressure above 20 psi. To maintain system pressure above 40 psi, a minimum Tower level of approximately 0.5m (5% full) is required. This does not account for losses within the distribution system, which will be looked at further in Section 6.6.5.1.

Table 6-8: Water Storage Requirements – Russell

Year	A – Fire Storage (m^3)	B – Equalization Storage (m^3)	C – Emergency Storage (m^3)	Storage Required (A+B+C) (m^3)	Storage Available (m^3) (1)
2026	958	830	447	2,235	2,582
2031	958	1,002	490	2,449	2,582
2036	958	1,259	554	2,771	2,582
2041	958	1,472	607	3,037	2,582
2046	958	1,652	652	3,262	2,582
Buildout	958	2,135	773	3,865	2,582

Table Notes:

1) Available floating storage in Russell is 2,300 m^3. Sum of available storage capacity in Russell includes the elevated tank and 20% of volume available at Embrun Reservoir.
2) The ground elevation of Russell is approximately 67 – 73 m. The bottom of the storage area of the Russell Tower has an elevation of 100.4 m. Therefore, the entire volume of the Russell Tower is expected to be usable while maintaining system pressure above 20 psi. To maintain system pressure above 40 psi, a minimum Tower level of approximately 1m (9% full) is required. This does not

account for losses within the distribution system, which will be looked at further in Section 6.6.5.2.

Table 6-9: Water Storage Requirements – Marionville

Year	A – Fire Storage (m^3)	B – Equalization Storage (m^3)	C – Emergency Storage (m^3)	Storage Required (A+B+C) (m^3)	Storage Available (m^3) (1)
2026	720	153	218	1,091	1,135
2031	720	175	224	1,118	1,135
2036	720	175	224	1,118	1,135
2041	720	175	224	1,118	1,135
2046	720	175	224	1,118	1,135
Buildout	720	175	224	1,118	1,135

Table Note:

1) Available floating storage in Marionville is 1,135 m^3. It is assumed that the full storage capacity at the Marionville elevated tank is available.

The overall available storage in Embrun and Russell is sufficient to meet projected 2031 requirements per MECP guidelines. However, additional storage capacity would be required to meet 2036 Embrun and Russell storage requirements and beyond. It should also be noted that storage requirements in Embrun in 2026 and in Russell in 2031 would exceed available floating storage. This deficit has implications on the booster pumping capacity requirements (see **Section 6.6.4**).

The available floating storage in Marionville is sufficient to meet 2046 demands per MECP Guidelines. However, the Marionville Tower is currently only filled to 50% to mitigate water quality issues. It is recommended that the Township consider rechloramination at the Tower, flushing programs, and/or looping to Embrun from the Tower to allow the full volume of the Tower to be maintained for storage requirements while mitigating water quality issues.

6.6.4 Future Booster Pumping Requirements

The objective of booster pumping is to provide sufficient distribution system pressure to meet community potable water demands as well as supplement treated water storage, when required, to provide fire, balancing, and emergency storage. Therefore, the capacity of booster pumping stations (BPSs) are dictated by the availability of floating storage in the distribution system. Per the MECP Guidelines, if floating storage in the distribution system is sufficient, the BPS should be designed for the future MDD. However, if inadequate floating storage is available, the BPS should be designed to supply future peak hour flows or future MDD and fire flow.

The required capacities of the BPSs in Embrun, Russell, and Marionville were estimated in the following table based on the availability of sufficient floating storage, and in comparison to the existing BPS firm capacities. As noted below, each BPS will require capacity upgrades by 2046 regardless of whether sufficient floating storage is provided in the distribution systems.

Table 6-10: Embrun, Russell, and Marionville BPS Capacity Requirements

Village	Existing BPS Firm Capacity (L/s)	2046 BPS Firm Capacity Requirements (L/s)	
		With Sufficient Floating Storage (1)	With Insufficient Floating Storage (2)
Embrun	57.5	110	160
Russell	31.4	76	120
Marionville	7.18	8	N/A

Table Notes:

1) If floating storage is increased to supply fire, balancing, and emergency storage requirements in Embrun and Russell, the firm capacity requirements for those BPSs would need to meet the 2046 MDDs.
2) If floating storage remains per existing, storage requirements in Embrun in 2026 and in Russell in 2031 would exceed available floating storage. Therefore, the firm capacity of Embrun and Russell BPSs would be required to meet the 2046 peak hour demands or 2046 MDD and fire flow conditions. It should be noted that the Embrun BPS and Russell BPS firm capacities for this scenario assumed that the existing floating storage in the Embrun and Russell Towers would provide fire and emergency storage; however, balancing storage would be stored at the Embrun Reservoir and pumped by the BPSs.

6.6.5 Future Water Distribution System Requirements

Water distribution system modelling was completed for the Embrun, Russell, and Marionville distribution systems using the projected 2046 MDD and fire flow requirements, as discussed in the following Sections.

6.6.5.1 Embrun Future Distribution System Capacity

The maximum headloss results for the Embrun distribution system under 2046 MDD conditions are shown in **Figure 6-6** below. Typically, less than 2 m/km is targeted for distribution system headloss. The existing 400mm/350mm watermain from the Embrun BPS to Notre Dame Street was found to experience headloss over 7 m/km indicating that this pipe is undersized for future demand conditions. High headloss occurred along most sections of Notre Dame Street, indicating limited east/west transmission capacity in the system.

The minimum pressure results under 2046 MDD conditions are shown in **Figure 6-7** below. Pressures were below 50 psi in a large portion of the system. In general, areas were found to experience low pressure during the peak hour period only, indicating that low pressures are a result of limited watermain capacity and high headloss.

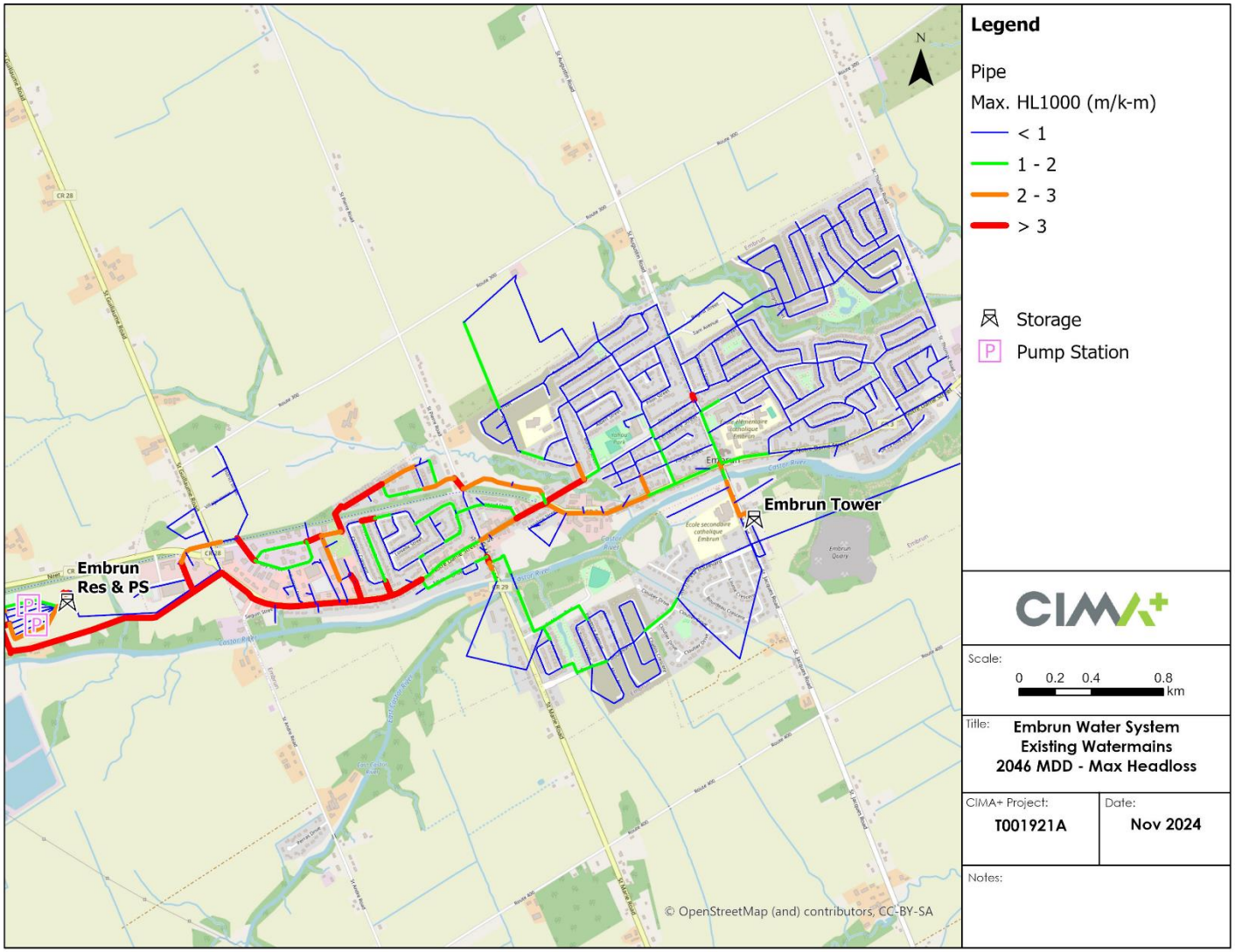


Figure 6-6: Embrun Max Headloss 2046 MDD

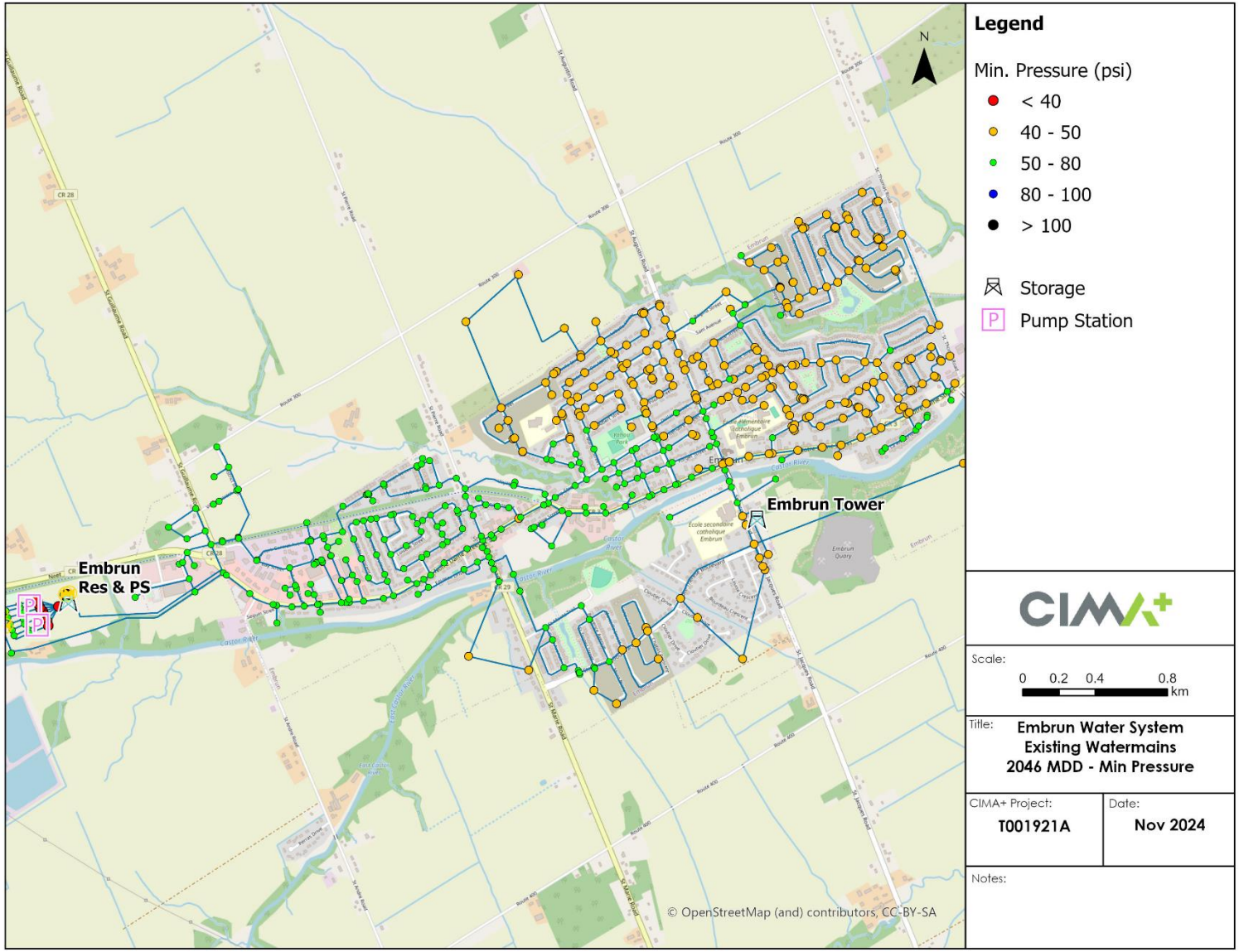


Figure 6-7: Embrun Min Pressure 2046 MDD

The following projects (**Table 6-11)** are recommended in Embrun to improve watermain capacity and system pressures for 2046 conditions. The proposed watermain locations are shown in **Figure 6-8** below. In general, the purpose of these projects is to increase the watermain capacity between the Embrun BPS and the east end of the system. By twinning the existing watermain from the pump station to Valoris Street (WM_E_1a), in addition to improving the hydraulic capacity, system redundancy will be improved as the BPS will continue to be able to supply the distribution system if one of the pipes along this route is out of service. Additionally, supply to the distribution system can be maintained during construction. Alternate routing could be considered for the proposed watermains, such as the New York Central foot path along the north end of the system for ease of construction and potential improved looping.

Recommended timing for each of the proposed projects was developed using the hydraulic model and the growth estimates established in **Table 6-6** to determine under which planning horizon each section of pipe would exceed its existing capacity. High-level cost estimates were developed for each project based on typical unit values for PVC pipe under 2024 conditions. Costs include 20% contingency and 15% engineering fees.

The 2046 MDD headloss results with the proposed watermain upgrades and the BPS capacity increased to 160 L/s are shown in **Figure 6-9** below. With the upgrades in place, the headloss is maintained below 2 m/km throughout the majority of the system with the exception of a few short sections of local pipes.

The 2046 MDD minimum pressure results with the proposed watermain upgrades and the BPS capacity increased to 160 L/s is shown in **Figure 6-10** below. Pressure was maintained above 50 psi throughout the system.

A 2-hour duration 133 L/s fire flow at the École élémentaire publique De la Rivière Castor under 2046 MDD conditions with the proposed watermain upgrades in place and the BPS capacity increased to 160 L/s was modelled. The minimum pressure results are presented in **Figure 6-11** below. Pressure was maintained above 20 psi throughout the system.

The available fire flow results under 2046 MDD conditions with the proposed watermain upgrades in place is shown in **Figure 6-12** below. The available fire flow was above 133 L/s throughout the majority of the system with the exception of a few local streets. Local watermain upgrades may be considered in these areas to improve fire flow results.

Table 6-11: Embrun Proposed Watermain Projects

Project No.	Year Required	Project Description	Estimated Capital Cost (2024 $CAD)[(1)]	Class EA Schedule	Trigger
WM_E_1a	2031	Option 1: Install 1200m of new 400mm diameter pipe parallel to existing 400mm/350mm diameter watermain from Embrun BPS to Valoris Street	$1.7M	Exempt	To accommodate future growth to 2046
		Option 2: Replace 1200m of existing 400mm/350mm diameter watermain from Embrun BPS to Valoris Street with 500mm diameter watermain	$2.3M		
WM_E_RT_300	2031 - 2036	Install 7600m of new 350mm diameter pipe on St Guillaume Road, Route 300, St. Pierre Road, St Augustin Road, and St. Thomas Road	$12M	Exempt	To accommodate future growth to 2046

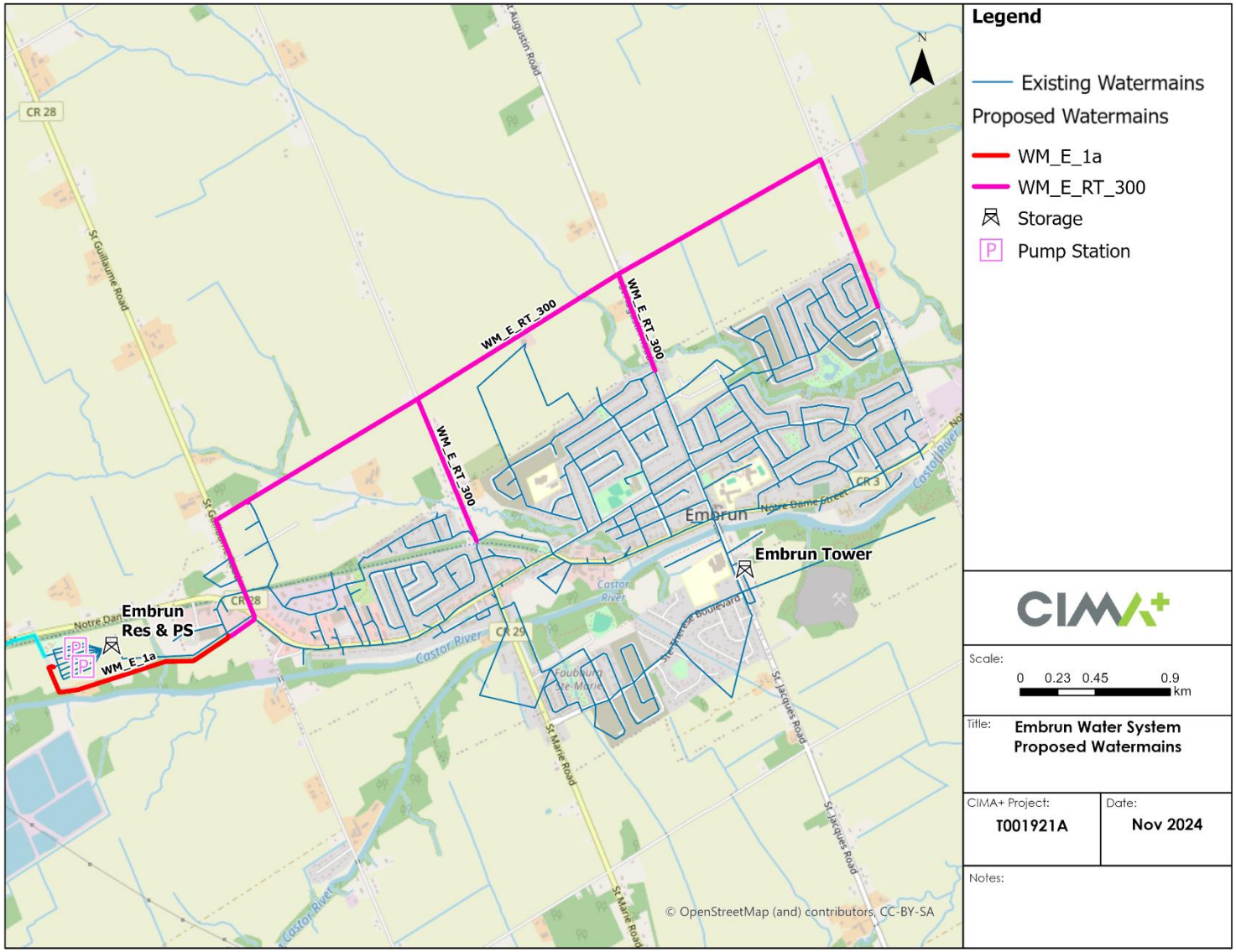


Figure 6-8: Proposed Embrun Watermain Upgrades

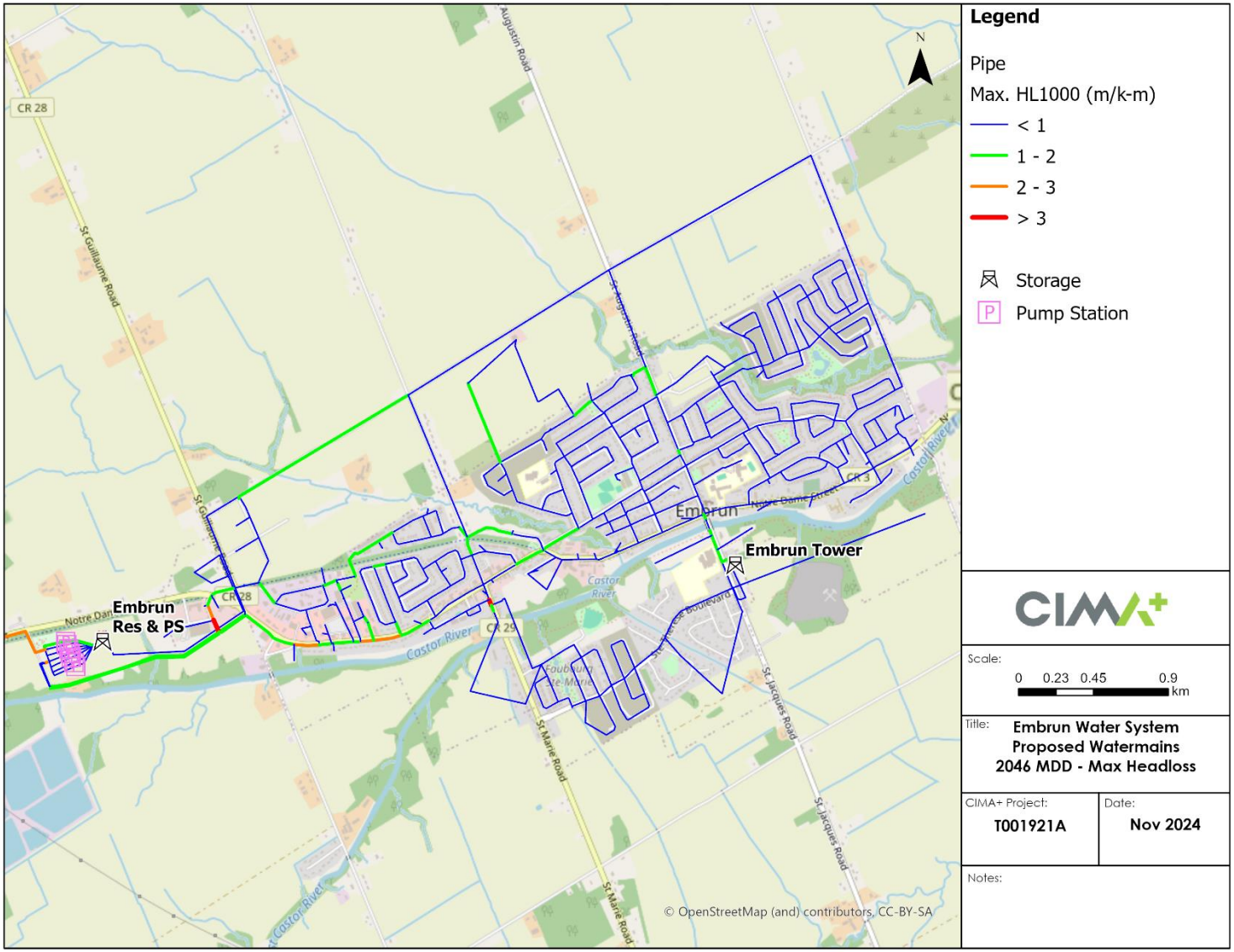


Figure 6-9: Embrun Max Headloss 2046 MDD – Watermain Upgrades

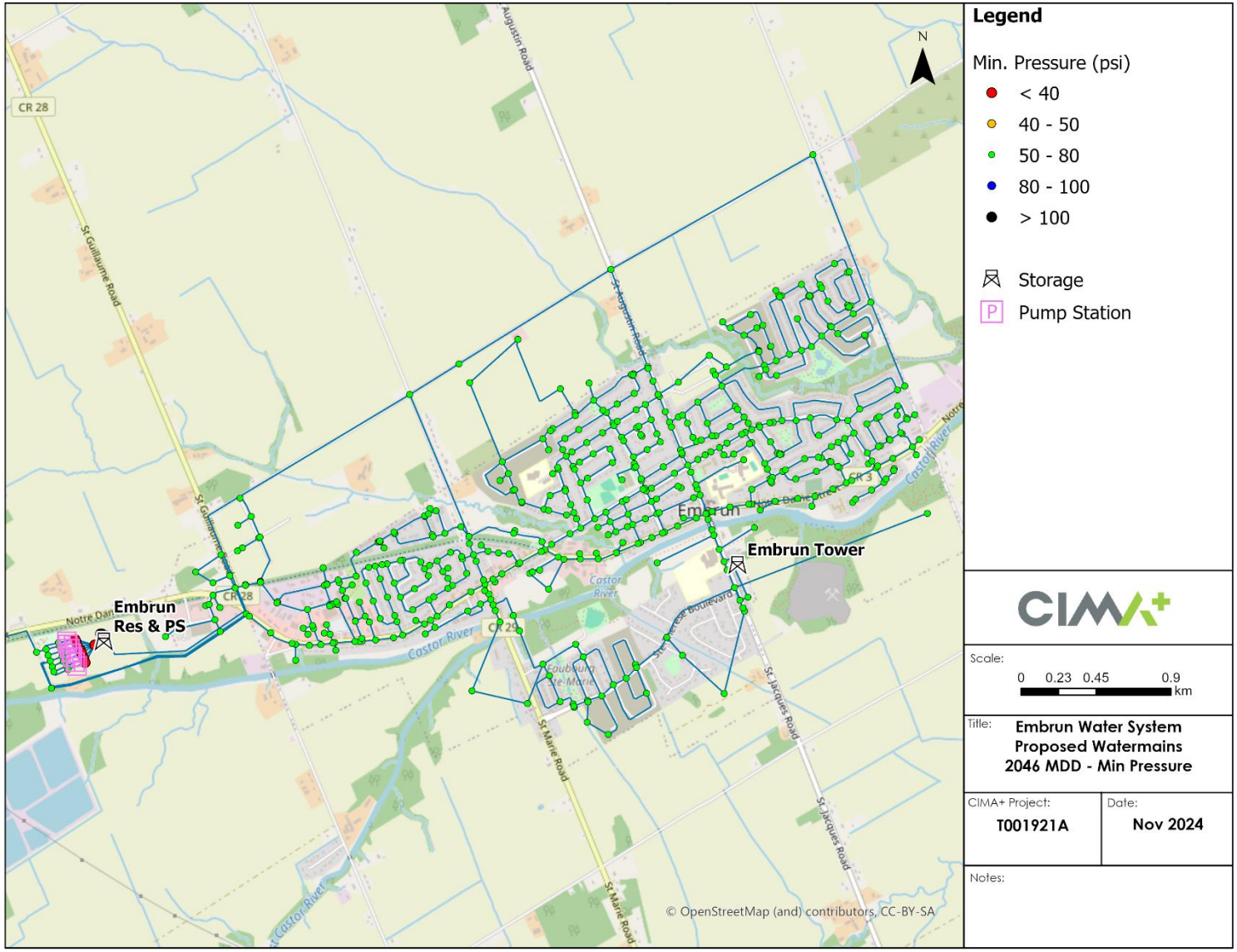


Figure 6-10: Embrun Min Pressure 2046 MDD – Watermain Upgrades

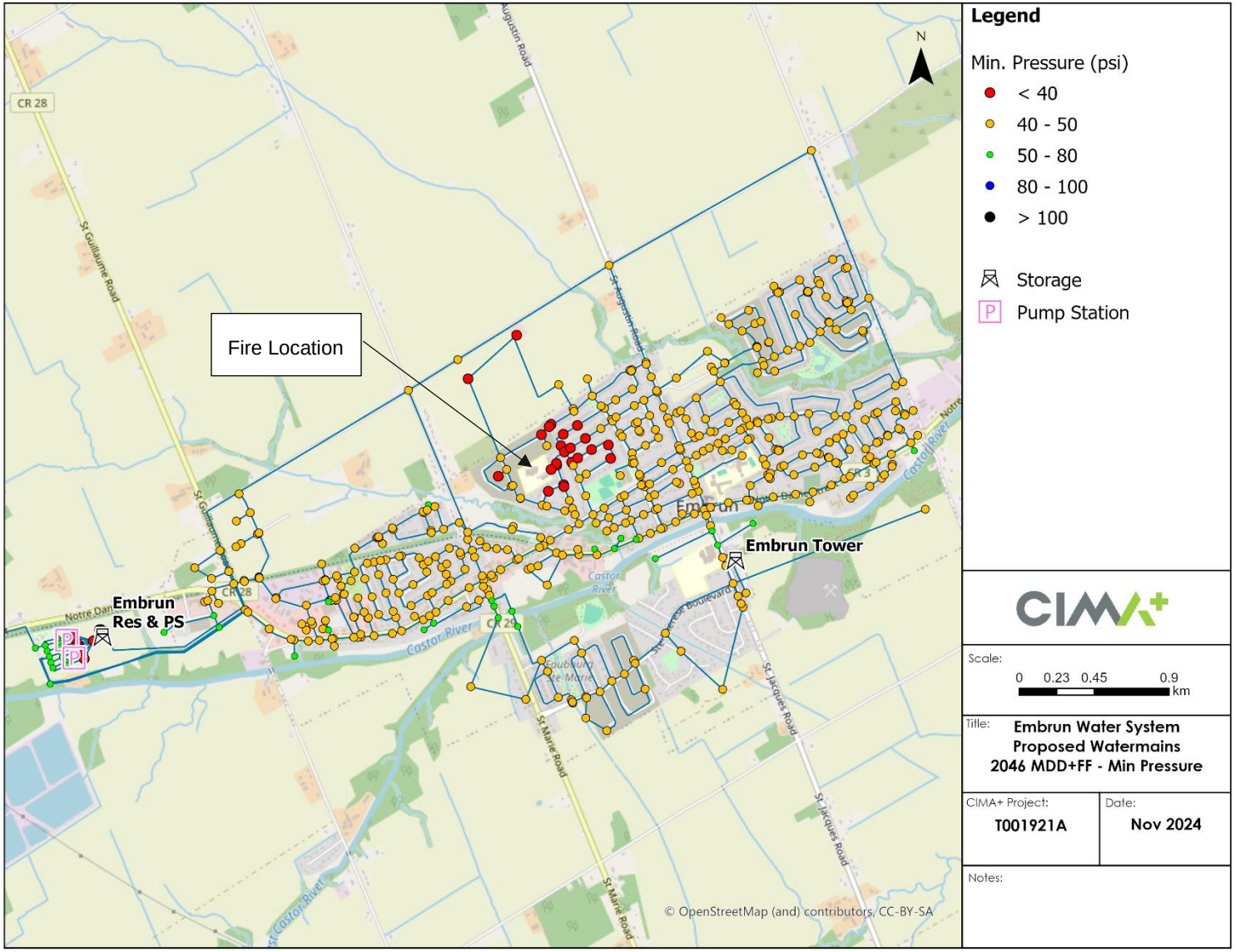


Figure 6-11: Embrun Min Pressure 2046 MDD + 133 L/s Fire – Watermain Upgrades

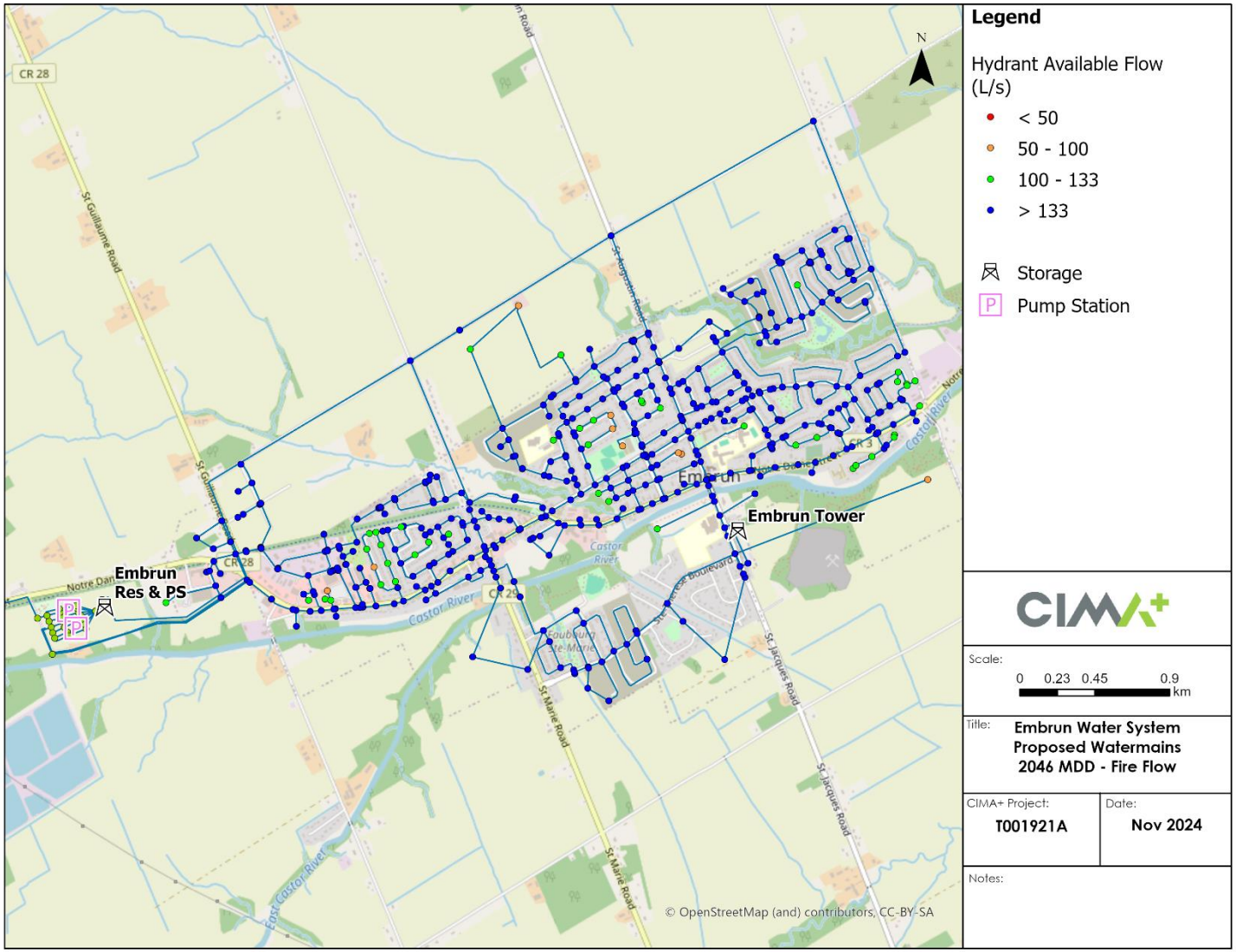


Figure 6-12: Embrun Available Fire Flow 2046 MDD - Watermain Upgrades

6.6.5.2 Russell Future Distribution System Capacity

The modelling results for headloss for the Russell distribution system under 2046 MDD conditions, with the Russell BPS capacity increased to 120 L/s, are shown in **Figure 6-6** below. Typically, less than 2 m/km of headloss is targeted in larger watermains. The existing 400mm watermain from the Russell BPS to Eadie Road was found to experience headloss over 2 m/km indicating that this pipe is somewhat undersized for future demand conditions. However, this was not found to result in any significant capacity issues in terms of filling the Russell Tower or providing adequate system pressure. The maximum velocity in this pipe was 0.9 m/s. No other headloss issues were noted in the Russell system.

The minimum pressure results under 2046 MDD conditions, with the Russell BPS capacity increased to 120 L/s, are shown in **Figure 6-7** below. Pressures were maintained above 50 psi throughout the majority of the system, with the exception of the far north end of the system and the southwest end of the system. These areas have lower pressure as a result of their relatively high ground elevation. The minimum pressure during MDD in the Russell system was 49 psi, only slightly below the preferred criteria of 50 psi.

The minimum pressure results in Russell under 2046 MDD conditions with a 2-hour duration 133 L/s fire flow at the Russell Arena are shown in **Figure 6-15** below. Pressures were maintained above 20 psi throughout the distribution system.

Additionally, minimum pressure results in Russell under 2046 MDD conditions with a 2-hour duration 100 L/s fire flow at the Seraphin Marion Park Outdoor Rink in Marionville are shown in **Figure 6-16** below. Pressures were maintained above 20 psi throughout the distribution system.

The available fire flow in Russell under 2046 MDD conditions is shown in **Figure 6-17**. The fire flow exceeded 133 L/s in the majority of the system, with the exception of the area at the west end of Craig Street. The pipe on Craig Street is a 300mm from Concession Street to Mill Street, then transitions to a 200mm west of Mill Street. To improve fire flows in this area, the Township could consider upsizing the Craig Street watermain to the west of Craig Street. Water quality implications should also be taken into consideration as this area is at a dead-end of the system. Alternatively, the Township may consider looping the watermain south of the Castor River (along Church Street) to Craig Street to improve fire flows on Craig Street. The fire flow results with Craig Street upgraded to 300mm are shown in **Figure 6-18** below.

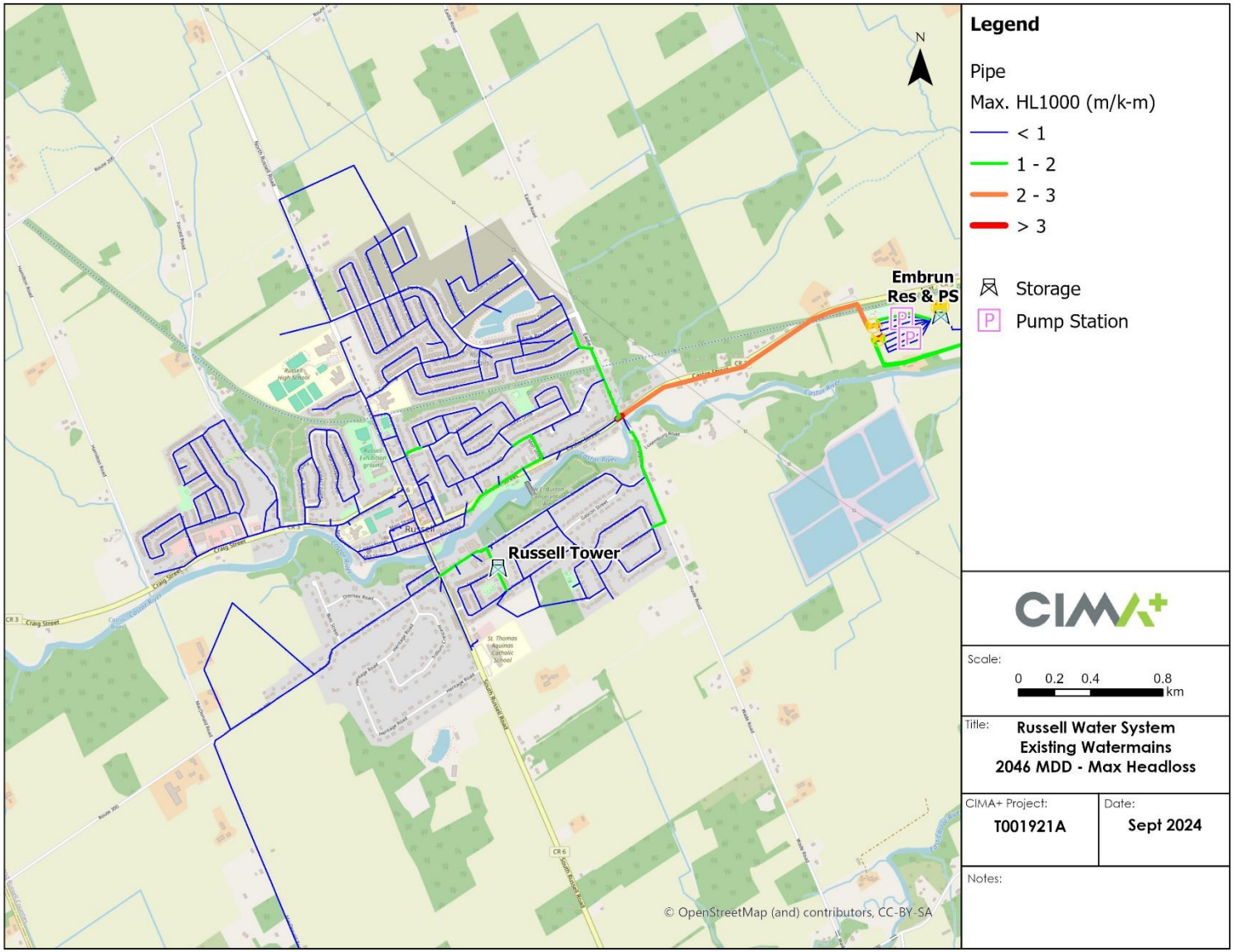


Figure 6-13: Russell Max Headloss 2046 MDD

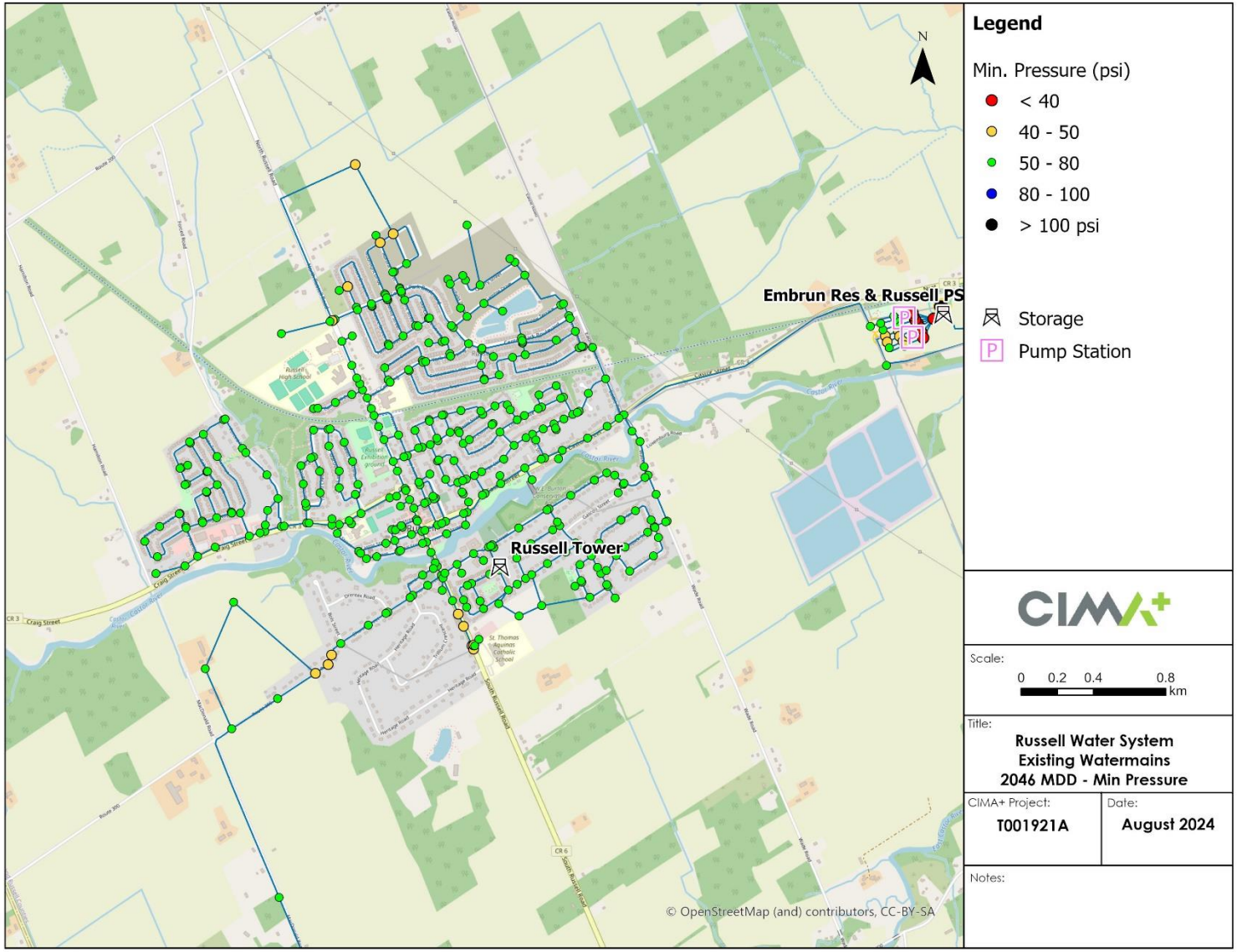


Figure 6-14: Russell Min Pressure 2046 MDD

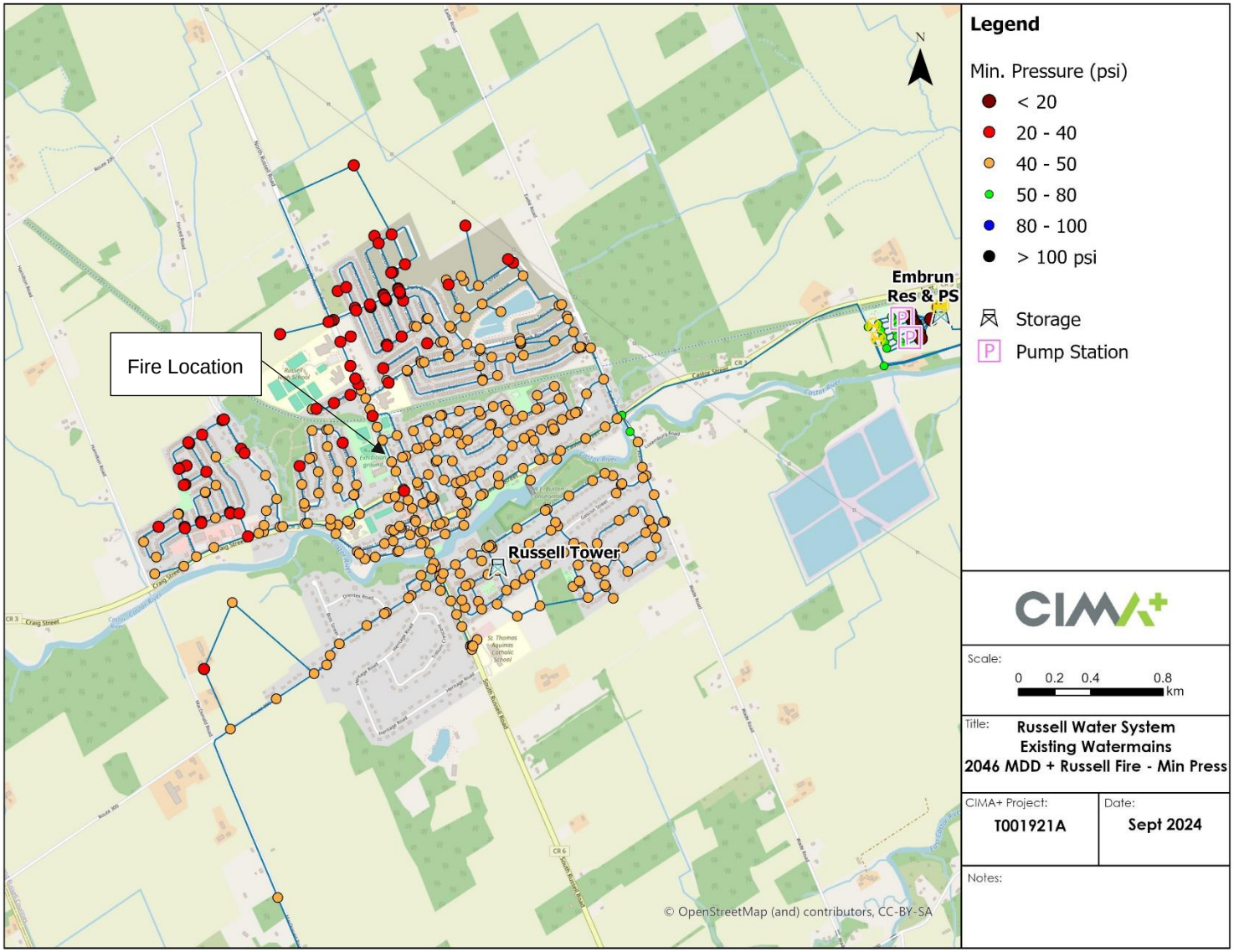


Figure 6-15: Russell Min Pressure 2046 MDD + 133 L/s Russell Fire

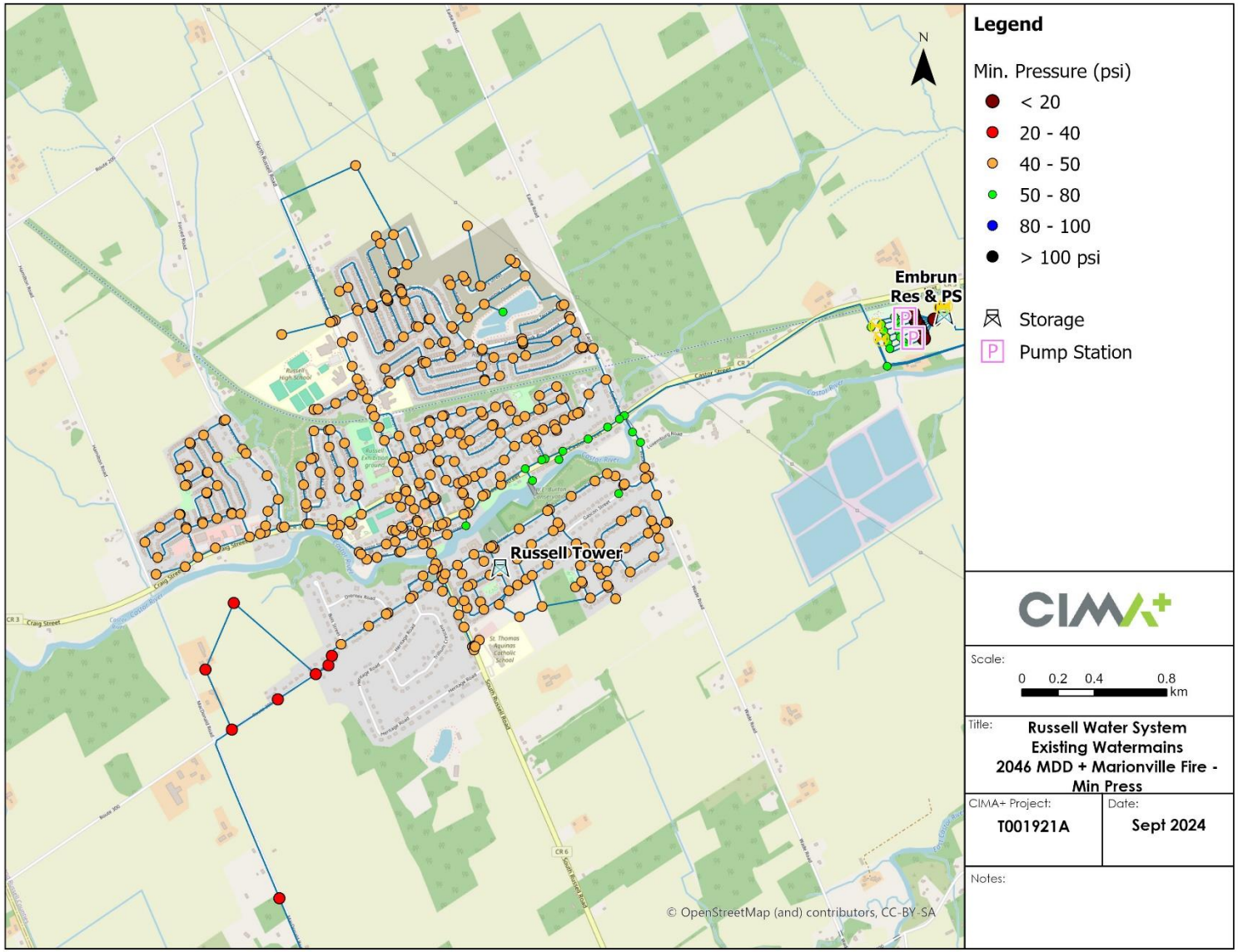


Figure 6-16: Russell Min Pressure 2046 MDD + 100 L/s Marionville Fire

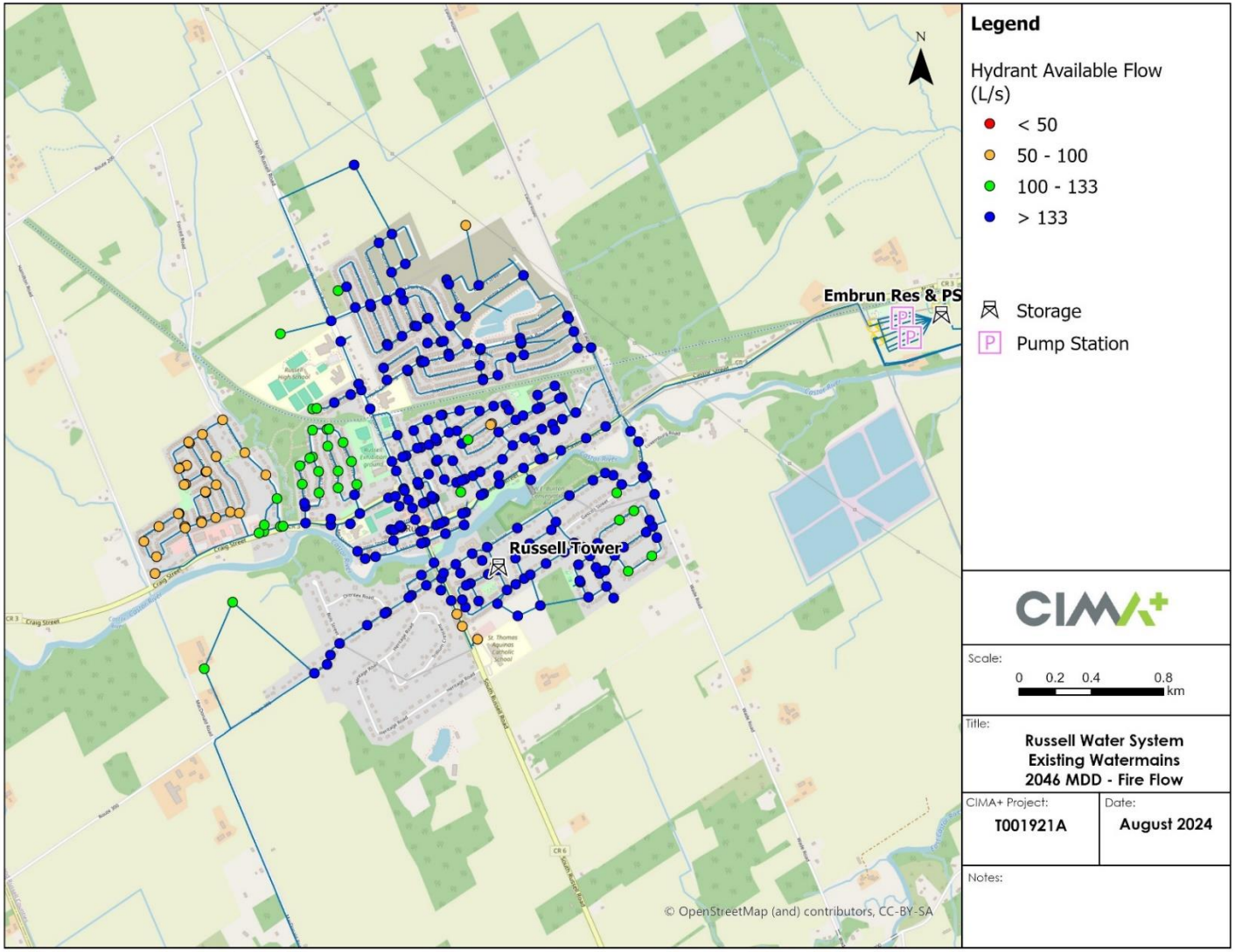


Figure 6-17: Russell Available Fire Flow 2046 MDD

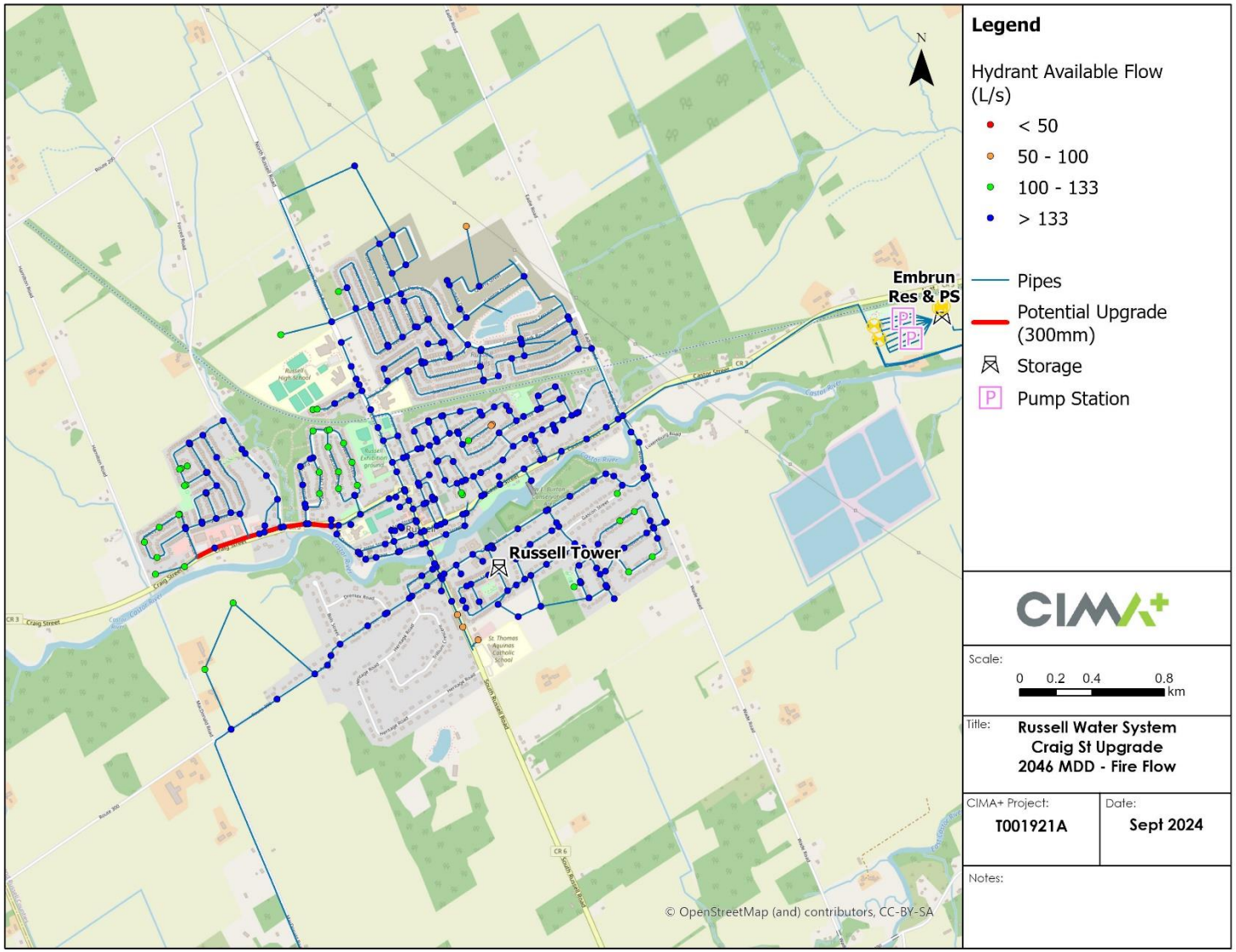


Figure 6-18: Russell Available Fire Flow 2046 MDD – Craig Street Upgrade

6.6.5.3 Marionville Future Distribution System Capacity

The headloss results for the Marionville system under 2046 MDD conditions are shown in **Figure 6-19** below. Headloss was maintained below 1m/km throughout the system and no watermain capacity issues were noted.

The minimum pressure results under 2046 MDD conditions are shown in **Figure 6-20** below. Pressures were maintained above 50 psi throughout the system and no pressure constraints were observed.

A 2-hour duration 100 L/s fire flow was modelled at the Seraphin Marion Park Outdoor Rink under 2046 MDD conditions. The available pressure is shown in **Figure 6-21** below. The pressure was maintained above 20 psi throughout Marionville.

The available fire flow in Marionville under 2046 MDD conditions is shown in **Figure 6-22**. The fire flow exceeded 100 L/s throughout the system and no fire flow limitation issues were observed.

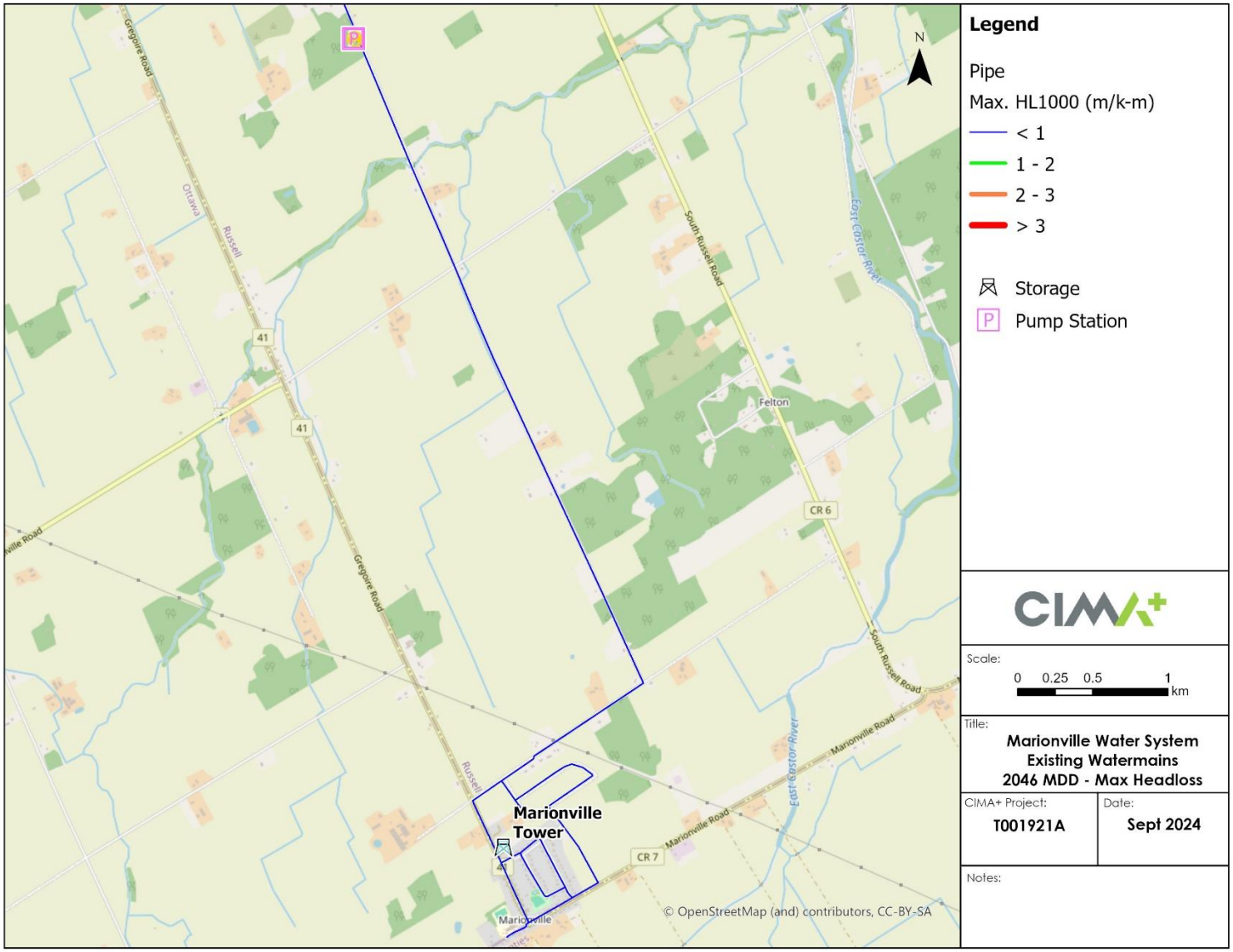


Figure 6-19: Marionville Max Headloss 2046 MDD

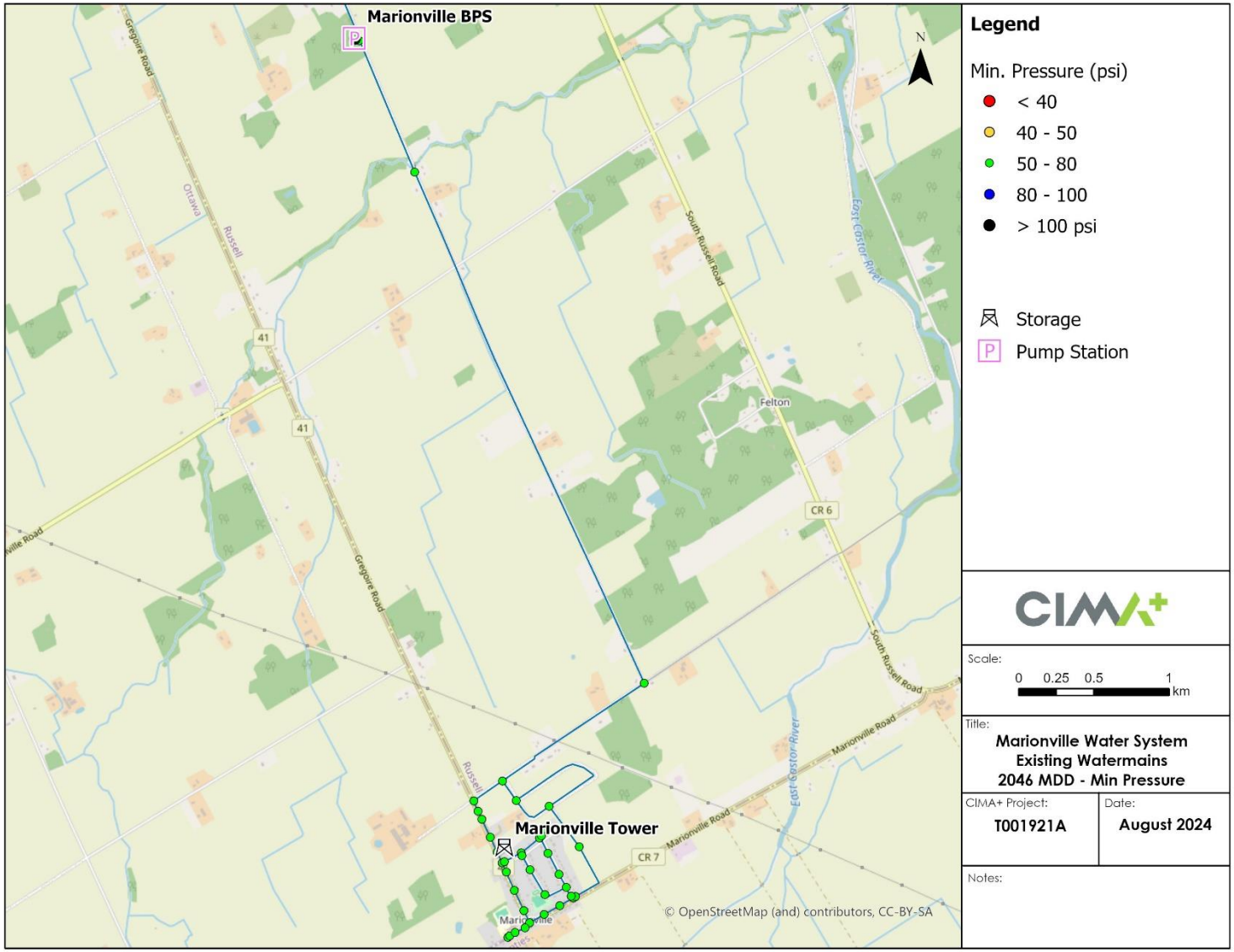


Figure 6-20: Marionville Min Pressure 2046 MDD

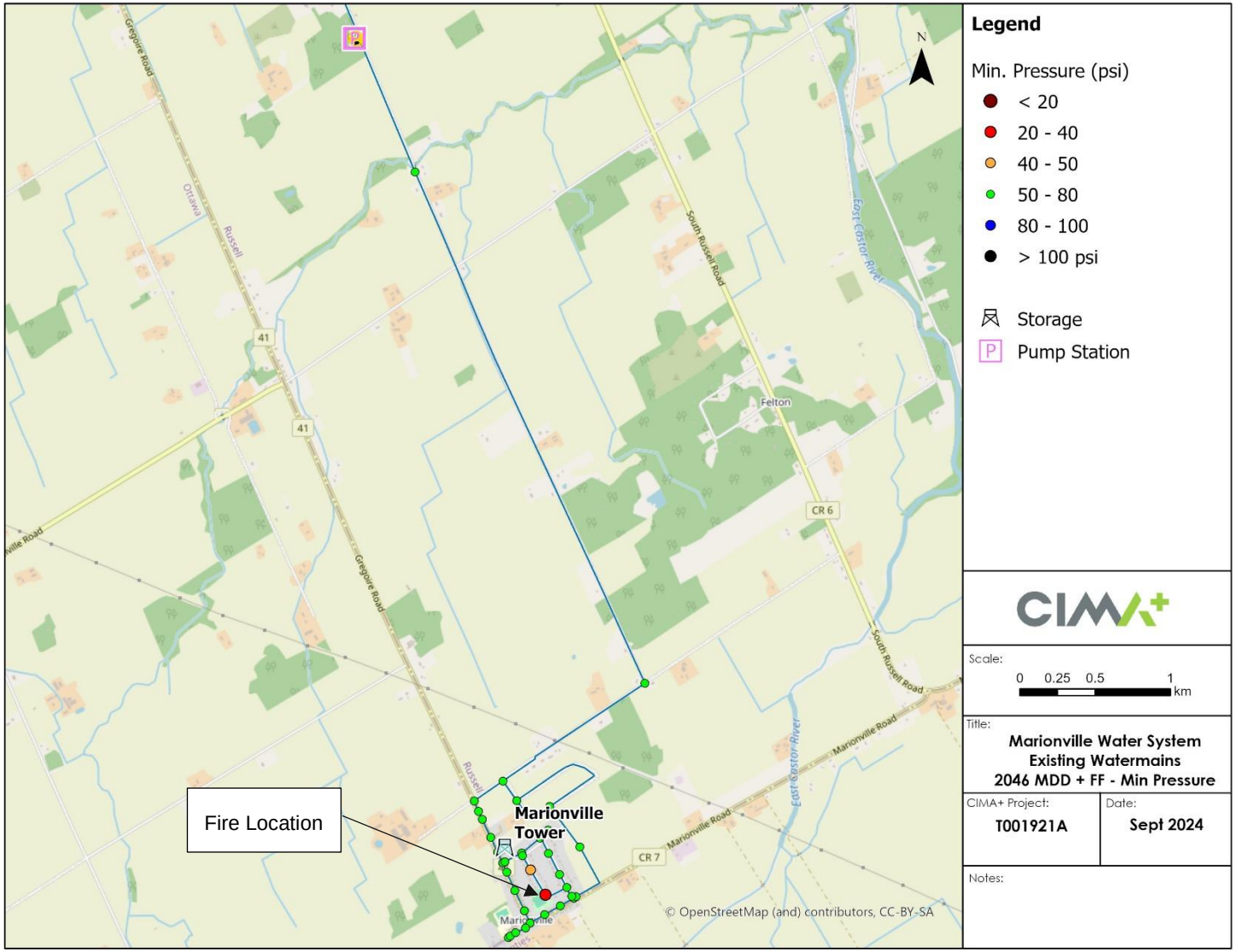


Figure 6-21: Marionville Min Pressure 2046 MDD + 100 L/s Fire

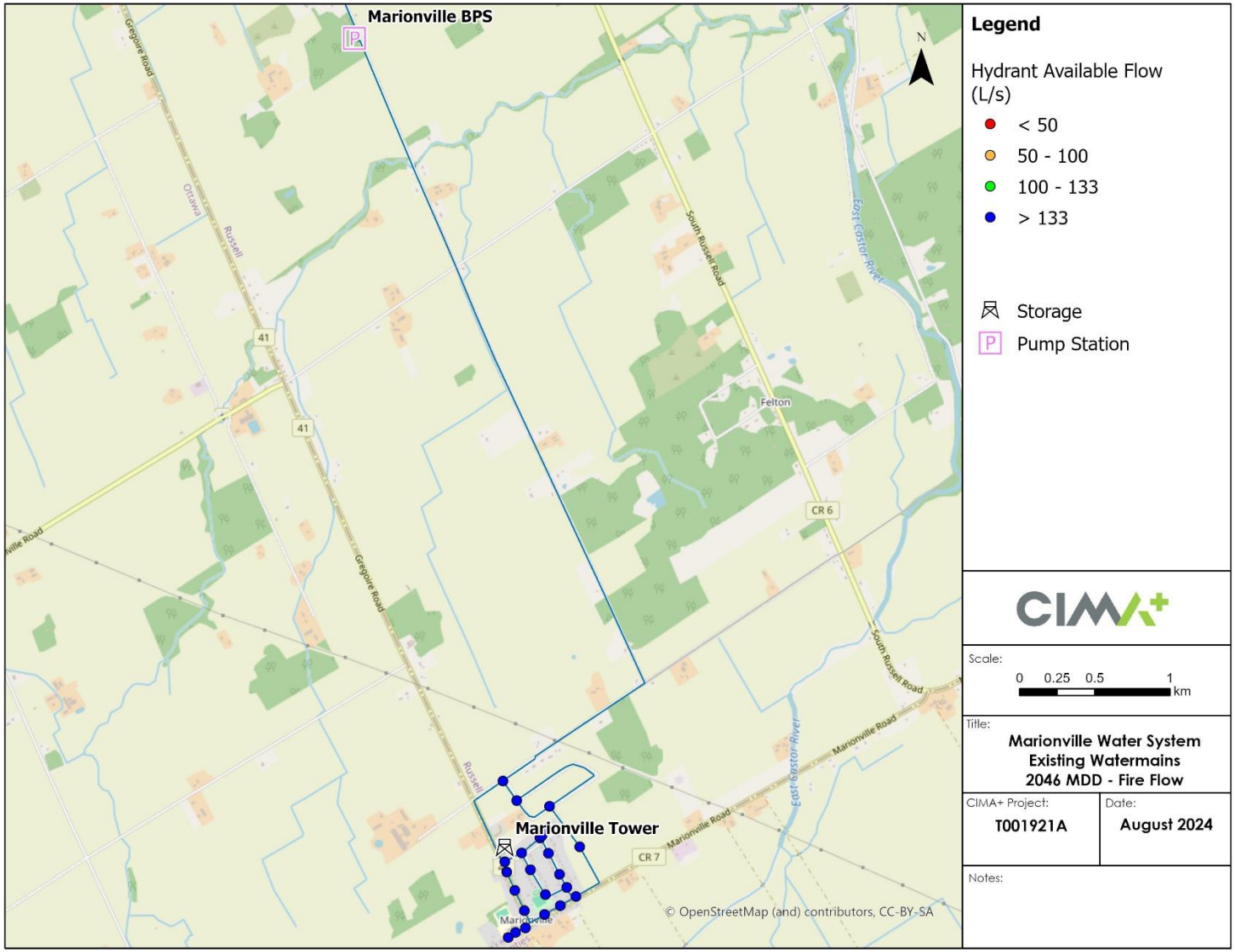


Figure 6-22: Marionville Available Fire Flow 2046 MDD

6.7 Water Supply Alternatives

The following sections will examine and evaluate feasible water supply (WS) alternatives for the Township to meet the water supply needs identified in **Section 6.6.2.** WS alternatives are independent of water storage and booster pumping alternatives, which are discussed in **Section 6.10**.

6.7.1 WS1 – Do Nothing

Alternative WS1 – Do Nothing involves not upgrading any portion of the water infrastructure and not increasing the daily flow allowance from the City of Ottawa. This does not align with the goals and growth strategy of the Township.

Alternative WS1 – Do Nothing is not recommended for the Township to pursue as it does not meet the problem/opportunity statement.

6.7.2 WS2 – Limit Growth

Alternative WS2 – Limit Growth allows growth to continue until the capacity of current infrastructure is reached, at which point, growth seizes. No upgrades, or expansion, to the current infrastructure would be made. Minor upgrades could be made to increase reliability or performance, but capacity would not be increased.

While this alternative allows for some population increase within the Township, it does not allow for expanded growth of the community which is a central objective for the Township.

Alternative WS2 – Limit Growth does not meet the objectives of the problem/opportunity statement; therefore, it is not recommended to be considered further.

6.7.3 WS3 – Reduce Water Consumption

Alternative WS3 – Reduce Water Consumption involves the population of the Township decreasing their per capita water demand. As shown in **Section 6.5,** the Township already has very low per capita water demand when compared to other benchmark municipalities. Therefore, it is likely not feasible to further reduce water consumption.

Alternative WS3 – Reduce Water Consumption is not recommended for the Township as it is not practical given the historical water demands and does meet the problem/opportunity statement.

6.7.4 WS4 – Local Water Treatment Plant

Alternative WS4 – Local Water Treatment Plant (WTP) involves the construction of a WTP in the Township. This alternative would supplement or eliminate the need for water supply from the City of Ottawa.

Prior to 2010, the Township supplied their own drinking water from the Russell WTP and the Embrun/Marionville WTP. These WTPs used groundwater as their source. The switch was made to drinking water from the City of Ottawa amid concerns over the quality and quantity of the source water.

Similar source water problems are affecting Limoges and Casselman. Limoges used to supply its own drinking water; however, it has since supplemented capacity deficits with drinking water from the Rockland WTP. The Municipality of Casselman has recently encountered source water quality challenges from the South Nation River. The source water quality had elevated manganese causing the treated water to exceed the aesthetic objective.

The source water for a new WTP is a concern as noted above. The historical decommissioned groundwater source was in too close proximity to possible contamination from a landfill. The nearby surface water source, the Castor River, is a small feeder to the South Nation River that does not have adequate conditions for use as source water.

Overall, Alternative WS4 – Local Water Treatment Plant does not meet the problem/opportunity statement in terms of achieving the required capacity in a sustainable manner.

6.7.5 WS5 – Expansion of Water Supply Capacity from Ottawa

Alternative WS5 – Expansion of Water Supply Capacity from Ottawa involves renegotiating the water supply agreement with the City of Ottawa to increase the daily volume of water sent to the Township via the existing feedermain. Currently, the City of Ottawa supplies up to a maximum of 11,860 m^3/d to the Township. However, the maximum operable velocity of a feedermain under normal conditions is 1.5 m/s per City of Ottawa Design Guidelines. If the feedermain were to operate at a standard velocity of 1.5 m/s, the maximum daily supplied flow could reach 20,612 m^3/d. Increasing the flowrate within the feedermain would be sufficient to meet the projected MDD of the Township beyond 2046.

This alternative will require infrastructure upgrades at the Leitrim Booster Station to increase the capacity of the booster pumps that supply the feedermain to the Township. In addition, the Township would need to renegotiate the water supply agreement with

the City of Ottawa prior to 2031 when the projected MDD surpasses the current agreement supply. As noted in **Section 6.2**, it has been over 15 years since the existing agreement was signed, therefore, per the terms of the agreement, the Township and the City may examine and discuss the daily water demand estimates and projections to determine if a supply increase is feasible.

Alternative WS5 – Expansion of Water Supply Capacity from Ottawa is recommended for further evaluation as it meets the objectives of the problem/opportunity statement.

6.7.6 WS6 – Obtain Water Supply from Clarence-Rockland

Alternative WS6 – Obtain Water Supply from Clarence-Rockland involves reaching an agreement with the City of Clarence-Rockland to supplement water currently supplied by the City of Ottawa. To meet the projected MDD for the Township in 2046, supply from Clarence-Rockland could supplement the existing City of Ottawa supply of 11,860 m^3/d.

As Clarence-Rockland currently supplies water to Limoges, this option involves the construction of an approximately 14 km feedermain from Limoges to the Township's Embrun Reservoir. In addition, upgrades may be required at the Clarence-Rockland WTP to provide the additional water supply to the Township. It is understood that Limoges must increase their water supply agreement with Clarence-Rockland to allow for further development and that the Municipality of Casselman is also considering an agreement with Clarence-Rockland for water supply. There may be a possible cost sharing agreement between the three municipalities for upgrades required to the Clarence-Rockland WTP.

This option would increase operational redundancy by providing an alternative source of water supply to the Township should one of the feedermains break or water supply from one of the two sources become unavailable.

Alternative WS6 – Obtain Water Supply from Clarence-Rockland is recommended for further evaluation as it meets the objectives of the problem/opportunity statement.

6.8 Water System Alternative Preliminary Screening Summary

Table 6-12 illustrates a summary of the above-mentioned alternatives for the water supply.

Table 6-12: Summary of Screening for Water Supply Alternatives

Alternative	Screening Assessment
Alternative WS1 – Do Nothing	Removed from consideration. Does not address the problem defined in the problem/opportunity statement.
Alternative WS2 – Limit Growth	Removed from consideration. Does not address the problem defined in the problem/opportunity statement.
Alternative WS3 – Reduce Water Consumption	Removed from consideration. Does not address the problem defined in the problem/opportunity statement.
Alternative WS4 – Local Water Treatment Plant	Removed from consideration. Does not address the problem defined in the problem/opportunity statement.
Alternative WS5 – Expansion of Water Supply Capacity from Ottawa	Short-listed for further evaluation.
Alternative WS6 – Obtain Water Supply from Clarence-Rockland	Short-listed for further evaluation.

6.9 Detailed Evaluation of Water Supply Alternatives

Table 6-13 presents a summary of the evaluation of alternatives for the Township's water supply.

Table 6-13: Summary of Water Supply Short-Listed Alternatives Detailed Evaluation

Evaluation Criteria	WS5 – Expansion of Water Supply Capacity from Ottawa	Rating	WS6 – Obtain Water Supply from Clarence-Rockland	Rating
Technical	• Similar O&M responsibility to existing conditions with only one feedermain from City of Ottawa • No redundancy for feedermain that must be mitigated with adequate water storage in the Township. • Preliminary discussion with the City of Ottawa indicates supply will be improved following upgrades, notably in the Tewin land. • Consultation with only one (1) jurisdiction (Ottawa) required.	◕	• Increased redundancy with water supply from two sources (Ottawa and Clarence-Rockland) • Increased O&M responsibility with an additional feedermain from Limoges with supply from City of Clarence-Rockland.	◑
Environmental	• No significant impact on natural environment as no additional feedermain construction required.	●	• Moderate impact to natural environment, requires mitigation measures during construction of new feedermain • Feedermain can be routed along right-of-way to mitigate disturbing naturized areas	◑
Social	• No significant impact on the social environment as no additional feedermain construction required	●	• Moderate impact to social environment, requires mitigation measures during construction of new feedermain. • Feedermain can be routed along right-of-way to mitigate impacts to undisturbed areas • Moderate truck traffic and lane closures during construction	◑

Evaluation Criteria	WS5 – Expansion of Water Supply Capacity from Ottawa	Rating	WS6 – Obtain Water Supply from Clarence-Rockland	Rating
Financial	• Moderate capital investment required to upgrade the City of Ottawa' Leitrim BPS to accommodate increase water servicing to the Township • Minimal increase in O&M costs • Total CAPEX Costs: High level estimate of $20M to upgrade Leitrim BPS. To be confirmed following discussions with City of Ottawa.		• Large capital investment required for new feedermain construction • Moderate increase in O&M costs • Total CAPEX Costs: High level estimate of $70M for feedermain to Clarence Rockland, plus any required upgrades to the Clarence Rockland WTP and Booster Pumping	
Overall	**Recommended Alternative**	✓	Alternative is **NOT** preferred	X

6.10 Water Storage and Booster Pumping Alternatives

The following sections will examine and evaluate feasible water storage and booster pumping (WSBP) alternatives for the Township to meet the water storage and pumping needs identified in **Sections 6.6.2. and 6.6.4**. WSBP alternatives are independent of water supply alternatives, which are discussed in **Section 6.7**.

6.10.1 WSBP1 – Do Nothing

Alternative WSBP1 – Do Nothing involves not upgrading any portion of the water storage and booster pumping stations. This does not align with the goals and growth strategy of the Township.

Alternative WSBP1 – Do Nothing is not recommended for the Township to pursue as it does not meet the problem/opportunity statement.

6.10.2 WSBP2 – Limit Growth

Alternative WSBP2 – Limit Growth allows growth to continue until the capacity of current water storage and BPSs are reached, at which point, growth seizes. No upgrades, or expansion, to the current infrastructure would be made. Minor upgrades could be made to water storage and BPS facilities to increase reliability or performance, but capacity would not be increased.

While this alternative allows for some population increase within the Township, it does not allow for expanded growth of the community which is a central objective for the Township.

Alternative WSBP2 – Limit Growth does not meet the objectives of the problem/opportunity statement; therefore, it is not recommended to be considered further.

6.10.3 WSBP3 – Reduce Water Consumption

Alternative WSBP3 – Reduce Water Consumption involves the population of the Township decreasing their per capita water demand. As shown in **Section 6.5**, the Township already has very low per capita water demand. Compared to other benchmark municipalities, the current usage rate within the Township is the lowest observed. Therefore, it is likely not feasible to ask the population to further reduce their water consumption.

Alternative WSBP3 – Reduce Water Consumption is not recommended for the Township as it is not practical given the historical water demands and does meet the problem/opportunity statement.

6.10.4 WSBP4 – Expansion of Reservoir Storage and Upgrade BPS Capacities

Alternative WSBP4 – Expansion of Reservoir Storage and Upgrade BPS Capacities involves the expansion of the existing reservoir on the Embrun Reservoir site and increasing the capacities of the Embrun BPS to 160 L/s and Russell BPS to 120 L/s. The existing reservoir site has sufficient space to accommodate a reservoir capacity expansion, which may exempt this storage option from further MCEA studies (pending eligibility screening). Increasing the capacity of the Embrun Reservoir would provide additional capacity available to supply both Russell and Embrun.

This alternative would require increased BPS capacity for Embrun and Russell due to the deficit in floating storage that is anticipated in these villages over the planning period. However, as noted in **Section 6.6.4** the capacity of the booster pumps in Embrun and Russell already require upgrades to meet future MDD and peaks flows.

Alternative WSBP4 – Expansion of Reservoir Storage and Upgrade BPS Capacities is recommended for further evaluation as it meets the objectives of the problem/opportunity statement, is feasible, and can meet future storage and booster pumping requirements.

6.10.5 WSBP5 – Construct Additional Water Towers in Embrun and Russell and Upgrade BPS Capacities

Alternative WSBP5 – Construct Additional Water Towers in Embrun and Russell and Upgrade BPS Capacities involves the construction of a second water tower in both Embrun and Russell to supplement the floating water storage of the existing elevated tanks and meet the future water storage requirements. In addition, this alternative would require upgrades to the firm capacities of the Embrun BPS to 110 L/s and the Russell BPS to 76 L/s. Although this option is feasible and meets future water storage requirements, it complicates the operation of the Embrun and Russell BPSs, which currently operate based on the level in the existing water towers.

This alternative would require BPS capacity upgrades for Embrun and Russell to meet future MDDs, as noted in **Section 6.6.4**; however, the capacity of the booster pumps in Embrun and Russell would not require as significant an upgrades as compared to Alternative WSBP4.

In addition to technical drawbacks, the environmental, social, and financial implications of constructing two new elevated water storage tanks must be compared against the benefits of additional floating storage.

Alternative WSBP5 – Construct Additional Water Towers in Embrun and Russell and Upgrade BPS Capacities is recommended for further evaluation as it meets the objectives of the problem/opportunity statement, is feasible, and can meet future storage and booster pumping requirements.

6.11 Water Storage and Booster Pumping Alternative Preliminary Screening Summary

Table 6-14 illustrates a summary of the above-mentioned alternatives for the water storage and booster pumping.

Table 6-14: Summary of Screening for Water Storage and Booster Pumping Alternatives

Alternative	Screening Assessment
WSBP1 – Do Nothing	Removed from consideration. Does not address the problem defined in the problem/opportunity statement.
WSBP2 – Limit Growth	Removed from consideration. Does not address the problem defined in the problem/opportunity statement.
WSBP3 – Reduce Water Consumption	Removed from consideration. Does not address the problem defined in the problem/opportunity statement.
WSBP4 – Expansion of Reservoir Storage and Upgrade BPS Capacities	Short-listed for further evaluation.
WSBP5 – Construct Additional Water Towers in Embrun and Russell and Upgrade BPS Capacities	Short-listed for further evaluation.

6.12 Detailed Evaluation of Water Storage and Booster Pumping Alternatives

Table 6-15 presents a summary evaluating the alternatives for the Township's water storage and booster pumping.

Table 6-15: Summary of Water Storage and Booster Pumping Short-Listed Alternatives Detailed Evaluation

Evaluation Criteria	WSBP4 – Expansion of Reservoir Storage and Upgrade BPS Capacities	Rating	WSBP5 – Construct Additional Water Towers in Embrun and Russell and Upgrade BPS Capacities	Rating
Technical	• Similar O&M complexity to existing conditions with only one elevated water tower in each village to control the operation of the booster pumps. • Additional reliance on booster pumps to be sized for peak flows due to deficit in floating storage.	◕	• Complicates operation of Embrun and Russell BPSs. • Increased redundancy with additional elevated tanks should the existing tanks require maintenance/repairs. • Increased O&M requirements with an additional elevated tanks.	◑
Environmental	• No significant impact on natural environment as reservoir expansion can occur on existing reservoir site (may be exempt from further MCEA study).	●	• Moderate impacts anticipated to natural environment, requires mitigation measures during construction of new elevated tanks. • Previously disturbed sites can be selected to mitigate disturbing naturized areas. • Likely requires further MCEA studies to assess impacts and develop mitigation measures.	◑
Social	• No significant impact on social as construction of reservoir expansion is proposed on reservoir site. • Mitigation measures to control dust, mud, noise should be implemented during construction due to nearby dog park and fitness trail.	●	• Moderate impact to social anticipated, which require mitigation measures during construction of new elevated tanks. • Likely requires further MCEA studies to assess impacts and develop mitigation measures.	◑

Evaluation Criteria	WSBP4 – Expansion of Reservoir Storage and Upgrade BPS Capacities	Rating	WSBP5 – Construct Additional Water Towers in Embrun and Russell and Upgrade BPS Capacities	Rating
Financial	• Moderate capital investment $5M required for additional reservoir storage construction and BPS upgrades on existing site. • Minimal increase in O&M costs.		• Large capital investment, approximately $10-15M per elevated tank, depending on size, location, and land acquisition costs. • Moderate increase in O&M costs.	
Overall	**Recommended Alternative**	✓	Alternative is **NOT** preferred	X

7 Wastewater Treatment

The Township services the villages of Russell and Embrun with two independent sanitary systems. Some developed areas in each village have private sewage services with approximately 600 existing households in Russell and Embrun not serviced by municipal wastewater services. Each system consists of gravity sewers, sanitary pumping stations, forcemains, and a wastewater treatment plant (WWTP).

The Township does not provide wastewater services to the Highway 417 Industrial Park (as discussed in **Section 1.2**), Limoges or Marionville. Existing development in the Industrial Park utilises private septic systems, and Limoges has a separate sanitary system which transports wastewater to the Limoges WWTP owned and operated by The Nation Municipality. Marionville has no sanitary works and there are no plans currently to provide Marionville with such infrastructure.

7.1 Assimilative Capacity of the Castor River

The receiver for both Russell and Embrun WWTP effluent is the Castor River. An assimilative capacity study (ACS) of the Castor River was completed. The river is of poor quality, and based on initial analysis, appears to be a Policy 2 receiver with regards to ammonia and phosphorus concentrations.

Table 7-1 illustrates the results of the ACS.

Table 7-1: Castor River ACS Results

Parameter	2 WWTPs		Combined WWTP	Rationale
	Russell	Embrun		
$cBOD_5$	9.70	9.70	10.85	Meets Policy 1
H_2S	<MDL	<MDL	<MDL	No change to existing limit
TP	0.286	0.360	0.333	Policy 2; maintains existing P loading
TSS	15	15	15	More stringent than Policy 1 requirements
TAN – Nov-Apr	3.07	3.07	2.73	Meets Policy 1
TAN – May	1.14	1.14	1.09	Meets Policy 1

Parameter	2 WWTPs		Combined WWTP	Rationale
	Russell	Embrun		
TAN – Jun	0.70	0.70	0.74	Meets Policy 1
TAN – Jul	0.48	0.48	0.54	Meets Policy 1
TAN – Aug	0.45	0.45	0.52	Meets Policy 1
TAN – Sep	0.80	0.80	0.71	Meets Policy 1
TAN – Oct	1.41	1.41	1.09	Meets Policy 1

Note:

(1) Concentration below laboratory method detection limit is denoted by "<MDL"

7.2 Russell

7.2.1 Existing Treatment System Overview

Wastewater generated in Russell is treated at the Russell WWTP. The treatment plant consists of two facultative lagoons, and three aerated lagoons. Alum is injected, within the distribution box, to improve phosphorus removal. A Process Flow Diagram (PFD) of the Russell treatment system, including the collection system, is shown in **Figure 7-1**.

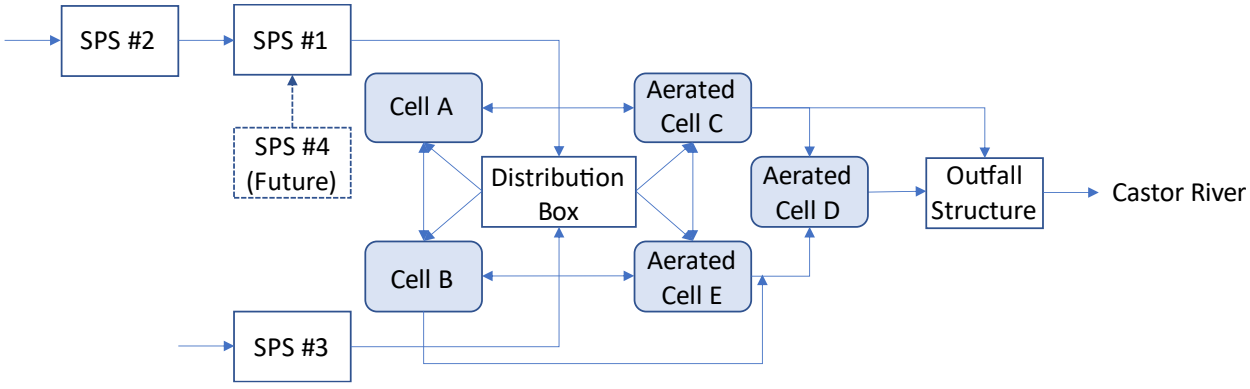


Figure 7-1: Village of Russell Wastewater PFD

The plant is operated under Environmental Compliance Approval (ECA) Number 3202-9XMPMQ issued August 21, 2015.

Under the current ECA, the Russell WWTP has a rated capacity of 2,675 m^3/d. However, the plant is subject to a maximum operating capacity restriction of 2,000 m^3/d until a Total Phosphorus Management (TPM) Agreement with South Nation

Conservation Authority is agreed upon. The detailed proposal for the TPM shall be prepared and submitted to the Regional Director for review and approval once the influent Average Day Flow (ADF) of the Russell WWTP reaches 1,700 m^3/d.

The plant discharges seasonally to the Castor River, during the spring and fall of each year as follows:

- Spring: Spring discharge may commence after the liquid surface of the lagoon is substantially free of ice and cannot continue past April 30th. Discharge is controlled such that a dilution ratio of river flow to effluent discharged is maintained at a minimum of 67.1:1.
- Fall: Fall discharge may begin no earlier than October 1st and finish no later than December 15th. Discharge is controlled such that a dilution ratio of river flow to effluent discharged is maintained at a minimum of 13:1.

Effluent discharge is controlled by an automatic control system that adjusts discharges as a function of river flow based on real time flow information from the Castor River Flowmetering Station.

7.2.2 Historical Wastewater Flows

The ECA determines a WWTP rated capacity based on Average Day Flowrate (ADF). The Russell WWTP historically (2019-2023) experiences an ADF of approximately 1,258 m^3/d, equating to about 47% of the plant's rated capacity. In 2023 the annual average flow was 1,474 m^3/d. At an annual average flowrate of 1,700 m^3/d the TPM must be submitted and approved, by South Nation Conservation, prior to reaching an annual average flow of 2,000 m^3/d. The ECA already has the clause required for approval, and South Nation Conservation has advised that the mechanisms allow for a quick and efficient agreement to be made when required.

Figure 7-2 shows the historical (from the past five years) Russell WWTP ADF. Flows reflect increases in population.

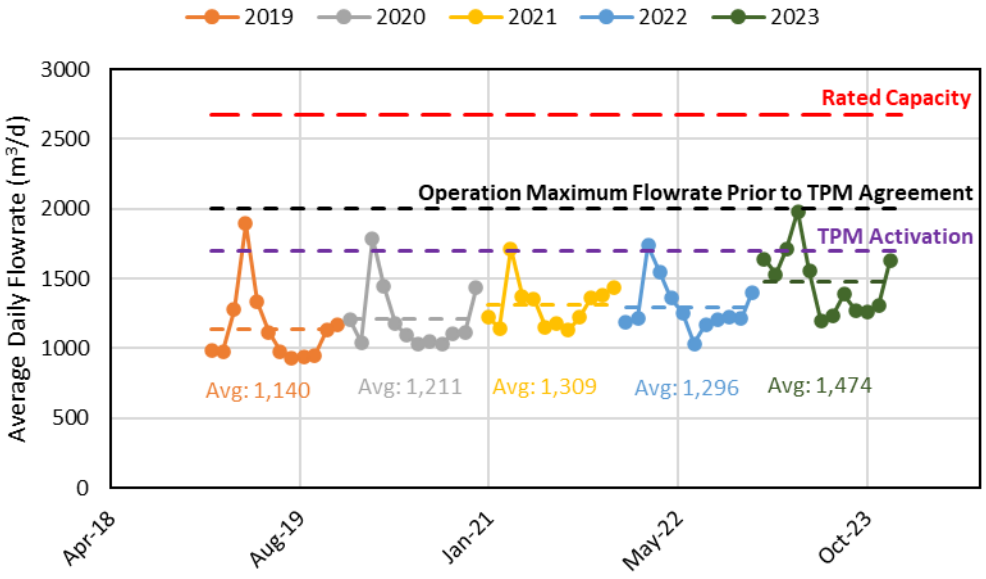


Figure 7-2: Russell Historical Average Day Flowrates

7.2.3 Historical Influent Quality

The influent water quality entering a WWTP has significant impacts on the level of treatment required, and the effectiveness of process units. Typical process units are designed regarding the loading that will be applied to them from the wastewater. Therefore, the influent loading to WWTPs is of more interest than influent concentrations.

The average loading to the Russell WWTP has been increasing over the last five years. Historically there is not a well-established timeframe when peak loading to the plant occurs, as peak loading each year can vary from month to month.

Table 7-2 shows the average historical wastewater influent quality to the Russell WWTP, both influent concentrations and loading, for carbonaceous biochemical oxygen demand ($cBOD_5$), Total Suspended Solids (TSS), Total Phosphorus (TP), Total Ammonia Nitrogen (TAN), and Total Kjeldahl Nitrogen (TKN). Influent quality is sampled at the inlet works (distribution box) of the Russell WWTP. The average concentrations indicate that the wastewater entering the Russell WWTP is a typical municipal wastewater. Note, a significant outlier was removed from the historical data, June 2022, as all parameters showed a large increase in loading on a single day; this is most likely due to a strong grab sample which contained predominantly solids. This data was removed as to not influence the underlying trends.

Table 7-2: Russell WWTP Historical Influent Quality (2019-2023)

Wastewater Parameter	Average Concentration (mg/L)	Average Loading (kg/d)
$cBOD_5$	196	239
TSS	198	246
TP	7.6	9.3
TAN	57	69
TKN	76	93

7.2.4 Historical Effluent Quality

The Russell WWTP is subject to effluent quality limits as stipulated in the ECA. The ECA notes WWTP objective and limits for each of the following wastewater parameters: $cBOD_5$, TSS, TP, TAN, pH, and Hydrogen Sulphide. Effluent concentrations are measured three times per week during discharge at the outfall structure. Composite samples are required for $cBOD_5$, TSS, TP, and TAN, while grab samples are required for pH and Hydrogen Sulphide.

Table 7-3 outlines the historical (2019-2023) average effluent concentration values for the Russell WWTP.

The Russell WWTP has performed well historically, however, in 2023 both the spring and fall discharge periods exceeded the ECA limits for effluent ammonia concentration. This was the second observed ECA non-compliance within the last six (6) years as effluent ammonia concentration was also exceeded in the fall of 2020. Further investigation is required to understand if the 2023 effluent concentrations were due to increased flows and loads to the plant, or if an operational error was made during 2023.

Figure 7-3 illustrates the historical (2019-2023) effluent ammonia concentrations during the spring discharge, while **Figure 7-4** illustrates discharge effluent ammonia concentrations during the fall discharge. Both the spring/fall discharge are compared to the ECA objective and limit.

Table 7-3: Russell WWTP Historical (2019-2023) Effluent Values and ECA Wastewater Parameter Objective and Limits

Wastewater Parameter	Average Historical Effluent Value	Average Effluent Limit (Objective / Limit)	Average Loading
$cBOD_5$ (mg/L)	4	20 / 30 mg/L	-
TSS (mg/L)	5	20 / 30 mg/L	-
TP (mg/L)	0.1	0.4 / 0.5 mg/L	1.0 kg/d (365 kg/yr)
TAN (mg/L)	1 (fall discharge) 9 (spring discharge)	1.0 / 2.0 mg/L (fall discharge) 5.0 / 10.0 mg/L (spring discharge)	-
pH	7.4	6.5 – 8.5 / 6.0 - 9.5	-
Hydrogen Sulphide (mg/L)	0.0	Non-detectable	-

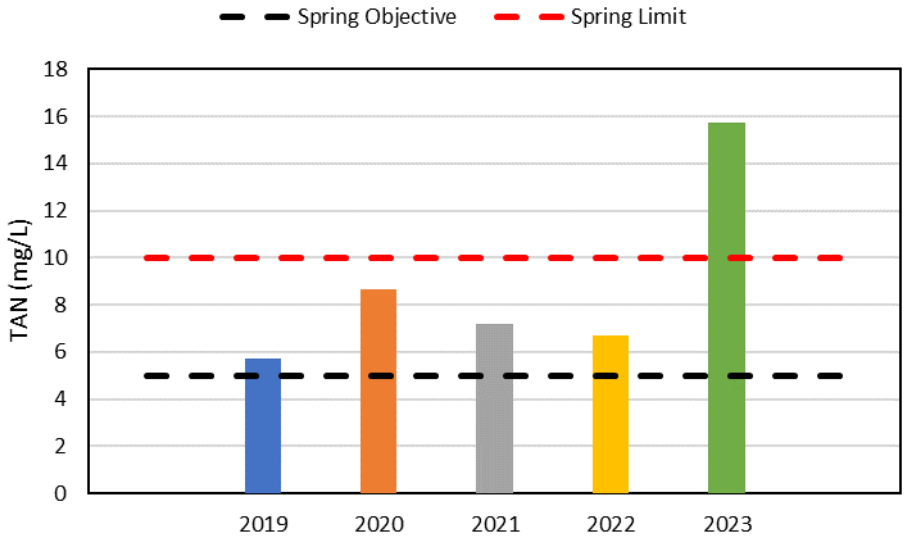


Figure 7-3: Russell WWTP Historical Spring Effluent Ammonia Concentrations

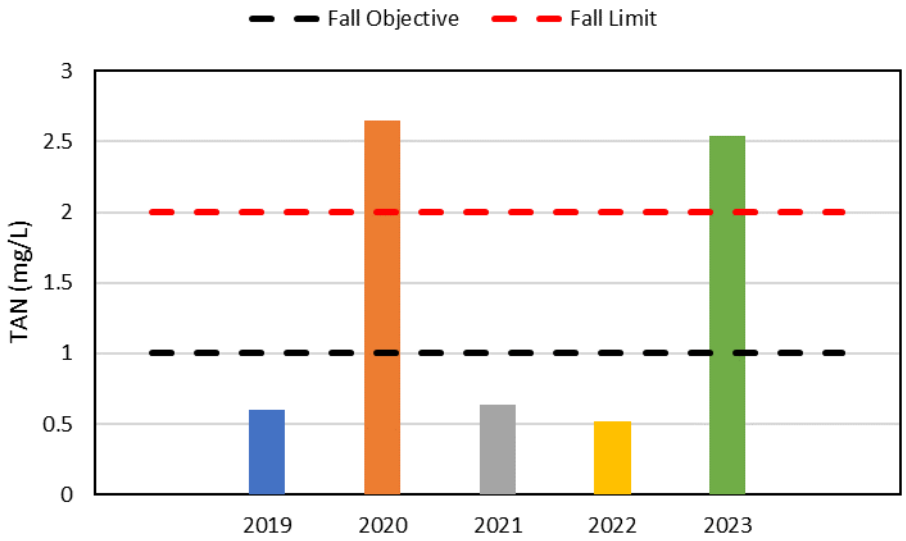


Figure 7-4: Russell WWTP Historical Fall Effluent Ammonia Concentrations

7.2.5 Population Growth

The projected serviced population for the Russell WWTP is anticipated to increase up to 2046 due to developer interest within Russell. The majority of growth is occurring on vacant land with some intensification occurring too. The anticipated service population is slightly lower than the projected population serviced by the water distribution system (1,039 less persons).

In 2022, the Township retained Hemson to update their Growth Management Strategy. Within that report, Hemson assumed a persons per unit rate of 2.45, therefore, for the population projections, 2.5 persons/unit has been assumed.

Table 7-4 illustrates the projected units added, projected persons added, and total projected population within Russell at designated timelines serviced by the sewage collection/treatment system.

Figure 7-5 illustrates the expected growth of Russell from present to 2046.

Table 7-4: Projected Wastewater Serviced Population per Planning Period Interval

Planning Period Interval	Units Added	Pop. Added	Total Pop.
2023 - 2026	181	453	7,658
2026 - 2031	423	1,058	8,715

Planning Period Interval	Units Added	Pop. Added	Total Pop.
2031 - 2036	633	1,583	10,298
2036 - 2041	519	1,298	11,595
2041 - 2046	434	1,085	12,680
Buildout	1,227	3,068	15,748

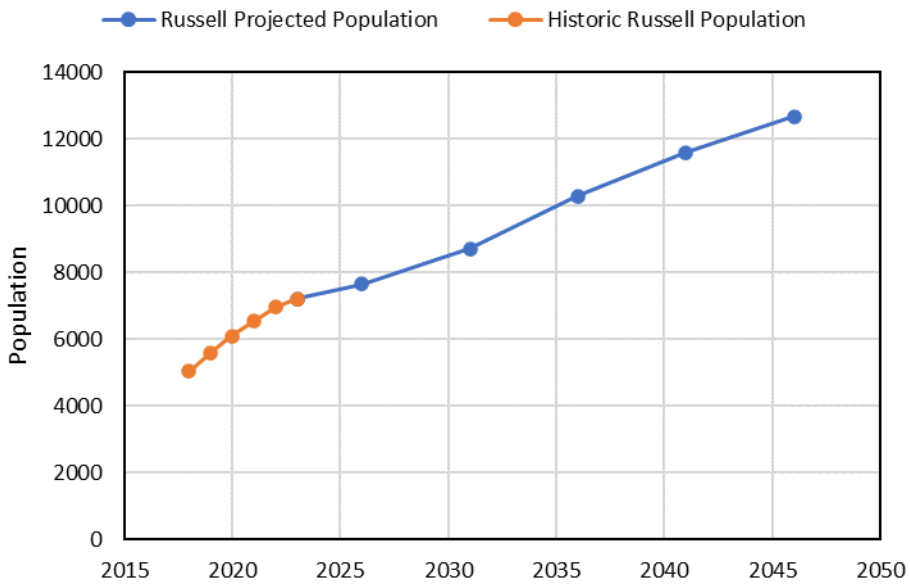


Figure 7-5: Expected Population Serviced by the Russell Wastewater Collection/Treatment System

7.2.6 Per Capita Flowrate

The previous Master Plan (WSP, 2016) identified a per capita wastewater generation rate of 230 L/c/d for planning purposes. This is quite low compared to other benchmark communities as seen in **Table 7-5**. The benchmarked communities were selected based on proximity and/or perceived similarities.

Table 7-5: Per Capita Water Demand for Benchmark Municipalities

Community	Per Capita Wastewater Generation (L/c/d) [1]
Niagara Region	255

Community	Per Capita Wastewater Generation (L/c/d) [1]
City of Ottawa	280
Carleton Place	280

Note:

1) Per capita wastewater generation rate does not include Infiltration and Inflow (I&I) into the system

As shown in **Table 7-6** and illustrated in **Figure 7-6**, the historical per capita wastewater generation for Russell is low compared to the benchmark municipalities discussed above.

Table 7-6: Historical Per Capita Wastewater Generation within Russell

Village	Annual Average Per Capita Water Demand (2019-2023) (L/c/d)	Max Annual Per Capita Wastewater Generation (L/c/d)
Russell	199	247

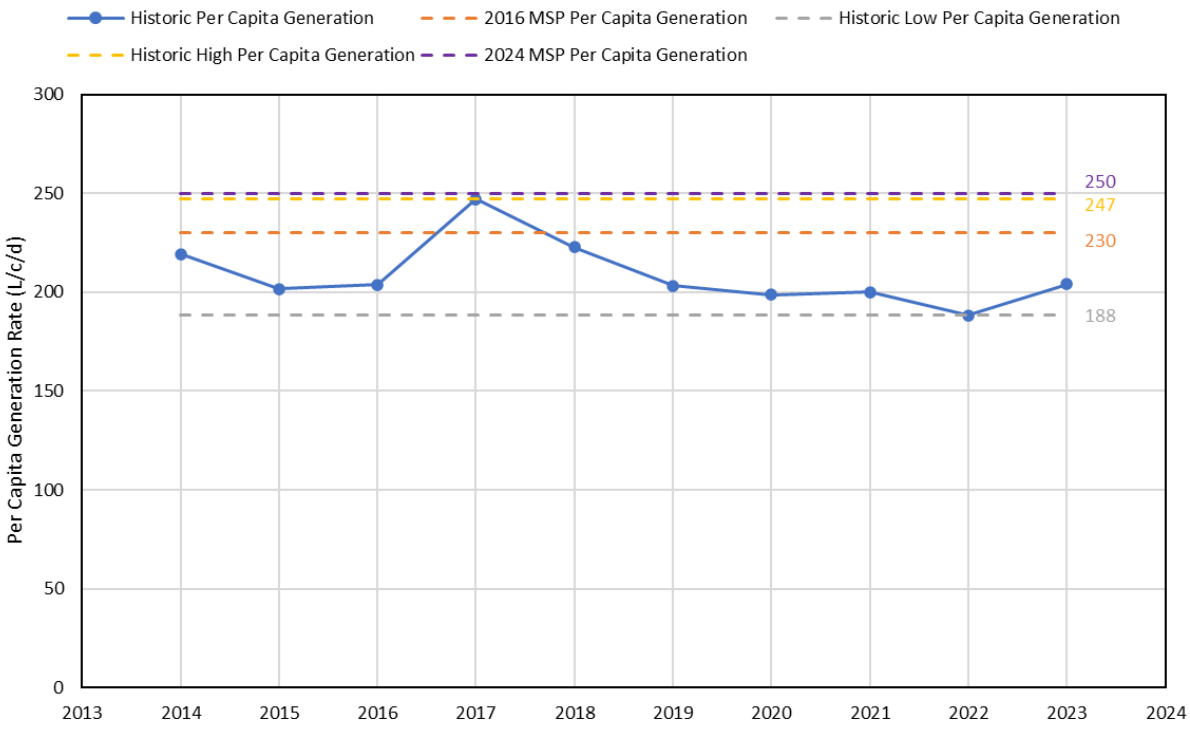


Figure 7-6: Russell's Historical Per Capita Wastewater Generation Rate

For this Master Plan Update, a per capita wastewater generation rate of 250 L/c/d was adopted. The intention of selecting a higher per capita generation rate versus the 2016 Master Plan is to align more closely with other municipalities and use a conservative value for future infrastructure planning. The increase from 230 L/c/d to 250 L/c/d is not a substantial change and keeps the per capita wastewater generation within the lower bounds of benchmark municipalities.

In addition, the 2016 Master Plan did not have access to the 2017 per capita flow data. From **Figure 7-6** above, it can be observed that per capita generation rates spiked in 2017. 2017 was a year with heavy precipitation and snow melt, resulting in a 'wet' year. Increasing the wastewater per capita generation rates helps to safeguard from these spikes for future planning.

Historically, Russell has been subject to very little I&I within the collection network and a recently completed I&I study of the sanitary collection network found this to be true. Note, incorporating an allowance for I&I, in addition to the per capita generation, would help to safeguard future wastewater infrastructure upgrades. This will be discussed further in the proceeding subsection.

The value of 250 L/c/d should be assessed in future Master Servicing Plans to reflect the per capita wastewater generation of the population more closely at that time.

7.2.7 Future Wastewater System Requirements

Two scenarios were considered for future wastewater system requirements. Both scenarios used the projected population values in **Table 7-4**, a per capita flow rate of 250 L/c/d, and assumed 5 ha of commercial land added.

- Scenario 1: Low Flow
- Scenario 2: High Flow

Scenario 1 considered a commercial flowrate of 10 m^3/ha/d as this value was previously used in determination of the Industrial Park flowrates and is more consistent with low wastewater generating users, such as the Russell population. Scenario 1 also considers minimal I&I over an annual average (design criteria for lagoons). This scenario is likely a better representation of the short-term conditions of the sanitary network as it is unlikely that significant increases in I&I will occur within the next several years due to aging infrastructure and new development.

Scenario 2 is considered more long-range planning to be more conservative. This scenario considered a commercial flowrate of 28 m^3/ha/d, matching the City of Ottawa Design Guidelines, and also considers 0.025 L/ha/s (2.16 m^3/ha/d) of I&I. The City of Ottawa Design Guidelines for I&I use a value of 0.05 L/ha/s (4.32 m^3/ha/d). However,

the historical per capita flow is less than 250 L/c/d, inclusive of I&I. The annual I&I allowance was reduced to 0.025 L/ha/s to partially account for unknown changes in the future without being excessively conservative.

The commercial land added within Russell was assumed to track population growth, therefore, the overall projected commercial flowrate was divided evenly among the various time intervals. Additionally, the Township provided projections for hectares of land added to Russell per time interval, and these values were used to determine the expected additional infiltration, if required.

Projections for average day flowrate of wastewater, for Russell, up to Buildout are shown in **Table 7-7**.

Table 7-7: Anticipated Average Day Wastewater Flowrates to Russell WWTP

Year	Land Added	Scenario 1: Low Flow			Scenario 2: High Flow		
		Commercial Flowrate (m^3/d)	Infiltration Allowance (m^3/d)	Total Flowrate (m^3/d) [1]	Commercial Flowrate (m^3/d)	Infiltration Allowance (m^3/d)	Total Flowrate (m^3/d) [1]
2026	12	10	0	1,593	28	26	1,637
2031	22	10	0	1,868	28	48	1,978
2036	33	10	0	2,273	28	71	2,473
2041	27	10	0	2,608	28	58	2,884
2046	20	10	0	2,889	28	43	3,226
Buildout	50	0	0	3,656	0	109	4,102

Notes:

(1) Total flowrate incorporates the projected future population with a per capita flowrate of 250 L/c/d and assumes commercial land added tracks with population, therefore, commercial land added (5 ha) is divided evenly among time intervals

7.2.8 Wastewater Treatment Plant Capacity

The ECA rated capacity of the Russell WWTP is 2,675 m^3/d. A clause in the ECA for Russell WWTP requires that a TPM Agreement is in place with the South Nation Conservation Authority prior to the plant reaching an ADF of 2,000 m^3/d. When the plant reaches an ADF of 1,700 m^3/d this agreement must be sent to the South Nation Conservation Authority.

As part of the Master Plan, CIMA+ completed a preliminary capacity assessment of the Russell WWTP. The plant was determined to be hydraulically limited versus loading limited. This means that the capacity of the Russell WWTP is determined by influent flowrate, rather than influent loading. Based on the capacity assessment, operational challenges at the Russell WWTP, due to storage limitations, are expected when influent flows reach approximately 2,110 m^3/d (~80% of the ECA rated capacity). This is also typically when the planning and design phase of upgrades to WWTPs is triggered.

Figure 7-7 illustrates the projected flowrates of Scenario 1 and Scenario 2. Scenario 1 (low flow) presents a timeline which extends the effective life of the existing WWTP. This scenario is most likely to occur in the short-term as minimal I&I currently affects the Russell sanitary collection system. Scenario 2 presents an accelerated timeline as it considers the City of Ottawa guidelines for commercial flowrates and captures the potential increase of I&I as the collection system ages.

Operational challenges are expected by approximately 2034, and rated capacity exceeded by approximately 2042 when considering Scenario 1. Continued monitoring of flows is prudent to compare flowrates to predicted values and comparing observed flowrates to the identified planning horizon.

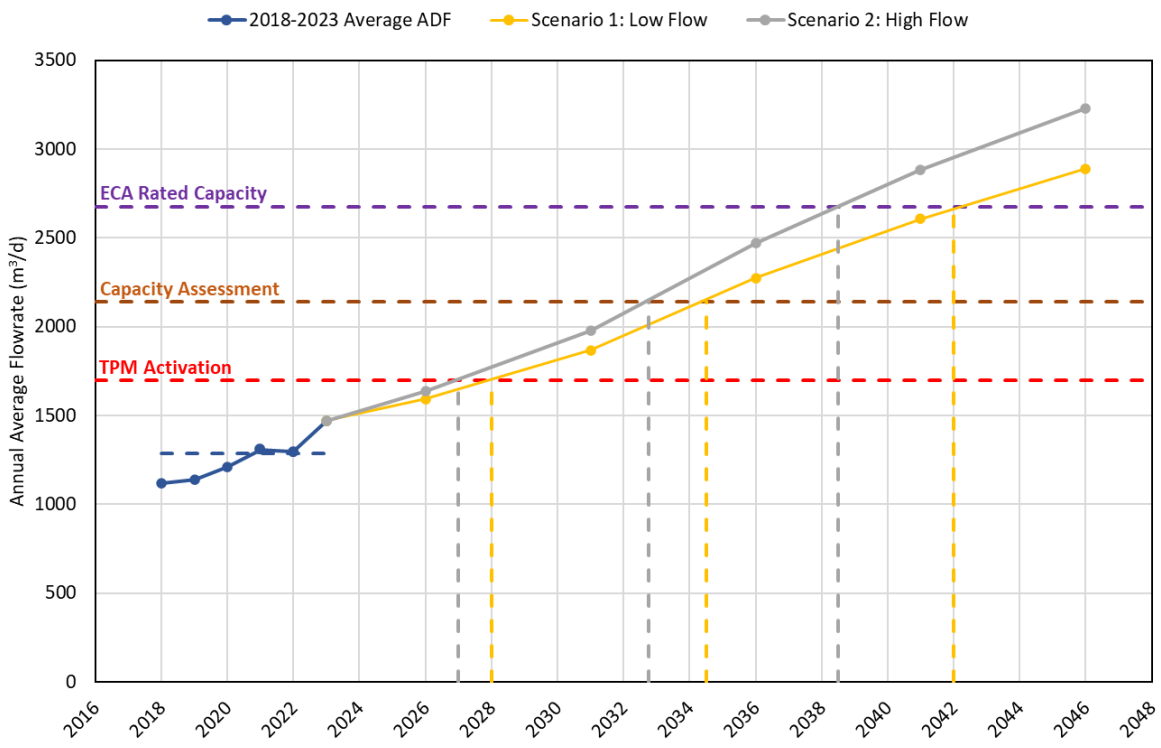


Figure 7-7: Preliminary Capacity Assessment of the Russell WWTP

7.2.9 Wastewater System Alternative Solutions

The following sections will examine and evaluate feasible Russell wastewater treatment (RWWT) alternatives for the Township to meet the Russell wastewater treatment needs identified in **Sections 7.2.7 and 7.2.8.**

7.2.9.1 RWWT1 – Do Nothing

Alternative RWWT1 – Do Nothing involves not upgrading any portion of the wastewater infrastructure within Russell and not increasing the capacity of the Russell WWTP.

Increased capacity of the Russell WWTP is required for the medium to long-term future of Russell. This alternative would result in infrastructure that is undersized for the growing population. This does not align with the goals and future aspirations of the Township.

Alternative RWWT1 – Do Nothing is not recommended for the Township to pursue for Russell WWTP as it does not meet the problem/opportunity statement.

7.2.9.2 RWWT2 – Limit Growth

Alternative RWWT2 – Limit Growth allows growth to continue until the capacity of current infrastructure is reached, at which point, growth seizes. No upgrades, or

expansion, to the current wastewater infrastructure or treatment would be made. Minor upgrades could be made to equipment at the Russell WWTP to improve reliability or performance, but no increase to capacity.

While this alternative allows for some population increase within Russell, it does not allow for expanded growth of the community which is a central objective for the Township.

Alternative RWWT2 – Limit Growth does not meet the objectives of the problem/opportunity statement; therefore, it is not recommended to be considered further.

7.2.9.3 RWWT3 – Upgrade/Expansion of Existing Systems

Alternative RWWT3 – Upgrade/Expansion of Existing Systems would entail the upgrade and expansion of all wastewater infrastructure at the existing Russell WWTP to meet anticipated future flowrates.

Expansion of the Russell WWTP would likely entail additional lagoons and treatment processes. Additional lagoons increase the available storage of the plant. To provide sufficient storage capacity, adding two more lagoon cells (i.e., Cells 6 and 7) would be required, but impractical, and difficult to maintain consistent effluent concentrations. The lagoons could be modified to allow for continuous discharge.

It is important to note that any capacity increase of the Russell WWTP would result in an amendment to the existing ECA. The new effluent treatment criteria within the amended ECA would follow the recommendations from the completed ACS study. Preliminary analysis suggests that the effluent concentrations allowed will follow **Table 7-1**. The expansion would require add-on technologies to reliably achieve very stringent ammonia concentrations year-round. The effluent ammonia concentrations are prohibitive to the lagoon technology.

Alternative RWWT3 – Upgrade/Expansion of Existing Systems meets the objectives of the problem/opportunity statement; therefore, it is recommended to be considered further.

7.2.9.4 RWWT4 – New Russell WWTP

Alternative RWWT4 – New Russell WWTP would entail constructing a new mechanical WWTP. The new WWTP would likely be located near the existing Russell WWTP to simplify the routing of sewerage and flow from the community.

The new WWTP could be adapted to treat the effluent to the required effluent limits identified in the ACS Study. This alternative carries high capital and operating costs compared to the current lagoon-based system.

Alternative RWWT4 – New Russell WWTP meets the objectives of the problem/opportunity statement; therefore, it is recommended to be considered further.

7.2.9.5 Summary

Table 7-8 illustrates a summary of the above-mentioned alternatives for the Russell WWTP.

Table 7-8: Summary of Screening for Russell WWTP Alternatives

Alternative	Screening Assessment
Alternative RWWT1 – Do Nothing	Removed from consideration. Does not address the problem defined in the problem/opportunity statement.
Alternative RWWT2 – Limit Growth	Removed from consideration. Does not address the problem defined in the problem/opportunity statement.
Alternative RWWT3 – Upgrade/Expansion of Existing Systems	Short-listed for further evaluation.
Alternative RWWT4 – New Russell WWTP	Short-listed for further evaluation.

7.2.10 Long-Term Upgrades to Achieve Anticipated Growth

The existing lagoon technology implemented at the Russell WWTP is not a sufficient technology for the anticipated population of Russell by 2046 and buildout. A solution to treat the Town's wastewater at the future projected flowrates (**Figure 7-7**) is required to allow for continued growth.

There may exist the opportunity to convey Russell's wastewater to Embrun for treatment, eliminating treatment occurring at the Russell WWTP. This will be explored compared to providing treatment at the Russell WWTP in the following subsections.

The preferred long-term solution should either be able to meet the future effluent regulations and have the ability for phasing to allow for continued growth within Russell or provide sufficient pumping capacity to convey all wastewater to Embrun.

7.2.10.1 RWWT3 – Upgrade/Expansion of Existing Systems

The lagoon technology is typically implemented for smaller communities as larger towns require very large lagoon footprints to adequately store and treat the community's wastewater. The existing influent flowrate of the Russell WWTP is likely already exceeding the upper limit of flowrate that should be processed by the lagoon technology. The storage required for seasonal discharge is very large with little benefit for treatment, due to lagoon treatment being simple/passive and largely dependent on climate conditions.

As noted, the existing lagoons are already having challenges to meet the effluent limits for ammonia. To meet the anticipated hydraulic capacity required for 2046, assuming seasonal discharge, two (2) more lagoons are likely required. The adjacent land to the Russell WWTP is not owned by the Township, therefore, the purchasing of land would be required for plant expansion. To maintain seasonal discharge mechanical processes for ammonia removal would need to be included and sized to polish the full during the discharge period (i.e. approximately 6 months of flow in 1 month) to account for residual ammonia. Therefore, additional lagoons are not a viable alternative.

Figure 7-8 outlines a possible layout for the addition of two (2) more lagoons to the Russell WWTP.

As this alternative is unlikely to meet the required effluent limits, a cost estimation has not been performed.

Figure 7-8: Russell WWTP Lagoon Expansion for 2046 Flowrates

7.2.10.2 RWWT4 – New Russell WWTP

A new WWTP for Russell would be mechanical and not use the existing lagoon technology for treatment. A mechanical WWTP offers a variety of technologies to be chosen from and the ability to meet very stringent effluent regulations. Due to the variety of mechanical technologies available, opportunities exist to implement technologies that can reduce O&M costs and lower overall greenhouse gas emissions. Technology selection will be dependent on the outcome of future studies.

The initial capital cost for a new mechanical WWTP would be high, however, the ability to meet effluent regulations and more easily phase in expansion is advantageous. Phasing of future expansion will be important to consider as the plant would be designed for a rated capacity capable of treating 2046 flows and loads. Selecting a technology capable of expansion to buildout flows and loads must be considered in future studies.

The O&M costs of a mechanical plant will be higher than that of the existing lagoon technology. The facility will require additional staffing and maintenance of mechanical

equipment. Depending on the technology selected, opportunities may exist to reduce O&M costs.

Constructing a new WWTP for Russell would require a Schedule 'C' Class EA. At this stage, the estimated approximate cost for this alternative is $50M CAD and a cost breakdown can be found in **Appendix A**.

Figure 7-9 outlines a possible footprint for a new mechanical Russell WWTP; however, the location would be confirmed during detailed design. Construction phasing and sizing of a new WWTP would need to be further developed in a Schedule 'C' EA. In this Master Plan, it is conceptualized to reuse a portion of the existing lagoon volume. If supporting studies show unfavorable conditions for construction within Cell A (or other cells), land acquisition will be required. Cost contingencies have been carried at this stage for potential land acquisition.

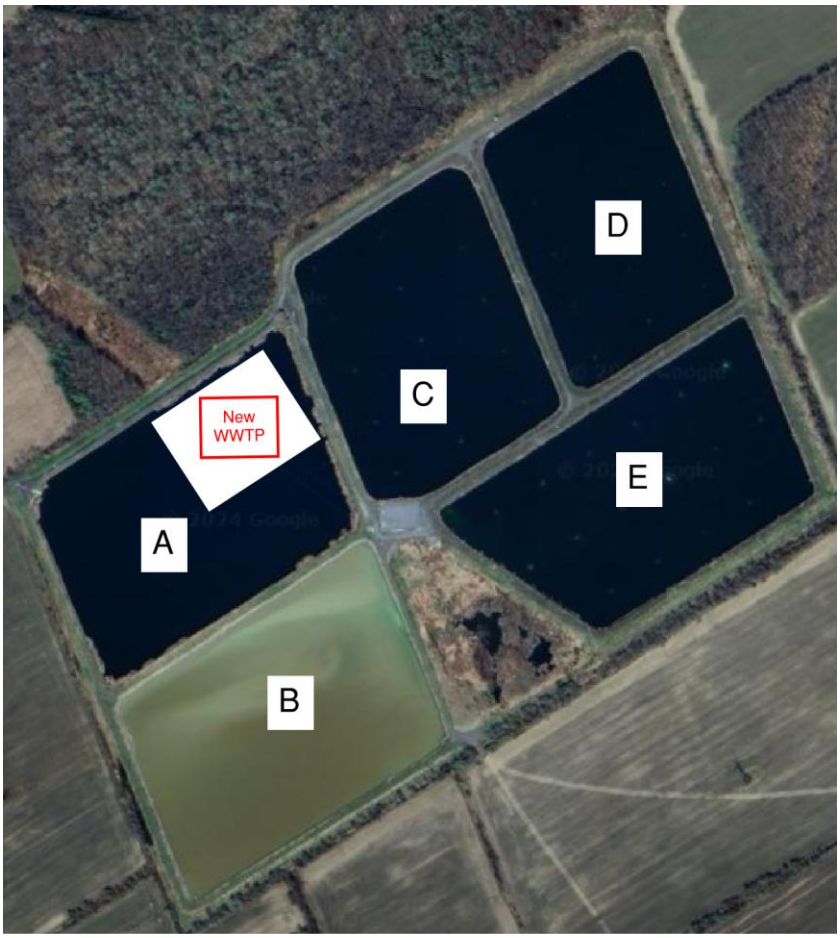


Figure 7-9: New Mechanical Russell WWTP Footprint

7.2.10.3 Detailed Evaluation of Russell WWTP Long-Term Alternatives

Table 7-9 presents a summary evaluating both short-listed long-term alternatives for the Russell WWTP.

Table 7-9: Summary of Russell WWTP Long-Term Alternatives

Evaluation Criteria	RWWT3 – Upgrade/Expansion of Existing Systems	Rating	RWWT4 – New Russell WWTP	Rating
Technical	• Approvals required (MECP, etc.) • Will not meet effluent criteria at future flowrates • Large excavation required • High compatibility with existing infrastructure • Limited ability for future expansion and phasing	○	• Approvals required (MECP, etc.) • Will meet effluent criteria at future flowrates • Moderate excavation required • No compatibility with existing infrastructure • High ability for future expansion and phasing	◕
Environmental	• High impact to natural environment, requires mitigation measures • Significant impact on receiving water as effluent limits not achieved	○	• Moderate impact to natural environment, requires mitigation measure • Minimal impact on receiving water as effluent limits achieved	◕
Social	• No change in site location • Likely to limit growth of Russell • Requires land acquisition • High aesthetic impacts to surrounding properties • Moderate odour addition to the WWTP • High truck traffic during construction	◔	• No change in site location • Will not limit growth of Russell • May or may not require land acquisition pending further studies • Low aesthetic impacts to surrounding properties • Minor odour addition to the WWTP • High truck traffic during construction	◕
Financial	• Alternative deemed unlikely to meet technical requirements, no costing performed • Total CAPEX Costs: N/A	**N/A**	• High capital investment required • Moderate future expansion costs • Potential for tank reuse of short-term solution • High increase in O&M cost • Total CAPEX Costs: $50M	◔
Overall	Alternative is **NOT** preferred	X	**Recommended Alternative**	✓

7.2.11 Short-Term Upgrade to Achieve Rated Capacity

As discussed in **Section 7.2.4**, the Russell WWTP has performed well historically. However, in 2023 the effluent in both the spring and fall discharge periods exceeded the ECA limits for effluent ammonia concentration. An extreme outlier was observed in the spring of 2023 that is not readily explainable. It is possible this carried over to the fall discharge due to residual ammonia within the lagoons after spring discharge.

Due to the likelihood of increased effluent ammonia concentrations persisting, process optimization of the Russell WWTP is recommended. Process optimization should review, at a minimum, flow paths within the lagoons and aeration. However, if process optimization steps are taken, and no significant increase in effluent quality is observed, short-term upgrades for ammonia polishing will be required, as recommended for Embrun WWTP (**Section 7.3.10)**. A short-term upgrade to the Russell WWTP would allow for polishing of the wastewater removing significant levels of ammonia up to existing hydraulic capacity prior to discharge.

7.3 Embrun

7.3.1 Existing Treatment System Overview

Wastewater treatment in Embrun is performed at the Embrun WWTP. The Embrun WWTP is a lagoon-based plant that has eight lagoons. Two of the lagoons are facultative, and six lagoons are aerated. Alum is injected at the inlet distribution box for phosphorus removal. The effluent discharge flowrate from the Embrun WWTP is controlled by a hydrograph-controlled release system, which allows the discharge to be controlled in proportion with the Castor River Flowrate.

The Embrun WWTP is operated under ECA Number 2449-BNYJZZ issued August 6th, 2020. Under this ECA, the Embrun WWTP has a rated capacity of 3,865 m^3/d and is noted to be seasonal discharge. Discharges occur once in the spring and once in the fall. As the plant is seasonal discharge, it is subjected to a spring/fall dilution ratio during discharge. The plant effluent dilution ratio (river flow to effluent discharge rate) cannot be lower than 17.3:1 and 7.9:1 in the spring and fall, respectively.

Figure 7-10 shows a PFD of the Village of Embrun's wastewater collection and treatment system.

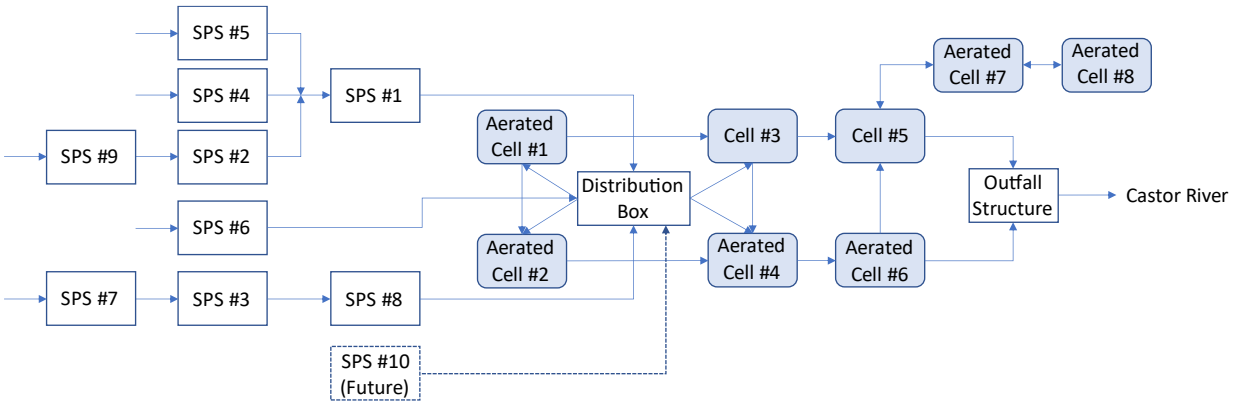


Figure 7-10: Village of Embrun Wastewater PFD

7.3.2 Historical Wastewater Flows

The rated capacity of the Embrun WWTP according to the ECA is 3,865 m^3/d. The annual average day flow to the plant between 2019 - 2023 was approximately 1,947 m^3/d, equating to approximately 50% of the rated capacity. The influent ADF has been steadily increasing over the last five (5) years, correlating to the rise in population within Embrun.

Figure 7-11 shows the historical (previous 5 years) average day flow.

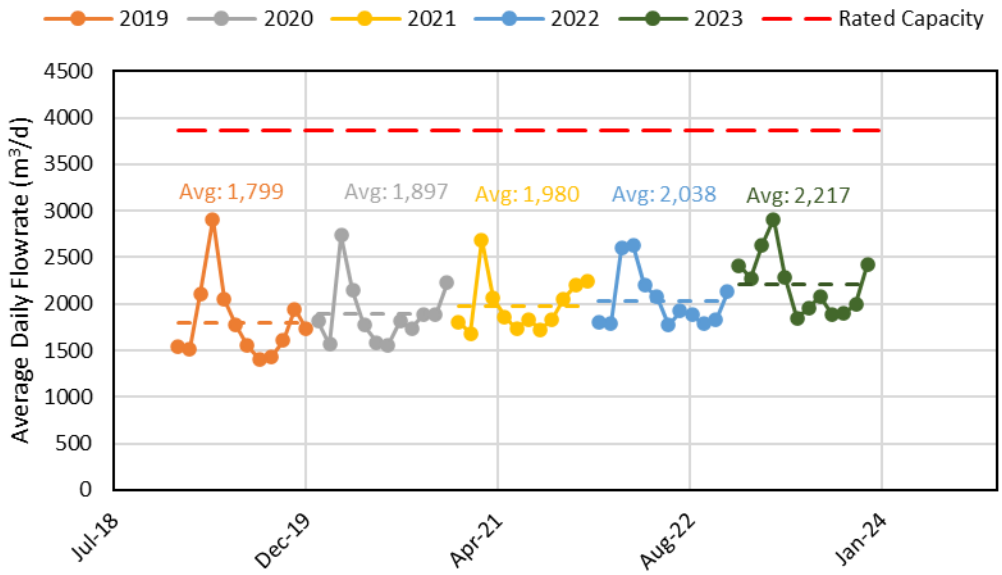


Figure 7-11: Embrun WWTP Historical Average Day Flowrates

7.3.3 Historical Influent Quality

The influent water quality entering a WWTP has significant impacts on the level of treatment required, and the effectiveness of process units. Typical process units are

designed regarding the loading that will be applied to them from the wastewater. Therefore, the influent loading to WWTPs is of more interest than influent concentrations. Note various samples in 2023 contained significantly higher than usual concentrations of $cBOD_5$, TSS, TKN, and TAN, these were likely due to strong grab samples which contained an unusual amount of solids. Due to the strength of these samples, the values were removed during calculations as to not skew the underlying trends in the data.

Table 7-10 shows the average historical wastewater influent quality to the Embrun WWTP, both influent concentrations and loading. The average concentrations indicate that the wastewater entering the Embrun WWTP is a typical municipal wastewater.

Table 7-10: Embrun WWTP Influent Quality (2019-2023)

Wastewater Parameter	Average Concentration (mg/L)	Average Loading (kg/d)
$cBOD_5$	193	363
TSS	185	353
TP	7.3	13.5
TAN	57	105
TKN	73	135

7.3.4 Historical Effluent Quality

The Embrun WWTP is subject to effluent quality limits as stipulated in the ECA. The ECA notes the WWTP objectives and limits for each of the following wastewater parameters: $cBOD_5$, TSS, TP, TAN, pH, Hydrogen Sulphide and Dissolved Oxygen (DO).

The Embrun WWTP is generally performing well as all effluent wastewater parameters are below the ECA limit, except for TAN concentrations. The Embrun WWTP has not met effluent TAN concentration limit since the spring of 2020. Prior to 2020 the plant was compliant; however, the effluent TAN concentration almost exceeded the ECA limit in 2019.

Table 7-11 outlines the historical (2019-2023) average effluent values of the above listed constituents and the effluent limits that are required for the Embrun WWTP to meet based on the ECA.

Figure 7-12 illustrates the historical (2019-2023) effluent ammonia concentrations during the spring discharge, while **Figure 7-13** illustrates discharge effluent ammonia concentrations during the fall discharge. Both the spring/fall discharge are compared to the ECA objective and limit

Table 7-11: Embrun WWTP Historical (2019-2023) Effluent Values and ECA Wastewater Parameter Objective and Limits

Wastewater Parameter	Average Historical Effluent Value	Average Effluent Limit (Objective / Limit)	Average Loading (kg/d unless otherwise noted)
$cBOD_5$ (mg/L)	5	20 / 30 mg/L	28,196
TSS (mg/L)	8	20 / 30 mg/L	28,196
TP (mg/L)	0.2	0.5 / 0.56 mg/L	2.16 (790 kg/yr)
TAN (mg/L)	4 (fall discharge) 13 (spring discharge)	1.0 / 2.0 mg/L (fall discharge) 5.0 / 10.0 mg/L (spring discharge)	850 (fall discharge) 5,150 (spring discharge)
pH	7.3	6.5 – 8.5 / 6.0 – 9.5	-
Hydrogen Sulphide (mg/L)	0.0	Non-detectable	-
DO (mg/L)	9.7	2.0 mg/L	-

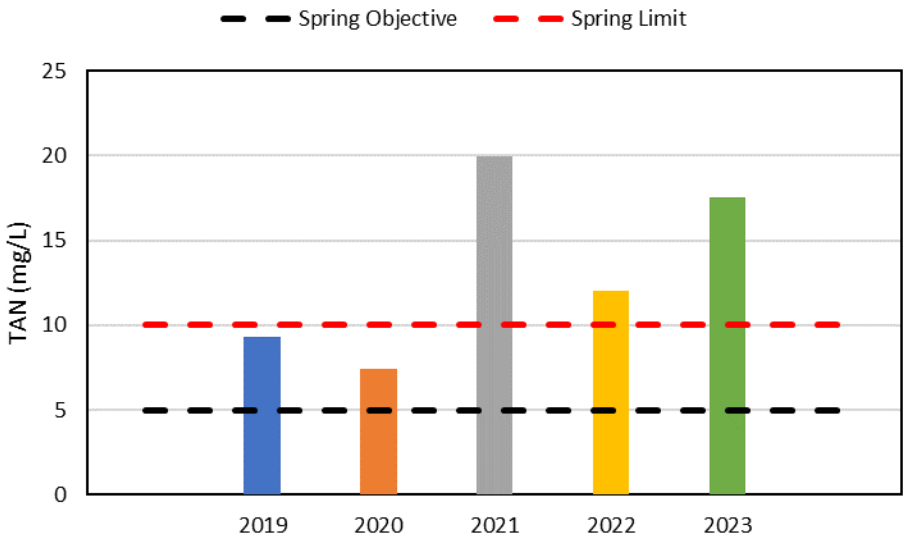


Figure 7-12: Embrun WWTP Historical Spring Effluent Ammonia Concentrations

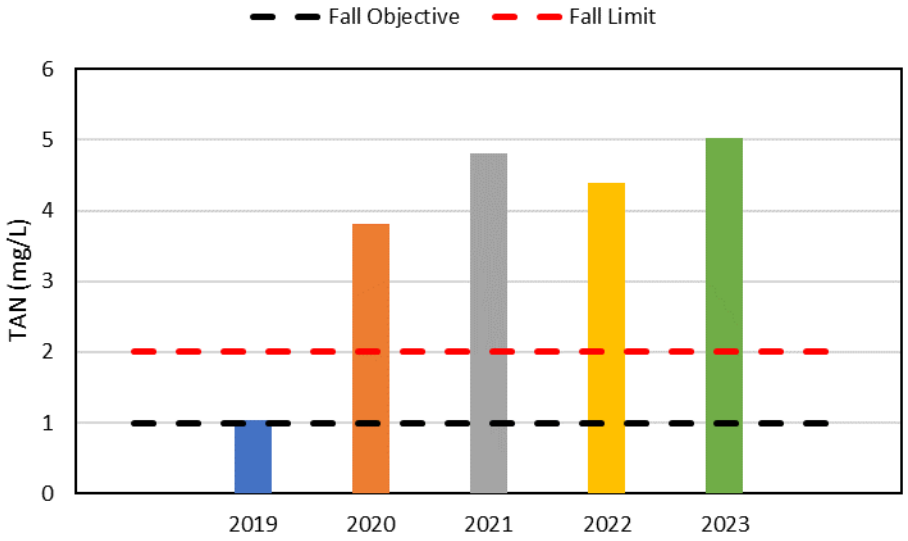


Figure 7-13: Embrun WWTP Historical Fall Effluent Ammonia Concentrations

7.3.5 Population Growth

The projected serviced population for the Embrun WWTP is anticipated to increase up to 2046 due to developer interest within Embrun.

In 2022, the Township retained Hemson to update their Growth Management Strategy. Within that report, Hemson assumed a persons per unit rate of 2.45, therefore, for the population projections, 2.5 persons/unit has been assumed.

Table 7-12 illustrates the projected units added, projected persons added, and total projected population within Embrun at designated timelines serviced by the sewage collection/treatment system.

Figure 7-14 illustrates the expected growth of Embrun from present to 2046.

Table 7-12: Embrun Wastewater Collection/Treatment Serviced Units Added per Year

Planning Period Interval	Units Added	Pop. Added	Total Pop.
2023 - 2026	667	1,668	11,825
2026 - 2031	870	2,175	14,000
2031 - 2036	657	1,643	15,642
2036 - 2041	452	1,130	16,772
2041 - 2046	385	963	17,735
Buildout	1,625	4,063	21,797

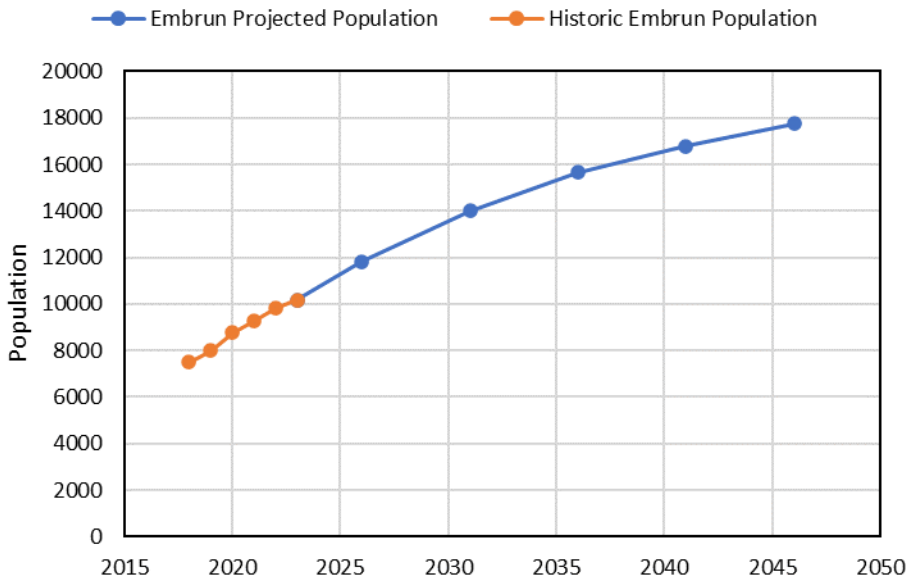


Figure 7-14: Expected Serviced Wastewater Collection/Treatment System Population of Embrun

7.3.6 Per Capita Flowrate

Similar to the Village of Russell, the historical per capita wastewater generation for Embrun is low, **Table 7-13**.

Table 7-13: Historical Per Capita Wastewater Generation within Embrun

Village	Historical Per Capita Water Demand (2019-2023) (L/c/d)	Max Annual Per Capita Wastewater Generation (L/c/d)
Embrun	216	274

Figure 7-15 illustrates historical per capita wastewater generation (2014 – 2023) for Embrun, with a similar spike in 2017 as was noted for Russell due to the increased precipitation in that year.

For the reasons discussed in **Section 7.2.6**, this Master Plan Update will use a per capita wastewater generation rate of 250 L/c/d for Embrun as well. The value of 250 L/c/d should be assessed in future Master Servicing Plans to reflect the per capita water demand of the population more closely at that time.

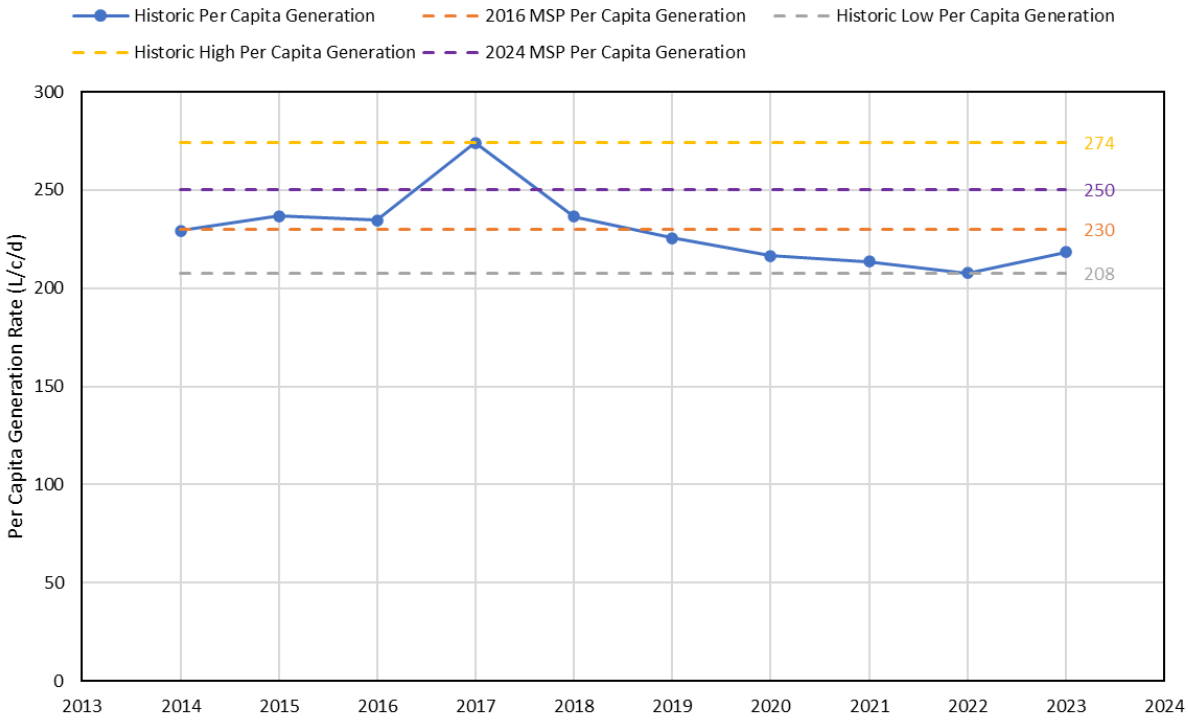


Figure 7-15: Embrun's Historical Per Capita Wastewater Generation Rate

7.3.7 Future Wastewater System Requirements

Two scenarios were considered for future wastewater system requirements. Both scenarios used the projected population values in **Table 7-12**, a per capita flow rate of 250 L/c/d, and assumed 38 ha of commercial land added.

- Scenario 1: Low Flow
- Scenario 2: High Flow

Scenario 1 considered a commercial flowrate of 10 m^3/ha/d as this value was previously used in determination of the Industrial Park flowrates and is more consistent with low wastewater generating users, such as the Embrun population. Scenario 1 also considers minimal I&I over an annual average (design criteria for lagoons). This scenario is likely a better representation of the short-term conditions of the sanitary network as it is unlikely that significant increases in I&I will occur within the next several years due to aging infrastructure and new development.

Scenario 2 is considered more long-range planning to be more conservative. This scenario considered a commercial flowrate of 28 m^3/ha/d, matching the City of Ottawa Design Guidelines, and also considers 0.025 L/ha/s (2.16 m^3/ha/d) of I&I. The City of Ottawa Design Guidelines for I&I use a value of 0.05 L/ha/s (4.32 m^3/ha/d). However, the historical per capita flow is less than 250 L/c/d, inclusive of I&I. The annual I&I allowance was reduced to 0.025 L/ha/s to partially account for unknown changes in the future without being excessively conservative.

The commercial land added within Embrun was assumed to track population growth, therefore, the overall projected commercial flowrate was divided evenly among the various time intervals. Additionally, the Township provided projections for hectares of land added to Embrun per time interval, and these values were used to determine the expected additional infiltration, if required.

Projections for average day flowrate of wastewater, for Embrun, up to Buildout are shown in **Table 7-14**:

Table 7-14: Anticipated Average Day Wastewater Flowrates in Embrun

Year	Land Added	Scenario 1: Low Flow			Scenario 2: High Flow		
		Commercial Flowrate (m^3/d)	Infiltration Allowance (m^3/d)	Total Flowrate (m^3/d) [1]	Commercial Flowrate (m^3/d)	Infiltration Allowance (m^3/d)	Total Flowrate (m^3/d) [1]
2026	25	76	0	2,710	212	53	2,899
2031	53	76	0	3,329	212	115	3,769
2036	53	76	0	3,815	212	115	4,507
2041	35	76	0	4,173	212	76	5,078
2046	30	76	0	4,490	212	65	5,595
Buildout	82	0	0	5,505	0	176	6,787

Notes:

(1) Total flowrate incorporates the projected future population with a per capita flowrate of 250 L/c/d and assumes commercial land added tracks with population, therefore, commercial land added (38 ha) is divided evenly among time intervals

7.3.8 Wastewater Treatment Plant Capacity

CIMA+ completed a preliminary capacity assessment of the Embrun WWTP. The plant was determined to be hydraulically limited versus loading limited. **Figure 7-16** illustrates the projected flowrates of Scenario 1 and Scenario 2. Scenario 1 (low flow) presents a timeline which extends the effective life of the existing WWTP. This scenario is most likely to occur in the short-term as minimal I&I currently affects the Embrun sanitary collection system. Scenario 2 presents an accelerated timeline as it considers the City of Ottawa guidelines for commercial flowrates and captures the potential increase of I&I as the collection system ages.

Based on the capacity assessment, operational challenges at the Embrun WWTP, due to storage limitations, are expected when influent flows reach approximately 3,271 m^3/d (~85% of the ECA rated capacity). 80% of the ECA rated capacity is typically when upgrades to WWTPs are triggered, and the planning/design phase begins with construction following.

Operational challenges are expected by approximately 2029, and rated capacity exceeded by approximately 2036 when considering Scenario 1. Continued monitoring of flows is prudent to compare flowrates to predicted values and comparing observed flowrates to the identified planning horizon.

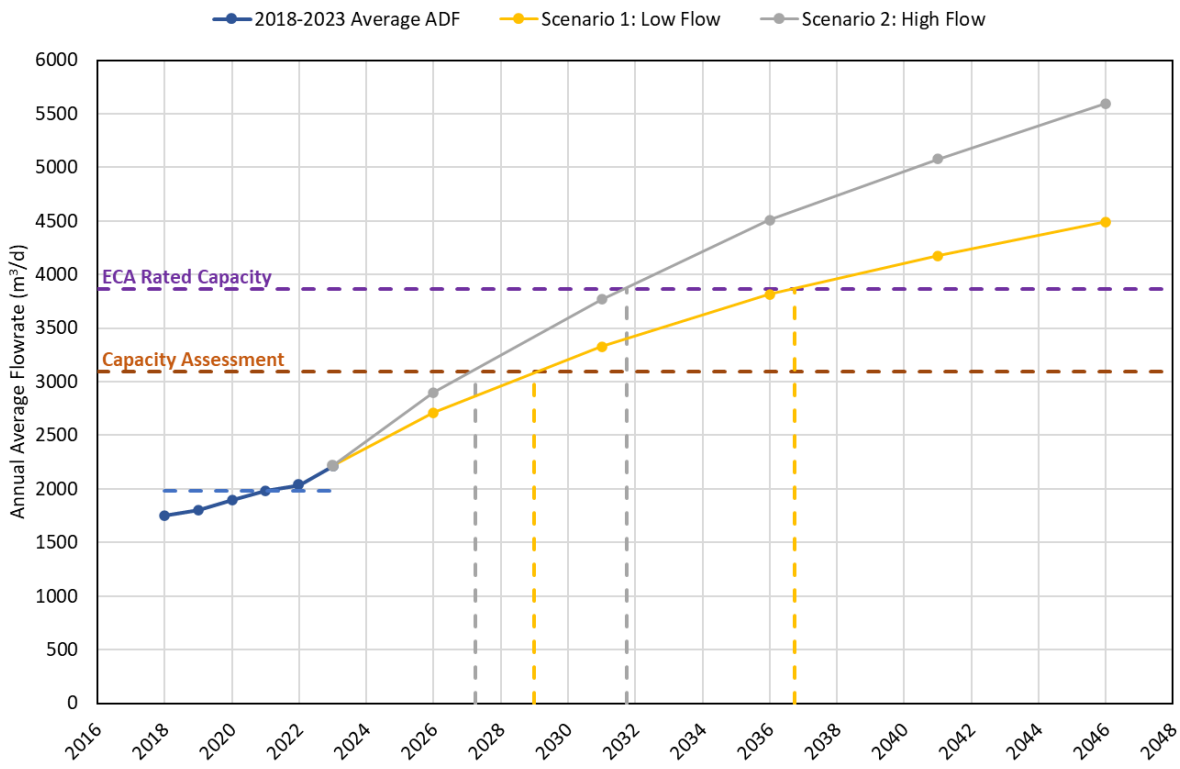


Figure 7-16: Preliminary Capacity Assessment of the Embrun WWTP

7.3.9 Wastewater System Alternative Solutions

The following sections will examine and evaluate feasible Embrun wastewater treatment (EWWT) alternatives for the Township to meet the Embrun wastewater treatment needs identified in **Sections 7.3.7 and 7.3.8.**

7.3.9.1 EWWT1 – Do Nothing

Alternative EWWT1 – Do Nothing involves not upgrading any portion of the wastewater infrastructure within Embrun and not increasing the capacity of the Embrun WWTP.

Proceeding sections discuss the capacity of the collection network and sanitary pumping stations, however, increased capacity of the Embrun WWTP is required for the short to medium-term future of Embrun. This alternative would result in infrastructure that is undersized for the growing population. This does not align with the goals and future aspirations of the Township.

Alternative EWWT1 – Do Nothing is not recommended for the Township to pursue for Embrun as it does not meet the problem/opportunity statement.

7.3.9.2 EWWT2 – Limit Growth

Alternative EWWT2 – Limit Growth allows growth to continue until the capacity of current infrastructure is reached, at which point, growth seizes. No upgrades, or expansion, to the current wastewater infrastructure or treatment would be made. Minor upgrades could be made to equipment at the Embrun WWTP to improve reliability or performance, but no increase to capacity.

While this alternative allows for some population increase within Embrun, it does not allow for expanded growth of the community which is a central objective for the Township.

Alternative EWWT2 – Limit Growth does not meet the objectives of the problem/opportunity statement; therefore, it is not recommended to be considered further.

7.3.9.3 EWWT3 – Upgrade/Expansion of Existing Systems

Alternative EWWT3 – Upgrade/Expansion of Existing Systems would entail the upgrade and expansion of all wastewater infrastructure at the existing Embrun WWTP to meet anticipated future flowrates.

Expansion of the Embrun WWTP would likely entail additional lagoons and treatment processes. Additional lagoons increase the available storage of the plant. To provide sufficient storage capacity, adding three (3) more lagoon cells (i.e., Cells 9 10, and 11)

would be required, but impractical, and difficult to maintain consistent effluent concentrations. The lagoons could be modified to allow for continuous discharge.

It is important to note that any capacity increase of the Embrun WWTP would result in an amendment to the existing ECA. The new effluent treatment criteria within the amended ECA would follow the recommendations from the completed ACS study. Preliminary analysis suggests that the effluent concentrations allowed will follow **Table 7-1**. The expansion would require add-on technologies to reliably achieve very stringent ammonia concentrations year-round. The effluent ammonia concentrations are prohibitive to the lagoon technology.

Alternative EWWT3 – Upgrade/Expansion of Existing Systems meets the objectives of the problem/opportunity statement; therefore, it is recommended to be considered further.

7.3.9.4 EWWT4 – New Embrun WWTP

Alternative EWWT4 – New Embrun WWTP would entail constructing a new mechanical WWTP. The new WWTP would likely be located near the existing Embrun WWTP to simplify the routing of sewerage and flow from the community.

The new WWTP could be adapted to treat the effluent to the required effluent limits identified in the ACS Study. This alternative carries high capital and operating costs compared to the current system.

Alternative EWWT4 – New Embrun WWTP meets the objectives of the problem/opportunity statement; therefore, it is recommended to be considered further.

7.3.9.5 Summary

Table 7-15 illustrates a summary of the above-mentioned alternatives for the Embrun WWTP.

Table 7-15: Summary of Screening for Embrun WWTP Alternatives

Alternative	Screening Assessment
Alternative EWWT1 – Do Nothing	Removed from consideration. Does not address the problem defined in the problem/opportunity statement.
Alternative EWWT2 – Limit Growth	Removed from consideration. Does not address the problem defined in the problem/opportunity statement.

Alternative	Screening Assessment
Alternative EWWT3 – Upgrade/Expansion of Existing Systems	Short-listed for further evaluation.
Alternative EWWT4 – New Embrun WWTP	Short-listed for further evaluation.

7.3.10 Short-Term Upgrade Alternatives

The Embrun WWTP has not met the ECA effluent requirement for ammonia concentration in 2020 fall, 2021, 2022, and 2023. A study was conducted to improve aeration for increased treatment and was deemed not viable. Additionally, lagoons 7 and 8 were noted by operations staff as being hydraulically limited and not providing the anticipated capacity they were initially intended to provide.

Due to the likelihood of increased effluent ammonia concentrations persisting, process optimization of the Embrun WWTP is recommended. Process optimization should review, at a minimum, flow paths within the lagoons and aeration. However, if process optimization steps are taken, and no significant increase in effluent quality is observed, short-term upgrades for ammonia polishing will be required. A short-term upgrade to the Embrun WWTP would allow for polishing of the wastewater removing significant levels of ammonia up to existing hydraulic capacity prior to discharge.

Process optimization or the addition of a polishing unit at Embrun WWTP would not increase the rated capacity of the plant; however, it would allow growth to continue in Embrun as projected in **Section 7.3.5**. As the rated capacity of the plant would not be increased, the current ECA could remain in place, allowing for continued use of the existing effluent concentrations. Either process optimization or ammonia polishing are considered short-term solutions for the Embrun WWTP as the assessed hydraulic capacity of the plant is expected to be exceeded by approximately 2029 under Scenario 1 (**Figure 7-16**).

The tankage for a polishing unit, if implemented, should be constructed in an advantageous position, allowing for its reuse for the preferred long-term alternative solution for the Embrun WWTP. The polishing unit tankage could be designed to allow for other technologies to be implemented within the same tankage to allow for flexibility of chosen technology for a new Embrun WWTP or a Combined WWTP. A Combined WWTP is discussed further in **Section 7.4.**

The following sections discuss ammonia polishing technologies that the Township could implement at Embrun WWTP in the short term if process optimization proves less effective.

7.3.10.1 Short Term Alternative 1: Submerged Attached Growth Reactor

This alternative for short-term upgrade implements the Submerged Attached Growth Reactor (SAGR) technology. The SAGR technology implements a large bed of aggregate, approximately two (2) m deep, which allows wastewater to flow through the aggregate in a plug flow configuration. The wastewater flow stimulates biofilm growth on the aggregate, and it is this biofilm which provides the bulk of the treatment. Aeration is provided underneath the aggregate, allowing for greater organics removal. Typically, over 30 days of hydraulic retention time (HRT) is required prior to the SAGR, allowing for appropriate removal of $cBOD_5$ and TSS; the existing lagoons can provide approximately 180 days at capacity flowrates. The SAGR technology can reliably treat wastewater constituent levels of $cBOD_5$ and TSS below 15 mg/L, and total ammonia nitrogen below 1 mg/L.

The SAGR technology can be operated in either a continuous or seasonal discharge configuration. This allows the plant to continuously discharge, eliminating the storage requirements for the plant provided upstream treatment is adequate. The SAGR can also effectively operate for seasonal discharge, as the wastewater can be recycled through the SAGR cells to maintain biological growth. The SAGR can likely be fed by gravity, however, to recycle the flow, an intermediate pump station is likely required.

This technology requires a large footprint; however, it is significantly smaller than new lagoons. Purchasing of land may be required as the Township does not own the land adjacent to the Embrun WWTP and space within this footprint is limited. The purchase of new land, while not increasing rated capacity of the plant, would require a Schedule ‘B’ Class EA to be performed. Conversely, if the SAGR cells are implemented within existing lagoon volume, the project would be exempt from the Class EA process. The capital costs would be relatively high as the civil works, process equipment, and an aeration building would be required.

The SAGR technology does not implement concrete tankage limiting reuse of the short-term upgrade if a new or Combined plant were to be constructed at the Embrun WWTP. Ideally any short-term upgrades made to the plant could be later reused and implemented into the long-term solution for the plant; this is unlikely with the SAGR technology.

The estimated approximate cost for this alternative is $13.5M CAD and a cost breakdown can be found in **Appendix A**.

Figure 7-17 illustrates a potential layout for the SAGR cells within existing lagoon volume; however, the location would be confirmed during detailed design.

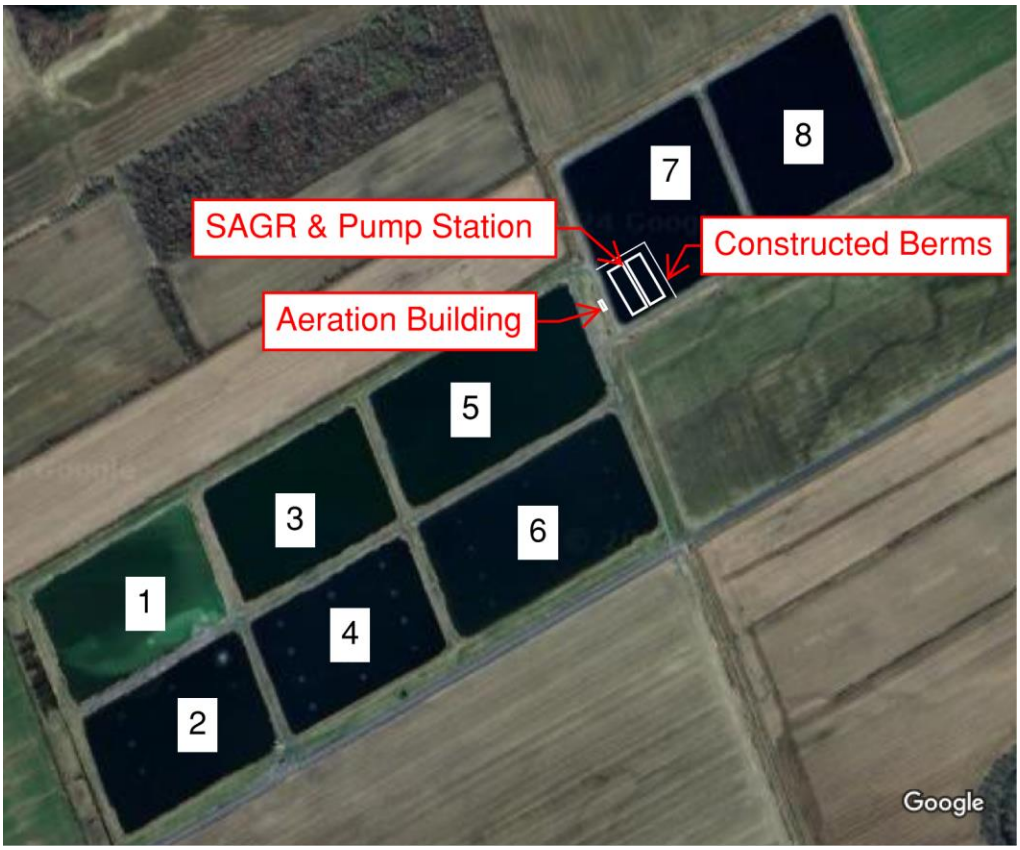


Figure 7-17: Embrun WWTP with SAGR Cells

7.3.10.2 Short Term Alternative 2: Moving Bed Biofilm Reactor

This alternative for short-term upgrade implements the Moving Bed Biofilm Reactor (MBBR). The existing lagoons would be responsible for BOD and TSS removal, while the majority of nitrification would occur within the MBBR unit, specifically during the winter months. The MBBR would be responsible for the majority of nitrification via recirculation of wastewater from several existing lagoons. The recirculation loop mitigates seasonal operation of the MBBR as this would be problematic for maintaining biological growth.

The MBBR functions as an attached growth system, which allows biofilm to grow on the media. The media offers a high surface area per cubic meter of media volume, allowing for compact design to achieve effluent limits.

The media within the MBBR tank is circulated by aeration provided to the tank. No backwashing of the tank is required as the media is constantly contacting each other and the walls of the tank, cleaning and discarding excess growth.

Phasing of the MBBR would also be easier than other technologies. If the concrete tank is designed to accommodate the appropriate HRT at the capacity flowrate, the amount of media within the tank can vary depending on the loading entering the plant. Initially less media can be used (lowering the effective surface area for treatment) and then more media could be added to augment surface area, increasing capacity. The MBBR technology has been proven to provide effective treatment after lagoon treatment even during cold temperatures.

The concrete tankage required for an MBBR could be repurposed for the long-term alternatives of the Embrun WWTP. The tankage could be positioned and sized in such a manner that integration with a new Embrun, or Combined WWTP could be possible while maintaining flexibility of technology choice for either new plant.

It is likely that the required tankage for a MBBR could be positioned within the existing land of the Embrun WWTP, allowing the project to be exempt from the EA process since rated capacity will not be increased. If the purchase of new land is required, a Schedule ‘B’ Class EA would be required.

The estimated approximate cost for this alternative is $9.7M CAD and a cost breakdown can be found in **Appendix A**.

Figure 7-18 illustrates a potential layout for the MBBR tanks within existing lagoon volume; however, the location would be confirmed during detailed design.

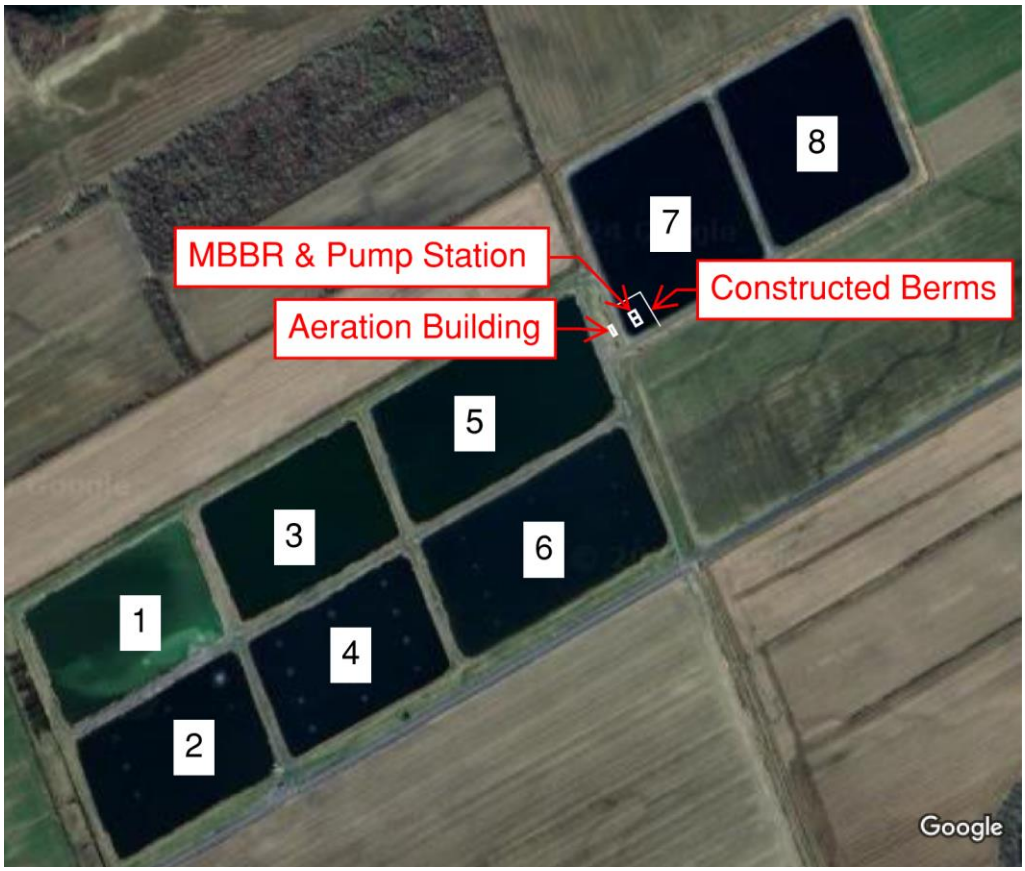


Figure 7-18: Embrun WWTP with MBBR Tanks

7.3.10.3 Short Term Alternative 3: Fixed Media

This alternative for short-term upgrade implements fixed media within the existing lagoons. Fixed media increases nitrification within the lagoon as autotrophic bacteria grow to the fixed media allowing more comprehensive treatment. Fixed media systems are also more resilient to washouts from high peak flows because of the microbial growth on media versus suspended growth which can be more easily washed out.

Fixed media systems can extend the nitrification period of the lagoons. The majority of nitrification within a lagoon system is performed during the warm summer months. Nitrifying microorganisms are temperature dependent and nitrification rates severally decrease below 8°C. When fixed media is present within lagoons, the ability to nitrify can be extended as the biofilm produced is more resilient to temperature fluctuations versus suspended growth, extending nitrification past only the summer months. However, the ability for fixed media within lagoons to achieve the current WWTP effluent ammonia concentrations is unlikely as similar technologies utilised within eastern Ontario have failed to show significant ammonia removal year-round.

These systems can be difficult to properly implement due to contact time required between the water and the biofilm to achieve treatment. Short-circuiting and bypass of the fixed film without receiving treatment is a common issue. Another barrier for these systems is the accumulation of solids. Solids accumulation around the fixed media can decrease its effectiveness as the solids can coat portions of the media, limiting the treatment provided.

Employing fixed media within the existing lagoons does not allow for implementing the short-term upgrade into a long-term solution. There is no concrete tankage that could be repurposed and because the long-term solution for the Embrun WWTP is likely a new mechanical WWTP, the lagoon technology would not be implemented, and the fixed media could not be reused.

Implementing fixed media would be exempt from the Class EA process due to additional treatment being added within existing lagoons while not increasing plant capacity, requiring the purchase of land, or adding additional lagoon cells.

As this alternative is unlikely to meet the required effluent limits, a cost estimation has not been performed.

7.3.10.4 Detailed Evaluation of Embrun WWTP Short-Term Alternatives

Table 7-16 presents a summary evaluating the short-term alternatives for the Embrun WWTP.

Table 7-16: Summary of Embrun WWTP Short-Term Alternatives

Evaluation Criteria	Alternative 1: SAGR	Rating	Alternative 2: MBBR	Rating	Alternative 3: Fixed Media	Rating
Technical	• Approvals required (MECP, etc.) • Likely requires Schedule 'B' EA • Proven to meet effluent criteria at rated capacity flowrates • Large excavation required • Moderate compatibility with existing infrastructure • No compatibility with any long-term upgrade/expansion	◑	• Approvals required (MECP, etc.) • Exempt from additional EA requirements • Proven to meet effluent criteria at rated capacity flowrates • Moderate excavation required • Moderate compatibility with existing infrastructure • High compatibility with any long-term upgrade/expansion as tankage could be repurposed	◕	• Approvals required (MECP, etc.) • Exempt from additional EA requirements • Less proven in Ontario to meet effluent criteria at rated capacity flowrates • No excavation required • High compatibility with existing infrastructure • No compatibility with any long-term upgrade/expansion	◔
Environmental	• Moderate impact to natural environment, requires mitigation measures • No significant impact on receiving water as effluent limits likely achieved	◕	• Moderate impact to natural environment, requires mitigation measures • No significant impact on receiving water as effluent limits likely achieved	◕	• Low impact to natural environment, requires some mitigation measures • Likely significant impact on receiving water as effluent limits likely not achieved	◔
Social	• No change in site location • Land acquisition likely required • Low aesthetic impacts to surrounding properties where expansion is built • Minor to no odour addition to the WWTP • Moderate truck traffic during construction	◑	• No change in site location • Land likely to be controlled by the Township • Low aesthetic impacts to surrounding properties where expansion is built • Minor to no odour addition to the WWTP • Moderate truck traffic during construction	◕	• No change in site location • Land controlled by the Township • No aesthetic impact to surrounding properties • No odour addition to the WWTP • Low truck traffic during construction	◕
Financial	• Large capital investment required • Limited reuse for long-term WWTP solution • Moderate increase in O&M costs • Total CAPEX Costs: $14M plus land acquisition if required	◑	• Large capital investment required • Potential for tank reuse, limiting future capital costs • Moderate increase in O&M costs • Total CAPEX Costs: $10M	◕	• Alternative deemed unlikely to meet technical requirements, no costing performed • Total CAPEX Costs: N/A	**N/A**
Overall	Alternative is **NOT** preferred	X	**Recommended Alternative**	✓	Alternative is **NOT** preferred	X

7.3.11 Long-Term Upgrades to Achieve Anticipated Growth

The existing lagoon technology implemented at the Embrun WWTP is not a sufficient technology for the anticipated population of Embrun by 2046 and buildout. A solution to treat Embrun's wastewater at the future projected flowrates, **Figure 7-16**, is required to allow for continued growth.

Expansion beyond the rated capacity in either of the below proposed alternatives will require a Schedule 'C' Class EA. Any long-term solution for the Embrun WWTP must be able to meet **Table 7-1** effluent regulations that will be imposed by the MECP based on the findings of the ACS study.

The preferred long-term solution should be able to meet the future effluent regulations while also having the ability for phasing to allow for continued growth within Embrun.

7.3.11.1 EWWT3 – Upgrade/Expansion of Existing System

The lagoon technology is typically implemented for smaller communities as larger towns require very large lagoon footprints to adequately store and treat the community's wastewater. The existing influent flowrate of the Embrun WWTP is likely already exceeding the upper limit of flowrate that should be processed by the lagoon technology. The storage required for seasonal discharge is very large with little benefit for treatment, due to lagoon treatment being simple/passive and largely dependent on climate conditions.

As noted, the existing lagoons are already having challenges to meet the effluent limits for ammonia. To meet the anticipated hydraulic capacity required for 2046, assuming seasonal discharge, three (3) more lagoons are likely required. The adjacent land to the Embrun WWTP is not owned by the Township, therefore, the purchasing of land would be required for plant expansion. To maintain seasonal discharge mechanical processes for ammonia removal would need to be included and sized to polish the full flow during the discharge period (i.e. approximately 6 months of flow in 1 month) to account for residual ammonia. Therefore, additional lagoons are not a viable alternative.

Figure 7-19 outlines a possible layout for the addition of three (3) more lagoons to the Russell WWTP.

As this alternative is unlikely to meet the required effluent limits, a cost estimation has not been performed.

Figure 7-19: Embrun WWTP Lagoon Expansion for 2046 Flowrates

7.3.11.2 EWWT4 – New Embrun WWTP

A new WWTP for Embrun would be mechanical and not use the existing lagoon technology for treatment. A mechanical WWTP offers a variety of technologies to be chosen from and the ability to meet very stringent effluent regulations. Due to the variety of mechanical technologies available, opportunities exist to implement technologies that can reduce O&M costs and lower overall greenhouse gas emissions. Technology selection will be dependent on the outcome of future studies.

The initial capital cost for a new mechanical WWTP would be high, however, the ability to meet effluent regulations and more easily phase in expansion is advantageous. Phasing of future expansion will be important to consider as the plant would be designed for a rated capacity capable of treating 2046 flows and loads. Selecting a technology capable of expansion to buildout flows and loads must be considered in future studies.

The O&M costs of a mechanical plant will be higher than that of the existing lagoon technology. The facility will require additional staffing and maintenance of mechanical

equipment. Depending on the technology selected, opportunities may exist to reduce O&M costs.

Constructing a new WWTP for Embrun would require a Schedule ‘C’ Class EA. At this stage, the estimated approximate cost for this alternative is $60M CAD and a cost breakdown can be found in **Appendix A**.

Figure 7-20 outlines the possible footprint for a new mechanical Embrun WWTP; however, the location would be confirmed during detailed design. Construction phasing and sizing of a new WWTP would need to be further developed in a Schedule ‘C’ EA. In this Master Plan, it is conceptualized to reuse a portion of the existing lagoon volume. If supporting studies show unfavorable conditions for construction within Cell 7 (or other cells), land acquisition will be required. Cost contingencies have been carried at this stage for potential land acquisition.

Figure 7-20: New Mechanical Embrun WWTP Footprint

7.3.11.3 Detailed Evaluation of Embrun WWTP Long-Term Alternatives

Table 7-17 presents a summary evaluating both short-listed long-term alternatives for the Embrun WWTP.

Table 7-17: Summary of Embrun WWTP Long-Term Alternatives

Evaluation Criteria	EWWT3 – Upgrade/Expansion of Existing System	Rating	EWWT4 – New Embrun WWTP	Rating
Technical	• Approvals required (MECP, etc.) • Will not meet effluent criteria at future flowrates • Large excavation required • High compatibility with existing infrastructure • Limited ability for future expansion and phasing	○	• Approvals required (MECP, etc.) • Will meet effluent criteria at future flowrates • Moderate excavation required • No compatibility with existing infrastructure • High ability for future expansion and phasing	◕
Environmental	• High impact to natural environment, requires mitigation measures • Significant impact on receiving water as effluent limits not achieved	○	• Moderate impact to natural environment, requires mitigation measures • Minimal impact on receiving water as effluent limits achieved	◕
Social	• No change in site location • Likely to limit growth of Embrun • Requires land for expansion not controlled by the Township • High aesthetic impacts to surrounding properties • Moderate odour addition to the WWTP • High truck traffic during construction	◔	• No change in site location • Will not limit growth of Embrun • Required land for expansion controlled by the Township • Low aesthetic impacts to surrounding properties • Minor odour addition to the WWTP • High truck traffic during construction	◕
Financial	• Alternative deemed unlikely to meet technical requirements, no costing performed • Total CAPEX Costs: N/A	**N/A**	• High capital investment required • Moderate future expansion costs • Potential for tank reuse of short-term solution • High increase in O&M cost • Total CAPEX Costs: $60M	◔
Overall	Alternative is **NOT** preferred	X	**Recommended Alternative**	✓

7.4 Combined Wastewater Treatment Plant

A Combined WWTP would serve as the WWTP for both Russell and Embrun, rather than two (2) new WWTPs. Similar to the Russell and Embrun WWTPs, the Castor River would be the discharge point for the new plant. The Combined WWTP would be designed to meet the effluent requirements put forth by the completed ACS study, **Table 7-1**. The anticipated capacity of the Combined WWTP is projected to be 9,500 m^3/d for Russell and Embrun. This plant would also be in close proximity to the Limoges WWTP should a larger combined plant be considered in the future.

Figure 7-21 illustrates the location and proximity of the Russell, Embrun, and Limoges WWTPs.

Figure 7-21: Proximity of the Russell, Embrun and Limoges WWTPs

7.4.1 Preferred Combined WWTP Location

A Combined WWTP for the Township could either be located at the Russell or Embrun WWTP. While both WWTP locations are possible, the preferred location for a Combined WWTP would be at the Embrun WWTP. The Combined WWTP could be located within existing lagoon volume, not requiring land acquisition. The location at the Embrun WWTP is within lagoon cells seven (7) or eight (8) as these lagoons do not function well hydraulically and could thus be taken offline for construction with minimum disruption to plant operation.

Embrun also has the larger population compared to Russell. Locating the Combined WWTP near the largest population centre is beneficial as less wastewater would require pumping large distances. A pump station could be constructed at the Russell WWTP to convey all wastewater flow from Russell directly to the Combined WWTP.

Figure 7-22 illustrates the possible footprint of a Combined WWTP; however, the location would be confirmed during detailed design.

Figure 7-22: Possible Combined WWTP Footprint

7.4.1.1 Russell WWTP Station

Russell's wastewater could be conveyed to Embrun via a new pumping station at the existing Russell WWTP. Constructing a pump station at the existing WWTP would mitigate changing sewer flow paths as wastewater from Russell currently discharges to the Russell WWTP. The pumping stations' wet well could be designed for buildout flowrates, however, the pumps could initially be sized for 2046 flowrates (~90 L/s) and then upsized to accommodate larger flows when required. Initial capacity to be determined in further studies.

The pumping station is likely to be constructed within the boundaries of the existing Russell WWTP, thus no land acquisition is anticipated. The pumping station could be constructed such that the influent sewers discharge directly to the wet well.

Construction of a new pumping station will require a Schedule 'B' Class EA. The construction of a new pumping station may also be subject to the Archaeological Screening Process to determine the archaeological potential of the chosen site.

Figure 7-23 illustrates a possible layout for the Russell WWTP Pumping Station forcemain to a Combined WWTP located at the Embrun WWTP.

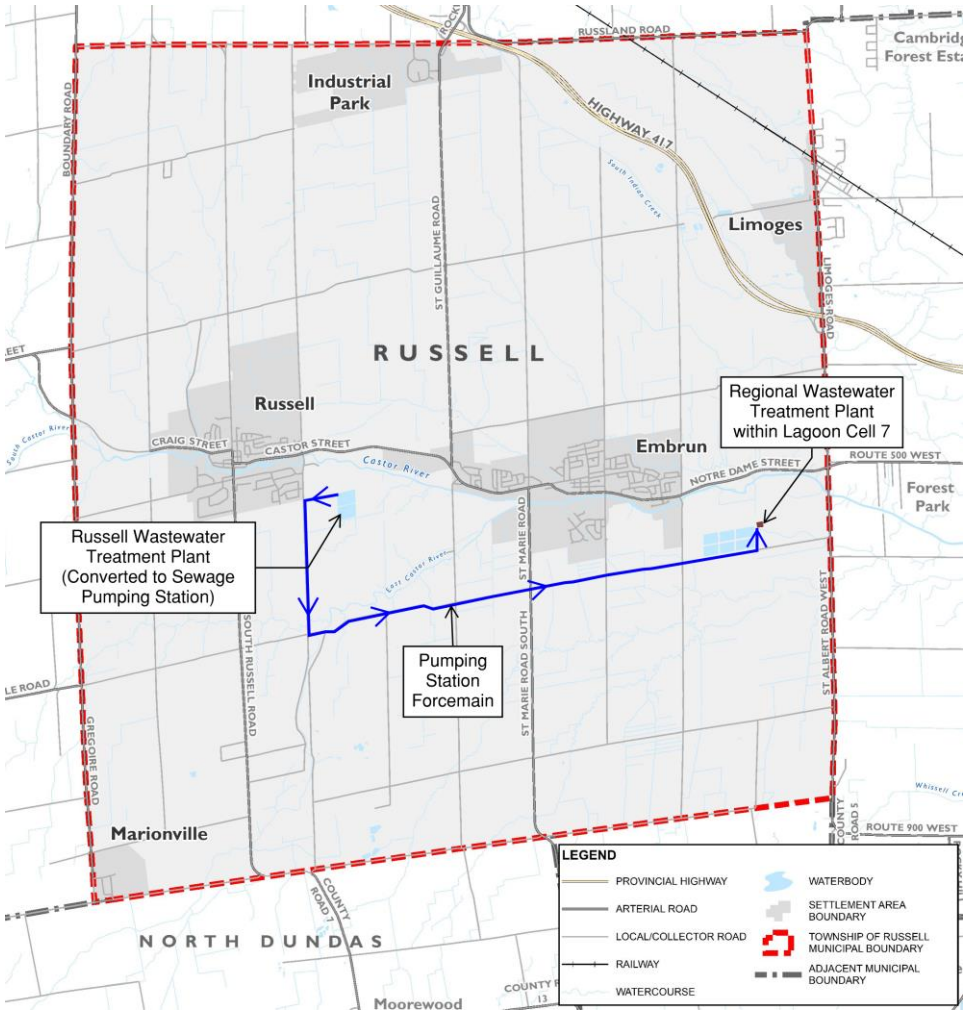


Figure 7-23: Russell WWTP Pumping Station Preliminary Forcemain Layout

7.4.1.2 Summary

Table 7-18 compares constructing a Combined WWTP at either the Russell WWTP or Embrun WWTP.

Table 7-18: Comparison of Locating a Combined WWTP in Russell or Embrun

Alternative 1: Locating Combined WWTP on Russell WWTP Site	Alternative 2: Locating Combined WWTP on Embrun WWTP Site
• Majority of Township's wastewater required to be pumped. Large pump	• Majority of Township's wastewater not required to be pumped. Moderate pump

Alternative 1: Locating Combined WWTP on Russell WWTP Site	Alternative 2: Locating Combined WWTP on Embrun WWTP Site
station required to convey Embrun sewage to Russell WWTP site.	station required to convey Russell sewage to Embrun WWTP site.
• Non-central location if Limoges were to send wastewater to the Combined WWTP.	• Central location if Limoges were to send wastewater to the Combined WWTP.
• Not located near the largest population centre	• Located near the largest population centre
• More challenging construction phasing within the existing WWTP lagoons cells or land acquisition required.	• Easier construction phasing with use of Cell 7 or 8 within the existing WWTP
Alternative is **NOT** preferred: **X**	**Recommended Alternative:** ✓

7.4.2 Local WWTPs or Combined WWTP

Construction of a Combined WWTP would lead to less capital and operating expenditures for the Township over time. Capital costs would be mitigated due to only one (1) large mechanical WWTP being built versus two (2) mid-sized mechanical WWTPs (**Figure 7-24**). Additionally, the cost of operating a single mechanical plant would be greatly reduced from the operation of two (2) individual WWTPs in terms of energy usage and operations staff required.

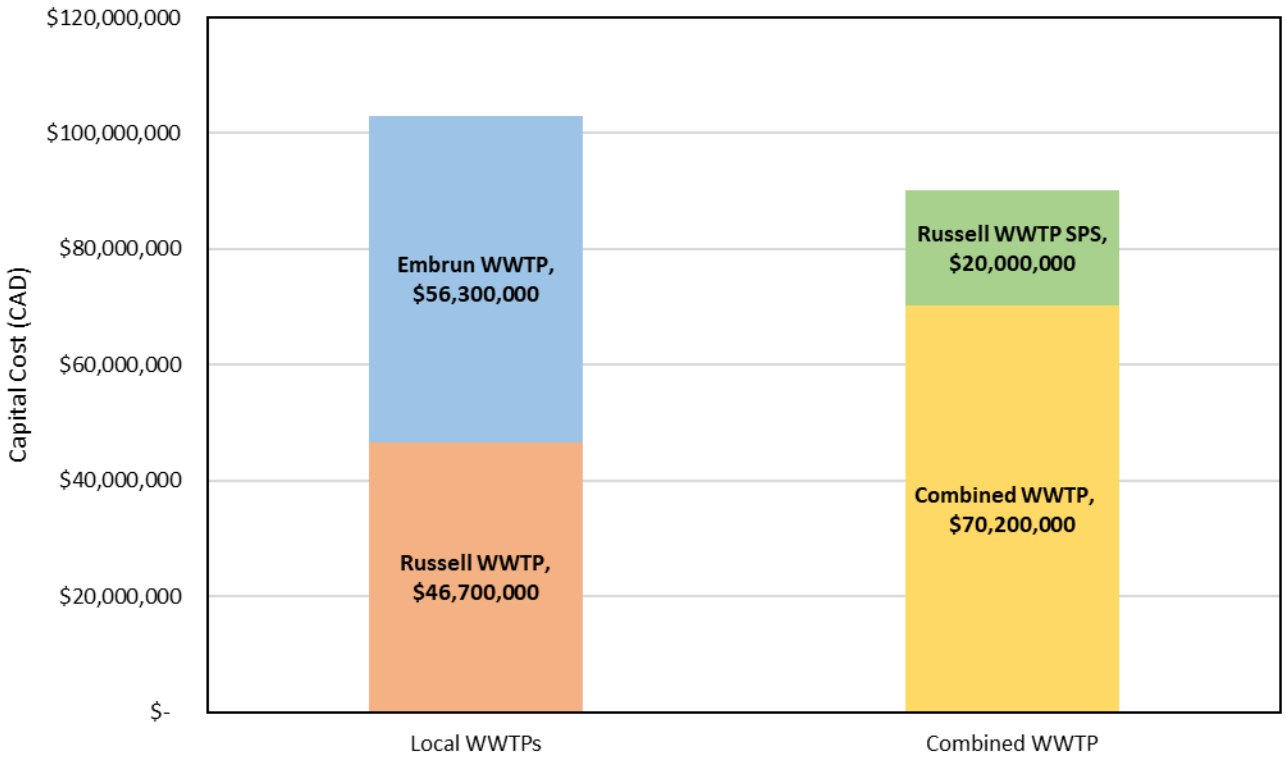


Figure 7-24: Capital Expenditure Comparison between two (2) Local WWTPs and a single Combined WWTP

A Combined WWTP would also mitigate environmental and social factors associated with construction as only a single plant would be built versus two individual WWTPs. **Table 7-19** compares construction of two individual local WWTPs to a Combined WWTP.

Table 7-19: Comparison of Local WWTPs versus a Combined WWTP

Evaluation Criteria	Alternative 1: Local WWTPs – Russell and Embrun	Rating	Alternative 2: Combined WWTP	Rating
Technical	• Approvals required for both WWTPs (MECP, etc.) • Will meet effluent criteria at future flowrates for both Russell and Embrun • Large excavation required for Russell and Embrun • Some compatibility with existing infrastructure after short-term upgrades implemented • High ability for future expansion and phasing	◑	• Approvals required for only one WWTP (MECP, etc.) • Will meet effluent criteria at future flowrates • Moderate excavation required • Some compatibility with existing infrastructure after Embrun's short-term upgrade implemented • High ability for future expansion and phasing	◕
Environmental	• High impact to natural environment for both WWTPs, requires mitigation measures • Increased GHG emissions with two (2) WWTPs • Minimal impact on receiving water as effluent limits not achieved	◔	• High impact to natural environment but localised, requires mitigation measures • Reduced GHG emissions with one (1) WWTP • Minimal impact on receiving water as effluent limits achieved	◑
Social	• No change in site location • Will not limit growth of Russell & Embrun • Likely requires several land acquisitions for expansion • Moderate aesthetic impacts to both surrounding properties • Minor odour addition to both WWTPs • High truck traffic in both Russell and Embrun during construction	◔	• No change in site location • Will not limit growth of Russell & Embrun • Likely requires limited land acquisition for expansion • Moderate aesthetic impacts to surrounding properties • Minor odour addition to the WWTP • High localised truck traffic during construction	◕
Financial	• High capital investment required • High future expansion costs • Potential for tank reuse of short-term solution • High O&M costs: $$$$$ • Total CAPEX Costs: $110M	◔	• Moderate capital investment required • Moderate future expansion costs • Potential for tank reuse of short-term solution • Moderate O&M costs: $$ • Total CAPEX Costs: $95M	◑
Overall	Alternative is **NOT** preferred	X	**Recommended Alternative**	✓

7.5 Wastewater Treatment Preferred Alternatives Summary

Table 7-20 illustrates a summary of the preferred alternatives to be further evaluated for the Township of Russell's wastewater treatment.

Figure 7-25 outlines the anticipated timeline of the Russell and Embrun WWTPs in terms of their capacities and when new WWTPs should be brought online.

Table 7-20: Summary of Alternatives for Russell/Embrun and the Township

Alternative	Screening Assessment
Short-Term Preferred Alternatives	
Russell WWTP: Process Optimization	Optimize existing processes to mitigate high effluent concentrations, if unsuccessful, review timeline to Combined WWTP or MBBR
Embrun WWTP: Process Optimization	Optimize existing processes to mitigate high effluent concentrations, if unsuccessful, review timeline to Combined WWTP or MBBR
Long-Term Preferred Alternatives	
Combined WWTP	Preferred Alternative for the Long-Term Sustainability of the Township of Russell

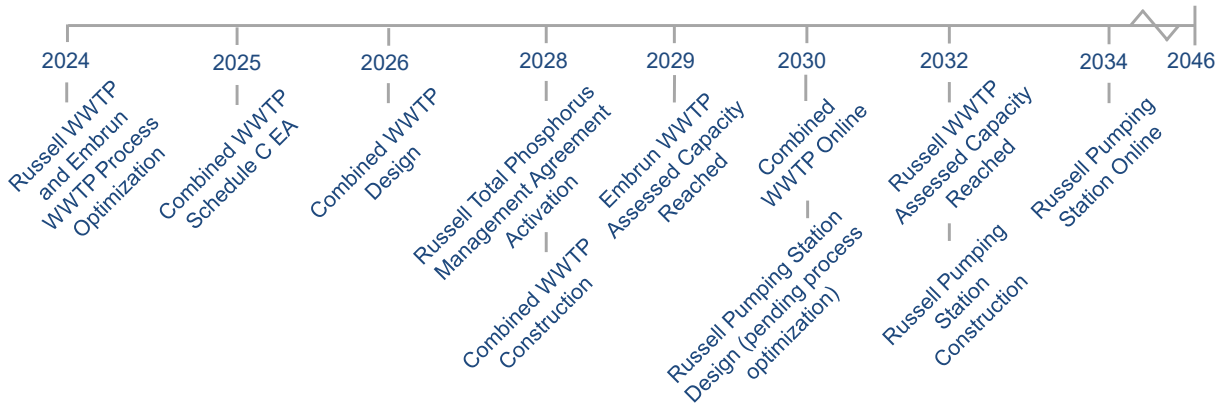


Figure 7-25: Township of Russell Wastewater Timeline

8 Wastewater Collection System

8.1 Russell

8.1.1 Existing Collection System Overview

The Village of Russell's wastewater collection system consists of gravity sewers, forcemains, and three (3) sewage pumping stations (SPSs). SPS 1 has the largest drainage area, which consists of most areas north of the Castor River, while also collecting a small area south of the Castor River. SPS 1 pumps directly to the distribution box at the Russell WWTP via forcemain. SPS 2 collects the wastewater from the northwest of Russell. This pumping station discharges into a manhole on Craig Street, which is located within SPS 1 drainage area. SPS 3 is in the northeast of Russell, and discharges to the Russell WWTP distribution box.

The majority of the collection system consists of 200 mm and 250 mm diameter sanitary sewers. There are 300 mm and 450mm diameter sewers upstream of SPS 1 and SPS 3.

Table 8-1 outlines the capacity of each SPS in Russell, along with a short pumping station description.

Table 8-1: Russell Sewage Pumping Stations Overview

Sewage Pumping Station	Firm Capacity	Description
SPS 1	80 L/s @ 44 m TDH	- Pump configuration: 1 duty, 1 standby - 450 mm inlet sanitary sewer - 300 mm forcemain - Contains bypass piping - No overflow noted in ECA - Discharge to the Russell WWTP - Standby natural gas generator
SPS 2	23.5 L/s @ 12.2 m TDH	- Pump configuration: 1 duty, 1 standby - 200 mm inlet sanitary sewer - 150 mm forcemain - No overflow noted in ECA - Discharge into SPS 1 drainage area - Standby natural gas generator

Sewage Pumping Station	Firm Capacity	Description
SPS 3	110 L/s @ 19 m TDH	- Pump configuration: 1 duty, 1 standby - 450 mm inlet sanitary sewer - 400 mm forcemain - Overflow discharge into existing stormwater management pond - Discharge to the Russell WWTP - Standby natural gas generator

A map of Russell's existing wastewater collection is shown in **Figure 8-1**. The majority of Russell is serviced by the sanitary collection system. North of the Castor River is fully serviced by the collection system, conversely, portions south of the Castor River are serviced by private sewage systems.

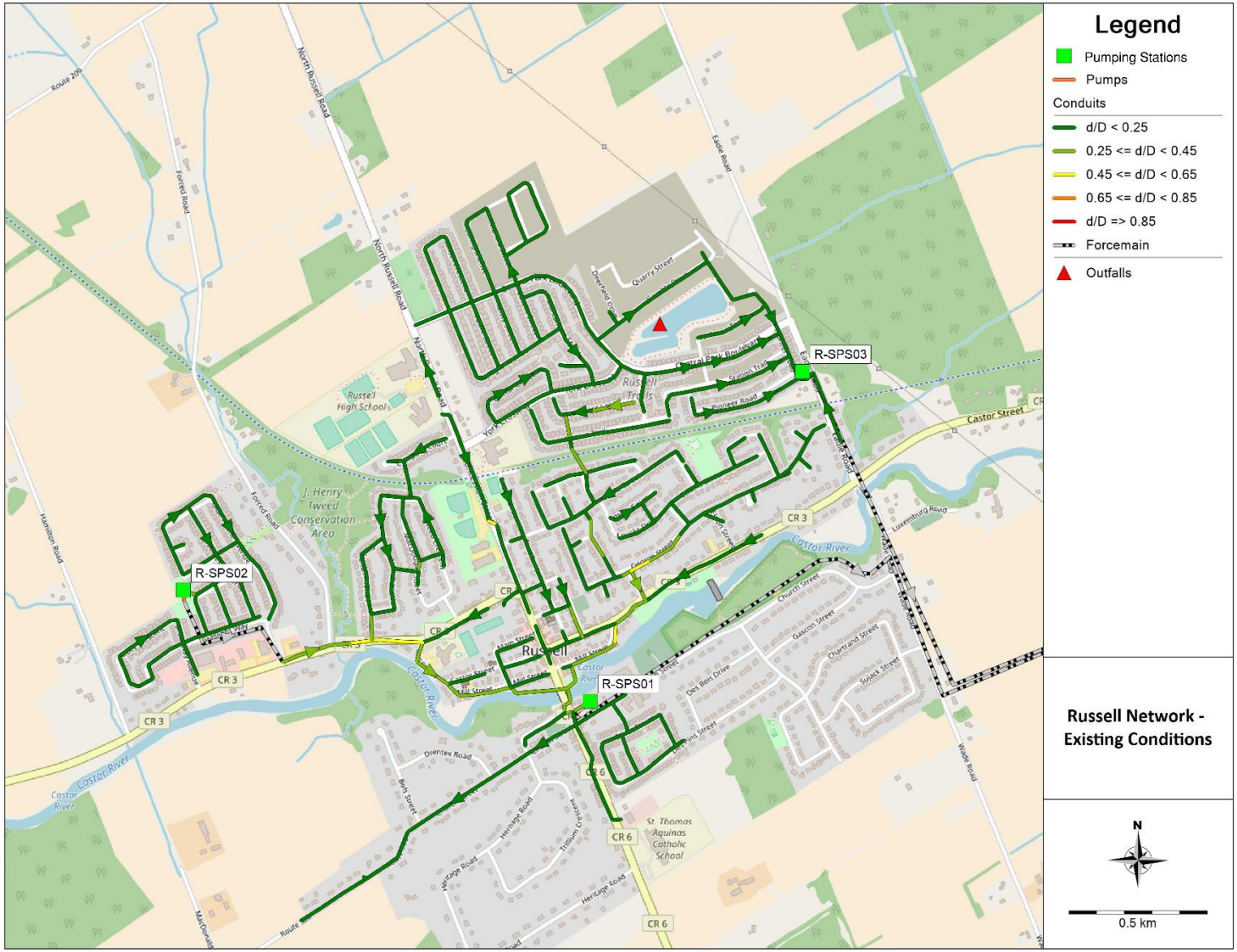


Figure 8-1: Russell Sewage Collection System Existing Conditions

8.1.2 Future Sewage Pumping Station Capacity Requirements

A wastewater collection system model was developed and calibrated using results from a recent sewer flow monitoring study in the Township (2023-2024), flow monitoring report can be found in **Appendix D**. The 2046 average and peak wastewater system flows were input into the model based on the proposed locations of new developments. The model was used to identify potential capacity exceedances for the existing SPSs and any requirements for additional SPSs. The peak flows to the SPSs as determined through the modelling of the 2046 planning scenario are shown in **Table 8-2** in comparison to the existing SPSs' capacities and existing (2024) peak flows.

A new SPS 4 is planned to service developments in the southwest of Russell and discharge to SPS 1. A new SPS 5 is planned to service developments in the northeast of Russell (New OP_2) and discharge to SPS 3.

Based on the modelling results, the existing SPS 1 requires firm capacity upgrades to service projected 2046 peak flows. The Township has an ongoing detailed design project to upgrade SPS 1 which will confirm the future firm capacity requirements. SPS 2 and SPS 3 are sufficiently sized to accommodate the 2046 peak flows.

Table 8-2: Russell Sewage Pumping Stations Capacities vs. Future Peak Flows

Sewage Pumping Station	Existing Station Capacity (L/s)	2024 Peak Flow (L/s)	2046 Peak Flow (L/s)
SPS 1	80	34.3	135(1)
SPS 2	23.5	3.09	5.31
SPS 3	110	4.67	32.93
SPS 4 (future)	-	-	64(2)
SPS 5 (future)	-	-	15(3)

Table Notes:

(1) Required R-SPS-1 future firm capacity to be confirmed during detailed design of R-SPS-1 upgrades.
(2) Source: (McIntosh Perry, 2024).
(3) Required R-SPS-5 firm capacity to be confirmed in future studies.

8.1.3 Future Collection System Capacity

The model was also used to identify potential sewage collection system capacity issues and surcharging. As shown in **Figure 8-2**, no hydraulic capacity issues were noted, as shown by the network ratios of sewage depth to diameter of sewer (d/D) remaining below 0.85. However, the sanitary sewer on Craig Street is approaching capacity and should be considered for upsizing during future road work projects on Craig Street.

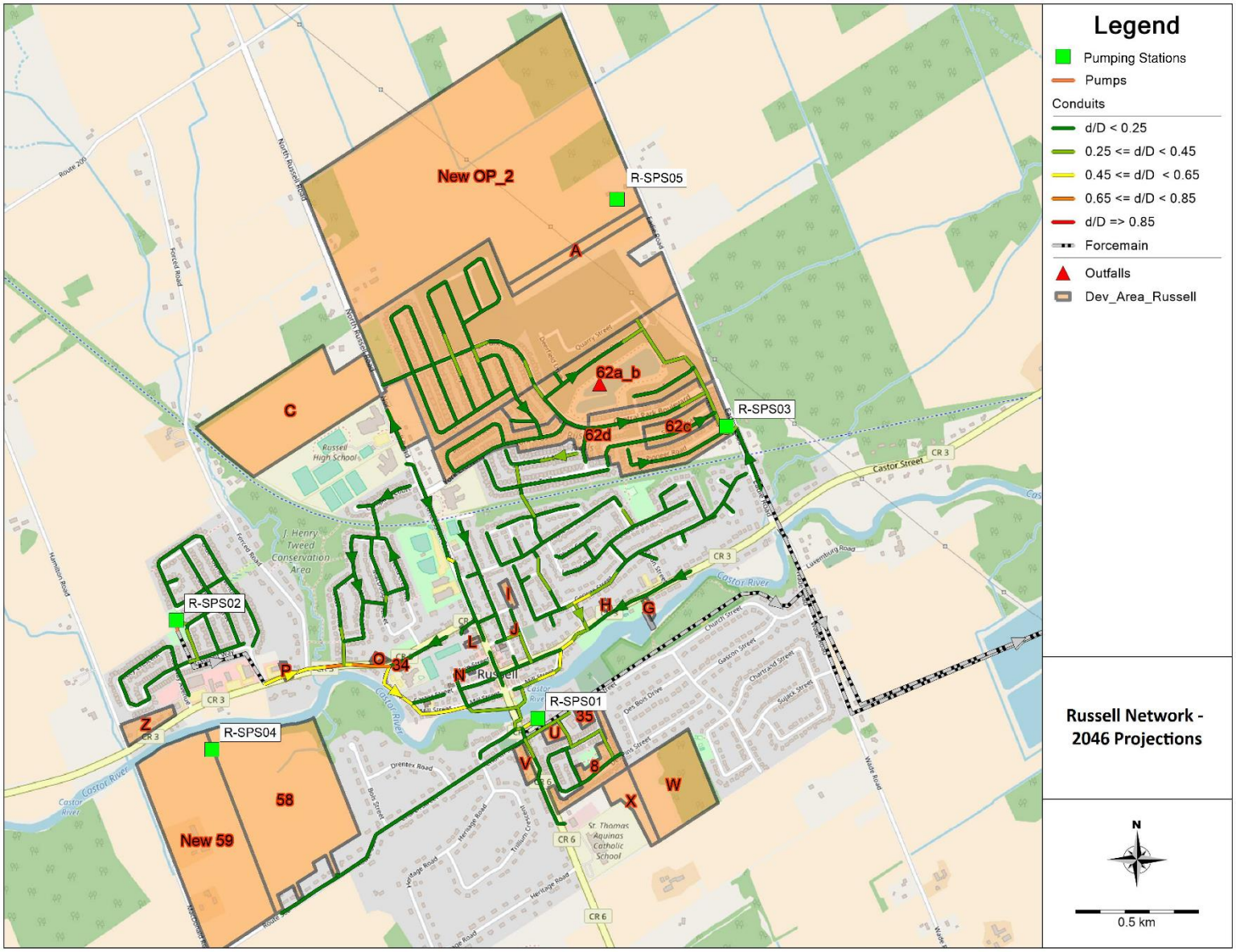


Figure 8-2: Russell Collection System Capacity Modelling Results for 2046 Peak Flows

8.2 Embrun

8.2.1 Existing Collection System Overview

The Embrun sanitary sewer network consists of gravity sewers, forcemains, and nine (9) SPSs. Most of the sanitary sewers located in Embrun are either 200 mm or 250 mm in diameter. A large 400 mm trunk sewer is located on Notre Dame Street between St-Augustin Street and SPS 1. **Figure 8-3** outlines wastewater flow through the Embrun SPSs.

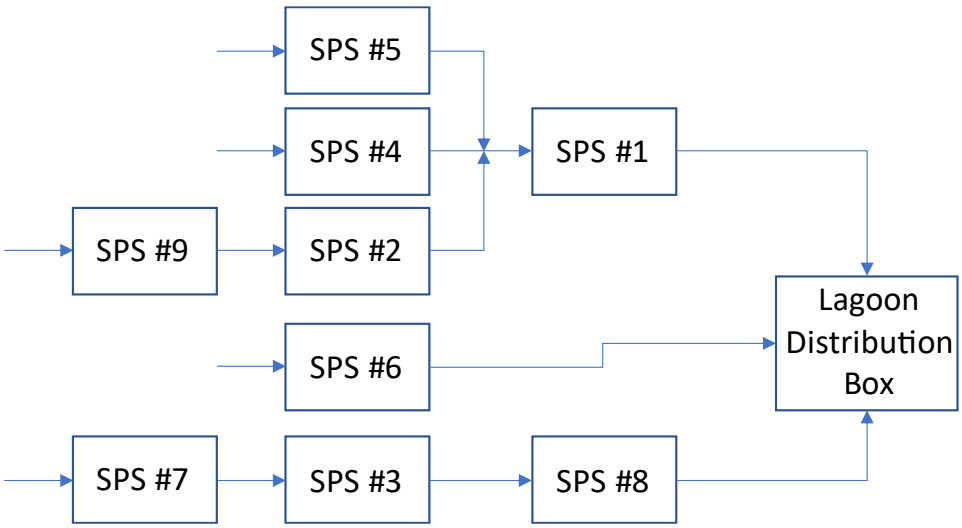


Figure 8-3: Village of Embrun PFD of the Collection System

Table 8-3 outlines the capacity of each SPS in Embrun, along with a short pumping station description.

Table 8-3: Embrun Sewage Pumping Stations Overview

Sewage Pumping Station	Firm Capacity	Description
SPS 1	113 L/s @ 14.7 m TDH	- Pump configuration: 1 duty, 1 standby - Receives sewage from SPS 2,4, and 5 - 375 mm emergency overflow, discharging to the Castor River - Bypass chamber - Twin 300 mm forcemains - Flow meter on discharge piping - Discharge to the Embrun WWTP

Sewage Pumping Station	Firm Capacity	Description
		- Standby natural gas generator
SPS 2	56 L/s @ 13.3 m TDH	- Pump configuration: 1 duty, 1 standby - Receives sewage from SPS 9 - 150 mm emergency overflow, discharging to the Castor River - Bypass chamber - 250 mm forcemain - Discharges to drainage area of SPS 1 via 300 mm gravity sewer - Standby natural gas generator
SPS 3	37 L/s @ 10.5 m TDH	- Pump configuration: 1 duty, 1 standby - Receives sewage from SPS 9 - 300 mm emergency overflow, discharging to the Castor River - Bypass chamber - 250 mm forcemain - Discharges to drainage area of SPS 8 - Standby natural gas generator
SPS 4	10.3 L/s @ 8.6 m TDH	- Pump configuration: 1 duty, 1 standby - 300 mm emergency overflow, discharging to the Castor River - 100 mm forcemain - Discharges to drainage area of SPS 1 via 300 mm gravity sewer - No standby generator, hookup for mobile generator
SPS 5	34 L/s @ 16.5 m TDH	- Pump configuration: 1 duty, 1 standby - No overflow noted in ECA - 200 mm forcemain - Discharges to drainage area of SPS 1 via 300 mm gravity sewer - Standby natural gas generator

Sewage Pumping Station	Firm Capacity	Description
SPS 6	128.2 L/s @ 38.3 m TDH	- Pump configuration: 1 duty, 1 standby - Flow meter on discharge piping - No overflow noted in ECA - Bypass chamber - 300 mm forcemain - Discharges to the Embrun WWTP - Standby natural gas generator
SPS 7	16 L/s @ 31 m TDH	- Pump configuration: 1 duty, 1 standby - 150 mm overflow discharging to the Castor River - Bypass chamber - 100 mm forcemain - Discharges to drainage area of SPS 3 - Standby natural gas generator
SPS 8	132 L/s @ 59.6 m TDH	- Pump configuration: 1 duty, 1 standby - Receives sewage from SPS 3 - Flow meter on discharge piping - No overflow noted in ECA - Bypass chamber - 300 mm forcemain - Discharges to the Embrun WWTP - Standby natural gas generator
SPS 9	10.7 L/s @ 5.9 m TDH	- Pump configuration: 1 duty, 1 standby - No overflow noted in ECA - 100 mm forcemain - Discharges to the drainage area of SPS 2 - No standby generator, hookup for mobile generator

A map of the Village of Embrun's existing wastewater collection is shown in **Figure 8-4**. The majority of Embrun is serviced by the sanitary collection system. North of the Castor River is fully serviced by the collection system, conversely, portions south of the Castor River are serviced by private sewage systems.

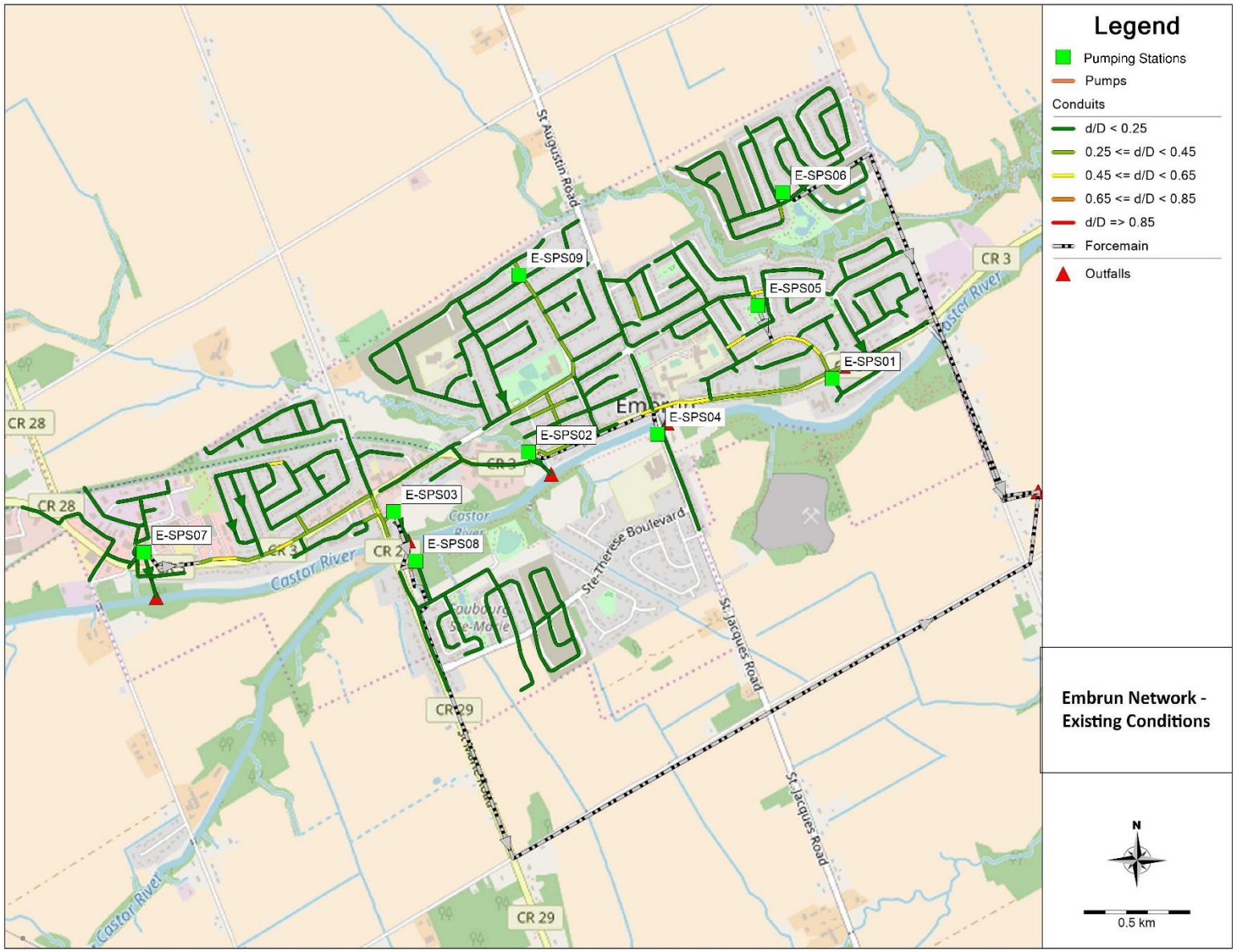


Figure 8-4: Embrun Sewage Collection System Existing Conditions

8.2.2 Future Sewage Pumping Station Capacity Requirements

A wastewater collection system model was developed and calibrated using results from a recent sewer flow monitoring study in the Township (2023-2024), flow monitoring report can be found in **Appendix D**. The 2046 average and peak wastewater system flows were input into the model based on proposed locations of new developments. The model was used to identify potential capacity exceedances for the existing SPSs and any requirements for additional SPSs. The peak flows to the SPSs as determined through the modelling of the 2046 planning scenario are shown in **Table 8-4** in comparison to the existing SPSs' capacities and existing (2024) peak flows.

A new SPS 10 is planned to service developments in the southeast of Embrun and discharge to the Embrun WWTP. A new SPS 11 is planned to service developments in the north of Embrun (New OP_1) and discharge to SPS 6.

Based on the modelling results, the majority of existing Embrun SPSs are sufficiently sized to accommodate the 2046 peak flows. SPS 3 and SPS 7 are projected to require firm capacity increases by 2046 to accommodate planned commercial developments in the northwest of Embrun. However, as noted in the following Section, potential I&I contributions and uncertainty regarding the commercial wastewater generation in this area are factors in the SPS 7 drainage area, which then pumps flow to the SPS 3 drainage area. Minimizing I&I and quantifying proposed commercial wastewater generation in this area will minimize the upgrades required at SPS 7 and, by extension, SPS 3.

Table 8-4: Embrun Sewage Pumping Stations Capacities vs. Future Peak Flows

Sewage Pumping Station	Existing Station Capacity (L/s)	2024 Peak Flow (L/s)	2046 Peak Flow (L/s)
SPS 1	114	39.29	93.53
SPS 2	56	17.67	49.88
SPS 3	37	17.56	87.76(1)
SPS 4	10.3	0.72	3.23
SPS 5	34	6.37	16.26
SPS 6	128.2	7.96	14.31

Sewage Pumping Station	Existing Station Capacity (L/s)	2024 Peak Flow (L/s)	2046 Peak Flow (L/s)
SPS 7	15	8.48	63(1)
SPS 8	132	24.15	118.8
SPS 9	10.7	1.1	1.1
SPS 10 (future)	-	-	6.37(2)
SPS 11 (future)	-	-	15(2)

Table Notes:

(1) Required E-SPS-3 and E-SPS-7 future firm capacities to be confirmed following I&I study and collection system upgrades.
(2) Required E-SPS-10 and E-SPS-11 firm capacities to be confirmed in future studies.

8.2.3 Future Collection System Capacity

The model was also used to identify potential sewage collection system capacity issues and surcharging. As shown in **Figure 8-5** and **Figure 8-6**, hydraulic capacity issues were noted in the planned commercial development collection area for SPS 7, as shown by the network ratios of sewage depth to diameter of sewer (d/D) exceeding 0.85. **Figure 8-7** shows the planned commercial development collection area for SPS 7 after the required system upgrades. It is recommended that an I&I reduction effort be completed in the drainage area for SPS 7 to minimize the extent of sewer upgrades required as well as SPS capacity increases to accommodate the 2046 peak flows.

Table 8-5 identifies the locations requiring upgrades.

Table 8-5: Embrun Collection System Upgrades Required

Project ID	Initial Diameter (m)	Modified Diameter (m)	Inlet Node	Outlet Node	Timing	Cost
WWEC_1 I&I Reduction Study in E-SPS-7 Collection Area	N/A	N/A	Various	E-SPS-7 Wet Well	2026	$0.2M
WWEC_2	0.25	0.3	MHSAE112	408_E	2031	$0.3M
WWEC_3	0.25	0.3	MHSAE113	MHSAE112	2031	$0.4M
WWEC_4	0.25	0.3	MHSAE114	MHSAE113	2031	$0.3M
WWEC_5	0.25	0.3	MHSAE115	MHSAE114	2031	$0.4M
WWEC_6	0.25	0.3	MHSAE127	MHSAE115	2031	$0.3M
WWEC_7	0.25	0.3	MHSAE128	MHSAE127	2031	$0.5M
WWEC_8	0.25	0.3	MHSAE129	MHSAE128	2031	$0.3M
WWEC_9	0.25	0.3	MHSAE106	407a	2031	$0.2M
WWEC_10	0.1	0.15	E-SPS-7 Forcemain		2031	$0.4M

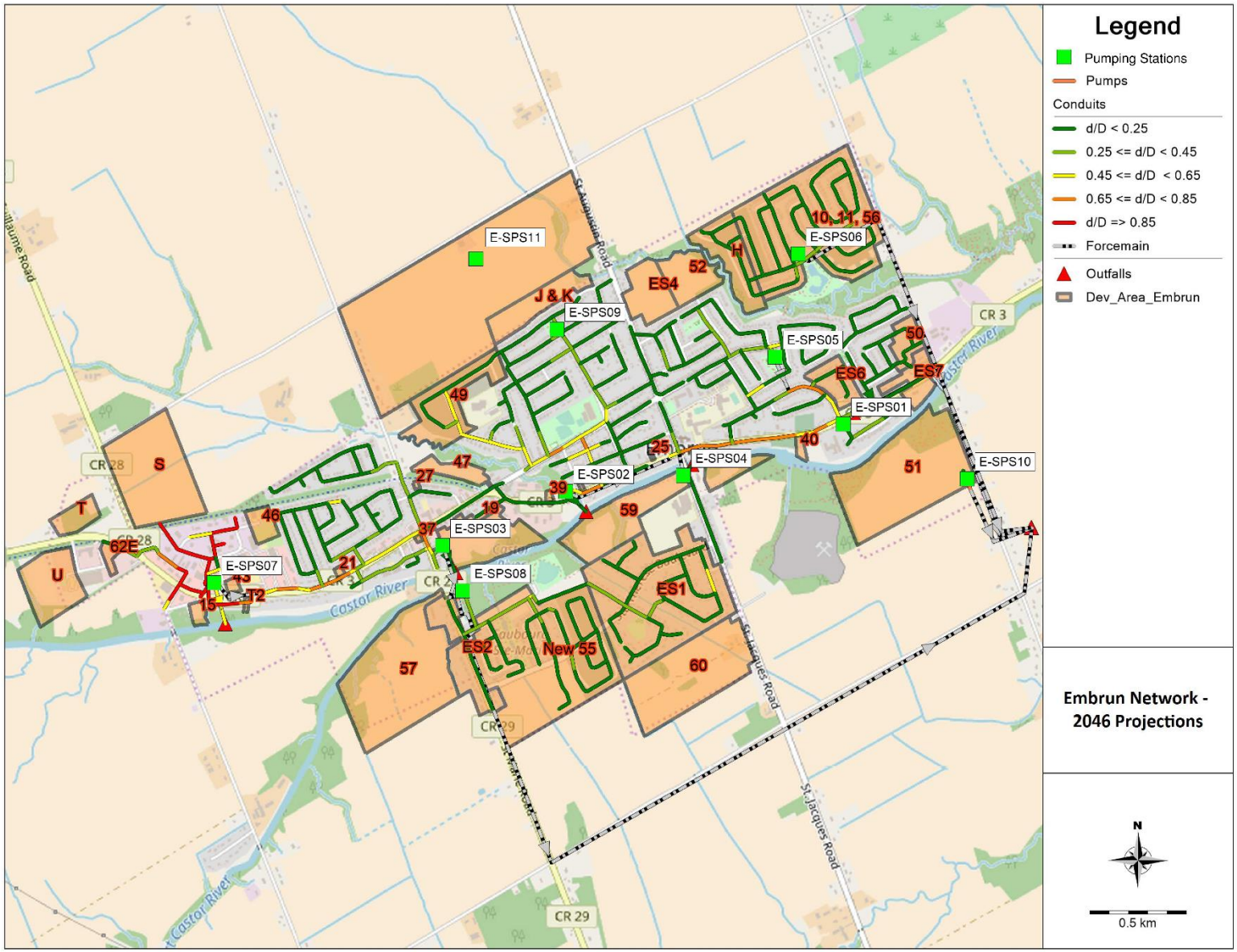


Figure 8-5: Embrun Collection System Capacity Modelling Results for 2046 Peak Flows

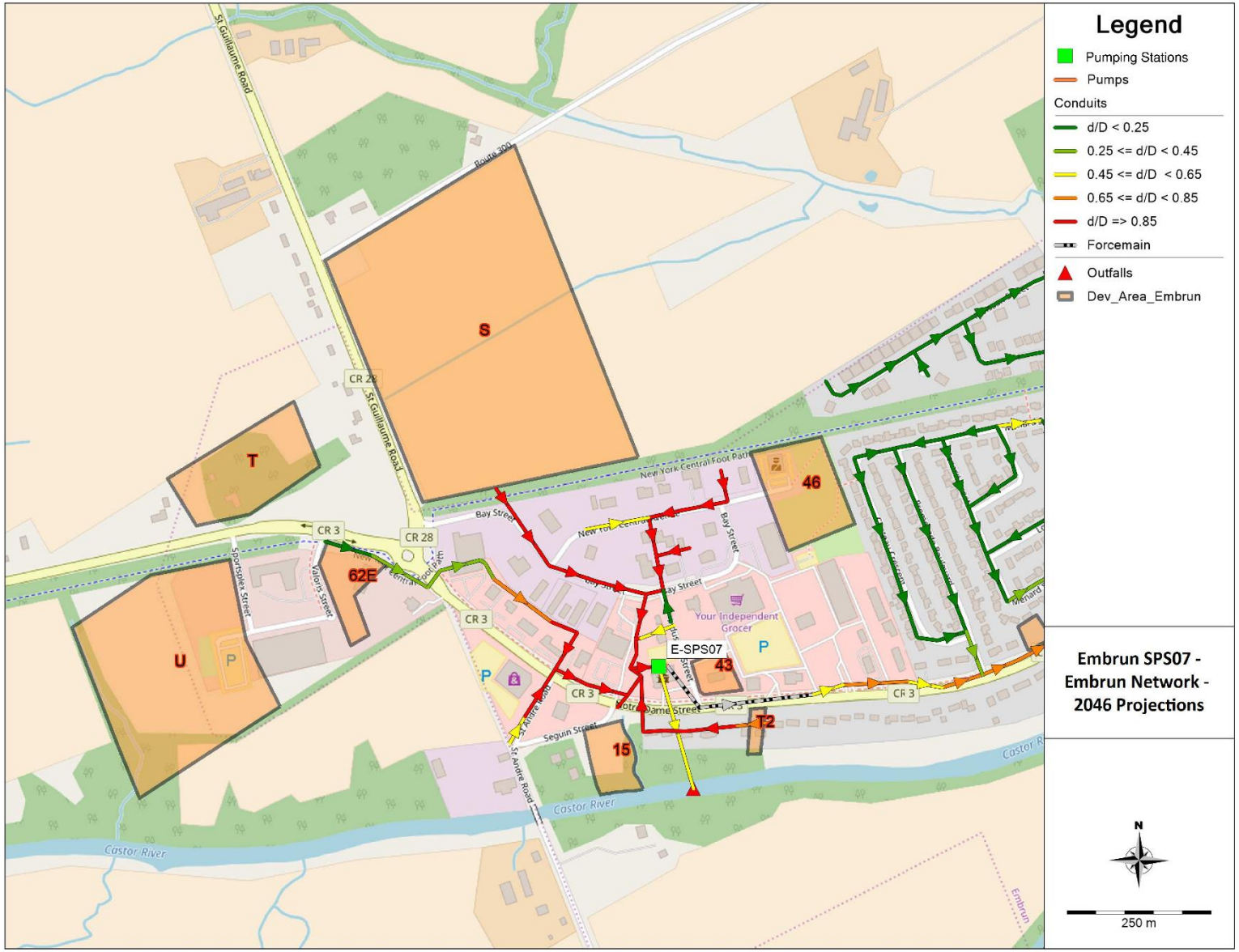


Figure 8-6: Embrun SPS 7 - 2046 Peak Flow

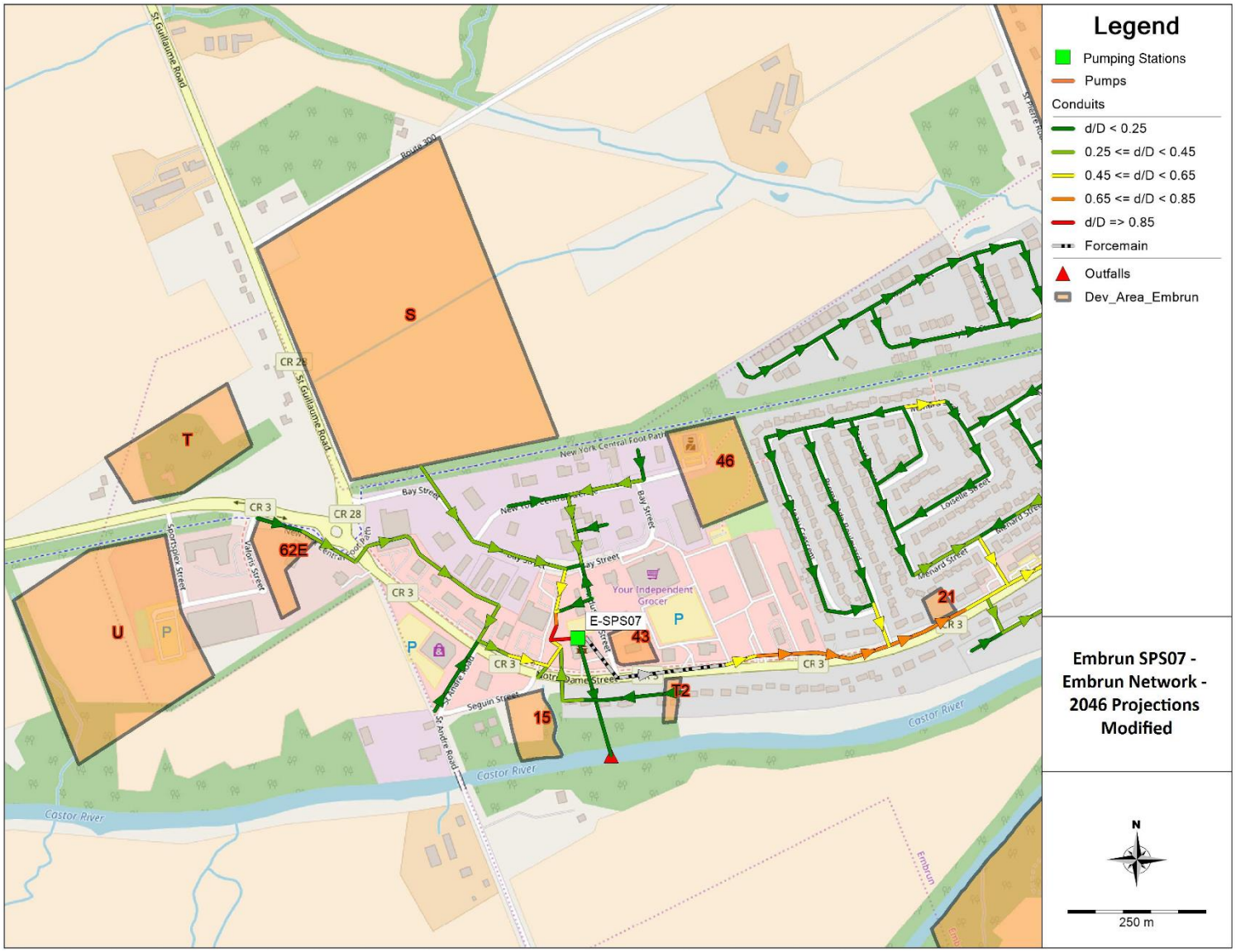


Figure 8-7: Embrun SPS 7 – 2046 Peak Flows After Upgrades

9 Public and Agency Consultation

An Approach 1 Master Plan involves public consultation throughout the study and especially following development of alternative solutions when the project team held an in-person Public Information Centre (PIC) with stakeholders. Successful public consultation programs build and maintain community trust and credibility, improve project decision-making, and identify community issues far enough in advance so that they can be effectively addressed.

This section provides a summary of public, agency, and indigenous consultation activities undertaken at key stages of the Water and Wastewater Master Plan Update. Comments, feedback, and relevant information received throughout the course of the Master Plan study are described in the following sections. Detailed information regarding consultation can be found further in the appendices referenced in the following sections. A Consultation Report compiling all consultation records can be found in **Appendix B3**.

9.1 Notices

Newspaper advertisements, social media posts, and advertisements on the Township's website were published in both English and French to inform stakeholders and the public about the following key study milestones:

- Notice of Study Commencement – Published July 19, 2023
- Revised Notice of Study Commencement – Published August 24, 2023
- Notice of Public Information Centre – Published April 24, 2024

Those who expressed interest in the Master Plan were added to the Project Contact List (**Appendix B1**) and received copies of the Notices. The PIC advertisement provided details on topic, location, time and date and was advertised twice in each of the targeted newspapers, social media platforms, and the Township website.

9.2 Public Information Centre (PIC)

The PIC was held in-person at the Township of Russell Office in the Council Chambers on May 8, 2024, from 6:00 pm to 8:00 pm. Those on the Project Contact List, including review agencies, indigenous communities, and members of the general public were notified by email of the PIC when an email address was available. Hard copies of the Notice of PIC were mailed out to all in the Project Contact List with valid mailing addresses including the residents that had requested to be included in the list.

The PIC was held using a drop-in format where members of the project team from the Township and CIMA+ were available to communicate study information to the general public and seek input for the Master Plan. The PIC was designed to be interactive and present visual boards in both English and French to outline the decision-making process and aim to provide an appropriate level of technical complexity to obtain stakeholders' feedback on the preliminary preferred alternatives.

After being presented at the PIC, the bilingual visual boards were available digitally by request. The project team requested that comment sheets be returned within a 3-week period following the PIC. However, communication remained open throughout the duration of the project for public comments to be received on the presented PIC material. The Township website provided directions on how to submit comments and add contact information to the Project Contact List.

The PIC meeting materials available included:

- Display panels, including information about the project using both text and visuals, presented in both English and French, and
- Comments Sheets, which the attendees were encouraged to fill out as an opportunity to provide comments, make suggestions or ask questions about the project and/or the MCEA Study process.

Contact information was provided for both the Township's and the consultant's project managers if stakeholders wanted to further discuss any content presented. Comments received after the PIC are summarized in the **Section 9.3** of this report. The information presented at the PIC is included in **Appendix B4**.

9.3 Public Consultation Comments

Comments from the public were received through a comment/feedback form collected at the PIC and through email. All correspondence shared with the public, including comments collected throughout the study are included in **Appendix B3**.

The PIC was attended by approximately 30 people and one comment sheet was received. A variety of questions and comments were received prior to (via email), during, and after the PIC. **Table 9-1** summarizes the key comments received during the PIC and the responses provided by the Project Team:

Table 9-1: Summary of PIC Comments and Responses

Question/Comment	Project Team Response
How is 417 Industrial Park being considered / handled?	As discussed in **Section 1.2**, this Master Plan evaluated if the current water supply feedermain had capacity should the 417.4 acres (approximately 170 ha) of future serviced lands identified for the Industrial Park receive water servicing. Industrial Park water and wastewater servicing are dependent on developer interest and funding, therefore, development timing is currently unknown.
What are the costs related to the obtaining the additional water needed from the Rockland WTP? Are more detail available for this option?	As outlined in **Table 6-13**, the opinion of probable cost for the new feedermain was estimated based on recent watermain construction projects and analysis recently completed to determine the costs for water supply from Clarence-Rockland to the Municipality of Casselman. Costs associated with upgrades required for the Rockland WTP are unknown; however, it was determined that the environmental, social, and financial impacts of the new feedermain alone outweighed the costs of the preferred alternative to increase water supply from the City of Ottawa, given that the existing feedermain has capacity to service the Township's 2046 water demands.
If we have water supply to 2031, why do we need to start conversation with Ottawa now?	Renegotiating the water agreement with the City of Ottawa is anticipated to require significant consultation given that the City must also prioritize its own development demands for future water supply.
Is it better to build the larger wastewater facility now?	As shown in **Figure 7-25**, the timeline for Schedule C MCEA, design, approvals, construction, and commissioning a new Combined WWTP is anticipated to require at

Question/Comment	Project Team Response
	least 6 years (2025-2030) during which time short-term upgrades are required at the Embrun WWTP to allow the plant to operate consistently within compliance.

9.4 Agency Consultation Comments

In conformance with the consultation program established for the MCEA Study, the Project Team contacted the appropriate review agencies to provide opportunities for the agencies to contribute during the study.

Opportunities for review agencies to participate in the project were provided through the distribution of the Notice of Study Commencement and Notice of PIC via direct letter mailing and/or through email, if specified. The complete list of all agencies contacted is included in **Appendix B1**. Detailed agency consultation information is included in **Appendix B3**.

This section describes major considerations, key input and feedback sought/received from review agencies during the study. Standards letters and exchange of information was carried out as part of the communication and consultation component, which can be found in **Appendix B3**.

9.4.1 Ministry of Environment, Conservation and Parks

A response to the Revised Notice of Study Commencement was received from the MECP via email. The letter provided a list of Aboriginal communities potentially affected by the project and to be consulted as part of this MCEA including Algonquins of Ontario, Algonquins of Pikwàkanagàn First Nation, Mohawk Council of Akwesasne, and the Huron-Wendat Nation (if there is potential for the project to impact archeological resources). The letter also advised of circumstances under which the Director of Environmental Assessment Branch should be contacted after initial discussions with the communities identified by the MECP.

Moreover, the letter included a standard list of “Areas of Interest” for the proponent to identify and address, as applicable, on a project basis. The following summarizes how applicable areas of interests were addressed and incorporated into the planning and decision-making process for this MCEA study.

- **Planning and Policy:** Provincial, regional, and municipal planning policy documents relevant to the growth and development of the Township, as well as current and planned works projects, are considered as part of this MCEA study.
- **Source Water Protection, Surface Water, and Groundwater:** The alternative solutions evaluate any impacts on water quality and source water protection in the detailed environmental evaluation category. Further evaluation of impacts on source water protection of the preferred alternative must be undertaken during the proposed future Schedule C project to construct a Combined WWTP.
- **Climate Change:** The alternative solutions considered in the study were evaluated against a set of categories that include natural environmental considerations such as 'climate change' criteria. In addition, potential impacts to climate change anticipated from implementation of the preferred recommended alternative solutions, along with available mitigation measures proposed to minimize or avoid such impacts.
- **Air Quality, Dust and Noise:** The alternative solutions considered in the study were evaluated against a set of categories that include socio-cultural considerations, such as aesthetics and operational impacts of new infrastructure. Potential impacts to air quality, dust and noise anticipated from implementation of the preferred servicing alternatives, along with available mitigation measures proposed to minimize or avoid such impacts.
- **Ecosystem Protection and Restoration:** The alternative solutions considered in the study were evaluated against a set of categories that include natural environment considerations. In addition, potential impacts due to the implementation of the preferred servicing alternatives are identified and mitigation measures proposed to minimize or avoid such impacts. Further evaluation of impacts on ecosystems of the preferred alternative must be undertaken during the proposed future Schedule C project to construct a Combined WWTP.
- **Species at Risk:** The alternative solutions evaluate any impacts on ecology, including species at risk, in the detailed environmental evaluation category. Further evaluation of species at risk of the preferred alternative must be undertaken during the proposed future Schedule C project to construct a Combined WWTP.
- **Excess Materials Management and Contaminated Sites:** The alternative solutions evaluate any impacts on conservation of natural resources, including soils, in the detailed environmental evaluation category. Further evaluation of impacts on excess materials management and contaminated sites of the

preferred alternative must be undertaken during the proposed future Schedule C project to construct a Combined WWTP.

- **Servicing, Utilities and Facilities:** As part of this Master Plan, consultation was undertaken with local utilities (See **Appendix B3**). Further evaluation of impacts on existing utilities and consultation for the preferred alternative must be undertaken during the proposed future Schedule C project to construct a Combined WWTP.
- **Mitigation and Monitoring:** Mitigation measures and proposed monitoring are outlined in this report. Further evaluation of impacts and identification of mitigation measures shall be completed for the preferred alternative during the proposed future Schedule C project to construct a Combined WWTP.
- **Consultation:** This Master Plan study completed consultation as outlined in this Section and **Appendix B**.
- **Class EA Process:** This Master Plan study completed the MCEA process.

9.4.2 Ministry of Citizenship and Multiculturalism (MCM)

In response to the Notice of Commencement, MCM sent a letter providing guidance on incorporating cultural heritage considerations into the master planning process, emphasizing the identification and mitigation of potential impacts on cultural heritage resources (**Appendix B3**). The letter outlined requirements for identifying archaeological and built heritage resources, conducting cultural heritage assessments, and engaging with Indigenous communities. It also stressed the importance of community input and technical heritage studies and encouraged ongoing consultation with the Ministry throughout the Master Plan process.

9.4.3 Ministry of Transportation (MTO)

In response to the Notice of Commencement, MTO sent a letter providing a reminder of the control areas under the authority of the Public Transportation and Highway Improvement Act that require MTO permits and approval (**Appendix B3**).

9.4.4 Impact Assessment Agency (IAAC)

In response to the Notice of Commencement, IAAC sent a letter providing guidance on the *Impact Assessment Act* (the IAA) for assessing the impacts of the positive and negative environmental, economic, health and social effects (**Appendix B3**). As well as guidance on the *Physical Activities Regulations* (the Regulations) under the IAA identify the physical activities that constitute the “designated projects” that are subject to the IAA and may require an impact assessment. Indicates the exclusion of apparent physical

activities described in the Regulations. The letter outlined the requirements to contact the Agency if details or design aspects of the Project change to include physical activities described in the Regulations.

9.5 City of Ottawa Consultation

Consultation with the City of Ottawa was carried out throughout the study and has been summarized in **Table 9-2**.

Table 9-2: Summary of Consultation with the City of Ottawa

Date	Description
August 24, 2023	City of Ottawa requested to be added to the Project Contact List to receive future project information.
May 26, 2024	On behalf of the Township, CIMA+ requested a meeting with the City of Ottawa and the Township to discuss the preferred water supply alternative solution to renegotiate the water supply agreement.
June 6, 2024	A meeting between the City of Ottawa and the Township/CIMA+ was held to discuss future water supply needs. An overview of the anticipated future max day water demands and timelines for increasing water supply were discussed as shown in **Appendix B3**. The City of Ottawa noted that a future development east of Leitrim (Tewin) is proposed in their latest Infrastructure Master Plan, which may alleviate water supply bottlenecks through the Greenbelt and allow supply to the Township to increase. However, timing for Tewin servicing is uncertain. The Township will continue engagement efforts with the City for increasing water supply or further review option to supplement City water supply with ground or surface water treated in the Township.

9.6 Indigenous Communities Consultation Comments

To coordinate the engagement of Indigenous Community members, a list of Indigenous Communities was developed, including communities with existing or asserted rights or claims within the study area based on similar projects in the area and the list provided by MECP after the Notice of Commencement was released. The identified Indigenous Communities were notified about the MCEA (Notices emailed and mailed) as well as the

consultation activities (e.g., PIC) proposed as part of the project. Additional project information was provided by the Project Team, when required, and follow up phone calls were made by CIMA+ to confirm receipt of the Project Notices and to solicit feedback on the project. No significant comments or concerns were received from Indigenous Communities throughout the study.

10 Preferred Solutions

10.1 Overview

Results of the comparative evaluation of alternative water servicing and water storage and booster pumping strategies (**Section 6.9** and **6.12**) support the selection of the preferred alternative solutions presented in **Table 10-1**. It is likely that no further MCEA studies are required to implement these preferred solutions (pending Archaeological Screening Process); however, it is recommended that the Township remain engaged in consultation with the City of Ottawa to source the required increase in water supply.

As noted in **Section 9.5**, a meeting between the City of Ottawa and the Township/CIMA+ was held to discuss future water supply needs. An overview of the anticipated future max day water demands and timelines for increasing water supply were discussed as shown in **Appendix B3**. The City of Ottawa noted that a future development east of Leitrim (Tewin) is proposed in their latest IMP, which may alleviate water supply bottlenecks through the Greenbelt and allow supply to the Township to increase. However, timing for Tewin servicing is uncertain. The Township will continue engagement efforts with the City for increasing water supply or further review the option to supplement City water supply with ground or surface water treated in the Township.

Table 10-1: Summary of the Preferred Water Servicing, Storage, and Distribution Strategies

Water Servicing Area	Preferred Water Servicing Strategy
Water Supply	Expansion of water supply capacity from City of Ottawa.
Water Storage and Booster Pumping	Expansion of existing Embrun Reservoir storage. Increase Embrun, Russell, and Marionville Booster Pumping Station capacities.
Water Distribution	Distribution watermain upgrades in Embrun, as required to meet growth.

Results of the comparative evaluation of short-term alternative wastewater servicing strategies for Russell (**Section 7.2.10**) and Embrun (**Section 7.3.10.4**) as well as long-term Township wastewater servicing strategies (**Section 7.4.2**) support the selection of the preferred alternative solutions presented in **Table 10-2**. Short-term upgrades are exempt from further MCEA studies; however, the new Combined WWTP will require a Schedule C MCEA be completed.

Table 10-2: Summary of the Preferred Wastewater System Strategies

Wastewater Servicing Area	Preferred Wastewater System
Short-Term	
Russell	Optimize existing processes to mitigate high effluent concentrations, if unsuccessful, review timeline to Combined WWTP or MBBR.
Embrun	Optimize existing processes to mitigate high effluent concentrations, if unsuccessful, review timeline to Combined WWTP or MBBR.
Long-Term	
Russell	Build a Combined WWTP in Embrun. Upgrade SPS 1 and construct new SPSs, as required to meet growth.
Embrun	Build a Combined WWTP in Embrun. Upgrade SPS 3 and SPS 7, upgrade sewer capacities and construct new SPSs, as required to meet growth.

Proposed timelines for further study, design, approvals, and implementation of the preferred solutions are presented in **Figure 10-1**.

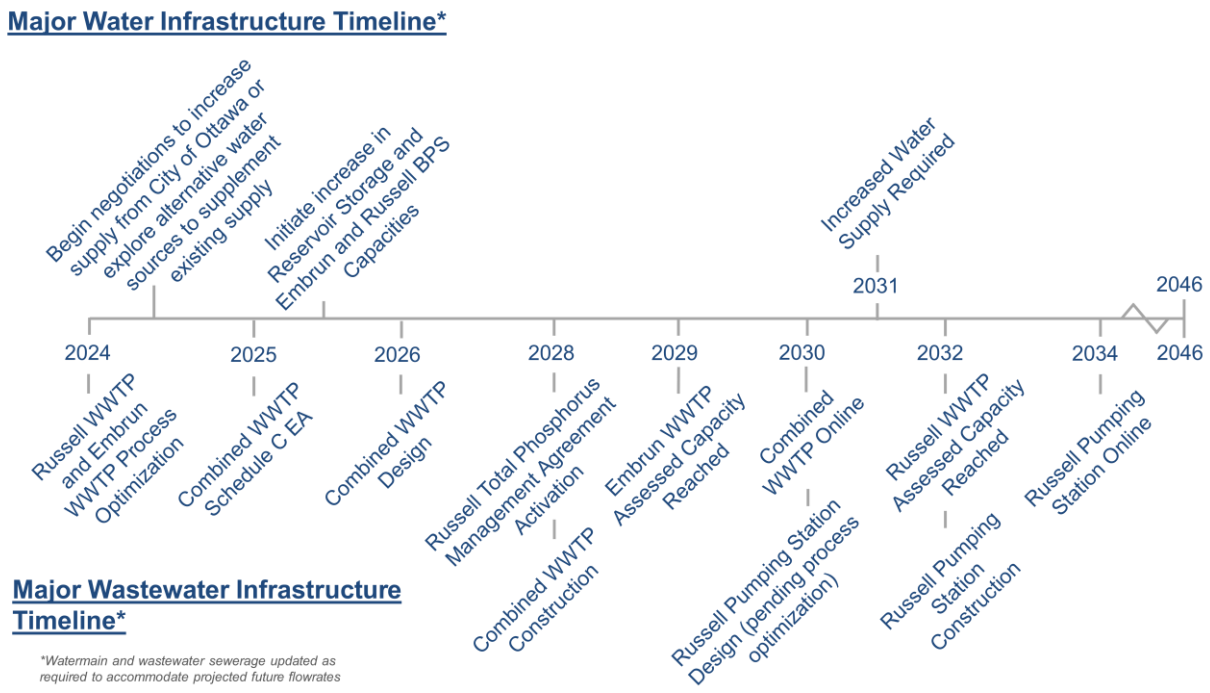


Figure 10-1: Water and Wastewater Preferred Solution Timelines

10.2 Potential Impacts and Mitigating Measures

This section describes the potential impacts anticipated from the construction of the new water and wastewater infrastructure, as well as the recommended mitigating measures to avoid or minimize such impacts.

Implementation of the preferred solutions are not expected to have significant impacts on the existing natural environment; however, as with any construction project, there will be some temporary potential impacts to the public and environment during construction in areas such as noise, dust, vibration and visuals during the construction period. Most of the impacts will be of short-term duration and expected to occur only during construction. Property owners adjacent to the sites where construction activities will take place should be notified in advance and provided with the Township's contact information should they encounter any problems during construction.

Public health and safety are a priority to the Township and as such, all design and construction related to the construction of new infrastructure will adhere to strict safety guidelines and all applicable codes and standards. All construction work will be carried out in accordance with the Occupational Health and Safety Act and other local regulations.

Specific mitigation measures, as described below, are recommended for implementation to reduce anticipated potential impacts.

10.2.1 Natural Environmental Impacts

10.2.1.1 Vegetation, Wildlife Habitat, and Species at Risk

Potential direct and indirect impacts to vegetation and associated habitat within and around the construction zones can be avoided by using standard mitigation measures during construction such as:

- Avoid removal of vegetation during the active season for breeding birds (April 15-August 15),
- Ensure all equipment is cleaned prior to transportation to, and use on, the site to avoid spread or introduction of invasive species seeds onto the site,
- Implement standard practices such as sediment and erosion controls, spill prevention etc., during the construction phase of the project,
- Use of best management practices to deter nesting/use of structures throughout the construction period are recommended to mitigate impacts to wildlife,
- Replanting in adjacent areas is recommended to mitigate impacts to trees, and
- Reseeding post construction with a native seed mix in adjacent areas to improve the diversity of vegetation.

Further consultation with the MECP is required to comply with the *Endangered Species Act* should species at risk (SAR) be identified in the future MCEA Schedule C study for the new Combined WWTP. Construction within timing windows is recommended for any proposed activity at this location to ensure compliance with the Migratory Birds Convention Act.

10.2.1.2 Surface and Groundwater Water Quality

To mitigate impacts on surface and groundwater quality:

- Detailed design of the preferred solutions should consider installation of emergency storage for sewage to mitigate impacts to surface water quality associated with overflow events as a result of peak sewage flows which exceed the capacity of the pumping station.
- A hydrogeological study and a Permit to Take Water may be required in the detailed design stage for the preferred option to quantify and mitigate impacts to groundwater during construction.
- Where a need for dewatering is identified, mitigation and monitoring will be required to ensure protection of water quality and quantity in surface water features to ensure protection of aquatic SAR and fish habitat in the Castor River

(including consideration for how groundwater will be treated and where it will be directed during dewatering).

10.2.1.3 Climate Change

Construction/operation of the proposed alternative solutions will result in additional energy requirements and greenhouse gas emissions due to heating, lighting, pumping/electrical requirements as well as O&M trucks and chemical delivery needs. In addition, the existing landscape of the area would need to be altered to accommodate new infrastructure.

Implementation of the following climate change mitigation measures should be considered to reduce the long-term generation of carbon emissions arising mainly from operation of the new treatment facility and pumping facilities and to enhance carbon storage due to proposed changes in the landscape:

- Construction equipment should be appropriately maintained to minimize exhaust emissions and meet industry standards.
- Use of energy efficiency features within the facilities such as LED lighting features and insulation to reduce the energy needs. Moreover, using energy-efficient pumps and equipment and optimizing system design would also contribute to the mitigation of climate change impacts.
- Chemical delivery schedule could be optimized to reduce the number of delivery trucks to/from the new facility.
- Implementation of an adequate landscape plan, comprising planting of new trees and local non-invasive vegetation species within the new site to contribute to carbon sinks.

10.2.1.4 Management of Excess Materials

In December 2019, MECP released a new regulation under the Environmental Protection Act, titled “On-Site and Excess Soil Management” (O. Reg. 406/19) to support improved management of excess construction soil. This regulation is a key step to support proper management of excess soils, ensuring valuable resources do not go to waste and to provide clear rules on managing and reusing excess soil. New risk-based standards referenced by this regulation help to facilitate local beneficial reuse which in turn will reduce greenhouse gas emissions from soil transportation, while ensuring strong protection of human health and the environment. The new regulation is being phased in over time, with the first phase in effect on January 1, 2021. For more information, please visit https://www.ontario.ca/page/handling-excess-soil.

Implementation of the proposed solutions involving the management of excess soil should be completed in accordance with O. Reg. 406/19 and the MECP's current guidance document titled "Management of Excess Soil – A Guide for Best Management Practices" (2014). All waste generated during construction must be disposed of in accordance with ministry requirements.

10.2.2 Social and Cultural Impacts

10.2.2.1 Archaeology and Heritage Features

Should previously undocumented archaeological resources be discovered during project implementation, it may indicate the presence of a new archaeological site and therefore subject to Section 48(1) of the Ontario Heritage Act. The proponent or person discovering the archaeological resources must cease alteration of the site immediately and engage a licensed consultant archaeologist to carry out an archaeological assessment, in compliance with Section 48(1) of the Ontario Heritage Act.

The Funeral, Burial and Cremation Services Act, 2002, S.O. 2002, c.33 requires that any person discovering human remains must cease all activities immediately and notify the police or coroner. If the coroner does not suspect foul play in the disposition of the remains, in accordance with Ontario Regulation 30/11 the coroner shall notify the Registrar, Ontario Ministry of Public and Business Service Delivery, which administers provisions of that Act related to burial sites. In situations where human remains are associated with archaeological resources, the Ministry of Citizenship and Multiculturalism should also be notified (at archaeology@ontario.ca) to confirm that the archaeological site is not subject to unlicensed alterations which would be a contravention of the Ontario Heritage Act.

10.2.2.2 Dust / Mud

Construction traffic and activities, particularly excavation and earthmoving, can generate dust and mud, which may cause nuisances to nearby residents and other receptors. These nuisances may include reduced air quality, visual impacts, and increased risks of slips and falls. The proposed mitigation measures include the following:

- Dust and Mud Control Measures: Implement dust and mud control measures, such as water spraying, dust suppression techniques, and temporary sediment control measures, to minimize the generation and spread of dust and mud during construction activities. These measures should be applied in accordance with relevant regulations and guidelines.
- Construction Site Maintenance: Regularly clean and maintain the construction site to prevent the accumulation of dust and mud on public roads, sidewalks, and

neighboring properties. This maintenance should include street sweeping, site drainage management, and prompt removal of excess mud or dirt.

- Public Communication: Inform nearby residents and businesses about the construction activities and associated dust and mud control measures through public notifications, signage, or community meetings. This communication will help manage expectations and address any concerns raised by the local community.

10.2.2.3 Traffic

All traffic should continue to occur during normal working hours, 5 days per week. During normal operation, vehicles accessing the site will include Township staff and operator vehicles as well as trucks for chemical and other deliveries, and for disposal of screenings/sludge. During construction, vehicles accessing the site will include vehicles required for normal operation, as the existing plant will continue to operate, as well as vehicles required for construction of the new processes. Additionally, the installation of linear infrastructure, is expected to have temporary impacts on residents, including temporary road closures and noise from truck traffic. The increased construction activities may lead to higher traffic volume and congestion in the project area. Short-term construction impacts will be experienced due to increased truck traffic for the delivery of construction equipment, materials, and potentially the removal of excavated material from the site. This has the potential to disrupt regular traffic patterns and impact the safety and convenience of road users. Proposed mitigation measures include the following:

- Traffic Management: This includes measures such as temporary traffic control signage, road closures, detour routes, and coordination with local authorities and emergency services. Any lane closures will be completed in accordance with best practices to protect safety to the workers and to the general public. All standard best practices for vehicle and pedestrian safety will be employed throughout the construction areas. All construction will adhere to strict safety guidelines.
- Construction Phasing: Plan and schedule construction activities in phases to minimize traffic disruptions and maintain smooth flow of vehicles. Consider implementing off-peak construction hours or alternate routes to further reduce impacts on traffic congestion.
- Public Awareness: Communicate the construction schedule, traffic management plan, and any potential disruptions to the local community through various channels, such as website postings, social media updates, and local news

outlets. Encourage the use of alternative transportation modes where possible and provide clear directions to minimize inconvenience for road users.

10.2.2.4 Noise / Vibration

Construction and operational activities associated with the new infrastructure may generate noise and vibrations, which could potentially affect the surrounding socio-cultural environment, including nearby residences.

Although a low impact from potential disturbances from operations and maintenance activities is anticipated, some temporary noise effects may occur due to construction traffic and equipment. The proposed mitigation measures include the following:

- Noise and Vibration Monitoring: Conduct regular monitoring of noise and vibration levels during construction and operation to maintain compliance with applicable noise regulations and guidelines. This monitoring should be carried out using appropriate equipment and methodologies.
- Noise Control Measures: Implement noise control measures, such as the use of noise barriers, equipment insulation, or mufflers, to minimize the potential impact of construction and operational noise on nearby receptors. These measures should be implemented in accordance with local noise control bylaws and regulations.
- Construction Scheduling: Schedule construction activities during daytime hours and avoid or minimize construction activities during sensitive periods, such as early mornings, evenings, and weekends, to minimize the disturbance caused by noise and vibrations.

10.2.2.5 Visual Impacts

The construction of preferred solutions may have potential impacts on architectural aesthetics, particularly concerning the visual appearance to neighbouring areas. To address this, measures should focus on blending architectural aesthetics well with the surroundings. Mitigation efforts will include incorporating design elements that harmonize with the existing landscape and utilizing buffer zones, screening and landscaping measures such as trees, shrubs, or fencing to minimize visual impact.

10.2.2.6 Public Notification

Notices should be sent out to any that will be affected as well as the surrounding area prior to the start of any construction. Communication of the construction schedule, traffic management plan, and any potential disruptions to the local community will be accomplished through various channels, such as website postings, social media updates, and local news outlets.

11 References

CIMA+. (2022). *Embrun Water Reservoir and Booster Pumping Station Upgrades – Needs Assessment and Conceptual Design - Final Report.* Township of Russell.

Government of Ontario. (1990 (last amended 2024)). *Environmental Assessment Act, R.S.O. 1990, CHAPTER E.18.*

Hemson. (2022). *Growth Management Strategy Update.*

McIntosh Perry. (2024). *Southwest Park Subdivision - Functional Servicign and Pump Station Report.*

Ministry of Environment, Conservation and Parks. (2008). *Design Guidelines for Drinking Water Systems.*

Municipal Engineers Association. (2024). *Municipal Class Environmental Assessment.*

TMIG. (2021). *Growth Management Plan Update.*

Township of Russell. (2018). *Official Plan.*

Township of Russell. (May 16, 2023). *Special Council Meeting Report - Servicing of the 417 Russell Township Industrial Park.*

United Counties of Prescott and Russell. (2022). *Official Plan.*

WSP. (2016). *Township of Russell Water and Wastewater Master Plan Update.*

A

Appendix A: Calculations and Opinions of Probable Cost

Engineering for people

Population

	Year							
Town	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**
Russell	5,546	5,755	5,971	6,578	7,052	7,506	7,922	8,169
Embrun	7,227	7,530	8,034	8,517	9,068	9,583	10,136	10,491
Marionville	361	358	361	361	364	364	376	390
Total	**13,134**	**13,643**	**14,366**	**15,456**	**16,484**	**17,453**	**18,434**	**19,050**

Total Annual Water Flow (m^3)

	Year							
Town	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**
Russell	331,034	326,029	370,212	436,416	460,490	471,469	453,917	562,612
Embrun	610,974	566,781	628,595	689,596	717,395	776,036	798,530	902,852
Marionville	30,975	29,886	31,452	24,491	27,635	35,095	31,745	32,569
Total	**972,983**	**922,696**	**1,030,259**	**1,150,503**	**1,205,520**	**1,282,600**	**1,284,192**	**1,498,033**

Average Daily Flow (m^3/d)

	Year							
Town	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**
Russell	904	893	1,014	1,196	1,280	1,291	1,244	1,541
Embrun	1,669	1,553	1,722	1,889	1,960	2,126	2,188	2,474
Marionville	85	82	86	67	76	96	87	89
Total	**2,658**	**2,528**	**2,822**	**3,152**	**3,316**	**3,513**	**3,519**	**4,104**

Average Daily Flow Per Capita ($m^3/c/d$)

	Year							
Town	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**
Russell	0.163	0.155	0.170	0.182	0.182	0.172	0.157	0.189
Embrun	0.231	0.206	0.214	0.222	0.216	0.222	0.216	0.236
Marionville	0.235	0.229	0.238	0.186	0.209	0.264	0.231	0.228
Average	**0.210**	**0.197**	**0.207**	**0.196**	**0.202**	**0.219**	**0.201**	**0.218**

Maximum Day Flow (m^3/d)

	Year							
Town	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**
Russell	1,686	1,536	1,873	1,889	2,669	2,304	1,922	3,019
Embrun	2,604	2,070	2,640	3,028	3,227	3,105	3,316	4,052
Marionville	558	359	477	364	374	407	531	457
Average	**4,848**	**3,965**	**4,990**	**5,281**	**6,270**	**5,816**	**5,769**	**7,528**

Maximum Peaking Factor

	Year							
Town	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**
Russell	1.87	1.72	1.85	1.58	2.09	1.78	1.55	1.96
Embrun	1.56	1.33	1.53	1.60	1.65	1.46	1.52	1.64
Marionville	6.56	4.38	5.55	5.43	4.92	4.24	6.10	5.13

Water Design Values

Town	**Design Average Day Flow Per Capita ($m^3/c/d$) (2019-2023)**	**Historic Max Day Factor**	**Design Max Day Factor (City of Ottawa DGs)**
Russell	0.176	2.30	**2.5**
Embrun	0.222	1.90	**2.5**
Marionville	0.224	6.40	**4**
Assumed	**0.250**		

Population

	Year							
Town	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**
Russell	4,565	4,796	5,036	5,606	6,092	6,536	6,954	7,205
Embrun	6,720	6,988	7,497	7,981	8,760	9,267	9,814	10,157

Total Annual Wastewater Flow (m^3)

	Year								
Town	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**Comments**
Russell			407,611	416,118	443,327	477,839	473,042	538,120	Data not available for 2016-2017
Embrun			639,107	656,671	694,278	722,668	743,729	809,143	

Average Monthly Flow (m^3/month)

	Year								
Town	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**Comments**
Russell			33,968	34,677	36,944	39,820	39,420	44,843	Data not available for 2016-2017
Embrun			53,259	54,723	57,857	60,222	61,977	67,431	

Average Daily Flow (m^3/d)

	Year							
Town	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**
Russell	933	1183	1,122	1,140	1,210	1,308	1,309	1,470
Embrun	1,568	1,915	1,772	1,799	1,897	1,980	2,038	2,217

Average Daily Flow Per Capita (m^3/c/d)

	Year							
Town	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**
Russell	0.204	0.247	0.223	0.203	0.199	0.200	0.188	0.204
Embrun	0.233	0.274	0.236	0.225	0.217	0.214	0.208	0.218

Design Average Day Flow Per Capita (m^3/c/d)

Town	**Flowrate**
Russell	0.199
Embrun	0.216

Historical Population

	Year					
Town	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**
Russell	5,971	6,578	7,052	7,506	7,922	8,169
Embrun	8,034	8,517	9,068	9,583	10,136	10,491
Marionville	361	361	364	364	376	390
Total	**14,366**	**15,456**	**16,484**	**17,453**	**18,434**	**19,050**

Additional Serviced Units

	Year											
Town	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2026**	**2031**	**2036**	**2041**	**2046**	**Buildout**
Russell	1,997	2,082	2,456	2,610	2,752	2,852	181	423	643	529	444	1,236
Embrun	2,849	3,053	3,432	3,622	3,826	3,963	667	870	614	409	342	1,582
Marionville	133	133	134	134	138	144	32	35	0	0	0	0
Total	**4,979**	**5,268**	**6,022**	**6,366**	**6,716**	**6,959**	**880**	**1,328**	**1,257**	**938**	**786**	**2,818**

Additional Population Serviced

	Year					
Town	**2026**	**2031**	**2036**	**2041**	**2046**	**Buildout**
Russell	453	1,058	1,608	1,323	1,110	3,090
Embrun	1,668	2,175	1,535	1,023	855	3,955
Marionville	80	88	0	0	0	0
Total	**2,200**	**3,320**	**3,143**	**2,345**	**1,965**	**7,045**

Total Population Serviced

	Year					
Town	**2026**	**2031**	**2036**	**2041**	**2046**	**Buildout**
Russell	8,622	9,679	11,287	12,609	13,719	16,809
Embrun	12,159	14,334	15,869	16,891	17,746	21,701
Marionville	470	558	558	558	558	558
Total	**21,250**	**24,570**	**27,713**	**30,058**	**32,023**	**39,068**

Additional Residential Flowrate (m^3/d)

	Year					
Town	**2026**	**2031**	**2036**	**2041**	**2046**	**Buildout**
Russell	113	264	402	331	278	773
Embrun	417	544	384	256	214	989
Marionville	20	22	0	0	0	0
Total	**550**	**830**	**786**	**586**	**491**	**1,761**

Commercial Development Added (ha)

	Year					
Town	**2026**	**2031**	**2036**	**2041**	**2046**	**Buildout**
Russell	1.0	1.0	1.0	1.0	1.0	0
Embrun	7.6	7.6	7.6	7.6	7.6	0
Marionville	0	0	0	0	0	0
Total	**9**	**9**	**9**	**9**	**9**	**0**

Commercial Flowrate Added (m^3/d)

	Year					
Town	**2026**	**2031**	**2036**	**2041**	**2046**	**Buildout**
Russell	10	10	10	10	10	0
Embrun	76	76	76	76	76	0
Marionville	0	0	0	0	0	0
Total	**86**	**86**	**86**	**86**	**86**	**0**

Total Average Day Flowrate (m^3/d)

	Year											
Town	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2026**	**2031**	**2036**	**2041**	**2046**	**Buildout**
Russell	1,014	1,196	1,280	1,291	1,244	1,541	1,434	1,708	2,120	2,460	2,748	3,520
Embrun	1,722	1,889	1,960	2,126	2,188	2,474	2,620	3,239	3,699	4,030	4,320	5,308
Marionville	86	67	76	96	87	89	103	125	125	125	125	125
Total	**2,822**	**3,152**	**3,316**	**3,513**	**3,519**	**4,104**	**4,157**	**5,072**	**5,944**	**6,615**	**7,192**	**8,954**

Total Max Day Demand (m^3/d)

	Year											
Town	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2026**	**2031**	**2036**	**2041**	**2046**	**Buildout**
Russell	1,873	1,889	2,669	2,304	1,922	3,019	3,327	4,013	5,042	5,894	6,613	8,544
Embrun	2,640	3,028	3,227	3,105	3,316	4,052	5,283	6,832	7,981	8,809	9,533	12,005
Marionville	477	364	374	407	531	457	611	699	699	699	699	699
Total	**4,990**	**5,281**	**6,270**	**5,816**	**5,769**	**7,528**	**9,221**	**11,543**	**13,722**	**15,402**	**16,844**	**21,247**

Design Criteria

Town	Person per Unit	Per Capita Average Day Demand (m^3/c/d)	Historic Max Day Demand Factor	Future Max Day Demand Factor - City of Ottawa Design Guideline	Average Day Commercial Flowrate (m^3/ha/d)	Fire Flow Duration (hrs)	Maximum Fire Flow Requirements (L/s)
Russell	2.5	0.250	2.30	2.5	10	2	133
Embrun	2.5	0.250	1.90	2.5	10	2	133
Marionville	2.5	0.250	6.40	4.0	10	2	133

Storage Available (m^3)

Town	Elevated Tank	Resevoir
Russell	2,300	282
Embrun	2,300	1,128
Marionville	1,135	
Total	**5,735**	**1,410**
Total - Cumulative	**7,145**	

Pumping Available

Parameter	Value
Max Supply from Ottawa (m^3/d)	11,860
Max Supply from Ottawa (L/s)	137
Embrun Resevoir - Russell Booster Pumping Station (L/s)	43
Embrun Resevoir - Embrun Booster Pumping Station (L/s)	50
Marionville Booster Pumping Station (L/s)	7.45

Pumping Capacity Check

Overall (m^3/d)

	Year						
Parameter	**2023**	**2026**	**2031**	**2036**	**2041**	**2046**	**Buildout**
Max Supply from Ottawa	11,860	11,860	11,860	11,860	11,860	11,860	11,860
Average Day Demand	4,104	4,157	5,072	5,944	6,615	7,192	8,954
Max Day Demand	7,528	9,221	11,543	13,722	15,402	16,844	21,247

Russell (m^3/d)

	Year						
Parameter	**2023**	**2026**	**2031**	**2036**	**2041**	**2046**	**Buildout**
Embrun Resevoir - Russell Booster Pumping Station	3,715	3,715	3,715	3,715	3,715	3,715	3,715
Average Day Demand	1,541	1,434	1,708	2,120	2,460	2,748	3,520
Max Day Demand	3,019	3,327	4,013	5,042	5,894	6,613	8,544
Fire Flow	11,491	11,491	11,491	11,491	11,491	11,491	11,491
Max Day + Fire Flow	14,510	14,818	15,504	16,534	17,385	18,104	20,035

Embrun (m^3/d)

	Year						
Parameter	**2023**	**2026**	**2031**	**2036**	**2041**	**2046**	**Buildout**
Embrun Resevoir - Russell Booster Pumping Station	4,320	4,320	4,320	4,320	4,320	4,320	4,320
Average Day Demand	2,474	2,620	3,239	3,699	4,030	4,320	5,308
Max Day Demand	4,052	5,283	6,832	7,981	8,809	9,533	12,005
Fire Flow	11,491	11,491	11,491	11,491	11,491	11,491	11,491
Max Day + Fire Flow	15,543	16,775	18,323	19,472	20,300	21,024	23,496

Marionville (m^3/d)

	Year						
Parameter	**2023**	**2026**	**2031**	**2036**	**2041**	**2046**	**Buildout**
Embrun Resevoir - Russell Booster Pumping Station	644	644	644	644	644	644	644
Average Day Demand	89	103	125	125	125	125	125
Max Day Demand	457	611	699	699	699	699	699
Fire Flow	11,491	11,491	11,491	11,491	11,491	11,491	11,491
Max Day + Fire Flow	11,948	12,102	12,190	12,190	12,190	12,190	12,190

Storage Requirements

Overall

Year	Max Day Demand (m^3/d)	Required Fire Flow (m^3/d)	Max Day + Fire Flow (m^3/d)	A - Fire Storage (m^3)	B - Equalization Storage (m^3)	C - Emergency Storage (m^3)	A + B + C = Storage Required (m^3)	Floating Storage (m^3)	Storage Available (m^3)	Upgrade Required?
2023	7,528	11,491	19,019	958	1882	710	3550	5,735	7,145	No
2026	9,221	11,491	20,712	958	2305	816	4079	5,735	7,145	No
2031	11,543	11,491	23,035	958	2886	961	4804	5,735	7,145	No
2036	13,722	11,491	25,213	958	3430	1097	5485	5,735	7,145	No
2041	15,402	11,491	26,893	958	3850	1202	6010	5,735	7,145	No
2046	16,844	11,491	28,335	958	4211	1292	6461	5,735	7,145	No
Buildout	21,247	11,491	32,738	958	5312	1567	7837	5,735	7,145	Yes

Russell and Marionville

Year	Max Day Demand (m^3/d)	Required Fire Flow (m^3/d)	Max Day + Fire Flow (m^3/d)	A - Fire Storage (m^3)	B - Equalization Storage (m^3)	C - Emergency Storage (m^3)	A + B + C = Storage Required (m^3)	Floating Storage (m^3)	Storage Available (m^3)	Upgrade Required?
2023	3,476	11,491	14,967	958	869	457	2283	3,435	3,717	No
2026	3,938	11,491	15,429	958	984	486	2428	3,435	3,717	No
2031	4,711	11,491	16,202	958	1178	534	2669	3,435	3,717	No
2036	5,741	11,491	17,232	958	1435	598	2991	3,435	3,717	No
2041	6,593	11,491	18,084	958	1648	651	3257	3,435	3,717	No
2046	7,311	11,491	18,802	958	1828	696	3482	3,435	3,717	No
Buildout	9,243	11,491	20,734	958	2311	817	4085	3,435	3,717	Yes

Embrun

Year	Max Day Demand (m^3/d)	Required Fire Flow (m^3/d)	Max Day + Fire Flow (m^3/d)	A - Fire Storage (m^3)	B - Equalization Storage (m^3)	C - Emergency Storage (m^3)	A + B + C = Storage Required (m^3)	Floating Storage (m^3)	Storage Available (m^3)	Upgrade Required?
2023	4,052	11,491	15,543	958	1013	493	2463	2,300	3,428	No
2026	5,283	11,491	16,775	958	1321	570	2848	2,300	3,428	No
2031	6,832	11,491	18,323	958	1708	666	3332	2,300	3,428	No
2036	7,981	11,491	19,472	958	1995	738	3691	2,300	3,428	Yes
2041	8,809	11,491	20,300	958	2202	790	3950	2,300	3,428	Yes
2046	9,533	11,491	21,024	958	2383	835	4176	2,300	3,428	Yes
Buildout	12,005	11,491	23,496	958	3001	990	4948	2,300	3,428	Yes

Historical Population

	Year					
Town	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**
Russell	5,036	5,606	6,092	6,536	6,954	7,205
Embrun	7,497	7,981	8,760	9,267	9,814	10,157
Marionville	0	0	0	0	0	0
Total	**12,533**	**13,587**	**14,852**	**15,803**	**16,768**	**17,362**

Additional Serviced Units

	Year											
Town	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2026**	**2031**	**2036**	**2041**	**2046**	**Build Out**
Russell	1,672	1,792	2,134	2,286	2,428	2,529	181	423	633	519	434	1,227
Embrun	2,657	2,862	3,330	3,512	3,714	3,853	667	870	657	452	385	1,625
Marionville	0	0	0	0	0	0	0	0	0	0	0	0
Total	**4,329**	**4,654**	**5,464**	**5,798**	**6,142**	**6,382**	**848**	**1,293**	**1,290**	**971**	**819**	**2,852**

Additional Population Serviced

	Year					
Town	**2026**	**2031**	**2036**	**2041**	**2046**	**Build Out**
Russell	453	1,058	1,583	1,298	1,085	3,068
Embrun	1,668	2,175	1,643	1,130	963	4,063
Marionville	0	0	0	0	0	0

Total Population Serviced

	Year					
Town	**2026**	**2031**	**2036**	**2041**	**2046**	**Build Out**
Russell	7,658	8,715	10,298	11,595	12,680	15,748
Embrun	11,825	14,000	15,642	16,772	17,735	21,797
Marionville	0	0	0	0	0	0

Additional Residential Flowrate (m^3/d)

	Year					
Town	**2026**	**2031**	**2036**	**2041**	**2046**	**Build Out**
Russell	113	264	396	324	271	767
Embrun	417	544	411	283	241	1,016
Marionville	0	0	0	0	0	0

Commercial Development Added (ha)

	Year					
Town	**2026**	**2031**	**2036**	**2041**	**2046**	**Build Out**
Russell	1.0	1.0	1.0	1.0	1.0	0
Embrun	7.6	7.6	7.6	7.6	7.6	0
Marionville	0	0	0	0	0	0

Commercial Flowrate Added (m^3/d)

	Year					
Town	**2026**	**2031**	**2036**	**2041**	**2046**	**Build Out**
Russell	10	10	10	10	10	0
Embrun	76	76	76	76	76	0
Marionville	0	0	0	0	0	0

Residential Land Added (ha)

	Year					
Town	**2026**	**2031**	**2036**	**2041**	**2046**	**Build Out**
Russell	12	22	33	27	20	50
Embrun	25	53	53	35	30	82
Marionville	0	0	0	0	0	0

Infiltration Flowrate (m^3/d)

	Year					
Town	**2026**	**2031**	**2036**	**2041**	**2046**	**Build Out**
Russell	0	0	0	0	0	0
Embrun	0	0	0	0	0	0
Marionville	0	0	0	0	0	0

Average Day Flowrate to Lagoons (m^3/d)

	Year											
Town	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2026**	**2031**	**2036**	**2041**	**2046**	**Build Out**
Russell	1,117	1,140	1,211	1,309	1,296	1,470	1,593	1,867	2,273	2,607	2,888	3,655
Embrun	1,751	1,799	1,897	1,980	2,038	2,217	2,710	3,329	3,815	4,173	4,490	5,505
Marionville	0	0	0	0	0	0	0	0	0	0	0	0

Peak Day Flowrate to Lagoons (m^3/d)

	Year												
Town	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**		**2026**	**2031**	**2036**	**2041**	**2046**	**Build Out**	**Comments**
Russell	2,042	3,346	2,757	2,938	3,440			4,512	5,289	6,437	7,384	8,180	10,352	
Embrun	3,592	5,281	4,227	4,872	4,745			7,559	9,288	10,644	11,644	12,526	15,359	Peak day flow data not available for 2023
Marionville	0	0	0	0	0	0		0	0	0	0	0	0	

Design Criteria

Town	Person per Unit	Per Capita Average Day Flow ($m^3/c/d$)	Commerical Flowrate (m3/ha/d)	Infiltration Allowance (L/ha/s)	Peak Day Flowrate Factor
Russell	2.5	0.250	10	0	2.83
Embrun	2.5	0.250	10	0	2.79
Marionville	0	0	0	0	0

Rated Treatment Capacity (m^3/d)

Town	Capacity
Russell	2,675
Embrun	3,865
Marionville	0

Lagoon Treatment Capacity Check - Russell

	Year							
Parameter (m^3/d)	**2023**	**2026**	**2031**	**2036**	**2041**	**2046**	**Build Out**	**Comment**
Rated Capacity	2,675	2,675	2,675	2,675	2,675	2,675	2,675	
Max Capacity	2,000	2,000	2,000	2,000	2,000	2,000	2,000	Max Capacity until TPM is Established
TPM Required	1,700	1,700	1,700	1,700	1,700	1,700	1,700	Capacity when Township must engage South Nation about the TPM
Average Day flow	1,470	1,593	1,867	2,273	2,607	2,888	3,655	

Lagoon Treatment Capacity Check - Embrun

	Year							
Parameter (m^3/d)	**2023**	**2026**	**2031**	**2036**	**2041**	**2046**	**Build Out**	**Comment**
Rated Capacity	3,865	3,865	3,865	3,865	3,865	3,865	3,865	
Average Day flow	2,217	2,710	3,329	3,815	4,173	4,490	5,505	

Historical Population

	Year					
Town	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**
Russell	5,036	5,606	6,092	6,536	6,954	7,205
Embrun	7,497	7,981	8,760	9,267	9,814	10,157
Marionville	0	0	0	0	0	0
Total	**12,533**	**13,587**	**14,852**	**15,803**	**16,768**	**17,362**

Additional Serviced Units

	Year											
Town	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2026**	**2031**	**2036**	**2041**	**2046**	**Build Out**
Russell	1,672	1,792	2,134	2,286	2,428	2,529	181	423	633	519	434	1,227
Embrun	2,657	2,862	3,330	3,512	3,714	3,853	667	870	657	452	385	1,625
Marionville	0	0	0	0	0	0	0	0	0	0	0	0
Total	**4,329**	**4,654**	**5,464**	**5,798**	**6,142**	**6,382**	**848**	**1,293**	**1,290**	**971**	**819**	**2,852**

Additional Population Serviced

	Year					
Town	**2026**	**2031**	**2036**	**2041**	**2046**	**Build Out**
Russell	453	1,058	1,583	1,298	1,085	3,068
Embrun	1,668	2,175	1,643	1,130	963	4,063
Marionville	0	0	0	0	0	0

Total Population Serviced

	Year					
Town	**2026**	**2031**	**2036**	**2041**	**2046**	**Build Out**
Russell	7,658	8,715	10,298	11,595	12,680	15,748
Embrun	11,825	14,000	15,642	16,772	17,735	21,797
Marionville	0	0	0	0	0	0

Additional Residential Flowrate (m^3/d)

	Year					
Town	**2026**	**2031**	**2036**	**2041**	**2046**	**Build Out**
Russell	113	264	396	324	271	767
Embrun	417	544	411	283	241	1,016
Marionville	0	0	0	0	0	0

Commercial Development Added (ha)

	Year					
Town	**2026**	**2031**	**2036**	**2041**	**2046**	**Build Out**
Russell	1.0	1.0	1.0	1.0	1.0	0
Embrun	7.6	7.6	7.6	7.6	7.6	0
Marionville	0	0	0	0	0	0

Commercial Flowrate Added (m^3/d)

	Year					
Town	**2026**	**2031**	**2036**	**2041**	**2046**	**Build Out**
Russell	28	28	28	28	28	0
Embrun	212	212	212	212	212	0
Marionville	0	0	0	0	0	0

Residential Land Added (ha)

	Year					
Town	**2026**	**2031**	**2036**	**2041**	**2046**	**Build Out**
Russell	12	22	33	27	20	50
Embrun	25	53	53	35	30	82
Marionville	0	0	0	0	0	0

Infiltration Flowrate (m^3/d)

	Year					
Town	**2026**	**2031**	**2036**	**2041**	**2046**	**Build Out**
Russell	26	48	71	58	43	109
Embrun	53	115	115	76	65	176
Marionville	0	0	0	0	0	0

Average Day Flowrate to Lagoons (m^3/d)

	Year											
Town	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2026**	**2031**	**2036**	**2041**	**2046**	**Build Out**
Russell	1,117	1,140	1,211	1,309	1,296	1,470	1,637	1,978	2,473	2,883	3,225	4,101
Embrun	1,751	1,799	1,897	1,980	2,038	2,217	2,899	3,769	4,507	5,078	5,595	6,787
Marionville	0	0	0	0	0	0	0	0	0	0	0	0

Peak Day Flowrate to Lagoons (m^3/d)

	Year												
Town	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**		**2026**	**2031**	**2036**	**2041**	**2046**	**Build Out**	**Comments**
Russell	2,042	3,346	2,757	2,938	3,440			4,637	5,602	7,003	8,165	9,134	11,614	
Embrun	3,592	5,281	4,227	4,872	4,745			8,088	10,516	12,574	14,167	15,610	18,936	Peak day flow data not available for 2023
Marionville	0	0	0	0	0	0		0	0	0	0	0	0	

Design Criteria

Town	Person per Unit	Per Capita Average Day Flow ($m^3/c/d$)	Commerical Flowrate (m3/ha/d)	Infiltration Allowance (L/ha/s)	Peak Day Flowrate Factor
Russell	2.5	0.250	28	0.025	2.83
Embrun	2.5	0.250	28	0.025	2.79
Marionville	0	0	0	0	0

Rated Treatment Capacity (m^3/d)

Town	Capacity
Russell	2,675
Embrun	3,865
Marionville	0

Lagoon Treatment Capacity Check - Russell

	Year							
Parameter (m^3/d)	**2023**	**2026**	**2031**	**2036**	**2041**	**2046**	**Build Out**	**Comment**
Rated Capacity	2,675	2,675	2,675	2,675	2,675	2,675	2,675	
Max Capacity	2,000	2,000	2,000	2,000	2,000	2,000	2,000	Max Capacity until TPM is Established
TPM Required	1,700	1,700	1,700	1,700	1,700	1,700	1,700	Capacity when Township must engage South Nation about the TPM
Average Day flow	1,470	1,637	1,978	2,473	2,883	3,225	4,101	

Lagoon Treatment Capacity Check - Embrun

	Year							
Parameter (m^3/d)	**2023**	**2026**	**2031**	**2036**	**2041**	**2046**	**Build Out**	**Comment**
Rated Capacity	3,865	3,865	3,865	3,865	3,865	3,865	3,865	
Average Day flow	2,217	2,899	3,769	4,507	5,078	5,595	6,787	

B1

Appendix B1: Project Contact List

Engineering for people

C000-22000 – Township of Russell Water and Wastewater Master Plan Stakeholder List

First Name	Last Name	Title	Company/ Organization	Department	Address 1	Address 2	City	Province	Postal Code	Email	Telephone	Fax
Federal Agencies												
		Environmental Assessment and Approvals Branch	Environment Canada									
To Whom It May Concern			Indigenous Services Canada	Environmental Assessment Branch								
Shannon	Doyle	Regional Manager	Indigenous Services Canada	Lands Operations								
Pauline	Haarmeyer	Senior Land Negotiations Officer	Indigenous Services Canada									
Alex	Sirianni	A/Manager, Economic Development	Federal Economic Development Agency for Southern Ontario	Infrastructure Operations								
Dan	McDonell	Manager, EA Section	Environment and Climate Change Canada									
Brent	Valere	Senior Fisheries Protection Program Biologist	Fisheries and Oceans Canada	Fish Habitat Management, Ontario Great Lakes								
Dale	Nicholson	Senior Departmental Advisor	Fisheries and Oceans Canada	Ecosystems Management								
Kitty	Ma	Regional Environmental Health Assessment Coordinator	Health Canada									
John	Moffet	Assistant Deputy Minister	Environment and Climate Change Canada	Environmental Protection Branch								
To Whom It May Concern			Impact Assessment Agency of Canada	Ontario Office								
Duwayne	Williams	Regional Director General	Transport Canada	Programs (Airports, Harbours and Ports, and Environmental Services)								
Provincial Agencies												
			Ministry of the Environment, Conservation and Parks	Environmental Assessment and Permissions Branch								
To Whom It May Concern		Director	Ministry of Environment, Conservation and Parks	Environmental Assessment Branch								
Jeff	Yurek	Minister	Ministry of Environment, Conservation and Parks									
Jon	Orpana	Environmental Planner/Environmental Assessment Coordinator										
Sharon	Rew	Regional Director	Ministry of Natural Resources and Forestry									
Keith	Johnston	Environmental Planning Team Lead (Acting)	Ministry of Natural Resources and Forestry	Policy Division, Strategic and Indigenous Policy Branch								
Catherine	Warren	District Planner Ref #19-AMEL-PEC-EAE-2998	Ministry of Natural Resources and Forestry									
Karla	Barboza	Team Lead (A), Heritage	Ministry of Citizenship and Multiculturalism (MCM)	Heritage Planning Unit, Program and Services Branch								
Joseph	Harvey	Heritage Planner	Ministry of Citizenship and Multiculturalism (MCM)	Heritage Planning Unit (Citizenship and Multiculturalism)								
Amanda	Mizerski	Director (Acting)	Ministry of Tourism, Culture, and Sport	Sport, Recreation, and Recognition Division, Programs Branch								
Jocelyn	Beatty	Rural Planner	Ministry of Agriculture, Food and Rural Affairs	Land Use Policy & Stewardship, Food Safety and Environmental Policy Branch								
Scott	Duff	Director	Ministry of Agriculture, Food and Rural Affairs	Policy Division - Economic Development Policy								
Dominic	LeBlanc	Minister of Intergovernmental Affairs, Infrastructure and Communities	Ministry of Infrastructure & Communities									
Amar	Singh	Executive Vice President - Commercial Advisory & Strategy	Infrastructure Ontario	Commercial Advisory and Strategy								
David	Ho	Executive Vice President - Commercial Advisory & Strategy	Infrastructure Ontario	Procurement and Program Management								
Greg	Rickford	Minister	Ministry of Northern Development, Mines, Natural Resources and Forestry									
Matthew	Kitchen	Senior Divisional Coordinator	Ministry of Energy, Northern Development and Mines									
Steve	Clark	Minister	Ministry of Municipal Affairs and Housing									
Michael	Elms	Manager, Community Planning and Development	Ministry of Municipal Affairs and Housing									
Patti	Mitchell	Regional Coordinator	Ministry of Municipal Affairs and Housing	Eastern Municipal Services Office								
Tarique	Kamal	Senior Project Manager, Corridor Management Planner	Ministry of Transportation	Operations Division, East Operations, Corridor Management East	PO Box 4000							
Jenn	Meleschuk	Manager, Engineering Program Delivery East	Ministry of Transportation	Engineering Program Delivery East								
Ryan	Amato	Director of Stakeholders Relations	Ministry of Transportation									
Jennifer	Abbott	Director (Acting)	Ministry of the Attorney General	Aboriginal Justice Division								

Last Updated: 2024-08-19

C000-22000 – Township of Russell Water and Wastewater Master Plan Stakeholder List

First Name	Last Name	Title	Company/ Organization	Department	Address 1	Address 2	City	Province	Postal Code	Email	Telephone	Fax
Jennifer	Block	Assistant Deputy Minister	Ministry of Economic Development, Job Creation and Trade's	Corporate and Policy Services								
Cara	Gregory	Executive President	Ontario Nature	Board of Directors								
Callum	Elder	Director of Communications Indigenous Affairs	Ministry of Indigenous Affairs	Minister's Office								
Amanda	Pape	Director of Policy, Indigenous Affairs	Ministry of Indigenous Affairs	Minister's Office								
Sylvia	Jones	Solicitor General	Ministry of the Solicitor General									
Creed	Atkinson		Ministry of the Solicitor General									
Sir/Madam		Supervisor, Cornwall MECP Area Office	Ministry of the Environment Conservation and Parks, Cornwall Area Office									
Tracy	Hart	Manager, Ottawa MECP District Office	Ministry of the Environment Conservation and Parks, Ottawa District Office									
Municipalities												
Guylain	Lafleche	Urbaniste / Planner	La Municipalité de La Nation / The Nation Municipality									
Nicholas	Pigeon	Directeur des eaux et égouts (intérimaire) / Director of Water and Wastewater (acting)	La Municipalité de La Nation / The Nation Municipality									
Marc-Olivier	Gratton	Ingénieur civil / Civil Engineer	La Municipalité de La Nation / The Nation Municipality									
Zoe (Qiaoqiao)	Gong	Project Manager, Infrastructure Planning Infrastructure and Water Services	City of Ottawa									
Christopher	Rogers	Program Manager,	City of Ottawa									
Katarina	Cvetkovic	Senior Project Manager, Transportation Planning	City of Ottawa									
Deborah	Lightman	Program Manager, Active Transportation Planning	City of Ottawa									
Christine	Hartig	Program Manager, Operational Support & Regulatory Services	City of Ottawa									
Melanie	Gervais											
Conservation Authority												
Dennis	O'Grady	General Manager	South Nation Conservation Authority									
First Nations												
John	Adams	Water Manager	Mohawk Council of Akwesasne									
Sir/Madam			Algonquins of Ontario (AOO)									
Amanda Two-Axe	Kohoko	Consultation Coordinator	Algonquins of Pikwakanagan First Nation									
Utilities												
J.	Ellis		Bell Canada									
To Whom It May Concern			Hydro One Networks Inc.									
Allison	Sadler		Enbridge									
Councillors												
Lisa	Deacon											
Public												
Rhonda	Bradley											
Bob	Martin											
Janet	Martin											
Tom & Sharon	Guntzel											
Candice	Vetter	Reporter	CJRO News									
Laurie	McCannell											
Jean	Cloutier											
Shawn / Wendy	McNally	General Partner	Arctic Fox Investments									
Charles	Armstrong											
Angela	Miner											
Lynne	McKinnon		Lynn McKinnon Design									
Denise	Cloutier											
Eric	Greer											
Greg	Wheeler											
Gilberte	Faucher											
Melanie	Millette											
Joan	Woodrooffe											
Mark	Vandusen											
Jason	Harps	Vice President of Operations	Bona Building and Management Co. Ltd.	Property and Resource Management								
J. Lee	Sheets	Director	NOVATECH	Land Development & Public Sector Infrastructure								

Last Updated: 2024-08-19

B2

Appendix B2: Project Notices

Engineering for people

Municipal Class Environmental Assessment Study
Master Plan Update for Russell Township Water and Wastewater Systems
Notice of Study Commencement

July 19, 2023 **Public Notice**

The Corporation of the Township of Russell (Township) is initiating a Class Environmental Assessment (Class EA) study to update its 2016 Water and Wastewater Master Plan.

The 2016 Master Plan outlined a 20-year strategy for water and wastewater infrastructure upgrades based on growth forecasted at the time. Since the completion of the 2016 Master Plan, the pace of development within the Township's urban areas has exceeded what was previously projected. In addition, the proposed Official Plan Amendment expands the urban boundaries of the Township. These new areas will require water and wastewater servicing. This Master Plan study will identify new infrastructure or improvements to existing infrastructure to accommodate future development over a 20-year planning period.

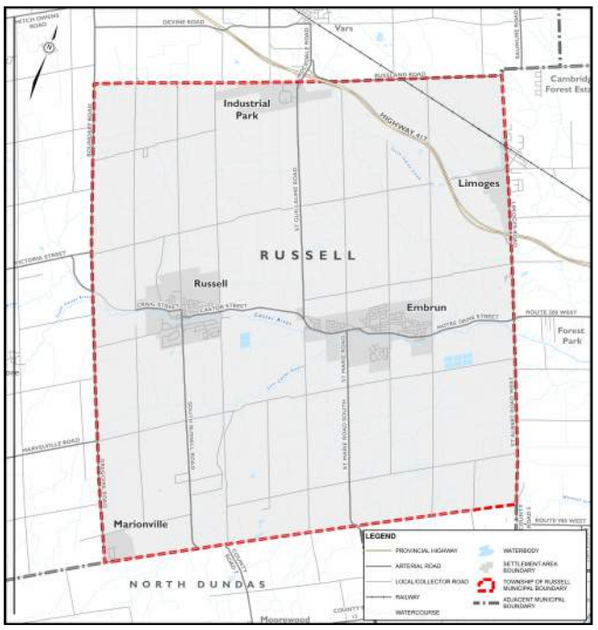


Figure 1: Master Plan Study Area

The Process

The Master Plan will be carried out in accordance with the requirements of the Municipal Class Environmental Assessment document (last amended in March 2023), which is approved under the Ontario Environmental Assessment Act. The Master Plan will complete Phases 1 and 2 of the Class EA Process. Projects recommended by the Master Plan requiring additional studies will require project specific Schedule B and Schedule C Class EA studies outside of the scope of this Master Plan.

The Master Plan process includes public, indigenous and external agency consultation, an evaluation of alternative solutions, an assessment of potential impacts associated with the proposed improvements and development of measures to mitigate identified impacts.

Public Consultation

Public consultation is an integral component of the Class EA process, and we value your input during the planning process. A Public Information Centre (PIC) will be held in association with the Master Plan. Once a date for the PIC has been scheduled, notices will be published in local newspapers, on the Township's website (www.russell.ca) and distributed to all individuals and agencies who express an interest in this project.

If you wish to be placed on the Project Contact List to receive notices and information or to provide comments at any time during the process, you can do so by contacting:

Francois Landry
Municipalité de Russell Township
Project Manager
613.443.1747
francoislandry@russell.ca

Bradley Young, Ph.D., P.Eng.
CIMA+
Project Manager
647.614.2462
bradley.young@cima.ca

Under the Freedom of Information and Protection of Privacy Act and the Environmental Assessment Act, unless otherwise stated in the submission, any personal information such as name, address, telephone number and property location included in a submission will become part of the public record files for this matter and may be released, if requested, to any person.

www.facebook.com/MunRussellTwp www.twitter.com/MunRussellTwp

Étude d'évaluation environnementale municipale de portée générale

Mise à jour du Plan directeur pour les systèmes d'Eau potable et d'Eaux usées de la Municipalité de Russell.

Avis de lancement d'étude

Le 19 juillet 2023 **Avis public**

La Corporation de la Municipalité de Russell entreprend une étude d'évaluation environnementale de portée générale, afin de mettre à jour le Plan directeur des infrastructures en eau potable et en eaux usées de 2016.

Le Plan directeur de 2016 décrivait une stratégie sur 20 ans pour les mises à niveau des infrastructures d'eau potable et d'eaux usées, basée sur les prévisions de croissance de l'époque. Depuis l'achèvement du Plan directeur de 2016, le rythme de développement dans les zones urbaines de la Municipalité a dépassé ce qui avait été prévu précédemment. De plus, l'amendement proposé au Plan officiel étendra les limites urbaines de la Municipalité. Ces nouvelles zones nécessiteront des services d'eau potable et d'égouts.

Le Plan directeur permettra de déterminer les besoins en nouvelles infrastructures et en améliorations à apporter aux infrastructures existantes pour permettre un développement futur sur une période de planification de 20 ans.

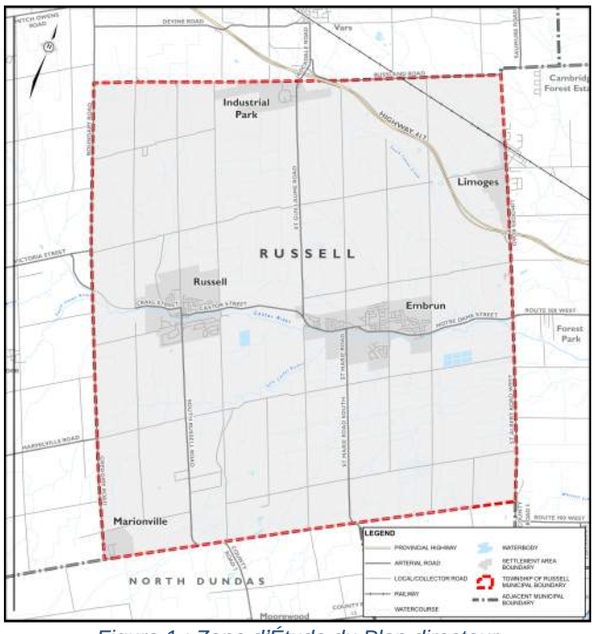


Figure 1 : Zone d'Étude du Plan directeur

Le Processus

Le Plan directeur sera réalisé conformément aux exigences du document d'évaluation environnementale municipale de portée générale (dernière modification en mars 2023), qui est approuvé en vertu de la Loi sur les évaluations environnementales de l'Ontario. Le Plan directeur complètera les phases 1 et 2 du processus d'évaluation environnementale de portée générale. Les projets recommandés par le Plan directeur nécessitant des études supplémentaires devront faire l'objet d'études d'évaluation environnementale spécifique aux projets selon les Annexes B et C. Ces études ne relèvent pas du mandat de ce Plan directeur.

Le processus de mise à jour du Plan directeur comprend des consultations auprès du public, des organismes autochtones et externes, une évaluation de solutions alternatives, une évaluation des impacts potentiels associés aux améliorations proposées et l'élaboration de mesures pour atténuer les impacts identifiés.

Consultation publique

La consultation publique fait partie intégrante du processus d'évaluation environnementale de portée générale, et nous apprécions votre contribution au cours du processus de planification. Un centre d'information publique (CIP) sera organisé en lien avec ce Plan directeur. Dès qu'une date pour le CIP aura été fixée, des avis seront publiés dans les journaux locaux, sur le site Web de la Municipalité (www.russell.ca) et distribués à toutes les personnes et agences qui expriment un intérêt pour ce projet.

Si vous souhaitez être inscrit sur la liste des personnes-ressources du projet pour recevoir des avis et des renseignements ou pour fournir des commentaires à tout moment au cours du processus, vous pouvez le faire en communiquant avec :

Francois Landry
Municipalité de Russell Township
Project Manager
613.443.1747
francoislandry@russell.ca

Bradley Young, Ph.D., P.Eng.
CIMA+
Project Manager
647.614.2462
bradley.young@cima.ca

Aux termes de la Loi sur l'accès à l'information et la protection de la vie privée et de la Loi sur l'évaluation environnementale, sauf indication contraire dans la soumission, toute information personnelle telle que le nom, l'adresse, le numéro de téléphone et l'emplacement de la propriété inclus dans une soumission deviendra partie du dossier public de cette affaire et pourra être divulguée, sur demande, à toute personne.

www.facebook.com/MunRussellTwp www.twitter.com/MunRussellTwp

Municipal Class Environmental Assessment Study
Master Plan Update for Russell Township Water and Wastewater Systems
Revised Notice of Study Commencement

August 24, 2023 **Public Notice**

The Corporation of the Township of Russell (Township) is initiating a Class Environmental Assessment (Class EA) study to update its 2016 Water and Wastewater Master Plan.

The 2016 Master Plan outlined a 20-year strategy for water and wastewater infrastructure upgrades based on growth forecasted at the time. Since the completion of the 2016 Master Plan, the pace of development within the Township's urban areas has exceeded what was previously projected. In addition, the proposed Official Plan Amendment expands the urban boundaries of the Township. These new areas will require water and wastewater servicing. This Master Plan study will identify new infrastructure or improvements to existing infrastructure to accommodate future development over a 20-year planning period.

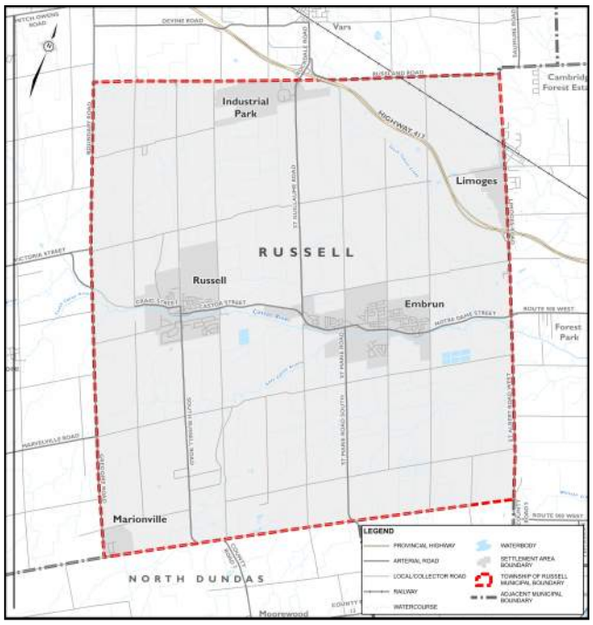


Figure 1: Master Plan Study Area

The Process

The Master Plan will be carried out in accordance with the requirements of the Municipal Class Environmental Assessment document (last amended in March 2023), which is approved under the Ontario Environmental Assessment Act. The Master Plan will complete Phases 1 and 2 of the Class EA Process. Projects recommended by the Master Plan requiring additional studies will require project specific Schedule B and Schedule C Class EA studies outside of the scope of this Master Plan.

The Master Plan process includes public, indigenous and external agency consultation, an evaluation of alternative solutions, an assessment of potential impacts associated with the proposed improvements and development of measures to mitigate identified impacts.

Public Consultation

Public consultation is an integral component of the Class EA process, and we value your input during the planning process. A Public Information Centre (PIC) will be held in association with the Master Plan. Once a date for the PIC has been scheduled, notices will be published in local newspapers, on the Township's website (www.russell.ca) and distributed to all individuals and agencies who express an interest in this project.

If you wish to be placed on the Project Contact List to receive notices and information or to provide comments at any time during the process, you can do so by contacting:

Francois Landry
Municipalité de Russell Township
Project Manager
613.443.1747
francoislandry@russell.ca

Bradley Young, Ph.D., P.Eng.
CIMA+
Project Manager
647.614.2462
bradley.young@cima.ca

Under the Freedom of Information and Protection of Privacy Act and the Environmental Assessment Act, unless otherwise stated in the submission, any personal information such as name, address, telephone number and property location included in a submission will become part of the public record files for this matter and may be released, if requested, to any person.

www.facebook.com/MunRussellTwp www.twitter.com/MunRussellTwp

Étude d'évaluation environnementale municipale de portée générale

Mise à jour du Plan directeur pour les systèmes d'Eau potable et d'Eaux usées de la Municipalité de Russell.

Avis de lancement d'étude révisé

Le 24 août 2023 **Avis public**

La Corporation de la Municipalité de Russell entreprend une étude d'évaluation environnementale de portée générale, afin de mettre à jour le Plan directeur des infrastructures en eau potable et en eaux usées de 2016.

Le Plan directeur de 2016 décrivait une stratégie sur 20 ans pour les mises à niveau des infrastructures d'eau potable et d'eaux usées, basée sur les prévisions de croissance de l'époque. Depuis l'achèvement du Plan directeur de 2016, le rythme de développement dans les zones urbaines de la Municipalité a dépassé ce qui avait été prévu précédemment. De plus, l'amendement proposé au Plan officiel étendra les limites urbaines de la Municipalité. Ces nouvelles zones nécessiteront des services d'eau potable et d'égouts.

Le Plan directeur permettra de déterminer les besoins en nouvelles infrastructures et en améliorations à apporter aux infrastructures existantes pour permettre un développement futur sur une période de planification de 20 ans.

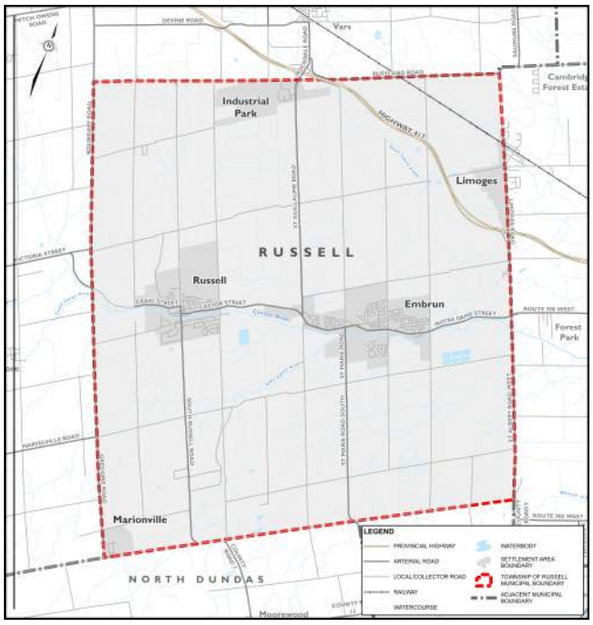


Figure 1 : Zone d'Étude du Plan directeur

Le Processus

Le Plan directeur sera réalisé conformément aux exigences du document d'évaluation environnementale municipale de portée générale (dernière modification en mars 2023), qui est approuvé en vertu de la Loi sur les évaluations environnementales de l'Ontario. Le Plan directeur complètera les phases 1 et 2 du processus d'évaluation environnementale de portée générale. Les projets recommandés par le Plan directeur nécessitant des études supplémentaires devront faire l'objet d'études d'évaluation environnementale spécifique aux projets selon les Annexes B et C. Ces études ne relèvent pas du mandat de ce Plan directeur.

Le processus de mise à jour du Plan directeur comprend des consultations auprès du public, des organismes autochtones et externes, une évaluation de solutions alternatives, une évaluation des impacts potentiels associés aux améliorations proposées et l'élaboration de mesures pour atténuer les impacts identifiés.

Consultation publique

La consultation publique fait partie intégrante du processus d'évaluation environnementale de portée générale, et nous apprécions votre contribution au cours du processus de planification. Un centre d'information publique (CIP) sera organisé en lien avec ce Plan directeur. Dès qu'une date pour le CIP aura été fixée, des avis seront publiés dans les journaux locaux, sur le site Web de la Municipalité (www.russell.ca) et distribués à toutes les personnes et agences qui expriment un intérêt pour ce projet.

Si vous souhaitez être inscrit sur la liste des personnes-ressources du projet pour recevoir des avis et des renseignements ou pour fournir des commentaires à tout moment au cours du processus, vous pouvez le faire en communiquant avec :

Francois Landry
Municipalité de Russell Township
Project Manager
613.443.1747
francoislandry@russell.ca

Bradley Young, Ph.D., P.Eng.
CIMA+
Project Manager
647.614.2462
bradley.young@cima.ca

Aux termes de la Loi sur l'accès à l'information et la protection de la vie privée et de la Loi sur l'évaluation environnementale, sauf indication contraire dans la soumission, toute information personnelle telle que le nom, l'adresse, le numéro de téléphone et l'emplacement de la propriété inclus dans une soumission deviendra partie du dossier public de cette affaire et pourra être divulguée, sur demande, à toute personne.

www.facebook.com/MunRussellTwp www.twitter.com/MunRussellTwp

Municipal Class Environmental Assessment Study
Master Plan Update for Russell Township Water and Wastewater Systems
Notice of Public Information Centre

Public Notice **First Published on April 24, 2024**

Public Information Centre Details:

- **Date/Time:** Wednesday, May 8, 2024, 6:00pm to 8:00pm
- **Location:** Council Chambers, Township of Russell Office
  717 Notre-Dame St, Embrun, ON K0A 1W1

The Corporation of the Township of Russell (Township) has initiated a Water and Wastewater Master Plan Update. This Master Plan study will identify new infrastructure or improvements to existing infrastructure to accommodate future development over a 20-year planning period.

A Public Information Centre (PIC) is being held to introduce the project, preliminary results of activities completed to-date and to solicit public and stakeholder's feedback on the information presented. The PIC will follow a drop-in format. Project team representatives will be available to answer questions and discuss next steps.

The Process

The Master Plan is being carried out in accordance with the requirements of the Municipal Class Environmental Assessment document (last amended in March 2023), which is approved under the Ontario Environmental Assessment Act. The Master Plan will complete Phases 1 and 2 of the Class EA Process. Projects recommended by the Master Plan requiring additional studies will require project specific Schedule B and Schedule C Class EA studies outside of the scope of this Master Plan.

The Master Plan process includes public, indigenous and external agency consultation, an evaluation of alternative solutions, an assessment of potential impacts associated with the proposed improvements and development of measures to mitigate identified impacts.

Public Consultation

Public consultation is an integral component of the Class EA process, and we value your input during the planning process. Notices are published in local newspapers, on the Township's website (www.russell.ca) and distributed to all individuals and agencies who express an interest in this project.

If you wish to be placed on the Project Contact List to receive notices and information or to provide comments at any time during the process, you can do so by contacting:

Francois Landry
Municipalité de Russell Township
Project Manager
613.443.1747
francoislandry@russell.ca

Bradley Young, Ph.D., P.Eng.
CIMA+
Project Manager
647.614.2462
bradley.young@cima.ca

Under the Freedom of Information and Protection of Privacy Act and the Environmental Assessment Act, unless otherwise stated in the submission, any personal information such as name, address, telephone number and property location included in a submission will become part of the public record files for this matter and may be released, if requested, to any person.

www.facebook.com/MunRussellTwp www.twitter.com/MunRussellTwp

Étude d'évaluation environnementale municipale de portée générale

Mise à jour du Plan directeur pour les systèmes d'Eau potable et d'Eaux usées de la Municipalité de Russell.

Avis de centre d'information publique

Avis public **Première publication le 24 avril 2024**

Détails du centre d'information publique:

- **Date/Heure:** Mercredi 8 mai 2024, de 18h00 à 20h00
- **Lieu:** Salle du conseil, bureau de la Municipalité de Russell
  717, rue Notre-Dame, Embrun, ON K0A 1W1

La Municipalité de Russell a entrepris une étude d'évaluation environnementale de portée générale, afin de mettre à jour le plan directeur des infrastructures en eau potable et en eaux usées. L'étude permettra de déterminer les besoins en infrastructure pour permettre un développement futur sur une période de planification de 20 ans.

Un Centre d'information publique (CIP) sera organisé afin de présenter le projet et les résultats préliminaires de l'étude pour solliciter l'apport de commentaires du public et des parties prenantes sur l'information présentée. Le CIP se déroulera sous la forme d'une visite libre. Les représentants de l'équipe de projet seront présents et disponibles pour répondre aux questions et discuter des prochaines étapes.

Le Processus

Le Plan directeur est en cours de réalisation conformément aux exigences du document d'évaluation environnementale municipale de portée générale (édition mars 2023), qui est approuvé en vertu de la Loi sur les évaluations environnementales de l'Ontario. Le Plan directeur complètera les phases 1 et 2 du processus d'évaluation environnementale de portée générale. Les projets recommandés par le Plan directeur nécessitant des études supplémentaires devront faire l'objet d'études d'évaluation environnementale spécifique aux projets selon les Annexes B et C. Ces études ne relèvent pas du mandat de ce Plan directeur.

Le processus de mise à jour du Plan directeur comprend des consultations auprès du public, des organismes autochtones et externes, une évaluation de solutions alternatives, une évaluation des impacts potentiels associés aux améliorations proposées et l'élaboration de mesures pour atténuer les impacts identifiés.

Consultation publique

La consultation publique fait partie intégrante du processus d'évaluation environnementale de portée générale, et nous apprécions votre contribution au cours du processus de planification. Des avis seront publiés dans les journaux locaux, sur le site Web de la Municipalité (www.russell.ca) et distribués à toutes les personnes et agences qui expriment un intérêt pour ce projet.

Si vous souhaitez être inscrit sur la liste des personnes-ressources du projet pour recevoir des avis et des renseignements ou pour fournir des commentaires à tout moment au cours du processus, vous pouvez le faire en communiquant avec :

François Landry
Municipalité de Russell Township
Project Manager
613.443.1747
francoislandry@russell.ca

Bradley Young, Ph.D., P.Eng.
CIMA+
Project Manager
647.614.2462
bradley.young@cima.ca

Aux termes de la Loi sur l'accès à l'information et la protection de la vie privée et de la Loi sur l'évaluation environnementale, sauf indication contraire dans la soumission, toute information personnelle telle que le nom, l'adresse, le numéro de téléphone et l'emplacement de la propriété inclus dans une soumission deviendra partie du dossier public de cette affaire et pourra être divulguée, sur demande, à toute personne.

www.facebook.com/MunRussellTwp www.twitter.com/MunRussellTwp

B3

Appendix B3: Consultation Report

Engineering for people

Township of Russell

Consultation Record

Water and Wastewater Master Plan Update

Monday, August 19, 2024

C431-22 / A001389

CIMA+

600-1400 Blair Towers Place
Ottawa, ON K1J 9B8
T 613 860 2462 **F** 613 860 1870
cima.ca

Contact

Bradley Young, Ph.D., P.Eng.
Bradley.Young@cima.ca
T 647 614 2462

Engineering for **people**

Table of Contents

Appendix

1 Introduction

An Approach 1 Master Plan involves public consultation throughout the study and especially following development of alternative solutions when the project team anticipates that an in-person Public Information Centre (PIC) will be beneficial to stakeholders. Successful public consultation programs build and maintain community trust and credibility, improve project decision-making, and identify community issues far enough in advance so that they can be effectively addressed.

This Consultation Record provides a detailed summary of public, agency, and indigenous consultation activities undertaken throughout the Water and Wastewater Master Plan Update. Comments, feedback, and relevant information received throughout the course of the Master Plan study are described in the following sections. Email correspondence are also provided in Appendix A.

2 Consultation with Mohawk Council of Akwesasne

Lonny Bomberry, Director, Land and Resource Department:

- July 19, 2023 - Sent Notice of Commencement.
- September 11, 2023 – Telephone call from Amy Seymour (CIMA+) to Reception – Asked to received contact information for the Water Manager (John Adams) to contact and ask if he had received the Notice of Study Commencement.

John Adams, Water Manager:

- September 11, 2023 – Telephone call from Amy Seymour (CIMA+) to John Adams – John provided email for future communication. Updated contact to include John Adams.
- September 11, 2023 - Sent revised Notice of Commencement.
- April 29, 2024 – Sent Notice of Public Information Centre.

General Contact:

- September 11, 2023 - Sent revised Notice of Commencement.
- September 11, 2023 – Amy Seymour (CIMA+) – Inquires if there were any questions or concerns regarding the Master Plan. The project team cc'd for any future question and comments.
- April 29, 2024 – Sent Notice of Public Information Centre.

3 Consultation with Algonquins of Ontario

Consultation Department:

- July 19, 2023 – Sent Notice of Commencement.
- August 24, 2023 - Sent revised Notice of Commencement.
- September 11, 2023 – Telephone call by Amy Seymour (CIMA+) to Consultation Department - Left a voicemail asking if the Revised Notice of Study Commencement was received and to contact the project team members on the Notice with any questions or concerns.
- April 29, 2024 – Sent Notice of Public Information Centre

4 Consultation with Algonquins of Pikwakanagan First Nation

Economics Manager:

- July 19, 2023 – Sent Notice of Commencement.
- August 24, 2023 - Sent revised Notice of Commencement.
- September 11, 2023 – Telephone call by Amy to Economics Manager - Message left asking if the Revised Notice of Study Commencement was received and to contact the project team members on the Notice with any questions or concerns.
- April 29, 2024 – Sent Notice of Public Information Centre.

5 Consultation with Government Agencies

Michael Harrison, Ontario Ministry of the Solicitor General:

- August 4, 2023 - Sent Notice of Commencement.
- August 4, 2023 – Michael Harrison - Informing of his departure and instructing to contact Creed Atkinson (Michael Harrison removed from contact list and replaced with Creed Atkinson).

Jon Orpana, MECP:

- August 4, 2023 - Sent Notice of Commencement.
- August 8, 2023 – Jon Orpana – Asked for the completion of Project Information Form attached to email.
- August 9, 2023 – Amy Seymour (CIMA+) – Replies with completed form and Notices of Commencement.
- August 16, 2023 – Jon Orpana - Provides preliminary comments from the MECP's. Additional resources provided for the Master Plan update as well a list of indigenous communities to consults (Letter and documents saved to MECP correspondence folder).
- August 16, 2023 – Indigenous contacts added to contact list.
- August 24, 2023 - Sent revised Notice of Commencement.
- August 24, 2023 – Jon Orpana - To update the file for the project (see complete email communication in Appendix A).
- April 29, 2024 – Sent Notice of Public Information Centre.

Deidre Taylor, Ministry of Transportation:

- August 2, 2023 - Sent Notice of Commencement.
- August 8, 2023 -Deidre Taylor - Ask to be removed from stakeholder list.
- August 9, 2023 – Deidre Taylor - Follow-up to the previous email to change contact to Tarique Kamal, Sr. Project Manager.
- August 10, 2023 – Deidre Taylor removed from the stakeholder contact list.

Tarique Kamal, Ministry of Transportation:

- August 4, 2023 – Sent Notice of Commencement.
- August 15, 2023 – Tarique Kamal - Provided comment from MTO for the Notice of Commencement.
- August 24, 2023, - Sent revised Notice of Commencement.
- April 29, 2024 – Notice of Public Information Centre.

- April 29, 2024 – Tarique Kamal – Provided information on PTHIA and the Highway Corridor Management to be considered for future MP planning (see full email communication in Appendix A).

Kim Browning, Ontario Region Impact Assessment Agency of Canada:

- August 4, 2023 - Sent Notice of Commencement.
- August 18, 2023 – Kim Browning - Response to Notice of Commencement. Letter from IAAC/AEIC in Appendix A.

Joseph Harvey & Karla Barboza, Ministry of Citizenship and Multiculturalism (MCM):

- August 2, 2023 - Sent Notice of Commencement.
- August 23, 2023 – Joseph Harvey - Provided information of the change from the Ministry of Tourism, Culture and Sport (MTCS) to the Ministry of Citizenship and Multiculturalism (MCM). Letter saved to Agency correspondence folder.
- August 24, 2023 – Sent revised Notice of Commencement.
- August 24, 2023 – Karla Barboza – Provided preliminary comments on revised Notice of Commencement. (see full email communication in Appendix A)

Zoe (Qiaoqiao) Gong, City of Ottawa:

- August 24, 2023 - Zoe Gong - Requested to be add to the contact list.
- August 24, 2023 - Zoe Gong is added to the contact list.
- August 24, 2023 - Sent revised Notice of Commencement.
- May 26, 2024 - Amy Seymour (CIMA+) – Communication to discuss future water supply needs.
- June 3, 2024 – Zoe Gong – Response and provide contact for Chris Rogers (cc'd) as the city contact for the purposes of setting up a meeting. (see full email communication in Appendix A)

Christopher Rogers, City of Ottawa:

- June 3, 2024 – Christpher Rogers added to contact list.
- June 3,2024 – Amy Seymour (CIMA+) - Communication with Christopher for future water supply requirements.
- June 4, 2024 – Chris Rogers – Response to inquiry and indicate the process of identifying staff for future discussion and request a meeting on June 6th in the morning. (see full email communication in Appendix A)
- Meeting held on June 6, 2024, between the Township, City, and CIMA+. Meeting minutes sent to attendees (see meeting minutes in Appendix B).

Patricia Vena, Ministry of Tourism, Culture, and Sport:

- April 24, 2024 - Sent Notice of Public Information Centre.
- Email dated on April 24, 2024: “I have departed the Ontario Public Service as of January 22nd” (Updated contact to Zalina Dusoruth, Executive Coordinator).

Zalina Dusoruth, Ministry of Tourism, Culture, and Sport:

- April 25, 2024 - Sent Notice of Public Information Centre.
- April 25, 2024 – Updated contact to Zalina Dusoruth based on autoreply email by Patricia Vena.
- April 25, 2024 – Zalina Dusoruth – Provided new Acting Director for future contact, (Updated contact to Amanda Mizerski, Acting Director).

Amanda Mizerski, Ministry of Tourism, Culture, and Sport:

- April 25, 2024 - Notice of Public Information Centre send by mail and email.
- April 25, 2024 – Updated contact to Amanda Mizerski based on email by Zalina Dusoruth.

Clair Lemay, South Nation Conservation:

- August 24, 2023 – Sent revised Notice of Commencement.
- October 2, 2023 – Clair Lemay - Confirmation on receipt of the revised Notice of Commencement and confirmation of future interest for updates regarding the project.
- April 25, 2024 - Sent Notice of Public Information Centre.

Tia Hopkinson, Executive Assistant, Infrastructure Ontario:

- May 21, 2024 – Tia Hopkinson – Request the removal of David Ho from contact list as project falls outside of area of responsibility.
- May 24, 2024 – Francois Landry (Township) – Acknowledge the comment made confirmed the removal of David Ho (contact updated from David Ho to Tia Hopkinson).

6 Consultation with Utilities Companies

Susan (Hongxia) Sun, Hydro One:

- August 24, 2023 – Sent revised Notice of Commencement.
- August 30, 2023 – Susan Sun – Provides Hydro One's Response to Notice of Commencement (Letter saved to Utility correspondence folder).
- August 31, 2023 – Francois Landry (Township) – Response to comments and confirm that they project's EA will not include physical works to any Hydro One infrastructure.

Kyle Witney, Enbridge:

- August 2, 2023 - Sent Notice of Commencement.
- August 8, 2023 – Kyle Witney – Provides response to Notice of Commencement with third party requirements for work and inquires if anything is needed for Enbridge.
- August 10, 2023 – Francois Landry (Township) – Response to Enbridge work inquiry; no work needed at this time.

7 Consultation with Township Councillor

Lisa Deacon, Councillor:

- July 23, 2023 – Added to Project Contact List following email correspondence from Rhonda Bradley on which Lisa Deacon was cc'd.
- August 4, 2023 - Sent Notice of Commencement.
- August 24, 2023 – Sent revised Notice of Commencement.
- April 25, 2024 - Sent Notice of Public Information Centre.
- May 27, 2024 – Lisa Deacon – Inquiries following PIC, about local vs regional costs, water storage and blackout period.
- June 6, 2024 – Bradley Young (CIMA+) – Reply to previously asked questions by Councillor. (see full email communication in Appendix A)

8 Consultation with the Public

Candice Vetter, Reporter, Carlsbad Springs Radio:

- July 31, 2023 – Candice Vetter- Email communication seeking information about EA and request for interview for radio show.
- July 31, 2023 – Francois Landry (Township) – Respond to interview request.
- July 31, 2023 – Candice Vetter – Email with question about MCEA and WSP report.
- August 9, 2023 – Candice Vetter - Requested a follow up to previous questions and interview request.
- August 21, 2023 - Meeting with Jonathan Bourgon from the Township to explain Master Plan project and previous Industrial Park EA.
- August 24, 2023 - Sent revised Notice of Commencement (Dated August 24, 2023)
- August 24, 2023 – Candice Vetter - Request information about regular updates of notices.
- August 25, 2023 – Amy Seymour (CIMA+) – Provided explanation on publication and stakeholder contact list (Francois and Bradley's contact information provided)(see full email communication in Appendix A).
- April 25, 2024 - Sent Notice of Public Information Centre.
- June 9, 2024 – Voicemail by Candice Vetter to CIMA+ General Phone Number requesting an interview with project personnel present at the PIC.
- June 11, 2024 – Bradley Young (CIMA+) had interview with Candice Vetter regarding the Water and Wastewater Master Plan.

J. Lee Sheets, Novatech:

- May 29, 2024 – Lee Sheets – Emailed comments following the PIC regarding future development on Eadie Road and future pumping station.
- June 20, 2024 - Bradley Young (CIMA+) – Response provided to Lee Sheets (see full email communication in Appendix A).

Wendy and Shawn McNally, Arctic Fox Investments:

- March 4, 2024 – Wendy McNally – Requested to be added to Project Contact List
- April 25, 2024 - Sent Notice of Public Information Centre.
- May 29, 2024 – Shawn McNally – Question following the PIC regarding the Russell Sewage Pumping Stations.

- June 6, 2024 – Bradley Young (CIMA+) – Provided response to Shawn McNally.
- June 14, 2024 – Shawn McNally – Inquired about further clarification following response to questions.
- June 14, 2024 – Jonathan Bourgon (Township) – Proposed an in-person meeting with Shawn McNally for further discussion on drainage area.
- July 12, 2024 – Shawn McNally – Accept proposed meetings with the Township proposed to be on July 22nd, 2024, request the inclusion of Lee Sheets in the meeting as well.
- July 15, 2024 – Jonathan Bourgon (Township) – To provided availability for the meeting as well as inviting all proper staff involved.(see full email communication in Appendix A)

Rhonda Bradley, General Public:

- July 23, 2023 – Rhonda Bradley – Requested to be added to the contact list.
- July 23, 2023 – Rhonda Bradley is added to the contact list.
- August 4, 2023 - Sent Notice of Commencement.
- August 24, 2023 – Sent Revised Notice of Commencement.
- August 25, 2023 – Rhonda Bradley – Inquiry about when updated study area figure to be published on the Township's website.
- August 28, 2023 – Amy Seymour (CIMA+) – Provided the timeline for publication.
- August 28, 2023 – Rhonda Bradley – Inquires about 417 Industrial Park inclusion in the new MP and elaboration about the MCEA.
- December 8, 2023 – Rhonda Bradley – Inquires about update on study progress.
- December 11, 2023 – Amy Seymour (CIMA+) – Inform of the continuation of the project and the PIC that will be held early in 2024.
- December 11, 2023 – Rhonda Bradley – Inquires about communication and consultation plan and PIC dates establishment.
- December 21, 2023 – Amy Seymour (CIMA+) – Elaborated on the Municipal Class EA communication process in various phases and the timeframe for public commentary following MP publication.
- December 21, 2023 – Rhonda Bradley – Presented a request for the development of a communication/consultation plan beyond MCEA process requirement.
- January 10, 2024 – Francois Landry (Township) – Review and acknowledgement to the request presented.

- April 19, 2024 – Jonathan Bourgon (Township) – Informs Rhonda about the upcoming public consultation to be held in May (see full email communication in Appendix A).

Tom Guntzel, General Public:

- July 26, 2023 – Tom Guntzel – Request to be put on the contact list for 417 Industrial Park servicing.
- August 3, 2023 – Francois Landry (Township) – Request clarification if Tom Guntzel would like to be contacted regarding the New MP MCEA.
- August 3, 2023 – Tom Guntzel – Confirmed his interest in the new MCEA, inquires about the expansion on Eadie Road and if it is included in this MP.
- August 10, 2023 – Francois Landry (Township) – Clarifies the encompassment of the MP and indicated the partial execution of the Industrial Park as project scope in under review (Tom Guntzel added to contact list) (see full email communication in Appendix A).

Laurie McCannell, General Public:

- August 1, 2023 – Laurie McCannell – Request to be added to the contact list, questions the scope of the study, the publishing of public notices, and the terms of reference for the EA.
- August 9, 2023 – Laurie McCannell is added to the contact list.
- August 24, 2023 – Amy Seymour (CIMA+) – Responses to questions about the MCEA.
- August 24, 2023 – Sent Revised Notice of Commencement.
- August 24, 2023 – Laurie McCannell – Acknowledgement of response and questions the location of newspaper publication and commence on the revised map from the notice of commencement compered to the Plan map of the industrial park.
- August 24, 2023 – Amy Seymour (CIMA+) – Provides clarification on newspaper publishing.
- April 24, 2024 - Sent Notice of Public Information Centre.
- April 25, 2024 – Laurie McCannell – Communicates her continued interest in receiving updates for the project, acknowledging her interest in receiving PIC board following PIC. Questions where new information and documents can be found.
- April 26, 2024 – Amy Seymour (CIMA+) – Clarifies the sharing of PIC board and receiving public comments following the event with the provided comment sheet

or by email throughout the duration of the project (see full email communication in Appendix A).

Greg Wheeler, General Public:

- April 24, 2024 – Greg Wheeler – Express his interest in receiving project updates. Comments on the extent of the engagement for the public and its limitation. Inquires if a remedy would be possible.
- April 26, 2024 – Francois Landry (Township) – Acknowledge the received email and suggestions. Indicates the publication through social media and to those registered to the Township's newsletter. (see full email communication in Appendix A).

A

Appendix A: Email Compilation and Comment Sheet

Municipal Class Environmental Assessment Study
Master Plan Update for Russell Township Water and Wastewater Systems

Public Information Centre – May 8th, 2024

Municipalité de RUSSELL Township

Comments and Feedback Form

Thank you for participating in the Public Information Centre (PIC). The Township values any comments, questions, or concerns that you may have regarding the Master Plan Update for Russell Township Water and Wastewater Systems.

The Township is committed to ensuring that all municipal services, programs and facilities are inclusive and accessible for persons with disabilities. Please contact one of the project team members listed below for an accessible version of this form.

Francois Landry **Project Manager** Municipalité de Russell Township Email: francoislandry@russell.ca	**Bradley Young, Ph. D., P. Eng.** **Project Manager** CIMA+ Email: Bradley.Young@cima.ca

Please use this form to submit your feedback. You can submit the completed form today or between **May 8, 2024, and May 29, 2024,** by one of the following options:

1. Email the completed form to the project team members listed above
2. Mail it to the Township of Russell Office (717 Notre-Dame St, Embrun, ON K0A 1W1)
3. Drop it off in person at the Township of Russell Office (717 Notre-Dame St, Embrun, ON K0A 1W1)

Project information presented today will be available upon request via email to the project team members listed above. A Master Plan Report, documenting the planning and decision-making process, will be available for Public Review at the end of the study.

Project website: https://www.russell.ca/en/your-township/water-and-wastewater-master-plan.aspx

CONTACT INFORMATION (optional, but required if you would like a response or to be added to the study mailing list):

Except for personal information, all comments will become part of the public record of the study. The study is being conducted according to the requirements of the Municipal Class Environmental Assessment document (last amended in March 2023), which is approved under the Ontario Environmental Assessment Act. The Master Plan will complete Phases 1 and 2 of the Class EA Process. Projects recommended by the Master Plan requiring additional studies will require project specific Schedule B and Schedule C Class EA studies outside of the scope of this Master Plan.

First and Last Name: [redacted]

As shown in the PIC material, the Preliminary Preferred Design Concepts recommended consist of:

Servicing Area	Preliminary Preferred Servicing Alternatives
Water Supply	• Expansion of Existing Service from the City of Ottawa
Water Storage and Booster Pumping	• Expansion of Embrun Reservoir and Russell/Embrun Booster Pumping Station Capacities
Russell Wastewater Treatment Plant	• Short Term Alternative: Process optimization, if unsuccessful review timeline to Regional plant or MBBR to reduce

1. **Please provide any comments, questions or concerns regarding the Preliminary Preferred Water and Wastewater Servicing Alternatives being recommended:**

→ Overall my comment is that costs are a big factor in the decisions and there were no cost estimates provided as part of the PIC.

2. **What impacts will implementation of the Preliminary Preferred Water and Wastewater Servicing Alternatives have on you? And what mitigation measures would you recommend being considered during construction of this project?**

[redacted] The impact on the Vars-Winchester Esker does not appears anywhere in these project plans, even while some aspects of piping will impact or traverse the Esker.

ADDITIONAL QUESTIONS / COMMENTS:

How much is the contract with City of Ottawa & how much more will it be? Also - when City of Ottawa raises its rates, do our rates go up as well?

From: Amy Langford
Sent: September 11, 2023 10:53 AM
To: [redacted]
Cc: Landry, Francois; Bradley Young
Subject: FW: Township of Russell - Water and Wastewater Master Plan Update - Revised Notice of Study Commencement
Attachments: A001389-230824-AkwesasneCL-RevisedNOC-e01.pdf

Good Morning, John:

Thanks for your time on the phone this morning.

As discussed, please find attached the Revised Notice of Study Commencement for the Municipal Class Environmental Assessment Study Master Plan Update for the Township of Russell. This Notice was also sent by mail to the following address: [redacted], and by email to [redacted] Please see email correspondence below for reference.

Please feel free to reach out to the project team (cc'd) with any questions or comments on the Master Plan at any time throughout the study.

Also, please let us know if you would prefer only digital correspondence in the future.

Thank you,
Amy

AMY LANGFORD, P.Eng.
Project Engineer
Water and Wastewater / Infrastructure

T 613-860-2462 **M** 343 597-0161 **F** 613-860-1870
600-1400 Blair Towers Place, Ottawa, ON K1J 9B8 CANADA

Engineering for people

Follow us

From: Amy Langford
Sent: Thursday, August 24, 2023 10:17 AM
To: Amy Langford <Amy.Langford@cima.ca>
Cc: Landry, Francois <FrancoisLandry@Russell.ca>; Bradley Young <Bradley.Young@cima.ca>
Subject: RE: Township of Russell - Water and Wastewater Master Plan Update - Revised Notice of Study Commencement

La version française suivra.

Please find attached a Revised Notice of Study Commencement for the Municipal Class Environmental Assessment Study Master Plan Update for the Township of Russell. The Notice of Study Commencement was revised to update the study area figure to match the Urban Policy Areas for Russell and Embrun as well as the Trade and Industry Policy Areas for the Industrial Park in the Township of Russell based on the recently approved United Counties of Prescott and Russell Official Plan. All other study information in the Notice of Study Commencement remains unchanged.

The Revised Notice of Study Commencement will be mailed out to all in the contact list for whom we have a valid mailing address and will be posted on the Township's website here:
https://www.russell.ca/en/your-township/water-and-wastewater-master-plan.aspx

---

Veuillez trouver ci-joint l'avis de lancement d'étude révisé de l'étude d'évaluation environnementale municipale de portée générale pour la mise à jour du plan directeur de la Municipalité de Russell. L'avis de lancement de l'étude a été révisé afin de mettre à jour la figure de la zone d'étude pour qu'elle corresponde aux zones de politique urbaine de Russell et d'Embrun ainsi qu'aux zones de politique commerciale et industrielle du parc industriel du canton de Russell, selon le Plan officiel des Comtés unis de Prescott et Russell récemment approuvé. Toute autre information relative à l'étude contenue dans l'avis de lancement de l'étude demeure inchangée.

L'avis révisé de lancement d'étude sera envoyé par la poste à toutes les personnes dont l'adresse postale est valide et sera également affiché sur le site Web de la municipalité ici :
https://www.russell.ca/en/your-township/water-and-wastewater-master-plan.aspx

---

AMY LANGFORD, P.Eng.
Project Engineer
Water and Wastewater / Infrastructure

T 613-860-2462 **M** 343 597-0161 **F** 613-860-1870
600-1400 Blair Towers Place, Ottawa, ON K1J 9B8 CANADA

Engineering for people

Follow us

From: Amy Langford
Sent: Friday, August 4, 2023 10:03 AM
To: Amy Langford <Amy.Langford@cima.ca>
Cc: Landry, Francois <FrancoisLandry@Russell.ca>; Bradley Young <Bradley.Young@cima.ca>
Subject: Township of Russell - Water and Wastewater Master Plan Update - Notice of Study Commencement

La version française suivra.

Municipal Class Environmental Assessment Study

Hello,

Please find attached for your information, the Notice of Study Commencement for the Municipal Class Environmental Assessment Study Master Plan Update that the Township of Russell is initiating to plan for its future Water and Wastewater System needs. The Notice is also posted on the Township's website here: https://www.russell.ca/en/your-township/water-and-wastewater-master-plan.aspx

The project team wants to make sure that appropriate consultation and engagement opportunities are provided to review agencies and stakeholders that may have an interest in this project. Please kindly advise either of the project team members listed in the attached Notice should you have any comments, questions or concerns, or if you would like to have a pre-consultation meeting with the team.

Hard copies of the attached Notice of Study Commencement have been mailed out to all in the contact list for whom we have a valid mailing address. Please indicate if you wish to receive project notifications in digital format moving forward.

Étude d'évaluation environnementale municipale de portée générale

Bonjour,

Veuillez trouver ci-joint, à titre d'information, l'avis de lancement d'étude pour la mise à jour du plan directeur de l'étude d'évaluation environnementale municipale de portée générale entreprise par la Municipalité de Russell. Cette mise à jour adressera la planification pour les besoins futurs en infrastructures d'eau potable et des eaux usées. L'avis est affiché sur le site Web de la Municipalité au lien suivant : https://www.russell.ca/en/your-township/water-and-wastewater-master-plan.aspx

L'équipe de projet veut s'assurer que les organismes et les parties prenantes qui pourraient être intéressés par ce projet bénéficient des possibilités de consultation et de rétroaction.
SVP informer l'un ou l'autre des membres de l'équipe de projet dont le nom figure dans l'avis ci-joint si vous avez des commentaires, des questions ou des préoccupations, ou si vous souhaitez prendre part à une réunion de préconsultation avec l'équipe.

Des copies papier de l'avis de début d'étude ci-joint ont été postées à toutes les personnes figurant sur la liste de contact pour lesquelles nous disposons d'une adresse postale valide. Veuillez nous indiquer si vous souhaitez recevoir les notifications du projet en format numérique à l'avenir.

AMY LANGFORD, P.Eng.
Water and Wastewater / Infrastructure

T 613-860-2462 **M** 343 597-0161 **F** 613-860-1870
600-1400 Blair Towers Place, Ottawa, ON K1J 9B8 CANADA

Engineering for people

Follow us

From: Landry, Francois <FrancoisLandry@Russell.ca>
Sent: August 16, 2023 2:57 PM
To: Amy Langford; Bourgon, Jonathan
Cc: Bradley Young
Subject: C000-22000 - W&WW Master Plan Revision: MECP Notice of Commencement Response
Attachments: fjo_MEA_Township of Russell_Master_Plan_Update_2023.pdf; Supporting Attachment - Proponent's Intro to Delegation of Procedural Aspects of Consultation with Aboriginal Communities.docx; Supporting Attachment - Species at Risk Proponents Guide to Preliminary Screening (Draft May 2019).pdf

EXTERNAL EMAIL

Hi,
Here is an email received from MECP for our info.

François Landry
Gestionnaire de projets | Project Manager
Infrastructure Services d'infrastructure
Municipalité de RUSSELL Township
[redacted] | Facebook | Webcasts | Web diffusion

From: Orpana, Jon (MECP) <[redacted]>
Sent: Wednesday, August 16, 2023 2:42 PM
To: Landry, Francois <FrancoisLandry@Russell.ca>
Cc: Bradley Young <Bradley.Young@cima.ca>; Hamilton-Browne, Shannon (She/Her) (MECP) [redacted]>
Subject: MECP Notice of Commencement Response - Russel Twp. Master Plan (2016) update

Hello Francois Landry,

Please find attached MECP's preliminary comments on the above mentioned project. In addition, there are also some additional resources for your consideration in the completion of your Master Plan update.

Also included in the letter is a list of indigenous communities which at a minimum the municipality (proponent) should consult with. If the municipality regularly consults with other indigenous communities they can be added to the studies consultation list.

Regards,

Jon

Jon K. Orpana hear name
Regional Environmental Planner
Environmental Assessment Branch
Ministry of the Environment, Conservation and Parks
Kingston Regional Office
[redacted]

Ministry of the Environment, Conservation and Parks

Environmental Assessment Branch

[redacted]

Ministère de l'Environnement, de la Protection de la nature et des Parcs

Direction des évaluations environnementales

[redacted]

By email only

August 16, 2023

The Township of Russell

Attention: Francois Landry
Project Manager
francoislandry@russell.ca

Dear Francois Landry,

Re: **NOTICE OF COMMENCEMENT Master Plan Update for Russell Twp. Water and Wastewater Systems**

Thank you for the Notice of Study Commencement issued July 19th, 2023.

The notice indicates that the Corporation of the Township of Russell (Township) is initiating a Class Environmental Assessment (Class EA) study to update its 2016 Water and Wastewater Master Plan. The 2016 Master Plan outlined a 20-year strategy for water and wastewater infrastructure upgrades based on growth forecasted at the time. Since the completion of the 2016 Master Plan, the pace of development within the Township's urban areas has exceeded what was previously projected. In addition, the proposed Official Plan Amendment expands the urban boundaries of the Township. These new areas will require water and wastewater servicing. This Master Plan study will identify new infrastructure or improvements to existing infrastructure to accommodate future development over a 20-year planning period.

The Process

The Master Plan will be carried out in accordance with the requirements of the Municipal Class Environmental Assessment document (last amended in March 2023), which is approved under the Ontario Environmental Assessment Act. The Master Plan will complete Phases 1 and 2 (Approach 1) of the Class EA Process. Projects recommended by the Master Plan requiring additional studies will require project specific Schedule B and Schedule C Class EA studies to be completed outside of the scope of this Master Plan.

The Master Plan process includes public, indigenous and external agency consultation, an evaluation of alternative solutions, an assessment of potential impacts associated with the proposed improvements and development of measures to mitigate identified impacts.

The Ministry acknowledges that the Proponent is following approach #1 for Master Plans. Approach #1 involves the Master Plan being done at a broad level of assessment thereby requiring more detailed investigations at the project-specific level in order to fulfil the Municipal Class EA documentation requirements for the specific Schedule B and C projects identified within the Master Plan. The Master Plan would therefore become the basis for, and be used in support of, future investigations for the specific Schedule B and C projects identified within it. Schedule B projects would require the filing of the Project file for public review while Schedule C projects would have to fulfil Phases 3 and 4 prior to filing an Environmental Study Report for public review.

Once the Master Plan report is finalized, the proponent must issue a Notice of Completion providing a minimum 30-day period during which documentation may be reviewed and comment and input can be submitted to the Proponent, prior to being approved by the municipality. As the Section 16 Order provisions only apply to specific projects completing the Class EA process and not the Master Plan document itself, there are no Section 16 Order provisions at the time of completion of the Master Plan for approach #1. Projects identified in the Master Plan will be subject to Section 16 Order provisions at the time of filing of a Project File (Schedule B) or Environmental Study Report (Schedule C).

The **updated (August 2022)** attached “Areas of Interest” document provides guidance regarding the ministry’s interests with respect to the Class EA process. Please address all areas of interest in the EA documentation at an appropriate level for the EA study. Proponents who address all the applicable areas of interest can minimize potential delays to the project schedule. **Further information is provided at the end of the Areas of Interest document relating to recent changes to the Environmental Assessment Act through Bill 197, Covid-19 Economic Recovery Act 2020.**

The Crown has a legal duty to consult Aboriginal communities when it has knowledge, real or constructive, of the existence or potential existence of an Aboriginal or treaty right and contemplates conduct that may adversely impact that right. Before authorizing the projects identified in this Master Plan, the Crown must ensure that its duty to consult has been fulfilled, where such a duty is triggered. Although the duty to consult with Aboriginal peoples is a duty of the Crown, the Crown may delegate procedural aspects of this duty to project proponents while retaining oversight of the consultation process.

The proposed Master Plan projects may have the potential to affect Aboriginal or treaty rights protected under Section 35 of Canada's *Constitution Act* 1982. Where the Crown's duty to consult is triggered in relation to the proposed projects**, the MECP is delegating the procedural aspects of rights-based consultation to the proponent through this letter.** The Crown intends to rely on the delegated consultation process in discharging its duty to consult and maintains the right to participate in the consultation process as it sees fit.

Based on information provided to date and the Crown`s preliminary assessment the proponent is required to consult with the following communities who have been identified as potentially affected by the proposed Master Plan projects:

- **Algonquins of Ontario (AOO)**
- **Algonquins of Pikwàkanagàn First Nation**
- **Mohawk Council of Akwesasne**

If the proponent has undertaken archeological studies and are required to undertake any work related to archeological resources, they should also include:

- **Huron-Wendat**

Steps that the proponent may need to take in relation to Aboriginal consultation for the proposed projects are outlined in the "Code of Practice for Consultation in Ontario's Environmental Assessment Process". Additional information related to Ontario's Environmental Assessment Act is available online at: www.ontario.ca/environmentalassessments.

Please also refer to the attached document "A Proponent's Introduction to the Delegation of Procedural Aspects of consultation with Aboriginal Communities" for further information, including the MECP's expectations for EA report documentation related to consultation with communities.

The proponent must contact the Director of Environmental Assessment Branch ([redacted]) under the following circumstances after initial discussions with the communities identified by the MECP:

- Aboriginal or treaty rights impacts are identified to you by the communities;
- You have reason to believe that your proposed projects may adversely affect an Aboriginal or treaty right;
- Consultation with Indigenous communities or other stakeholders has reached an impasse; or
- A Section 16 Order request is expected based on impacts to Aboriginal or treaty rights

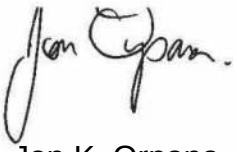
The MECP will then assess the extent of any Crown duty to consult for the circumstances and will consider whether additional steps should be taken, including what role you will be asked to play should additional steps and activities be required.

A draft copy of the report should be sent directly to me prior to the filing of the final report, allowing a minimum of 30 days for the ministry's technical reviewers to provide comments.

Please also ensure a copy of the final notice is sent to the ministry's Eastern Region EA notification email account (eanotification.eregion@ontario.ca) after the draft report is reviewed and finalized.

Should you or any members of your project team have any questions regarding the material above, please contact me at [redacted].

Regards,



Jon K. Orpana
Environmental Planner & Environmental Assessment Coordinator
Ministry of the Environment, Conservation and Parks
Kingston Regional Office
[redacted]

EC.

Bradley Young, Ph.D., P.Eng.
CIMA+
Project Manager
Bradley.young@cima.ca

Shannon Hamilton Browne, (A) Drinking Water and Compliance Supervisor
Ottawa District
Ministry of Environment Conservation and Parks
[redacted]

Encl. Areas of Interest

AREAS OF INTEREST (v. August 2022)

It is suggested that you check off each section after you have considered / addressed it.

☐ **Planning and Policy**

- Applicable plans and policies should be identified in the report, and the proponent should describe how the proposed project adheres to the relevant policies in these plans.
    - Projects located in MECP Central, Eastern or West Central Region may be subject to **A Place to Grow: Growth Plan for the Greater Golden Horseshoe (2020)**.
    - Projects located in MECP Central or Eastern Region may be subject to the **Oak Ridges Moraine Conservation Plan (2017)** or the **Lake Simcoe Protection Plan (2014)**.
    - Projects located in MECP Central, Southwest or West Central Region may be subject to the **Niagara Escarpment Plan (2017)**.
    - Projects located in MECP Central, Eastern, Southwest or West Central Region may be subject to the **Greenbelt Plan (2017)**.
    - Projects located in MECP Northern Region may be subject to the **Growth Plan for Northern Ontario (2011).**

- The **Provincial Policy Statement (2020)** contains policies that protect Ontario's natural heritage and water resources. Applicable policies should be referenced in the report, and the proponent should describe how the proposed project is consistent with these policies.

- In addition to the provincial planning and policy level, the report should also discuss the planning context at the municipal and federal levels, as appropriate.

☐ **Source Water Protection**

The *Clean Water Act*, 2006 (CWA) aims to protect existing and future sources of drinking water. To achieve this, several types of vulnerable areas have been delineated around surface water intakes and wellheads for every municipal residential drinking water system that is located in a source protection area. These vulnerable areas are known as a Wellhead Protection Areas (WHPAs) and surface water Intake Protection Zones (IPZs). Other vulnerable areas that have been delineated under the CWA include Highly Vulnerable Aquifers (HVAs), Significant Groundwater Recharge Areas (SGRAs), Event-based modelling areas (EBAs), and Issues Contributing Areas (ICAs). Source protection plans have been developed that include policies to address existing and future risks to sources of municipal drinking water within these vulnerable areas.

Projects that are subject to the Environmental Assessment Act that fall under a Class EA, or one of the Regulations, have the potential to impact sources of drinking water if they occur in designated vulnerable areas or in the vicinity of other at-risk drinking water systems (i.e. systems that are not municipal residential systems). MEA Class EA projects may include activities that, if located in a vulnerable area, could be a threat to sources of drinking water (i.e. have the potential to adversely affect the quality or quantity of drinking water sources) and the activity could therefore be subject to policies in a source protection plan. Where an activity poses a risk to drinking water, policies in the local source protection plan may impact how or where that activity is undertaken. Policies may prohibit certain activities, or they may require risk management measures for these activities. Municipal Official Plans, planning decisions, Class EA projects (where the project includes an activity that is a threat to drinking water) and prescribed instruments must conform with policies that address significant risks to drinking water and must have regard for policies that address moderate or low risks.

- The proponent should identify the source protection area and should clearly document how the proximity of the project to sources of drinking water (municipal or other) and any delineated vulnerable areas was considered and assessed. Specifically, the report should discuss whether or not the project is located in a vulnerable area and provide applicable details about the area.

- If located in a vulnerable area, proponents should document whether any project activities are prescribed drinking water threats and thus pose a risk to drinking water (this should be consulted on with the appropriate Source Protection Authority). Where an activity poses a risk to drinking water, the proponent must document and discuss in the report how the project adheres to or has regard to applicable policies in the local source protection plan. This section should then be used to inform and be reflected in other sections of the report, such as the identification of net positive/negative effects of alternatives, mitigation measures, evaluation of alternatives etc.

- While most source protection plans focused on including policies for significant drinking water threats in the WHPAs and IPZs it should be noted that even though source protection plan policies may not apply in HVAs, these are areas where aquifers are sensitive and at risk to impacts and within these areas, activities may impact the quality of sources of drinking water for systems other than municipal residential systems.

- In order to determine if this project is occurring within a vulnerable area, proponents can use this mapping tool: http://www.applications.ene.gov.on.ca/swp/en/index.php. Note that various layers (including WHPAs, WHPA-Q1 and WHPA-Q2, IPZs, HVAs, SGRAs, EBAs, ICAs)

can be turned on through the “Map Legend” bar on the left. The mapping tool will also provide a link to the appropriate source protection plan in order to identify what policies may be applicable in the vulnerable area.

- For further information on the maps or source protection plan policies which may relate to their project, proponents must contact the appropriate source protection authority. **Please consult with the local source protection authority to discuss potential impacts on drinking water. Please document the results of that consultation within the report and include all communication documents/correspondence.**

More Information

For more information on the *Clean Water Act*, source protection areas and plans, including specific information on the vulnerable areas and drinking water threats, please refer to Conservation Ontario’s website where you will also find links to the local source protection plan/assessment report.

A list of the prescribed drinking water threats can be found in section 1.1 of Ontario Regulation 287/07 made under the *Clean Water Act*. In addition to prescribed drinking water threats, some source protection plans may include policies to address additional “local” threat activities, as approved by the MECP.

- **Climate Change**

The document "Considering Climate Change in the Environmental Assessment Process" (Guide) is now a part of the Environmental Assessment program's Guides and Codes of Practice. The Guide sets out the MECP's expectation for considering climate change in the preparation, execution and documentation of environmental assessment studies and processes. The guide provides examples, approaches, resources, and references to assist proponents with consideration of climate change in EA. Proponents should review this Guide in detail.

- **The MECP expects proponents of projects under a Class EA or EA Act Regulation to:**

1. Consider during the assessment of alternative solutions and alternative designs, the following:
    a. the project's expected production of greenhouse gas emissions and impacts on carbon sinks (climate change mitigation); and
    b. resilience or vulnerability of the undertaking to changing climatic conditions (climate change adaptation).
2. Include a discrete section in the report detailing how climate change was considered in the EA.

How climate change is considered can be qualitative or quantitative in nature and should be scaled to the project's level of environmental effect. In all instances, both a project's impacts on climate change (mitigation) and impacts of climate change on a project (adaptation) should be considered.

- The MECP has also prepared another guide to support provincial land use planning direction related to the completion of energy and emission plans. The "Community Emissions Reduction Planning: A Guide for Municipalities" document is designed to educate stakeholders on the municipal opportunities to reduce energy and greenhouse gas emissions, and to provide guidance on methods and techniques to incorporate consideration of energy and greenhouse gas emissions into municipal activities of all types. We encourage you to review the Guide for information.

Air Quality, Dust and Noise

- If there are sensitive receptors in the surrounding area of this project, a quantitative air quality/odour impact assessment will be useful to evaluate alternatives, determine impacts and identify appropriate mitigation measures. The scope of the assessment can be determined based on the potential effects of the proposed alternatives, and typically includes source and receptor characterization and a quantification of local air quality impacts on the sensitive receptors and the environment in the study area. The assessment will compare to all applicable standards or guidelines for all contaminants of concern.

- If a quantitative Air Quality Impact Assessment is not required for the project, the MECP expects that the report contain a qualitative assessment which includes:

    - A discussion of local air quality including existing activities/sources that significantly impact local air quality and how the project may impact existing conditions;
    - A discussion of the nearby sensitive receptors and the project's potential air quality impacts on present and future sensitive receptors;
    - A discussion of local air quality impacts that could arise from this project during both construction and operation; and
    - A discussion of potential mitigation measures.

- Dust and noise control measures should be addressed and included in the construction plans to ensure that nearby residential and other sensitive land uses within the study area are not adversely affected during construction activities.

- The MECP recommends that non-chloride dust-suppressants be applied. For a comprehensive list of fugitive dust prevention and control measures that could be

applied, refer to *Cheminfo Services Inc. Best Practices for the Reduction of Air Emissions from Construction and Demolition Activities* report prepared for Environment Canada. March 2005.

- The report should consider the potential impacts of increased noise levels during the operation of the completed project. The proponent should explore all potential measures to mitigate significant noise impacts during the assessment of alternatives.

- Noise associated with a proposed transformer station should be evaluated. Note that any noise monitoring and assessment should be conducted in accordance with the requirements of MECP guidelines, such as MECP Publication NPC-233, "*Information to be Submitted for Approval of Stationary Sources of Sound*".

- In order to address potential noise impacts of the transformer station, it may be necessary to first monitor ambient noise levels prior to the installation of the transformer station, and to then conduct a noise assessment after the transformer station is installed and operational. Depending on the results of these studies and the proximity to sensitive receptors, remedial measures may be needed to address noise generated by the transformer station.

Ecosystem Protection and Restoration

- Any impacts to ecosystem form and function must be avoided where possible. The report should describe any proposed mitigation measures and how project planning will protect and enhance the local ecosystem.

- Natural heritage and hydrologic features should be identified and described in detail to assess potential impacts and to develop appropriate mitigation measures. The following sensitive environmental features may be located within or adjacent to the study area:
    - Key Natural Heritage Features: Habitat of endangered species and threatened species, fish habitat, wetlands, areas of natural and scientific interest (ANSIs), significant valleylands, significant woodlands; significant wildlife habitat (including habitat of special concern species); sand barrens, savannahs, and tallgrass prairies; and alvars.
    - Key Hydrologic Features: Permanent streams, intermittent streams, inland lakes and their littoral zones, seepage areas and springs, and wetlands.
    - Other natural heritage features and areas such as: vegetation communities, rare species of flora or fauna, Environmentally Sensitive Areas, Environmentally Sensitive Policy Areas, federal and provincial parks and conservation reserves, Greenland systems etc.

We recommend consulting with the Ministry of Natural Resources and Forestry (MNRF), Fisheries and Oceans Canada (DFO) and your local conservation authority to determine if special measures or additional studies will be necessary to preserve and protect these sensitive features.

- **Species at Risk**

- The Ministry of the Environment, Conservation and Parks has now assumed responsibility of Ontario's Species at Risk program. Information, standards, guidelines, reference materials and technical resources to assist you are found at https://www.ontario.ca/page/species-risk.

- The Client's Guide to Preliminary Screening for Species at Risk (Draft May 2019) has been attached to the covering email for your reference and use. Please review this document for next steps.

- For any questions related to subsequent permit requirements, SAR considerations etc., proponents / consultants are highly recommended to contact SAROntario@ontario.ca.

- **Surface Water**

- The report must include enough information to demonstrate that there will be no negative impacts on the natural features or ecological functions of any watercourses within the study area. Measures should be included in the planning and design process to ensure that any impacts to watercourses from construction or operational activities (e.g. spills, erosion, pollution) are mitigated as part of the proposed undertaking.

- Additional stormwater runoff from new pavement can impact receiving watercourses and flood conditions. Quality and quantity control measures to treat stormwater runoff should be considered for all new impervious areas and, where possible, existing surfaces. The ministry's Stormwater Management Planning and Design Manual (2003) should be referenced in the report and utilized when designing stormwater control methods.

- A Stormwater Management Plan prepared as part of the Class EA process should include:

    - Strategies to address potential water quantity and erosion impacts related to stormwater draining into streams or other sensitive environmental features, and to ensure that adequate (enhanced) water quality is maintained

- Watershed information, drainage conditions, and other relevant background information
- Future drainage conditions, stormwater management options, information on erosion and sediment control during construction, and other details of the proposed works
- Information on maintenance and monitoring commitments.

- Any potential approval requirements for surface water taking or discharge should be identified in the report. A Permit to Take Water (PTTW) under the OWRA will be required for any water takings that exceed 50,000 L/day, except for certain water taking activities that have been prescribed by the Water Taking EASR Regulation – *O. Reg. 63/16*. These prescribed water-taking activities require registration in the EASR instead of a PTTW. Please review the Water Taking User Guide for EASR for more information. Additionally, an Environmental Compliance Approval under the OWRA is required for municipal stormwater management works.

Groundwater

- The status of, and potential impacts to any well water supplies should be addressed. If the project involves groundwater takings or changes to drainage patterns, the quantity and quality of groundwater may be affected due to drawdown effects or the redirection of existing contamination flows. In addition, project activities may infringe on existing wells such that they must be reconstructed or sealed and abandoned. Appropriate information to define existing groundwater conditions should be included in the report.

- If the potential construction or decommissioning of water wells is identified as an issue, the report should refer to Ontario Regulation 903, Wells, under the OWRA.

- Potential impacts to groundwater-dependent natural features should be addressed. Any changes to groundwater flow or quality from groundwater taking may interfere with the ecological processes of streams, wetlands or other surficial features. In addition, discharging contaminated or high volumes of groundwater to these features may have direct impacts on their function. Any potential effects should be identified, and appropriate mitigation measures should be recommended. The level of detail required will be dependent on the significance of the potential impacts. For example, where construction of transmission towers is proposed, any pile driving into the subsurface that is required for steel pile type tower foundations, particularly to the bedrock surface at depth, may have an adverse effect on local groundwater resources.

- Any potential approval requirements for groundwater taking or discharge should be identified in the report. A Permit to Take Water (PTTW) under the OWRA will be required for any water takings that exceed 50,000 L/day, with the exception of certain water taking activities that have been prescribed by the Water Taking EASR Regulation – *O. Reg. 63/16*. These prescribed water-taking activities require registration in the EASR instead of a PTTW. Please review the Water Taking User Guide for EASR for more information.

- Consultation with the railroad authorities is necessary wherever there is a plan to use construction dewatering in the vicinity of railroad lines or where the zone of influence of the construction dewatering potentially intercepts railroad lines.

- Groundwater should be protected from the potential for spills, dewatering and wood pole preservative during construction. A plan should be in place for preventing and dealing with spills. All spills that could potentially cause damage to the environment should be reported to the Spills Action Centre of the Ministry of the Environment, Conservation and Parks at 1-800-268-6060.

Excess Materials Management

- In December 2019, MECP released a new regulation under the Environmental Protection Act, titled "On-Site and Excess Soil Management" (O. Reg. 406/19) to support improved management of excess construction soil. This regulation is a key step to support proper management of excess soils, ensuring valuable resources don't go to waste and to provide clear rules on managing and reusing excess soil. New risk-based standards referenced by this regulation help to facilitate local beneficial reuse which in turn will reduce greenhouse gas emissions from soil transportation, while ensuring strong protection of human health and the environment. The new regulation is being phased in over time, with the first phase in effect on January 1, 2021. For more information, please visit https://www.ontario.ca/page/handling-excess-soil.

- The report should reference that activities involving the management of excess soil should be completed in accordance with O. Reg. 406/19 and the MECP's current guidance document titled "Management of Excess Soil – A Guide for Best Management Practices" (2014).

- All waste generated during construction must be disposed of in accordance with ministry requirements

Contaminated Sites

- Any current or historical waste disposal sites should be identified in the report. The status of these sites should be determined to confirm whether approval pursuant to Section 46 of the EPA may be required for land uses on former disposal sites. We recommend referring to the MECP's D-4 guideline for land use considerations near landfills and dumps.
    - Resources available may include regional/local municipal official plans and data; provincial data on large landfill sites and small landfill sites; Environmental Compliance Approval information for waste disposal sites on Access Environment.

- Other known contaminated sites (local, provincial, federal) in the study area should also be identified in the report (Note – information on federal contaminated sites is found on the Government of Canada's website).

- The location of any underground storage tanks should be investigated in the report. Measures should be identified to ensure the integrity of these tanks and to ensure an appropriate response in the event of a spill. The ministry's Spills Action Centre must be contacted in such an event.

- Since the removal or movement of soils may be required, appropriate tests to determine contaminant levels from previous land uses or dumping should be undertaken. If the soils are contaminated, you must determine how and where they are to be disposed of, consistent with *Part XV.1 of the Environmental Protection Act* (EPA) and Ontario Regulation 153/04, Records of Site Condition, which details the new requirements related to site assessment and clean up. Consideration of potential environmental contamination should be given following regulatory guidance where the project involves decommissioning of facilities. Please contact the appropriate MECP District Office for further consultation if contaminated sites are present.

- Where poles are being removed that have been chemically treated, we recommend that the proponent consider soil testing to determine the extent of any related soil contamination. Soil testing may be contingent on factors such as proximity to water bodies or wetlands, proximity to wells, locations where poles are being removed but not replaced, and the treatment chemicals used (i.e. chromated copper arsenate (CCA) or creosote). In the case of poles which have been treated with CCA or creosote, testing for arsenic, copper and creosote should be completed.

- **Servicing, Utilities and Facilities**

- The report should identify any above or underground utilities in the study area such as transmission lines, telephone/internet, oil/gas etc. The owners should be consulted to discuss impacts to this infrastructure, including potential spills.

- The report should identify any servicing infrastructure in the study area such as wastewater, water, stormwater that may potentially be impacted by the project.

- Any facility that releases emissions to the atmosphere, discharges contaminants to ground or surface water, provides potable water supplies, or stores, transports or disposes of waste must have an Environmental Compliance Approval (ECA) before it can operate lawfully. Please consult with MECP's Environmental Permissions Branch to determine whether a new or amended ECA will be required for any proposed infrastructure.

- We recommend referring to the ministry's environmental land use planning guides to ensure that any potential land use conflicts are considered when planning for any infrastructure or facilities related to wastewater, pipelines, landfills or industrial uses.

- **Mitigation and Monitoring**

- Contractors must be made aware of all environmental considerations so that all environmental standards and commitments for both construction and operation are met. Mitigation measures should be clearly referenced in the report and regularly monitored during the construction stage of the project. In addition, we encourage proponents to conduct post-construction monitoring to ensure all mitigation measures have been effective and are functioning properly.

- Design and construction reports and plans should be based on a best management approach that centres on the prevention of impacts, protection of the existing environment, and opportunities for rehabilitation and enhancement of any impacted areas.

- The proponent's construction and post-construction effects monitoring strategies and programs must be documented in the report.

- The proponent must consider cumulative effects when planning projects. The assessment will include the proposed undertaking and any other proposed undertakings in the immediate project area where documentation is available (e.g. other environmental assessments).

Consultation

- The report must demonstrate how the consultation provisions of the Class EA have been fulfilled, including documentation of all stakeholder consultation efforts undertaken during the planning process. This includes a discussion in the report that identifies concerns that were raised and **describes how they have been addressed by the proponent** throughout the planning process. The report should also include copies of comments submitted on the project by interested stakeholders, and the proponent's responses to these comments (as directed by the Guide to Environmental Assessment Requirements for Electricity Projects to include full documentation).

- Please include the full stakeholder distribution/consultation list in the documentation.

Class EA Process

- The report should provide clear and complete documentation of the planning process in order to allow for transparency in decision-making.

- The Class EA requires the consideration of the effects of each alternative on all aspects of the environment (including planning, natural, social, cultural, economic, technical). The report should include a level of detail (e.g. hydrogeological investigations, terrestrial and aquatic assessments, cultural heritage assessments) such that all potential impacts can be identified, and appropriate mitigation measures can be developed. Any supporting studies conducted during the Class EA process should be referenced and included as part of the report.

- Please include in the report a list of all subsequent permits or approvals that may be required for the implementation of the preferred alternative, including but not limited to, MECP's PTTW, EASR Registrations and ECAs, conservation authority permits, species at risk permits, MTO permits and approvals under the *Impact Assessment Act*, 2019.

- Ministry guidelines and other information related to the issues above are available at http://www.ontario.ca/environment-and-energy/environment-and-energy. We encourage you to review all the available guides and to reference any relevant information in the report.

Amendments to the EAA through the Covid-19 Economic Recovery Act, 2020

Once the report is finalized, the proponent must issue a Notice of Completion providing a minimum 30-day period during which documentation may be reviewed and comment and input can be submitted to the proponent. The Notice of Completion must be sent to the appropriate MECP Regional Office email address (for projects in MECP Southwest Region, the email is eanotification.swregion@ontario.ca).

The public has the ability to request a higher level of assessment on a project if they are concerned about potential adverse impacts to constitutionally protected Aboriginal and treaty rights. In addition, the Minister may issue an order on his or her own initiative within a specified time period. The Director (of the Environmental Assessment Branch) will issue a Notice of Proposed Order to the proponent if the Minister is considering an order for the project within 30 days after the conclusion of the comment period on the Notice of Completion. At this time, the Director may request additional information from the proponent. Once the requested information has been received, the Minister will have 30 days within which to make a decision or impose conditions on your project.

Therefore, the proponent cannot proceed with the project until at least 30 days after the end of the comment period provided for in the Notice of Completion. Further, the proponent may not proceed after this time if:

- a Section 16 Order request has been submitted to the ministry regarding potential adverse impacts to constitutionally protected Aboriginal and treaty rights, or
- the Director has issued a Notice of Proposed order regarding the project.

Please ensure that the Notice of Completion advises that outstanding concerns are to be directed to the proponent for a response, and that in the event there are outstanding concerns regarding potential adverse impacts to constitutionally protected Aboriginal and treaty rights, Section 16 Order requests on those matters should be addressed in writing to:

Minister David Piccini
Ministry of Environment, Conservation and Parks
[redacted]

and

Director, Environmental Assessment Branch
Ministry of Environment, Conservation and Parks
[redacted]

Ministry of the Environment, Conservation and Parks

Environmental Assessment Branch

[redacted]

Ministère de l'Environnement, de la Protection de la nature et des Parcs

Direction des évaluations environnementales

[redacted]

Ontario

Instructions for Providing Class EA Notices to the Ministry of the Environment, Conservation and Parks

The following protocol for providing Class EA notifications to the Ministry of the Environment, Conservation and Parks is in effect as of **May 1, 2018.** Important information is below. Please read carefully.

You must follow the process described below and submit an electronic version of the Notice and completed Project Information Form to the appropriate Regional EA Notification email address. These email addresses are provided below.

All Notices of Commencement and Completion are to follow this process. Please feel free to pass along this information to your colleagues. Thank you.

Notification Procedure:

The Ministry of the Environment, Conservation and Parks becomes aware of streamlined environmental assessments (e.g., class environmental assessment projects, electricity projects and waste management projects) through notifications by project owners. Notifying the ministry is an important step in the streamlined environmental assessment processes. As part of the ministry's ongoing efforts to improve processes and ensure the ministry has an opportunity to provide input on projects undergoing streamlined environmental assessments, the ministry has established dedicated email accounts in each regional office. These accounts will be used to receive notices as required in your class environmental assessment process along with a new "Project Information Form". As of May 1, 2018, proponents must use this new process.

4 Step Process for Submitting Notices for Streamlined EAs

To submit your notice, you must do the following:

1. **Download and complete the Project Information Form.** (The Form can be found here under "Streamlined EAs". It is an excel spreadsheet with columns that need to be filled out by the proponent. The form has been developed for ease of use (i.e. drop-down pick list for most fields). Instructions on filling out the form are contained in 2 tabs within the form itself).

2. **Create an email. The subject line of your email must include in this order: Project location, Type of streamlined EA, and Project name**

   For example:

   - York Region, MEA Class EA, Elgin Mills Rd East (Bayview to Woodbine)
   - Durham Region, Electricity Screening Process, New Cogeneration Station
   - City of Ottawa, Waste Management Screening Process, Landfill Expansion

3. **Attach the completed Project Information Form (in excel format) and a copy of your project notice (in PDF format) to the email.**

4. **Send by email to the appropriate ministry regional office:**

   Central Region – eanotification.cregion@ontario.ca

   Eastern Region – eanotification.eregion@ontario.ca

   Northern Region – eanotification.nregion@ontario.ca

   South West Region – eanotification.swregion@ontario.ca

   West Central Region – eanotification.wcregion@ontario.ca

Notes:

- The hyperlink to the MECP District Officer Locator website, can be used to assist with determining what ministry region your project is located.
- The minimum requirement is to send project initiation and completion notices (and where applicable, Revised Notice of Completion, Notice of Filing of Addendum, Statement of Completion). All other notices (e.g. Notice of PIC/OH) can be sent to the Regional email address but not required.
- If your project is located in more than one ministry region, you need to submit your notices to all appropriate regions.

Client's Guide to Preliminary Screening for Species at Risk

Ministry of the Environment, Conservation and Parks

Species at Risk Branch, Permissions and Compliance

DRAFT - May 2019

Table of Contents

1.0 Purpose, Scope, Background and Context

1.1 Purpose of this Guide

This guide has been created to:

- help clients better understand their obligation to gather information and complete a preliminary screening for species at risk before contacting the ministry,
- outline guidance and advice clients can expect to receive from the ministry at the preliminary screening stage,
- help clients understand how they can gather information about species at risk by accessing publicly available information housed by the Government of Ontario, and
- provide a list of other potential sources of species at risk information that exist outside the Government of Ontario.

It remains the client's responsibility to:

- carry out a preliminary screening for their projects,
- obtain best available information from all applicable information sources,
- conduct any necessary field studies or inventories to identify and confirm the presence or absence of species at risk or their habitat,
- consider any potential impacts to species at risk that a proposed activity might cause, and
- comply with the *Endangered Species Act* (ESA).

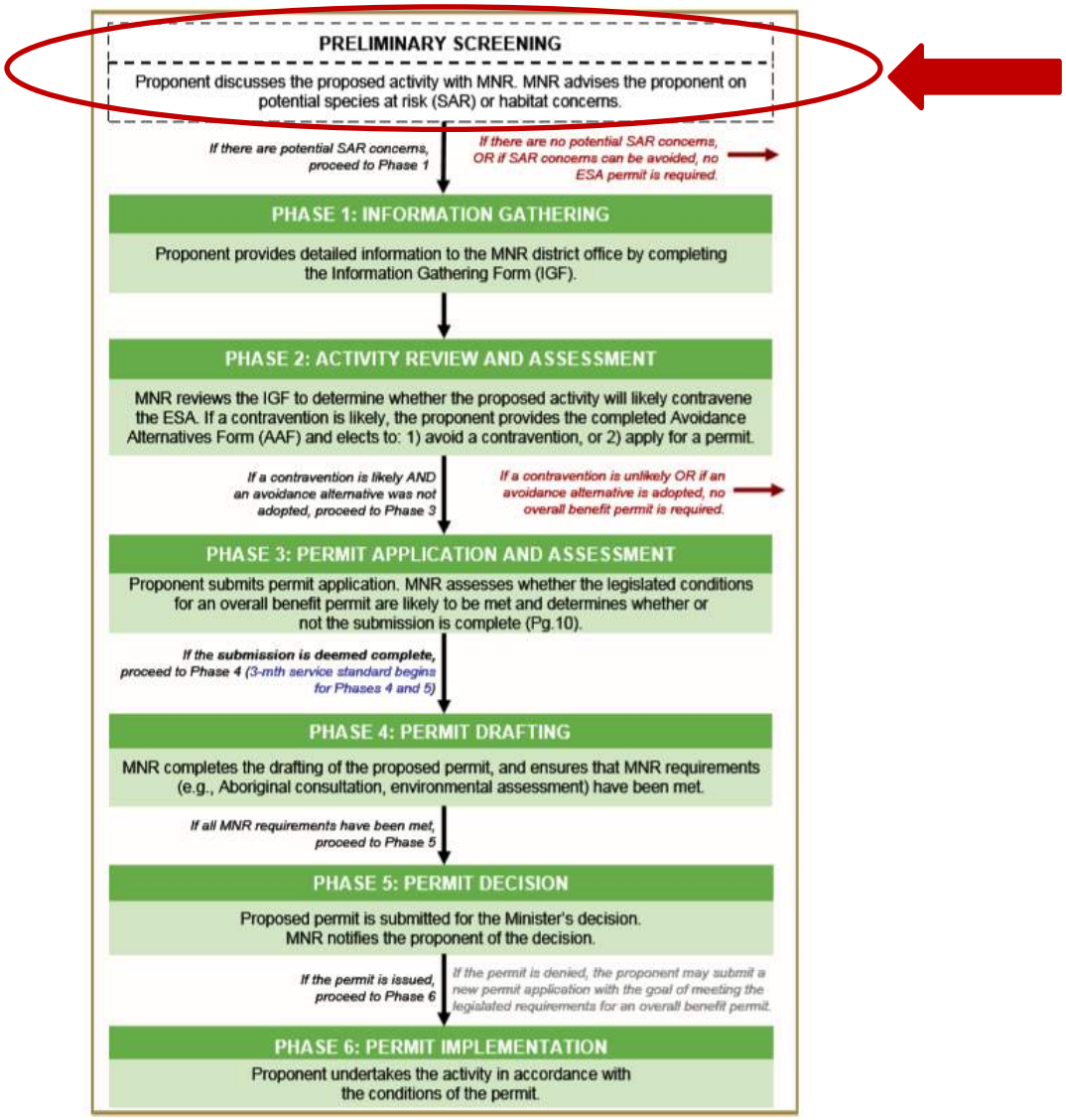
To provide the most efficient service, clients should initiate species at risk screenings and seek information from all applicable information sources identified in this guide, at a minimum, prior to contacting Government of Ontario ministry offices for further information or advice.

1.2 Scope

This guide is a resource for clients seeking to understand if their activity is likely to impact species at risk or if they are likely to trigger the need for an authorization under the ESA. It is not intended to circumvent any detailed site surveys that may be necessary to document species at risk or their habitat nor to circumvent the need to assess the impacts of a proposed activity on species at risk or their habitat. This guide is not an exhaustive list of available information sources for any given area as the availability of information on species at risk and their habitat varies across the province. This guide is intended to support projects and activities carried out on Crown and private land, by private landowners, businesses, other provincial ministries and agencies, or municipal government.

1.3 Background and Context

To receive advice on their proposed activity, clients must first determine whether any species at risk or their habitat exist or are likely to exist at or near their proposed activity, and whether their proposed activity is likely to contravene the ESA. Once this step is complete, clients may contact the ministry at SAROntario@ontario.ca to discuss the main purpose, general methods, timing and location of their proposed activity as well as information obtained about species at risk and their habitat at, or near, the site. At this stage, the ministry can provide advice and guidance to the client about potential species at risk or habitat concerns, measures that the client is considering to avoid adverse effects on species at risk or their habitat and whether additional field surveys are advisable. This is referred to as the "Preliminary Screening" stage. For more information on additional phases in the diagram below, please refer to the *Endangered Species Act Submission Standards for Activity Review and 17(2)(c) Overall Benefit Permits* policy available online at https://www.ontario.ca/page/species-risk-overall-benefit-permits



2.0 Roles and Responsibilities

To provide the most efficient service, clients should initiate species at risk screenings and seek information from all applicable information sources identified in this guide prior to contacting Government of Ontario ministry offices for further information or advice.

Step 1: Client seeks information regarding species at risk or their habitat that exist, or are likely to exist, at or near their proposed activity by referring to all applicable information sources identified in this guide.

Step 2: Client reviews and consider guidance on whether their proposed activity is likely to contravene the ESA (see section 3.4 of this guide for guidance on what to consider).

Step 3: Client gathers information identified in the checklist in section 4 of this guide.

Step 4: Client contacts the ministry at SAROntario@ontario.ca to discuss their preliminary screening. Ministry staff will ask the client questions about the main purpose, general methods, timing and location of their proposed activity as well as information obtained about species at risk and their habitat at, or near, the site. Ministry staff will also ask the client for their interpretation of the impacts of their activity on species at risk or their habitat as well as measures the client has considered to avoid any adverse impacts.

Step 5: Ministry staff will provide advice on next steps.

Option A: Ministry staff may advise the client they can proceed with their activity without an authorization under the ESA where the ministry is confident that:

- no protected species at risk or habitats are likely to be present at or near the proposed location of the activity; or
- protected species at risk or habitats are known to be present but the activity is not likely to contravene the ESA; or
- through the adoption of avoidance measures, the modified activity is not likely to contravene the ESA.

Option B: Ministry staff may advise the client to proceed to Phase 1 of the overall benefit permitting process (i.e. Information Gathering in the previous diagram), where:

- there is uncertainty as to whether any protected species at risk or habitats are present at or near the proposed location of the activity; or
- the potential impacts of the proposed activity are uncertain; or
- ministry staff anticipate the proposed activity is likely to contravene the ESA.

3.0 Information Sources

Land Information Ontario (LIO) and the Natural Heritage Information Centre (NHIC) maintain and provide information about species at risk, as well as related information about fisheries, wildlife, crown lands, protected lands and more. This information is made available to organizations, private individuals, consultants, and developers through online sources and is often considered under various pieces of legislation or as part of regulatory approvals and planning processes.

The information available from LIO or NHIC and the sources listed in this guide should not be considered as a substitute for site visits and appropriate field surveys. Generally, this information can be regarded as a starting point from which to conduct further field surveys, if needed. While this data represents best available current information, it is important to note that a lack of information for a site does not mean that species at risk or their habitat are not present. There are many areas where the Government of Ontario does not currently have information, especially in more remote parts of the province. The absence of species at risk location data at or near your site does not necessarily mean no species at risk are present at that location. On-site assessments can better verify site conditions, identify and confirm presence of species at risk and/or their habitats.

Information on the location (i.e. observations and occurrences) of species at risk is considered sensitive and therefore publicly available only on a 1km square grid as opposed to as a detailed point on a map. This generalized information can help you understand which species at risk are in the general vicinity of your proposed activity and can help inform field level studies you may want to undertake to confirm the presence, or absence of species at risk at or near your site.

Should you require specific and detailed information pertaining to species at risk observations and occurrences at or near your site on a finer geographic scale; you will be required to demonstrate your need to access this information, to complete data sensitivity training and to obtain a Sensitive Data Use License from the NHIC. Information on how to obtain a license can be found online at https://www.ontario.ca/page/get-natural-heritage-information.

Many organizations (e.g. other Ontario ministries, municipalities, conservation authorities) have ongoing licensing to access this data so be sure to check if your organization has this access and consult this data as part of your preliminary screening if your organization already has a license.

3.1 Make a Map: Natural Heritage Areas

The Make a Natural Heritage Area Map (available online at http://www.gisapplication.lrc.gov.on.ca/mamnh/Index.html?site=MNR_NHLUPS_NaturalHeritage&viewer=NaturalHeritage&locale=en-US provides public access to natural heritage information, including species at risk, without the user needing to have Geographic Information System (GIS) capability. It allows users to view and identify generalized species at risk information, mark areas of interest, and create and print a custom map directly from the web application. The tool also shows topographic information such as roads, rivers, contours and municipal boundaries.

Users are advised that sensitive information has been removed from the natural areas dataset and the occurrences of species at risk has been generalized to a 1-kilometre grid to mitigate the risks to the species (e.g. illegal harvest, habitat disturbance, poaching).

The web-based mapping tool displays natural heritage data, including:

- Generalized Species at risk occurrence data (based on a 1-km square grid),
- Natural Heritage Information Centre data.

Data cannot be downloaded directly from this web map; however, information included in this application is available digitally through Land Information Ontario (LIO) at https://www.ontario.ca/page/land-information-ontario.

3.2 Land Information Ontario (LIO)

Most natural heritage data is publicly available. This data is managed in a large provincial corporate database called the LIO Warehouse and can be accessed online through the LIO Metadata Management Tool at https://www.javacoeapp.lrc.gov.on.ca/geonetwork/srv/en/main.home. This tool provides descriptive information about the characteristics, quality and context of the data. Publicly available geospatial data can be downloaded directly from this site.

While most data are publicly available, some data may be considered highly sensitive (i.e. nursery areas for fish, species at risk observations) and as such, access to some data maybe restricted.

3.3 Additional Species at Risk Information Sources

- The Breeding Bird Atlas can be accessed online at http://www.birdsontario.org/atlas/index.jsp?lang=en
- eBird can be accessed online at https://ebird.org/home
- iNaturalist can be accessed online at https://www.inaturalist.org/
- The Ontario Reptile and Amphibian Atlas can be accessed online at https://ontarionature.org/programs/citizen-science/reptile-amphibian-atlas
- Your local Conservation Authority. Information to help you find your local Conservation Authority can be accessed online at https://conservationontario.ca/conservation-authorities/find-a-conservation-authority/

  Local naturalist groups or other similar community-based organizations
- Local Indigenous communities
- Local land trusts or other similar Environmental Non-Government Organizations
- Field level studies to identify if species at risk, or their habitat, are likely present or absent at or near the site.
- When an activity is proposed within one of the continuous caribou ranges, please be sure to consider the caribou Range Management Policy. This policy includes figures and maps of the continuous caribou range, can be found online at https://www.ontario.ca/page/range-management-policy-support-woodland-caribou-conservation-and-recovery

3.4 Information Sources to Support Impact Assessments

- Guidance to help you understand if your activity is likely to adversely impact species at risk or their habitat can be found online at https://www.ontario.ca/page/policy-guidance-harm-and-harass-under-endangered-species-act and https://www.ontario.ca/page/categorizing-and-protecting-habitat-under-endangered-species-act
- A list of species at risk in Ontario is available online at https://www.ontario.ca/page/species-risk-ontario. On this webpage, you can find out more about each species, including where is lives, what threatens it and any specific habitat protections that apply to it by clicking on the photo of the species.

4.0 Check-List

Please feel free to use the check list below to help you confirm you have explored all applicable information sources and to support your discussion with Ministry staff at the preliminary screening stage.

- ✓ Land Information Ontario (LIO)
- ✓ Natural Heritage Information Centre (NHIC)
- ✓ The Breeding Bird Atlas
- ✓ eBird
- ✓ iNaturalist
- ✓ Ontario Reptile and Amphibian Atlas
- ✓ List Conservation Authorities you contacted:_____

  _____
- ✓ List local naturalist groups you contacted:_____

  _____
- ✓ List local Indigenous communities you contacted:_____

  _____
- ✓ List any other local land trusts or Environmental Non-Government Organizations you contacted:_____

  _____
- ✓ List and field studies that were conducted to identify species at risk, or their habitat, likely to be present or absent at or near the site: _____

  _____
- ✓ List what you think the likely impacts of your activity are on species at risk and their habitat (e.g. damage or destruction of habitat, killing, harming or harassing species at risk):_____

  _____

From: Orpana, Jon (MECP) [redacted]>
Sent: August 8, 2023 10:07 AM
To: Amy Langford
Subject: FW: Township of Russell - Water and Wastewater Master Plan Update - Notice of Study Commencement
Attachments: A001389-230712_FINAL_Notice of Commencement_e02.pdf; A001389-230714_FINAL_Avis de lancement_e01.pdf; Copy of streamlined_ea_project_information_form.xlsx; Instructions for Providing Class EA Notices to the Ministry of the Environment Conservation and Parks.pdf

EXTERNAL EMAIL

Hello Amy,

Thanks for these notices.

MECP has also had a new process in place since May 2018 for projects in that we also require a Project Information Form (attached) filled out in EXCEL format for our tracking of active projects. Instructions are also enclosed.

Thanks in advance.

Jon

Jon K. Orpana hear name
Regional Environmental Planner
Environmental Assessment Branch
Ministry of the Environment, Conservation and Parks
Kingston Regional Office
[redacted]

From: Battarino, Gavin (MECP) <[redacted]>
Sent: August 4, 2023 10:20 AM
To: Orpana, Jon (MECP) <[redacted] Del Villar Cuicas, Joan (MECP) <[redacted]>

Subject: FW: Township of Russell - Water and Wastewater Master Plan Update - Notice of Study Commencement

FYI

From: Amy Langford <Amy.Langford@cima.ca>
Sent: August-04-23 10:03 AM
To: Amy Langford <Amy.Langford@cima.ca>
Cc: Landry, Francois <FrancoisLandry@Russell.ca>; Bradley Young <Bradley.Young@cima.ca>
Subject: Township of Russell - Water and Wastewater Master Plan Update - Notice of Study Commencement

La version française suivra.

Municipal Class Environmental Assessment Study

Hello,

Please find attached for your information, the Notice of Study Commencement for the Municipal Class Environmental Assessment Study Master Plan Update that the Township of Russell is initiating to plan for its future Water and Wastewater System needs. The Notice is also posted on the Township's website here: https://www.russell.ca/en/your-township/water-and-wastewater-master-plan.aspx

The project team wants to make sure that appropriate consultation and engagement opportunities are provided to review agencies and stakeholders that may have an interest in this project. Please kindly advise either of the project team members listed in the attached Notice should you have any comments, questions or concerns, or if you would like to have a pre-consultation meeting with the team.

Hard copies of the attached Notice of Study Commencement have been mailed out to all in the contact list for whom we have a valid mailing address. Please indicate if you wish to receive project notifications in digital format moving forward.

Étude d'évaluation environnementale municipale de portée générale

Bonjour,

Veuillez trouver ci-joint, à titre d'information, l'avis de lancement d'étude pour la mise à jour du plan directeur de l'étude d'évaluation environnementale municipale de portée générale entreprise par la Municipalité de Russell. Cette mise à jour adressera la planification pour les besoins futurs en infrastructures d'eau potable et des eaux usées. L'avis est affiché sur le site Web de la Municipalité au lien suivant : https://www.russell.ca/en/your-township/water-and-wastewater-master-plan.aspx

L'équipe de projet veut s'assurer que les organismes et les parties prenantes qui pourraient être intéressés par ce projet bénéficient des possibilités de consultation et de rétroaction.
SVP informer l'un ou l'autre des membres de l'équipe de projet dont le nom figure dans l'avis ci-joint si vous avez des commentaires, des questions ou des préoccupations, ou si vous souhaitez prendre part à une réunion de préconsultation avec l'équipe.

Des copies papier de l'avis de début d'étude ci-joint ont été postées à toutes les personnes figurant sur la liste de contact pour lesquelles nous disposons d'une adresse postale valide. Veuillez nous indiquer si vous souhaitez recevoir les notifications du projet en format numérique à l'avenir.

AMY LANGFORD, P.Eng.
Water and Wastewater / Infrastructure

T 613-860-2462 **M** 343 597-0161 **F** 613-860-1870
600-1400 Blair Towers Place, Ottawa, ON K1J 9B8 CANADA

Engineering for people

Follow us

From: Amy Langford
Sent: August 9, 2023 10:44 AM
To: Orpana, Jon (MECP)
Cc: eanotification.eregion@ontario.ca
Subject: RE: Township of Russell - Water and Wastewater Master Plan Update - Notice of Study Commencement
Attachments: RussellTownship-W-WW-MP-streamlined_ea_project_information_form.xlsx; A001389-230712_FINAL_Notice of Commencement_e02.pdf; A001389-230714_FINAL_Avis de lancement_e01.pdf

Hi Jon,

Please find attached the completed form and Notices of Commencement.

Thanks,
Amy

AMY LANGFORD, P.Eng.
Water and Wastewater / Infrastructure

T 613-860-2462 **M** 343 597-0161 **F** 613-860-1870
600-1400 Blair Towers Place, Ottawa, ON K1J 9B8 CANADA

Engineering for people

Follow us

From: Orpana, Jon (MECP) <[redacted]>
Sent: Tuesday, August 8, 2023 10:07 AM
To: Amy Langford <Amy.Langford@cima.ca>
Subject: FW: Township of Russell - Water and Wastewater Master Plan Update - Notice of Study Commencement

EXTERNAL EMAIL

Hello Amy,

Thanks for these notices.

MECP has also had a new process in place since May 2018 for projects in that we also require a Project Information Form (attached) filled out in EXCEL format for our tracking of active projects. Instructions are also enclosed.

Thanks in advance.

Jon

Jon K. Orpana hear name
Regional Environmental Planner
Environmental Assessment Branch
Ministry of the Environment, Conservation and Parks
Kingston Regional Office
[redacted]

From: Battarino, Gavin (MECP) <[redacted]>
Sent: August 4, 2023 10:20 AM
To: Orpana, Jon (MECP) <[redacted]>; Del Villar Cuicas, Joan (MECP) <[redacted]>
Subject: FW: Township of Russell - Water and Wastewater Master Plan Update - Notice of Study Commencement

FYI

From: Amy Langford <Amy.Langford@cima.ca>
Sent: August-04-23 10:03 AM
To: Amy Langford <Amy.Langford@cima.ca>
Cc: Landry, Francois <FrancoisLandry@Russell.ca>; Bradley Young <Bradley.Young@cima.ca>
Subject: Township of Russell - Water and Wastewater Master Plan Update - Notice of Study Commencement

La version française suivra.

Municipal Class Environmental Assessment Study

Hello,

Please find attached for your information, the Notice of Study Commencement for the Municipal Class Environmental Assessment Study Master Plan Update that the Township of Russell is initiating to plan for its future Water and Wastewater System needs. The Notice is also posted on the Township's website here: https://www.russell.ca/en/your-township/water-and-wastewater-master-plan.aspx

The project team wants to make sure that appropriate consultation and engagement opportunities are provided to review agencies and stakeholders that may have an interest in this project. Please kindly advise either of the project team members listed in the attached Notice should you have any comments, questions or concerns, or if you would like to have a pre-consultation meeting with the team.

Hard copies of the attached Notice of Study Commencement have been mailed out to all in the contact list for whom we have a valid mailing address. Please indicate if you wish to receive project notifications in digital format moving forward.

Étude d'évaluation environnementale municipale de portée générale

Bonjour,

Veuillez trouver ci-joint, à titre d'information, l'avis de lancement d'étude pour la mise à jour du plan directeur de l'étude d'évaluation environnementale municipale de portée générale entreprise par la Municipalité de Russell. Cette mise à jour adressera la planification pour les besoins futurs en infrastructures d'eau potable et des eaux usées. L'avis est affiché sur le site Web de la Municipalité au lien suivant : https://www.russell.ca/en/your-township/water-and-wastewater-master-plan.aspx

L'équipe de projet veut s'assurer que les organismes et les parties prenantes qui pourraient être intéressés par ce projet bénéficient des possibilités de consultation et de rétroaction.
SVP informer l'un ou l'autre des membres de l'équipe de projet dont le nom figure dans l'avis ci-joint si vous avez des commentaires, des questions ou des préoccupations, ou si vous souhaitez prendre part à une réunion de préconsultation avec l'équipe.

Des copies papier de l'avis de début d'étude ci-joint ont été postées à toutes les personnes figurant sur la liste de contact pour lesquelles nous disposons d'une adresse postale valide. Veuillez nous indiquer si vous souhaitez recevoir les notifications du projet en format numérique à l'avenir.

AMY LANGFORD, P.Eng.
Water and Wastewater / Infrastructure

T 613-860-2462 **M** 343 597-0161 **F** 613-860-1870
600-1400 Blair Towers Place, Ottawa, ON K1J 9B8 CANADA

Engineering for people

Follow us

From: Orpana, Jon (MECP) <[redacted]>
Sent: August 24, 2023 10:36 AM
To: Amy Langford
Cc: Landry, Francois; Bradley Young
Subject: RE: Township of Russell - Water and Wastewater Master Plan Update - Revised Notice of Study Commencement

EXTERNAL EMAIL

Thanks Amy,

I will update the file.

Jon

From: Amy Langford <Amy.Langford@cima.ca>
Sent: August 24, 2023 10:17 AM
To: Amy Langford <Amy.Langford@cima.ca>
Cc: Landry, Francois <FrancoisLandry@Russell.ca>; Bradley Young <Bradley.Young@cima.ca>
Subject: RE: Township of Russell - Water and Wastewater Master Plan Update - Revised Notice of Study Commencement

CAUTION -- EXTERNAL E-MAIL - Do not click links or open attachments unless you recognize the sender.

La version française suivra.

Please find attached a Revised Notice of Study Commencement for the Municipal Class Environmental Assessment Study Master Plan Update for the Township of Russell. The Notice of Study Commencement was revised to update the study area figure to match the Urban Policy Areas for Russell and Embrun as well as the Trade and Industry Policy Areas for the Industrial Park in the Township of Russell based on the recently approved United Counties of Prescott and Russell Official Plan. All other study information in the Notice of Study Commencement remains unchanged.

The Revised Notice of Study Commencement will be mailed out to all in the contact list for whom we have a valid mailing address and will be posted on the Township's website here: https://www.russell.ca/en/your-township/water-and-wastewater-master-plan.aspx

---

Veuillez trouver ci-joint l'avis de lancement d'étude révisé de l'étude d'évaluation environnementale municipale de portée générale pour la mise à jour du plan directeur de la Municipalité de Russell. L'avis de lancement de l'étude a été révisé afin de mettre à jour la figure de la zone d'étude pour qu'elle corresponde aux zones de politique urbaine de Russell et d'Embrun ainsi qu'aux zones de politique commerciale et industrielle du parc industriel du canton de Russell, selon le Plan officiel des Comtés unis

de Prescott et Russell récemment approuvé. Toute autre information relative à l'étude contenue dans l'avis de lancement de l'étude demeure inchangée.

L'avis révisé de lancement d'étude sera envoyé par la poste à toutes les personnes dont l'adresse postale est valide et sera également affiché sur le site Web de la municipalité ici : https://www.russell.ca/en/your-township/water-and-wastewater-master-plan.aspx

---

AMY LANGFORD, P.Eng.
Project Engineer
Water and Wastewater / Infrastructure

T 613-860-2462 **M** 343 597-0161 **F** 613-860-1870
600-1400 Blair Towers Place, Ottawa, ON K1J 9B8 CANADA

Follow us

From: Amy Langford
Sent: Friday, August 4, 2023 10:03 AM
To: Amy Langford <Amy.Langford@cima.ca>
Cc: Landry, Francois <FrancoisLandry@Russell.ca>; Bradley Young <Bradley.Young@cima.ca>
Subject: Township of Russell - Water and Wastewater Master Plan Update - Notice of Study Commencement

La version française suivra.

Municipal Class Environmental Assessment Study

Hello,

Please find attached for your information, the Notice of Study Commencement for the Municipal Class Environmental Assessment Study Master Plan Update that the Township of Russell is initiating to plan for its future Water and Wastewater System needs. The Notice is also posted on the Township's website here: https://www.russell.ca/en/your-township/water-and-wastewater-master-plan.aspx

The project team wants to make sure that appropriate consultation and engagement opportunities are provided to review agencies and stakeholders that may have an interest in this project. Please kindly advise either of the project team members listed in the attached Notice should you have any comments, questions or concerns, or if you would like to have a pre-consultation meeting with the team.

Hard copies of the attached Notice of Study Commencement have been mailed out to all in the contact list for whom we have a valid mailing address. Please indicate if you wish to receive project notifications in digital format moving forward.

Étude d'évaluation environnementale municipale de portée générale

Bonjour,

Veuillez trouver ci-joint, à titre d'information, l'avis de lancement d'étude pour la mise à jour du plan directeur de l'étude d'évaluation environnementale municipale de portée générale entreprise par la Municipalité de Russell. Cette mise à jour adressera la planification pour les besoins futurs en infrastructures d'eau potable et des eaux usées. L'avis est affiché sur le site Web de la Municipalité au lien suivant : https://www.russell.ca/en/your-township/water-and-wastewater-master-plan.aspx

L'équipe de projet veut s'assurer que les organismes et les parties prenantes qui pourraient être intéressés par ce projet bénéficient des possibilités de consultation et de rétroaction.
SVP informer l'un ou l'autre des membres de l'équipe de projet dont le nom figure dans l'avis ci-joint si vous avez des commentaires, des questions ou des préoccupations, ou si vous souhaitez prendre part à une réunion de préconsultation avec l'équipe.

Des copies papier de l'avis de début d'étude ci-joint ont été postées à toutes les personnes figurant sur la liste de contact pour lesquelles nous disposons d'une adresse postale valide. Veuillez nous indiquer si vous souhaitez recevoir les notifications du projet en format numérique à l'avenir.

AMY LANGFORD, P.Eng.
Water and Wastewater / Infrastructure

T 613-860-2462 **M** 343 597-0161 **F** 613-860-1870
600-1400 Blair Towers Place, Ottawa, ON K1J 9B8 CANADA

From: Taylor, Deidre (MTO) <[redacted]>
Sent: August 9, 2023 8:45 AM
To: Amy Langford
Cc: Landry, Francois; Bradley Young; Kamal, Tarique (MTO)
Subject: RE: Township of Russell - Water and Wastewater Master Plan Update - Notice of Study Commencement

EXTERNAL EMAIL

As a follow-up to the email below. Please consider including Tarique Kamal, Sr. Project Manager from our Corridor Office on future correspondence.
Thank you.

Deidre Taylor, P.Eng. | hear it | she/her/hers
Senior Project Engineer (A), PD | DEB | TIMD | MTO

From: Taylor, Deidre (MTO)
Sent: August 8, 2023 10:50 AM
To: Amy Langford <Amy.Langford@cima.ca>
Cc: Landry, Francois <FrancoisLandry@Russell.ca>; Bradley Young <Bradley.Young@cima.ca>
Subject: RE: Township of Russell - Water and Wastewater Master Plan Update - Notice of Study Commencement

Hello Amy – I am not sure why I have been included on this project mailing list. Please remove me from future correspondence.
Thank you kindly.

Deidre Taylor, P.Eng. | hear it | she/her/hers
Senior Project Engineer (A), Design and Engineering Branch

Ministry of Transportation Ontario
Transportation Infrastructure Management Division
[redacted]

From: Amy Langford <Amy.Langford@cima.ca>
Sent: August 4, 2023 10:03 AM
To: Amy Langford <Amy.Langford@cima.ca>
Cc: Landry, Francois <FrancoisLandry@Russell.ca>; Bradley Young <Bradley.Young@cima.ca>
Subject: Township of Russell - Water and Wastewater Master Plan Update - Notice of Study Commencement

La version française suivra.

Municipal Class Environmental Assessment Study

Hello,

Please find attached for your information, the Notice of Study Commencement for the Municipal Class Environmental Assessment Study Master Plan Update that the Township of Russell is initiating to plan for its future Water and Wastewater System needs. The Notice is also posted on the Township's website here: https://www.russell.ca/en/your-township/water-and-wastewater-master-plan.aspx

The project team wants to make sure that appropriate consultation and engagement opportunities are provided to review agencies and stakeholders that may have an interest in this project. Please kindly advise either of the project team members listed in the attached Notice should you have any comments, questions or concerns, or if you would like to have a pre-consultation meeting with the team.

Hard copies of the attached Notice of Study Commencement have been mailed out to all in the contact list for whom we have a valid mailing address. Please indicate if you wish to receive project notifications in digital format moving forward.

Étude d'évaluation environnementale municipale de portée générale

Bonjour,

Veuillez trouver ci-joint, à titre d'information, l'avis de lancement d'étude pour la mise à jour du plan directeur de l'étude d'évaluation environnementale municipale de portée générale entreprise par la Municipalité de Russell. Cette mise à jour adressera la planification pour les besoins futurs en infrastructures d'eau potable et des eaux usées. L'avis est affiché sur le site Web de la Municipalité au lien suivant : https://www.russell.ca/en/your-township/water-and-wastewater-master-plan.aspx

L'équipe de projet veut s'assurer que les organismes et les parties prenantes qui pourraient être intéressés par ce projet bénéficient des possibilités de consultation et de rétroaction.
SVP informer l'un ou l'autre des membres de l'équipe de projet dont le nom figure dans l'avis ci-joint si vous avez des commentaires, des questions ou des préoccupations, ou si vous souhaitez prendre part à une réunion de préconsultation avec l'équipe.

Des copies papier de l'avis de début d'étude ci-joint ont été postées à toutes les personnes figurant sur la liste de contact pour lesquelles nous disposons d'une adresse postale valide. Veuillez nous indiquer si vous souhaitez recevoir les notifications du projet en format numérique à l'avenir.

AMY LANGFORD, P.Eng.
Water and Wastewater / Infrastructure

T 613-860-2462 **M** 343 597-0161 **F** 613-860-1870
600-1400 Blair Towers Place, Ottawa, ON K1J 9B8 CANADA

Engineering for people

30+ YEARS

KINCENTRIC Best Employer CANADA 2021

Follow us

Do you really need to print this email? Let's protect the environment!

From: Kamal, Tarique (MTO) <[redacted]>
Sent: August 15, 2023 3:05 PM
To: Amy Langford
Cc: Landry, Francois; Bradley Young; Nadeau, Alain (MTO)
Subject: RE: Township of Russell - Water and Wastewater Master Plan Update - Notice of Study Commencement

EXTERNAL EMAIL

Good afternoon Amy,

Thank you for circulating the Notice of Study Commencement for the Township of Russell to the Ministry of Transportation (MTO) for review. The Ministry understands that the study is related to initiating a plan for its future Water and Wastewater System needs. MTO has reviewed the notice in accordance with the *Public Transportation and Highway Improvement Act* (PTHIA) and the Highway Corridor Management Manual to offer the following comments:

Under the authority of the Public Transportation and Highway Improvement Act, the Ministry, through the issuance of permits, controls all land use within 45 metres of the highway right-of-way and the area within 395 metres of the center-point of the intersection of the highway and any intersecting road. As well, the Ministry's control area extends to 800 metres for developments that are considered a larger traffic generator. All development within the control area is subject to Ministry approvals and it is the responsibility of the landowner to acquire all necessary MTO permits prior to the commencement of any activities the control area.

Please note that part of the subject study area is within the Ministry's permit control area as defined by PTHIA. Therefore, the MTO strongly encourages early consultation of any activities that will be carried out withing the control area so that stakeholders can grasp a clear picture of the MTO review process, requirements, personnel to engage, and timelines; as well as the expectations regarding associated planning, design and construction including engineering consultant qualifications.
The MTO pre-consultation requests can be submitted online using the Highway Corridor Management Online Services at: HCMS - Highway Corridor Management System (gov.on.ca).

Please feel free to contact me if you have any questions or concerns.

Thanks,

Tarique

Tarique Kamal
Corridor Management Senior Project Manager (A)
Corridor Management Section | East Operations

Ministry of Transportation (MTO)
[redacted]

From: Amy Langford <Amy.Langford@cima.ca>
Sent: August 4, 2023 10:03 AM
To: Amy Langford <Amy.Langford@cima.ca>
Cc: Landry, Francois <FrancoisLandry@Russell.ca>; Bradley Young <Bradley.Young@cima.ca>
Subject: Township of Russell - Water and Wastewater Master Plan Update - Notice of Study Commencement

La version française suivra.

Municipal Class Environmental Assessment Study

Hello,

Please find attached for your information, the Notice of Study Commencement for the Municipal Class Environmental Assessment Study Master Plan Update that the Township of Russell is initiating to plan for its future Water and Wastewater System needs. The Notice is also posted on the Township's website here: https://www.russell.ca/en/your-township/water-and-wastewater-master-plan.aspx

The project team wants to make sure that appropriate consultation and engagement opportunities are provided to review agencies and stakeholders that may have an interest in this project. Please kindly advise either of the project team members listed in the attached Notice should you have any comments, questions or concerns, or if you would like to have a pre-consultation meeting with the team.

Hard copies of the attached Notice of Study Commencement have been mailed out to all in the contact list for whom we have a valid mailing address. Please indicate if you wish to receive project notifications in digital format moving forward.

Étude d'évaluation environnementale municipale de portée générale

Bonjour,

Veuillez trouver ci-joint, à titre d'information, l'avis de lancement d'étude pour la mise à jour du plan directeur de l'étude d'évaluation environnementale municipale de portée générale entreprise par la Municipalité de Russell. Cette mise à jour adressera la planification pour les besoins futurs en

infrastructures d'eau potable et des eaux usées. L'avis est affiché sur le site Web de la Municipalité au lien suivant : https://www.russell.ca/en/your-township/water-and-wastewater-master-plan.aspx

L'équipe de projet veut s'assurer que les organismes et les parties prenantes qui pourraient être intéressés par ce projet bénéficient des possibilités de consultation et de rétroaction.
SVP informer l'un ou l'autre des membres de l'équipe de projet dont le nom figure dans l'avis ci-joint si vous avez des commentaires, des questions ou des préoccupations, ou si vous souhaitez prendre part à une réunion de préconsultation avec l'équipe.

Des copies papier de l'avis de début d'étude ci-joint ont été postées à toutes les personnes figurant sur la liste de contact pour lesquelles nous disposons d'une adresse postale valide. Veuillez nous indiquer si vous souhaitez recevoir les notifications du projet en format numérique à l'avenir.

AMY LANGFORD, P.Eng.
Water and Wastewater / Infrastructure

T 613-860-2462 **M** 343 597-0161 **F** 613-860-1870
600-1400 Blair Towers Place, Ottawa, ON K1J 9B8 CANADA

Engineering for people

Follow us

From: Kamal, Tarique (MTO) <[redacted]>
Sent: April 29, 2024 4:13 PM
To: Amy Seymour
Cc: Landry, Francois; Bradley Young
Subject: RE: Township of Russell - Water and Wastewater Master Plan Update - Notice of Public Information Centre
Attachments: MTOComment-NoticeofEAStudy-Water&WastewaterPlan-TWPofRussell.pdf

EXTERNAL EMAIL

Hi Amy,

Please find the attached MTO Comments.

Thanks,

Tarique

Tarique Kamal
Senior Project Manager | Corridor Management | East Operations
Ministry of Transportation | Ontario Public Service
[redacted]

Ontario

Taking pride in strengthening Ontario, its places and its people

Highway Corridor Management

From: Amy Langford <Amy.Langford@cima.ca>
Sent: April 24, 2024 4:13 PM
To: Amy Langford <Amy.Langford@cima.ca>
Cc: Landry, Francois <FrancoisLandry@Russell.ca>; Bradley Young <Bradley.Young@cima.ca>
Subject: Township of Russell - Water and Wastewater Master Plan Update - Notice of Public Information Centre

Ministry of Transportation

Corridor Management Section

[redacted]

Ministère des Transports

Section de gestion des couloirs routiers

[redacted]

April 29, 2024

AMY LANGFORD, P.Eng.
Project Engineer
Water and Wastewater / Infrastructure
T 613-860-2462 M 343 597-0161 F 613-860-1870
600-1400 Blair Towers Place, Ottawa, ON K1J 9B8 CANADA

Via email: Amy.Langford@cima.ca

Dear Amy Langford:

RE: Municipal Class Environmental Assessment Study - Master Plan Update for Russell Township Water and Wastewater Systems- Notice of Public Information Centre

Thank you for circulating the notice regarding the Township of Russell Municipal Class Environmental Assessment study for the Township Water and Wastewater system. The Ministry of Transportation (MTO) would like to provide important information in accordance with the *Public Transportation and Highway Improvement Act* (PTHIA) and the Highway Corridor Management Manual for your consideration when planning activities related to the Master Plan.

Under the PTHIA, the Ministry has authority over land use within 45 meters of the Highway 417 right-of-way and 395 meters from the center-point of the highway intersection. Any development within this area requires Ministry approvals, and proponents must obtain MTO permits before commencing any activities.

It is important to note that any future watermain construction related to the study that involves crossing the highway must be planned outside of the highway interchange area and must comply with the requirements of the applicable Ontario Provincial Standard Specifications, including OPSS 701, which specifically addresses watermain construction. For guidance on the installation method of any pipeline within the MTO right-of-way and highway crossing, please refer to the Highway Corridor Management Manual (2022).

Early consultation with the MTO is highly recommended for activities within the control area. This enables stakeholders to understand the MTO review process, requirements, personnel involved, timelines, and expectations for planning, design, and construction, including qualifications for engineering consultants.

Pre-consultation requests with the MTO can be submitted online using the Highway Corridor Management Online Services at: HCMS - Highway Corridor Management System (gov.on.ca).

Please do not hesitate to contact me if you have any questions or concerns.

Sincerely,

Tarique Kamal
Senior Project Manager
MTO, Eastern Region

From: Ontario Region / Region d'Ontario (IAAC/AEIC) <ontarioregion-regiondontario@iaac-aeic.gc.ca>
Sent: August 18, 2023 5:14 PM
To: Amy Langford
Cc: Landry, Francois; Bradley Young; Ontario Region / Region d'Ontario (IAAC/AEIC)
Subject: RE: Township of Russell - Water and Wastewater Master Plan Update - Notice of Study Commencement
Attachments: Letter from IAAC to Township of Russell - Water and Wastewater Systems.pdf

EXTERNAL EMAIL

UNCLASSIFIED - NON CLASSIFIÉ

Good afternoon,

Please see attached response to your August 4, 2023 correspondence regarding the Township of Russell Water and Wastewater System Master Plan.

Best regards,

Kim Browning

Administrative Clerk, Ontario Region
Impact Assessment Agency of Canada / Government of Canada
[redacted]

Commis administratif, Bureau régional de l'Ontario
Agence d'évaluation d'impact du Canada / Gouvernement du Canada
[redacted]

From: Amy Langford <Amy.Langford@cima.ca>
Sent: Friday, August 4, 2023 10:03 AM
To: Amy Langford <Amy.Langford@cima.ca>
Cc: Landry, Francois <FrancoisLandry@Russell.ca>; Bradley Young <Bradley.Young@cima.ca>
Subject: Township of Russell - Water and Wastewater Master Plan Update - Notice of Study Commencement

La version française suivra.

Municipal Class Environmental Assessment Study

Hello,

Please find attached for your information, the Notice of Study Commencement for the Municipal Class Environmental Assessment Study Master Plan Update that the Township of Russell is initiating to plan for its future Water and Wastewater System needs. The Notice is also posted on the Township's website here: https://www.russell.ca/en/your-township/water-and-wastewater-master-plan.aspx

The project team wants to make sure that appropriate consultation and engagement opportunities are provided to review agencies and stakeholders that may have an interest in this project. Please kindly advise either of the project team members listed in the attached Notice should you have any comments, questions or concerns, or if you would like to have a pre-consultation meeting with the team.

Hard copies of the attached Notice of Study Commencement have been mailed out to all in the contact list for whom we have a valid mailing address. Please indicate if you wish to receive project notifications in digital format moving forward.

Étude d'évaluation environnementale municipale de portée générale

Bonjour,

Veuillez trouver ci-joint, à titre d'information, l'avis de lancement d'étude pour la mise à jour du plan directeur de l'étude d'évaluation environnementale municipale de portée générale entreprise par la Municipalité de Russell. Cette mise à jour adressera la planification pour les besoins futurs en infrastructures d'eau potable et des eaux usées. L'avis est affiché sur le site Web de la Municipalité au lien suivant : https://www.russell.ca/en/your-township/water-and-wastewater-master-plan.aspx

L'équipe de projet veut s'assurer que les organismes et les parties prenantes qui pourraient être intéressés par ce projet bénéficient des possibilités de consultation et de rétroaction.
SVP informer l'un ou l'autre des membres de l'équipe de projet dont le nom figure dans l'avis ci-joint si vous avez des commentaires, des questions ou des préoccupations, ou si vous souhaitez prendre part à une réunion de préconsultation avec l'équipe.

Des copies papier de l'avis de début d'étude ci-joint ont été postées à toutes les personnes figurant sur la liste de contact pour lesquelles nous disposons d'une adresse postale valide. Veuillez nous indiquer si vous souhaitez recevoir les notifications du projet en format numérique à l'avenir.

AMY LANGFORD, P.Eng.
Water and Wastewater / Infrastructure

T 613-860-2462 **M** 343 597-0161 **F** 613-860-1870
600-1400 Blair Towers Place, Ottawa, ON K1J 9B8 CANADA

Follow us

Impact Assessment Agency of Canada | Agence d'évaluation d'impact du Canada

Ontario Region | Région de l'Ontario
[redacted]

August 18, 2023 **Sent by email**

Amy Langford
Water and Wastewater / Infrastructure
600-1400 Blair Towers Place
Ottawa ON K1J 8B8
Amy.Langford@cima.ca

Dear Amy Langford:

Subject: Applicability of the *Impact Assessment Act* to the Water and Wastewater Systems Master Plan proposed by Township of Russell

Thank you for your correspondence, dated August 4, 2023 regarding the proposed Water and Wastewater Systems Master Plan (the Project) proposed by The Township of Russell (the proponent).

The ***Impact Assessment Act*** (the IAA) sets out the federal process for assessing the impacts of certain major projects, including the assessment of positive and negative environmental, economic, health and social effects that are within the legislative authority of the Parliament of Canada. The ***Physical Activities Regulations*** (the Regulations) under the IAA identify the physical activities that constitute the "designated projects" that are subject to the IAA and may require an impact assessment. Proponents of designated projects are required to submit an Initial Project Description to the Impact Assessment Agency of Canada (the Agency) to inform a determination of whether an impact assessment is required.

Based on the information provided, the proposed project does not appear to include physical activities that are described in the Regulations.

Should details or design aspects of the Project change such that the Project may include physical activities that are described in the Regulations, contact the Agency to discuss these changes and the implications on the applicability of the IAA.

…/2

Please note that for physical activities not described in the Regulations, subsection 9(1) of the IAA provides that the Minister of Environment and Climate Change (the Minister) may designate a physical activity. The Minister may designate on request or on his or her own initiative. A physical activity may be designated if the Minister is of the opinion that the carrying out of that activity may cause adverse effects within federal jurisdiction or adverse direct or incidental effects (resulting from federal decisions), or if public concerns related to those effects warrant the designation. Should the Minister designate the physical activity it would be considered a designated project and an Initial Project Description would be required.

Should the Project be carried out in whole or in part on federal lands, section 82 of the IAA would apply if any federal authority is required to exercise a power, duty or function under an Act other than IAA in order for the Project to proceed, or is providing financial assistance for the purpose of enabling the Project to be carried out. In that case, that federal authority must ensure that any Project assessment requirements under those provisions are satisfied.

In addition, other federal regulatory permits, authorizations and/or licences may still be required.

Further information on the IAA and associated regulations can be found at ***https://www.canada.ca/en/impact-assessment-agency.html.***

If you have any questions, please feel free to contact us at ***ontarioregion-regiondontario@iaac-aeic.gc.ca***.

Sincerely,

Amy Sen
A/Director, Ontario Region

Enclosure: Useful Legislation, Regulation, and Guidance Documents

c.c.: Francois Landry, Municipalite de Russell Township
Bradley Young, CIMA+

Attachment – Useful Legislation, Regulation, and Guidance Documents

For more information on the ***Impact Assessment Act***, please refer to the following links:

Legislation and Regulations:
https://www.canada.ca/en/impact-assessment-agency/corporate/acts-regulations/legislation-regulations.html

Impact Assessment Process Overview:
https://www.canada.ca/en/impact-assessment-agency/services/policy-guidance/impact-assessment-process-overview.html

Practitioner's Guide to Federal Impact Assessments under the ***Impact Assessment Act***: ***https://www.canada.ca/en/impact-assessment-agency/services/policy-guidance/practitioners-guide-impact-assessment-act.html***

Compendium of Policies and Guidance Documents:
https://www.canada.ca/en/impact-assessment-agency/services/policy-guidance.html

From: Harvey, Joseph (MCM) <[redacted]>
Sent: August 23, 2023 12:26 PM
To: FrancoisLandry@Russell.ca
Cc: Bradley Young; Amy Langford
Subject: FW: File 0019864: Township of Russell - Water and Wastewater Master Plan Update - Notice of Study Commencement
Attachments: A001389-230712_FINAL_Notice of Commencement_e02.pdf; A001389-230714_FINAL_Avis de lancement_e01.pdf; 2023-08-23_Russell-WWMP-MCM-Ltr.pdf

EXTERNAL EMAIL

Francois Landry,

Please find attached our initial advice on the above referenced undertaking.

Please note that the responsibility for administration of the *Ontario Heritage Act* and matters related to cultural heritage have been transferred from the Ministry of Tourism, Culture and Sport (MTCS) to the Ministry of Citizenship and Multiculturalism (MCM). Individual staff roles and contact information remain unchanged. Please continue to send any notices, report and/or documentation to both Karla Barboza and myself.

Please do not hesitate to contact me with any questions or concerns.

Regards,

Joseph Harvey | Heritage Planner
Citizenship, Inclusion and Heritage Division | Heritage Branch | Heritage Planning Unit
Ministry of Citizenship and Multiculturalism
[redacted]

From: Amy Langford <Amy.Langford@cima.ca>
Sent: August 4, 2023 10:03 AM
To: Amy Langford <Amy.Langford@cima.ca>
Cc: Landry, Francois <FrancoisLandry@Russell.ca>; Bradley Young <Bradley.Young@cima.ca>
Subject: Township of Russell - Water and Wastewater Master Plan Update - Notice of Study Commencement

CAUTION -- EXTERNAL E-MAIL - Do not click links or open attachments unless you recognize the sender.

La version française suivra.

Municipal Class Environmental Assessment Study

Hello,

Please find attached for your information, the Notice of Study Commencement for the Municipal Class Environmental Assessment Study Master Plan Update that the Township of Russell is initiating to plan for its future Water and Wastewater System needs. The Notice is also posted on the Township's website here: https://www.russell.ca/en/your-township/water-and-wastewater-master-plan.aspx

The project team wants to make sure that appropriate consultation and engagement opportunities are provided to review agencies and stakeholders that may have an interest in this project. Please kindly advise either of the project team members listed in the attached Notice should you have any comments, questions or concerns, or if you would like to have a pre-consultation meeting with the team.

Hard copies of the attached Notice of Study Commencement have been mailed out to all in the contact list for whom we have a valid mailing address. Please indicate if you wish to receive project notifications in digital format moving forward.

Étude d'évaluation environnementale municipale de portée générale

Bonjour,

Veuillez trouver ci-joint, à titre d'information, l'avis de lancement d'étude pour la mise à jour du plan directeur de l'étude d'évaluation environnementale municipale de portée générale entreprise par la Municipalité de Russell. Cette mise à jour adressera la planification pour les besoins futurs en infrastructures d'eau potable et des eaux usées. L'avis est affiché sur le site Web de la Municipalité au lien suivant : https://www.russell.ca/en/your-township/water-and-wastewater-master-plan.aspx

L'équipe de projet veut s'assurer que les organismes et les parties prenantes qui pourraient être intéressés par ce projet bénéficient des possibilités de consultation et de rétroaction.
SVP informer l'un ou l'autre des membres de l'équipe de projet dont le nom figure dans l'avis ci-joint si vous avez des commentaires, des questions ou des préoccupations, ou si vous souhaitez prendre part à une réunion de préconsultation avec l'équipe.

Des copies papier de l'avis de début d'étude ci-joint ont été postées à toutes les personnes figurant sur la liste de contact pour lesquelles nous disposons d'une adresse postale valide. Veuillez nous indiquer si vous souhaitez recevoir les notifications du projet en format numérique à l'avenir.

AMY LANGFORD, P.Eng.
Water and Wastewater / Infrastructure

T 613-860-2462 **M** 343 597-0161 **F** 613-860-1870
600-1400 Blair Towers Place, Ottawa, ON K1J 9B8 CANADA

Follow us

Do you really need to print this email? Let's protect the environment!

Ministry of Citizenship and Multiculturalism

Heritage Planning Unit
Heritage Branch
Citizenship, Inclusion and Heritage Division
[redacted]

Ministère des Affaires civiques et du Multiculturalisme

Unité de la planification relative au patrimoine
Direction du patrimoine
Division des affaires civiques, de l'inclusion et du patrimoine
[redacted]

Ontario

August 23, 2023 VIA EMAIL ONLY

Francois Landry
Municipalité de Russell Township
Project Manager
francoislandry@russell.ca

MCM File	**:**	[redacted]
Proponent	**:**	**Corporation of the Township of Russell**
Subject	**:**	**Notice of Study Commencement - Master Plan Approach 1**
Project	**:**	**Master Plan Update for Russell Township Water and Wastewater Systems**
Location	**:**	**Township of Russell**

Dear Francois Landry:

Thank you for providing the Ministry of Citizenship and Multiculturalism (MCM) with the Notice of Commencement for this project.

MCM's interest in this master plan relates to it's mandate of conserving Ontario's cultural heritage, which includes archaeological resources, built heritage resources and cultural heritage landscapes.

MCM understands that master plans are long range plans which integrate infrastructure requirements for existing and future land use with environmental assessment planning principles. The Municipal Class Environmental Assessment (MCEA) outlines a framework for master plan and associated studies which should recognize the planning and design Process of this Class EA, and should incorporate the key principles of successful environmental assessment planning identified in Section A.1.1. The master planning process will, at minimum, address Phases 1 and 2 of the Planning and Design Process of the MCEA.

This letter provides advice on how to incorporate consideration of cultural heritage in the above-mentioned master planning process by outlining the technical cultural heritage studies and the level of detail required to address cultural heritage in master plans. In accordance with the MCEA, cultural heritage resources should be identified early in the process in order to determine known and potential resources and potential impacts.

Master Plan Summary
The Corporation of the Township of Russell is initiating a Class Environmental Assessment (Class EA) study to update its 2016 Water and Wastewater Master Plan. The 2016 Master Plan outlined a 20-year strategy for water and wastewater infrastructure upgrades based on growth forecasted at the time. Since the completion of the 2016 Master Plan, the pace of development within the

Township's urban areas has exceeded what was previously projected. In addition, the proposed Official Plan Amendment expands the urban boundaries of the Township. These new areas will require water and wastewater servicing. This Master Plan study will identify new infrastructure or improvements to existing infrastructure to accommodate future development over a 20-year planning period.

Identifying Cultural Heritage Resources
MCM understands that the final public notice for the master plan could become the notice of completion for the Schedule B and C MCEAs within it and that this approach would likely result in extensive documentation should the master plan include numerous Schedule C MCEA undertakings. In regards to cultural heritage resources the Master Plan Document should;

- identify existing baseline environmental conditions,
- identify expected environmental impacts and,
- Include measures to mitigate potential negative impacts.

Archaeological Resources
Any undertakings as part of the master plan should be screened using the Ministry's *Criteria for Evaluating Archaeological Potential* and *Criteria for Evaluating Marine Archaeological Potential* to determine if an archaeological assessment is needed. If the EA project area exhibits archaeological potential, then an archaeological assessment (AA) should be undertaken by an archaeologist licensed under the Ontario Heritage Act and submitted for MCM review prior to the completion of the master plan.

Built Heritage Resources and Cultural Heritage Landscapes
A Cultural Heritage Report: Existing Conditions and Preliminary Impact Assessment will be undertaken for the entire study area during the planning phase and will be summarized in the EA Report. This study will:

1. Describe the existing baseline cultural heritage conditions within the study area by identifying all known or potential built heritage resources and cultural heritage landscapes, including a historical summary of the study area. The Ministry has developed screening criteria that may assist with this exercise: *Criteria for Evaluating for Potential Built Heritage Resources and Cultural Heritage Landscapes*.

2. Identify preliminary potential project-specific impacts on the known and potential built heritage resources and cultural heritage landscapes that have been identified. The report should include a description of the anticipated impact to each known or potential built heritage resource or cultural heritage landscape that has been identified.

3. Recommend measures to avoid or mitigate potential negative impacts to known or potential built heritage resources and cultural heritage landscapes. The proposed mitigation measures are to inform the next steps of project planning and design.

Where a known or potential built heritage resource or cultural heritage landscape may be directly and adversely impacted, and where it has not yet been evaluated for Cultural Heritage Value or Interest (CHVI), completion of a Cultural Heritage Evaluation Report (CHER) is required to fully understand its CHVI and level of significance. The CHER must be completed as part of the final EA report. If a potential resource is found to be of CHVI, then a Heritage Impact Assessment (HIA) will need to be undertaken and included in the final EA report. Our Ministry's *Info Sheet #5: Heritage Impact Assessments and Conservation Plans* outlines the scope of HIAs. Please send the HIA to MCM for review and make it available to local organizations or individuals who have expressed interest in review.

While some cultural heritage landscapes are contained within individual property boundaries, others span across multiple properties. For certain cultural heritage landscapes, it will be more appropriate for the CHER and HIA to include multiple properties, in order to reflect the extent of that cultural heritage landscape in its entirety.

Community input should be sought to identify locally recognized and potential cultural heritage resources. Sources include, but are not limited to, municipal heritage committees, community heritage registers, historical societies and other local heritage organizations.

Cultural heritage resources are often of critical importance to Indigenous communities. Indigenous communities may have knowledge that can contribute to the identification of cultural heritage resources, and we suggest that any engagement with Indigenous communities includes a discussion about known or potential cultural heritage resources that are of value to them.

Environmental Assessment Reporting
Technical cultural heritage studies are to be undertaken by a qualified person who has expertise, recent experience, and knowledge relevant to the type of cultural heritage resources being considered and the nature of the activity being proposed. Please advise MCM whether any technical heritage studies will be completed for this master plan and provide them to MCM before issuing a Notice of Completion.

Please note that the responsibility for administration of the *Ontario Heritage Act* and matters related to cultural heritage have been transferred from the Ministry of Tourism, Culture and Sport (MTCS) to the Ministry of Citizenship and Multiculturalism (MCM). Individual staff roles and contact information remain unchanged. Please continue to send any notices, report and/or documentation electronically to both Karla Barboza and myself.

- Karla Barboza, Team Lead - Heritage | Heritage Planning Unit (Citizenship and Multiculturalism) | [redacted]
- Joseph Harvey, Heritage Planner | Heritage Planning Unit (Citizenship and Multiculturalism) | [redacted]

Thank you for consulting MCM on this project. Please continue to do so through the master plan process and contact myself with any questions or concerns.

Sincerely,

Joseph Harvey
Heritage Planner
Heritage Planning Unit
[redacted]

Copied to: Bradley Young, Project Manager, CIMA+
Amy Langford, Water and Wastewater, CIMA+,

From: Amy Seymour
Sent: May 26, 2024 9:45 AM
To: [redacted]
Cc: Landry, Francois; Bradley Young; Bourgon, Jonathan
Subject: Township of Russell W/WW Master Plan Update - Discussion on Future Water Supply
Attachments: RussellTownshipWaterPICBoards.pdf

Good Morning, Zoe:

We are reaching out on behalf of the Township of Russell to discuss the Township's anticipated future water supply needs. The Township currently has an agreement with the City of Ottawa for supply of up to 11,860 m^3/d of water through an approximately 30 km long, 450mm diameter feedermain from the Leitrim Road Pumping Station. As shown on the attached water-related boards from the Township's recent W/WW Master Plan Public Information Centre, the Township anticipates that water demands will exceed the 11,860 m^3/d agreement limit by 2031. The preliminary preferred alternative to meet the Township's future water demands is to renegotiate the agreement with the City to increase water supply as the existing 450mm feedermain has additional capacity.

We would like to schedule a meeting with the City of Ottawa's infrastructure planning group, the Township, and CIMA+ to review the Township's projected water demands, quantify the extent of upgrades required to the City's distribution system to meet the Township's water demands, and discuss next steps for revising the water supply agreement. We anticipate that this will be an introductory conservation to share information between the City and the Township prior to finalizing our preferred Master Plan water servicing alternative.

Could you please let us know who from the City should attend this coordination meeting with the Township/CIMA+? We are available to meet in the next few weeks within the following timeslots:

- Thursday, May 30 – 9:00am-12:00pm
- Thursday, May 30 – 1:00pm-3:00pm
- Monday, June 3 – 9:00am-12:00pm
- Monday, June 3 – 1:00pm-3:00pm
- Thursday, June 6 – 9:00am-12:00pm
- Thursday, June 6 – 1:00pm-3:00pm

Please feel free to reach out with any questions or requests for additional information.
Thank you,
Amy

AMY SEYMOUR (nee LANGFORD), P.Eng.
Project Engineer
Water and Wastewater / Infrastructure

M 343 597-0161
600-1400 Blair Towers Place, Ottawa, ON K1J 9B8 CANADA

Follow us

Do you really need to print this email? Let's protect the environment!

From: Amy Seymour
Sent: June 4, 2024 9:37 AM
To: Rogers, Christopher; Gong, Qiaoqiao
Cc: Landry, Francois; Bradley Young; Bourgon, Jonathan
Subject: RE: Township of Russell W/WW Master Plan Update - Discussion on Future Water Supply

Hi Chris,

That would be great – thanks! I will send you a meeting invite for 11:00am on Thursday if that works for you.

Looking forward to your input.

Thanks,
Amy

AMY SEYMOUR (nee LANGFORD), P.Eng.
Project Engineer
Water and Wastewater / Infrastructure

M 343 597-0161
600-1400 Blair Towers Place, Ottawa, ON K1J 9B8 CANADA

Follow us

From: Rogers, Christopher <[redacted]
Sent: Tuesday, June 4, 2024 9:31 AM
To: Amy Seymour <amy.seymour@cima.ca>; Gong, Qiaoqiao <[redacted]ca>
Cc: Landry, Francois <FrancoisLandry@Russell.ca>; Bradley Young <Bradley.Young@cima.ca>; Bourgon, Jonathan <JonathanBourgon@Russell.ca>
Subject: RE: Township of Russell W/WW Master Plan Update - Discussion on Future Water Supply

EXTERNAL EMAIL

Hi Amy,

I am in the process of identifying staff that should be involved in this discussion, so we will likely need some new dates to choose from. However, I would be available for a brief informal chat on June 6th in the morning if you would like to get an initial sense of the issues from my perspective.

Chris

Chris Rogers, M.A.Sc., P.Eng.
Program Manager, Infrastructure Planning
Infrastructure and Water Services
City of Ottawa
[redacted]

From: Amy Seymour <amy.seymour@cima.ca>
Sent: June 03, 2024 1:24 PM
To: Gong, Qiaoqiao <[redacted]>; Rogers, Christopher <[redacted]>
Cc: Landry, Francois <FrancoisLandry@Russell.ca>; Bradley Young <Bradley.Young@cima.ca>; Bourgon, Jonathan <JonathanBourgon@Russell.ca>
Subject: RE: Township of Russell W/WW Master Plan Update - Discussion on Future Water Supply

Thanks, Zoe!

@Rogers, Christopher please see correspondence below requesting an initial discussion with the City regarding the future Township of Russell's water supply requirements.

Please let me know if one of the Thursday, June 6 timeslots (9:00am-12:00pm or 1:00pm-3:00pm) work for you and the City's Infrastructure Planning team. Otherwise, we can propose additional timeslots.

Thanks,
Amy

AMY SEYMOUR (nee LANGFORD), P.Eng.
Project Engineer

Water and Wastewater / Infrastructure

M 343 597-0161
600-1400 Blair Towers Place, Ottawa, ON K1J 9B8 CANADA

Follow us

From: Gong, Qiaoqiao <[redacted]>
Sent: Monday, June 3, 2024 9:44 AM
To: Amy Seymour <amy.seymour@cima.ca>
Cc: Landry, Francois <FrancoisLandry@Russell.ca>; Bradley Young <Bradley.Young@cima.ca>; Bourgon, Jonathan <JonathanBourgon@Russell.ca>; Rogers, Christopher [redacted]>
Subject: RE: Township of Russell W/WW Master Plan Update - Discussion on Future Water Supply

EXTERNAL EMAIL

Hi Amy,

Please contact Chris Rogers (cc'd) as the city contact for the purposes of setting up a meeting.

Thanks a lot.

Zoe

Zoe (Qiaoqiao) Gong

From: Amy Seymour <amy.seymour@cima.ca>
Sent: 2024/06/03 9:13 AM
To: Gong, Qiaoqiao <[redacted]>
Cc: Landry, Francois <FrancoisLandry@Russell.ca>; Bradley Young <Bradley.Young@cima.ca>; Bourgon, Jonathan <JonathanBourgon@Russell.ca>
Subject: RE: Township of Russell W/WW Master Plan Update - Discussion on Future Water Supply

Hi Zoe,

Following up on my email below requesting an initial discussion with the City regarding the future Township of Russell's water supply requirements.

Please let me know if there is a time this week that works for you and the City's Infrastructure Planning team (see timeslots below). Otherwise, we can propose additional timeslots.

Thanks,
Amy

AMY SEYMOUR (nee LANGFORD), P.Eng.
Project Engineer
Water and Wastewater / Infrastructure

M 343 597-0161
600-1400 Blair Towers Place, Ottawa, ON K1J 9B8 CANADA

Follow us

From: Amy Seymour
Sent: Sunday, May 26, 2024 9:45 AM
To: [redacted]
Cc: Landry, Francois <FrancoisLandry@Russell.ca>; Bradley Young <Bradley.Young@cima.ca>; Bourgon, Jonathan <JonathanBourgon@Russell.ca>
Subject: Township of Russell W/WW Master Plan Update - Discussion on Future Water Supply

Good Morning, Zoe:

We are reaching out on behalf of the Township of Russell to discuss the Township's anticipated future water supply needs. The Township currently has an agreement with the City of Ottawa for supply of up to 11,860 m^3/d of water through an approximately 30 km long, 450mm diameter feedermain from the Leitrim Road Pumping Station. As shown on the attached water-related boards from the Township's recent W/WW Master Plan Public Information Centre, the Township anticipates that water demands will exceed the 11,860 m^3/d agreement limit by 2031. The preliminary preferred alternative to meet the Township's future water demands is to renegotiate the agreement with the City to increase water supply as the existing 450mm feedermain has additional capacity.

We would like to schedule a meeting with the City of Ottawa's infrastructure planning group, the Township, and CIMA+ to review the Township's projected water demands, quantify the extent of upgrades required to the City's distribution system to meet the Township's water demands, and discuss next steps for revising the water supply agreement. We anticipate that this will be an introductory conservation to share information between the City and the Township prior to finalizing our preferred Master Plan water servicing alternative.

Could you please let us know who from the City should attend this coordination meeting with the Township/CIMA+? We are available to meet in the next few weeks within the following timeslots:

- ~~Thursday, May 30 – 9:00am-12:00pm~~
- ~~Thursday, May 30 – 1:00pm-3:00pm~~
- ~~Monday, June 3 – 9:00am-12:00pm~~
- ~~Monday, June 3 – 1:00pm-3:00pm~~
- Thursday, June 6 – 9:00am-12:00pm
- Thursday, June 6 – 1:00pm-3:00pm

Please feel free to reach out with any questions or requests for additional information.
Thank you,
Amy

AMY SEYMOUR (nee LANGFORD), P.Eng.
Project Engineer
Water and Wastewater / Infrastructure

M 343 597-0161
600-1400 Blair Towers Place, Ottawa, ON K1J 9B8 CANADA

'

'
'

This e-mail originates from the City of Ottawa e-mail system. Any distribution, use or copying of this e-mail or the information it contains by other than the intended recipient(s) is unauthorized. Thank you.

Le présent courriel a été expédié par le système de courriels de la Ville d'Ottawa. Toute distribution, utilisation ou reproduction du courriel ou des renseignements qui s'y trouvent par une personne autre que son destinataire prévu est interdite. Je vous remercie de votre collaboration.

'

From: Amy Seymour
Sent: June 6, 2024 1:06 PM
To: Amy Seymour; [redacted]; FrancoisLandry@Russell.ca; JonathanBourgon@Russell.ca; Bradley Young; [redacted]; [redacted]
Subject: Township of Russell W/WW Master Plan - Initial Future Water Supply Discussion

Thank you for attending this initial meeting to discuss the future water supply requirements for the Township of Russell. We greatly appreciate the information provided by the City thus far.

Please find notes and action items below. As discussed, we will schedule a follow up meeting in July.

Thanks,
Amy

Township of Russell W/WW Master Plan - Initial Future Water Supply Discussion

June 6, 2024
11:17 AM

Township of Russell W/WW Master Plan - Initial Future Water Supply Discussion

Thu, Jun 6, 11:00 a.m. - 12:00 p.m.

Microsoft Teams Meeting

Link to Outlook Item

Invitation Message

As discussed, we are proposing this initial discussion regarding the Township of Russell's anticipated future water supply needs. We anticipate that this will be an introductory conversation to share information between the City and the Township.

The Township currently has an agreement with the City of Ottawa for supply of up to 11,860 m^3/d of water through an approximately 30 km long, 450mm diameter feedermain from the Leitrim Road Pumping Station. As shown on the attached water-related boards from the Township's recent W/WW Master Plan Public Information Centre, the Township anticipates that water demands will exceed the 11,860 m^3/d agreement limit by 2031. The preliminary preferred alternative to meet the Township's future water demands is to renegotiate the agreement with the City to increase water supply as the existing 450mm feedermain has additional capacity.

Meeting Objectives (may require a few meetings to complete):

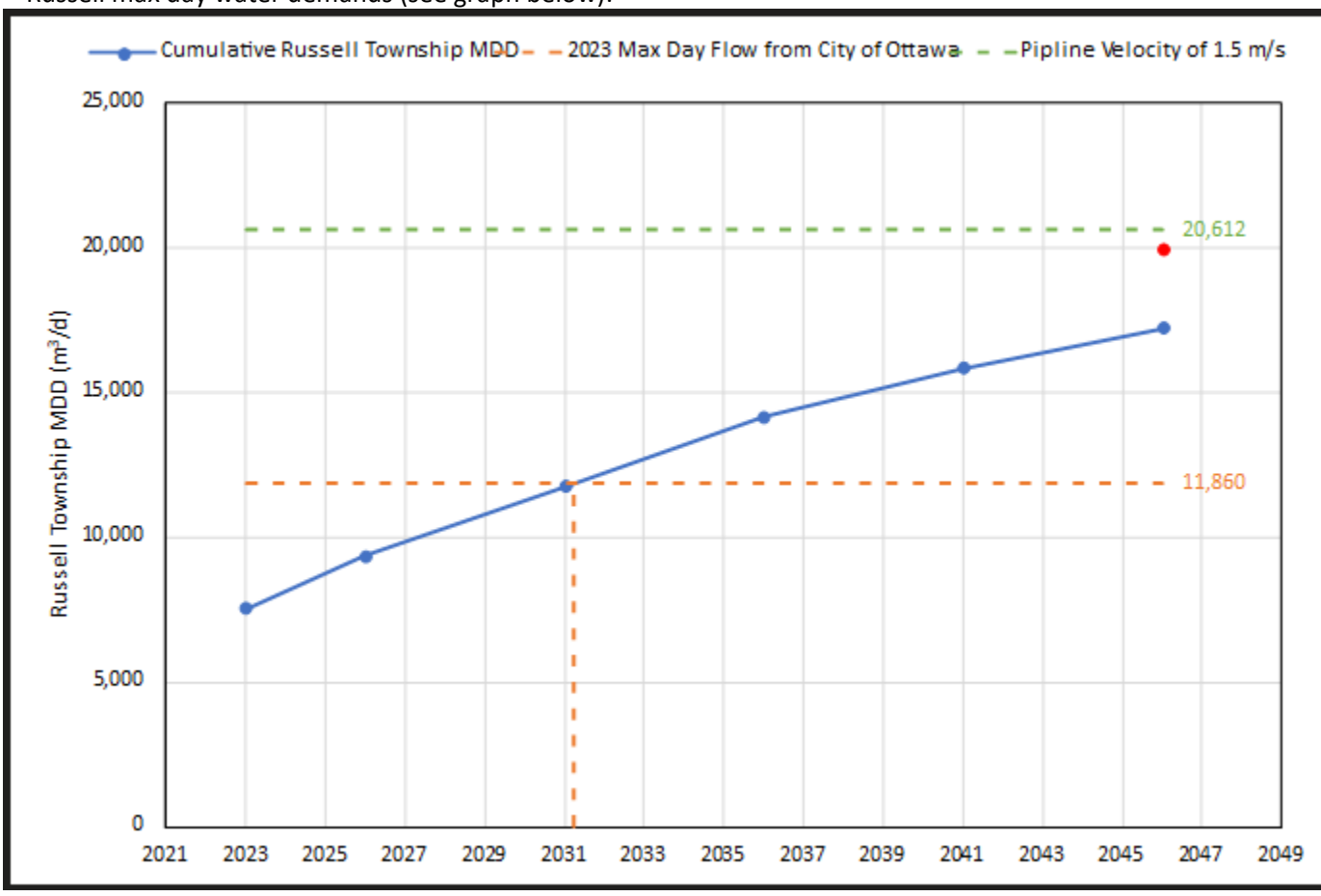
- Review the Township's projected water demands,
- Quantify the extent of upgrades required to the City's distribution system to meet the Township's water demands, and
- Discuss next steps for revising the water supply agreement.

Participants (7)

- Amy Seymour (Meeting Organizer)
- Rogers, Christopher (Accepted Meeting)
- Landry, Francois (Accepted Meeting)
- Bourgon, Jonathan -
- Bradley Young (Accepted Meeting)
- Bougadis, John (Accepted Meeting)
- Gong, Qiaoqiao (Accepted Meeting)

Notes

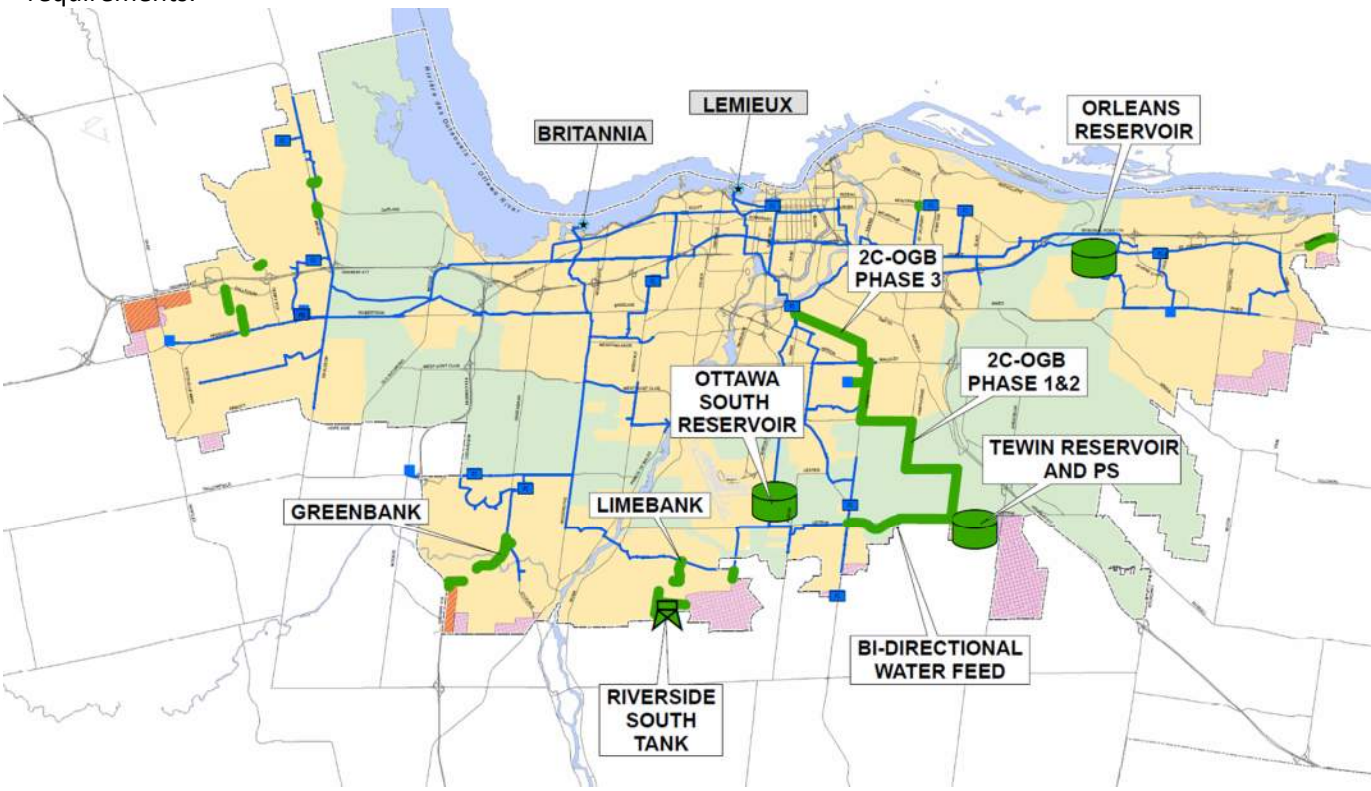
- B.Young and A.Seymour (CIMA+) provided overview of the anticipated future Township of Russell max day water demands (see graph below):



- ☐ City to share the design report and as-builts of the Leitrim Booster Pumping Station that supplies the Township of Russell's feedermain

- C.Rogers shared City's IMP map (see below). Tewin lands have been identified for future water/wastewater servicing with a new water feedermain through the greenbelt and bi-directional water feedermain to Leitrim. C.Rogers noted that timing for Tewin is uncertain but will be phased. Opportunity for the Township of Russell to contribute to Tewin water servicing

project to allow for capacity in new Tewin water infrastructure to include the future Township requirements.



- ☐ CIMA+/Township to review IMP when released on June 11 and consider options.
- ☐ CIMA+ to schedule follow up meeting in July with the City and the Township to continue discussion.

From: Vena, Patricia (MTCS) <[redacted]>
Sent: April 24, 2024 4:13 PM
To: Amy Langford
Subject: Automatic reply: Township of Russell - Water and Wastewater Master Plan Update - Notice of Public Information Centre

EXTERNAL EMAIL

** ABSENCE / OUT OF OFFICE NOTICE**
Hello and thank you for your message. Please note I have departed the Ontario Public Service as of January 22nd to take on a new opportunity. For matters related to the Ministry of Tourism Culture and Sport, please contact:

For general inquires:
Zalina Dusoruth, Executive Coordinator
[redacted]

For Community Programs:
Leslie Charlton, Manager
[redacted]

For Sport Programs:
Ray Dempster, Manager
[redacted]

For Games Programs:
Russell Zavitz, Manager
[redacted]

Thank you and have a great day!
If you need to reach me: [redacted]

From: Dusoruth, Zalina (MTCS) <[redacted]>
Sent: April 25, 2024 11:06 AM
To: Amy Langford
Cc: Landry, Francois; Bradley Young
Subject: RE: Township of Russell - Water and Wastewater Master Plan Update - Notice of Public Information Centre

EXTERNAL EMAIL

Hi Amy,

Thank you for sending this over. We actually have a new Acting Director, Amanda Mizerski.
Here is her email for reference: [redacted]

Have a great day!

Zalina Dusoruth
Executive Coordinator | Programs Branch
Sport, Recreation, and Recognition Division
Ministry of Tourism, Culture, and Sport
[redacted]

Ontario

Taking pride in strengthening Ontario, its places and its people

---

From: Amy Langford <Amy.Langford@cima.ca>
Sent: April 25, 2024 10:44 AM
To: Dusoruth, Zalina (MTCS) <[redacted]>
Cc: Landry, Francois <FrancoisLandry@Russell.ca>; Bradley Young <Bradley.Young@cima.ca>
Subject: FW: Township of Russell - Water and Wastewater Master Plan Update - Notice of Public Information Centre

CAUTION -- EXTERNAL E-MAIL - Do not click links or open attachments unless you recognize the sender.

Hi Zalina,

Please see below and attached FYI. Forwarded to you based on an autoreply received from Patricia Vena.

Thanks,
Amy

AMY LANGFORD, P.Eng.
Project Engineer
Water and Wastewater / Infrastructure

T 613-860-2462 **M** 343 597-0161 **F** 613-860-1870
600-1400 Blair Towers Place, Ottawa, ON K1J 9B8 CANADA

Follow us

From: Amy Langford
Sent: Wednesday, April 24, 2024 4:13 PM
To: Amy Langford <Amy.Langford@cima.ca>
Cc: Landry, Francois <FrancoisLandry@Russell.ca>; Bradley Young <Bradley.Young@cima.ca>
Subject: Township of Russell - Water and Wastewater Master Plan Update - Notice of Public Information Centre

La version française suivra.

Municipal Class Environmental Assessment Study – Notice of Public Information Centre

Hello,

Please find attached for your information, the Notice of Public Information Centre (PIC) that the Township of Russell is undertaking for the Water and Wastewater Master Plan.

Your participation and feedback on the Master Plan are important to us. The project team wants to make sure that appropriate consultation and engagement is provided to review agencies, indigenous communities, and stakeholders that may have an interest in this project. You are invited to attend the upcoming **PIC on Wednesday May 8, 2024**, where key findings of our work and preliminary study recommendations will be presented. The details of the PIC, including location and time, are included in the attached notice.

Hard copies of the attached Notice of PIC have been mailed out to all in the contact list for whom we have a valid mailing address. Please indicate if you wish to receive project notifications in digital format moving forward.

Should you not be able to attend the meeting, the PIC related material will be available on the project webpage, listed below, for your review.

https://www.russell.ca/en/your-township/water-and-wastewater-master-plan.aspx

Kindly, let either of the project team members listed in the notice of any questions, comments or concerns you have in association with the Master Plan.

Étude d'évaluation environnementale municipale de portée générale – Avis d'un centre d'information publique

Bonjour,

Veuillez trouver ci-joint, à titre d'information, l'avis public du centre d'information publique (CIP) au sujet du plan directeur des infrastructures en eau potable et en eaux usées entrepris par la Municipalité de Russell.

Votre participation ainsi que vos commentaires sur le plan directeur sont importants pour nous. L'équipe de projet veut s'assurer que les organismes d'examen, les communautés autochtones et les parties prenantes susceptibles d'être intéressées par ce projet sont consultés et engagés de manière appropriée. Vous êtes invités à assister au prochain **CIP, le mercredi 8 mai 2024**, où seront présentées les principales conclusions de nos travaux et les recommandations préliminaires de l'étude. Les détails du CIP, y compris le lieu et l'heure, sont inclus dans l'avis ci-joint.

Des copies papier de l'avis du CIP ci-joint ont été postées à toutes les personnes figurant sur la liste de contact pour lesquelles nous disposons d'une adresse postale valide. SVP, veuillez nous indiquer si vous souhaitez recevoir les notifications du projet en format numérique à l'avenir.

Si vous ne pouvez pas assister à la réunion, les documents relatifs au CIP seront disponibles sur la page web du projet, mentionnée ci-dessous, pour que vous puissiez en prendre connaissance.

https://www.russell.ca/en/your-township/water-and-wastewater-master-plan.aspx

Si vous avez des questions, des commentaires ou des inquiétudes concernant le plan directeur, veuillez en faire part à l'un ou l'autre des membres de l'équipe de projet mentionnés dans l'avis.

AMY LANGFORD, P.Eng.
Project Engineer
Water and Wastewater / Infrastructure

T 613-860-2462 **M** 343 597-0161 **F** 613-860-1870
600-1400 Blair Towers Place, Ottawa, ON K1J 9B8 CANADA

CIMA+ Engineering for people 30+ YEARS

KINCENTRIC Best Employer CANADA 2021

Follow us

From: Claire Lemay <[redacted]>
Sent: October 2, 2023 1:32 PM
To: bradley.young@cima.ca; Landry, Francois
Cc: Planning
Subject: Russell Township Water and Wastewater Master Plan Update - Municipal Class EA

Good day,

South Nation Conservation has received the Revised Notice of Study Commencement for Russell Township's Water and Wastewater Master Plan Update Municipal Class Environmental Assessment Study. Thank you for including us in your circulation. Please send future correspondence regarding this study by email to planning@nation.on.ca. We would like to be kept informed of the progress of the study and to receive an invitation to the Public Information Centre when it is scheduled. You may update your project contact list to include myself as primary contact at South Nation Conservation.

Sincerely,

Claire Lemay | RPP, Senior Planner
[redacted]
nation.on.ca |

Our local environment, we're in it together.
Notre environnement local, protégeons-le ensemble.

Celebrating 75 Years of Conservation in 2022 | Célébrer 75 ans de conservation en 2022

From: Landry, Francois
Sent: May 24, 2024 7:07 AM
To: Hopkinson, Tia (IO)
Cc: bradley.young@cima.ca; Bourgon, Jonathan
Subject: RE: notice of public information mail

Hi,
Thank you Tia for your e-mail and comments.

We will remove David from the contact list and replace his information with yours.

François Landry
Gestionnaire de projets | Project Manager
Infrastructure Services d'infrastructure

Municipalité de RUSSELL Township
www.russell.ca | Twitter | Facebook | Webcasts | Web diffusion

---

From: Hopkinson, Tia (IO) <[redacted]>
Sent: Tuesday, May 21, 2024 11:39 AM
To: info@cima.ca
Cc: Landry, Francois <FrancoisLandry@Russell.ca>; bradley.young@cima.ca
Subject: notice of public information mail

Hello,

I am writing from the Toronto office of Infrastructure Ontario on behalf of David Ho, Chief Procurement Officer and EVP of Program Strategy & Management.

David has been receiving mail regarding the Municipal Class Environmental Assessment Study. Please remove him from all distribution lists related to environmental studies, as this falls outside his area of responsibility. Additionally, the title used in your correspondence is incorrect.

Thank you for your attention to this matter.

Tia Hopkinson (she, her)
Infrastructure Ontario
Executive Assistant to David Ho,
Chief Procurement Officer and
EVP, Program Strategy and Management
[redacted]
www.infrastructureontario.ca

From: Landry, Francois <FrancoisLandry@Russell.ca>
Sent: August 31, 2023 8:02 AM
To: [redacted]
Cc: Amy Langford; Bradley Young; Bourgon, Jonathan
Subject: FW: Hydro One Response: 2[redacted]-NoticeOfCommence-Water and Wastewater Systems
Attachments: [redacted]-NoticeOfCommence-Water and Wastewater Systems .pdf; [redacted].pdf

EXTERNAL EMAIL

Hi Susan,
Thank you for your comments.

This is to confirm that this project's EA which is to update the Master Plan will not include any physical works or relocation/modifications to any Hydro One infrastructure.

Regards

Infrastructure Services d'infrastructure Municipalité de RUSSELL Township www.russell.ca | Twitter | Facebook | Webcasts | Web diffusion The information in this e-mail is intended solely for the addressee(s) named, and is confidential. Any other distribution, disclosure or copying is strictly prohibited. If you have received this communication in error, please reply by e-mail to the sender and delete or destroy all copies of this message.
Les renseignements contenus dans le présent message électronique sont confidentiels et concernent exclusivement le(s) destinataire(s) désigné(s). Il est strictement interdit de distribuer ou de copier ce message. Si vous avez reçu ce message par erreur, veuillez répondre par courriel à l'expéditeur et effacer ou détruire toutes les copies du présent message

-----Original Message-----
From: SUN Hongxia [redacted]> On Behalf Of SECONDARY LAND USE Department
Sent: Wednesday, August 30, 2023 1:45 PM
To: Landry, Francois <FrancoisLandry@Russell.ca>
Cc: SECONDARY LAND USE Department <Department.SecondaryLandUse@hydroone.com>; bradley.young@cima.ca
Subject: Hydro One Response: [redacted]-NoticeOfCommence-Water and Wastewater Systems

[You don't often get email from department.secondarylanduse@hydroone.com. Learn why this is important at https://aka.ms/LearnAboutSenderIdentification]

Please see the attached for Hydro One's Response.

Hydro One Networks Inc

SecondaryLandUse@HydroOne.com

transmission received by you. This statement applies to the initial email as well as any and all copies (replies and/or forwards) of the initial email

Hydro One Networks Inc.

[redacted]

HydroOne.com

August 30, 2023

Re: Water and Wastewater Systems

Attention:
Francois Landry
Municipalité de Russell Township
Project Manager

Thank you for sending us notification regarding (Water and Wastewater Systems). In our preliminary assessment, we have confirmed that Hydro One has existing high voltage Transmission facilities within your study area. At this time we do not have sufficient information to comment on the potential resulting impacts that your project may have on our infrastructure. As such, we must stay informed as more information becomes available so that we can advise if any of the alternative solutions present actual conflicts with our assets, and if so; what resulting measures and costs could be incurred by the proponent. Note that this response does not constitute approval for your plans and is being sent to you as a courtesy to inform you that we must continue to be consulted on your project.

In addition to the existing infrastructure mentioned above, the applicable transmission corridor may have provisions for future lines or already contain secondary land uses (e.g., pipelines, watermains, parking). Please take this into consideration in your planning.

Also, we would like to bring to your attention that should (Water and Wastewater Systems) result in a Hydro One station expansion or transmission line replacement and/or relocation, an Environmental Assessment (EA) will be required as described under the Class Environmental Assessment for Minor Transmission Facilities (Hydro One, 2016). This EA process would require a minimum of 6 months for a Class EA Screening Process (or up to 18 months if a Full Class EA were to be required) to be completed. Associated costs will be allocated and recovered from proponents in accordance with the Transmission System Code. If triggered, Hydro One will rely on studies completed as part of the EA you are current undertaking.

Consulting with Hydro One on such matters during your project's EA process is critical to avoiding conflicts where possible or, where not possible, to streamlining processes (e.g., ensuring study coverage of expansion/relocation areas within the current EA). Once in receipt of more specific project information regarding the potential for conflicts (e.g., siting, routing), Hydro One will be in a better position to communicate objections or not objections to alternatives proposed.

If possible at this stage, please formally confirm that Hydro One infrastructure and associated rights-of-way will be completely avoided, or if not possible, allocate appropriate lead-time in your project schedule to collaboratively work through potential conflicts with Hydro One, which ultimately could result in timelines identified above.

In planning, note that developments should not reduce line clearances or limit access to our infrastructure at any time. Any construction activities must maintain the electrical clearance from the transmission line conductors as specified in the Ontario Health and Safety Act for the respective line voltage.

Be advised that any changes to lot grading or drainage within, or in proximity to Hydro One transmission corridor lands must be controlled and directed away from the transmission corridor.

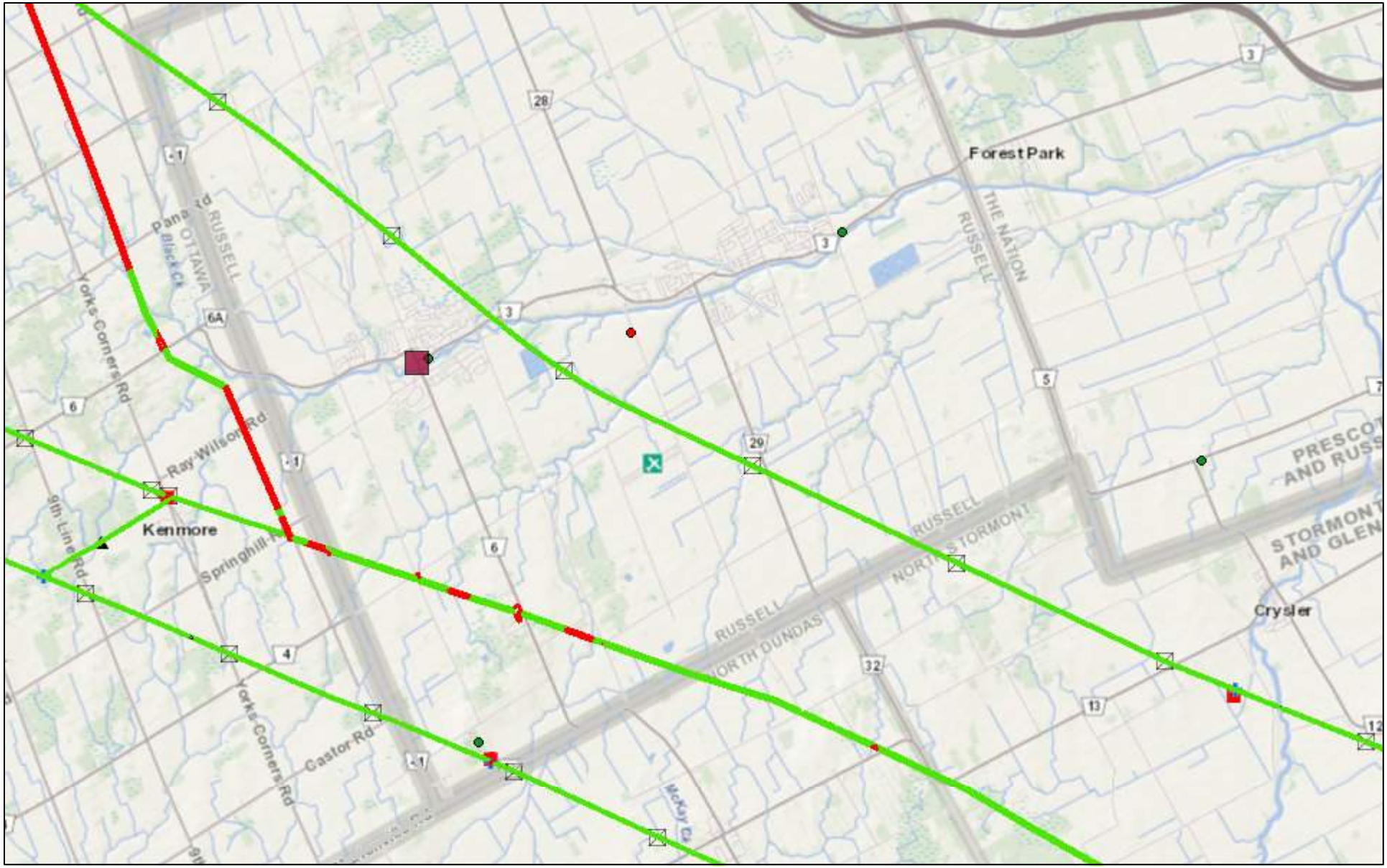
Please note that the proponent will be held responsible for all costs associated with modifications or relocations of Hydro One infrastructure that result from your project, as well as any added costs that may be incurred due to increased efforts to maintain said infrastructure.

We reiterate that this message does not constitute any form of approval for your project. Hydro One must be consulted during all stages of your project. Please ensure that all future communications about this and future project(s) are sent to us electronically to secondarylanduse@hydroone.com

Sent on behalf of,

Secondary Land Use
Asset Optimization
Strategy & Integrated Planning
Hydro One Networks Inc.

Landscape PDF



August 30, 2023

1:144,448

0 1.25 2.5 5 mi

0 2 4 8 km

From: Landry, Francois <FrancoisLandry@Russell.ca>
Sent: August 10, 2023 2:10 PM
To: Kyle Witney
Cc: Bourgon, Jonathan; Amy Langford; Bradley Young
Subject: C000-22000 - W&WW Master Plan Revision

EXTERNAL EMAIL

Hi Kyle,
Thank you for your email.

To respond to the question, the TWP does not require anything specific from Enbridge at this time, thank you.

Infrastructure Services

From: Kyle Witney <[redacted]>
Sent: Tuesday, August 8, 2023 2:33 PM
To: Landry, Francois <FrancoisLandry@Russell.ca>; bradley.young@cima.ca
Subject: FW: Township of Russell - Water and Wastewater Master Plan Update - Notice of Study Commencement

Hi Francois / Bradley,

I have received the attached Notice of Commencement.

I have attached our third party requirements for working in the vicinity of our gas mains.

The area pointed out in the notice of commencement is quite large. Is there anything specific that you need from Enbridge for this assessment study?

Thanks,
Kyle

From: Amy Langford <Amy.Langford@cima.ca>
Sent: Friday, August 4, 2023 10:03 AM
To: Amy Langford <Amy.Langford@cima.ca>
Cc: Landry, Francois <FrancoisLandry@Russell.ca>; Bradley Young <Bradley.Young@cima.ca>
Subject: [External] Township of Russell - Water and Wastewater Master Plan Update - Notice of Study Commencement

La version française suivra.

Municipal Class Environmental Assessment Study

Hello,

Please find attached for your information, the Notice of Study Commencement for the Municipal Class Environmental Assessment Study Master Plan Update that the Township of Russell is initiating to plan for its future Water and Wastewater System needs. The Notice is also posted on the Township's website here: https://www.russell.ca/en/your-township/water-and-wastewater-master-plan.aspx

The project team wants to make sure that appropriate consultation and engagement opportunities are provided to review agencies and stakeholders that may have an interest in this project. Please kindly advise either of the project team members listed in the attached Notice should you have any comments, questions or concerns, or if you would like to have a pre-consultation meeting with the team.

Hard copies of the attached Notice of Study Commencement have been mailed out to all in the contact list for whom we have a valid mailing address. Please indicate if you wish to receive project notifications in digital format moving forward.

Étude d'évaluation environnementale municipale de portée générale

Bonjour,

Veuillez trouver ci-joint, à titre d'information, l'avis de lancement d'étude pour la mise à jour du plan directeur de l'étude d'évaluation environnementale municipale de portée générale entreprise par la Municipalité de Russell. Cette mise à jour adressera la planification pour les besoins futurs en infrastructures d'eau potable et des eaux usées. L'avis est affiché sur le site Web de la Municipalité au lien suivant : https://www.russell.ca/en/your-township/water-and-wastewater-master-plan.aspx

L'équipe de projet veut s'assurer que les organismes et les parties prenantes qui pourraient être intéressés par ce projet bénéficient des possibilités de consultation et de rétroaction.
SVP informer l'un ou l'autre des membres de l'équipe de projet dont le nom figure dans l'avis ci-joint si vous avez des commentaires, des questions ou des préoccupations, ou si vous souhaitez prendre part à une réunion de préconsultation avec l'équipe.

Des copies papier de l'avis de début d'étude ci-joint ont été postées à toutes les personnes figurant sur la liste de contact pour lesquelles nous disposons d'une adresse postale valide. Veuillez nous indiquer si vous souhaitez recevoir les notifications du projet en format numérique à l'avenir.

AMY LANGFORD, P.Eng.
Water and Wastewater / Infrastructure

T 613-860-2462 **M** 343 597-0161 **F** 613-860-1870
600-1400 Blair Towers Place, Ottawa, ON K1J 9B8 CANADA

Engineering for people

Follow us

From: Deacon, Lisa <[redacted]>
Sent: June 10, 2024 10:08 AM
To: Bradley Young; Landry, Francois
Cc: Bourgon, Jonathan; Godin, Richard; Amy Seymour
Subject: RE: Russell Township Water/Wastewater PIC questions

EXTERNAL EMAIL

Thank you, Mr. Young.

Lisa Deacon (she/elle)
[redacted]

From: Bradley Young <Bradley.Young@cima.ca>
Sent: Thursday, June 6, 2024 4:15 PM
To: Deacon, Lisa [redacted]>; Landry, Francois <FrancoisLandry@Russell.ca>
Cc: Bourgon, Jonathan <JonathanBourgon@Russell.ca>; Godin, Richard <RichardGodin@Russell.ca>; Amy Seymour <amy.seymour@cima.ca>
Subject: RE: Russell Township Water/Wastewater PIC questions

Hello Lisa,

Thank you for the questions. Please see below for the answers. If you have any additional questions or would like further clarity please don't hesitate to ask.

- For capital costs of the wastewater treatment plant options, the local treatment plant option is more costly. Is the regional option less costly because it assumes cost-sharing? Or is it less costly for other reasons? The rated capacity for wastewater remains considerably higher than the average flow, so is it too much flow that causes the ammonia issues, or something else?

The Regional Plant is less expensive in capital and operating costs due to economies of scale. The construction of two plants requires double the equipment, more concrete, more buildings and two large plant construction projects compared to one facility with larger equipment. There are additional efficiencies to operations and maintenance for a single mechanical plant rather than two.

The ammonia issue in the existing system is due to the technology currently in place and increasing flows. The wastewater is treated with lagoons that treat and store the water. The lagoons discharge the stored water in the Spring and Fall. This type of treatment is dependent on the provided mechanical aeration, degradation of the settled material and other natural impacts (i.e. weather).

The bacteria responsible to remove ammonia are inhibited by cold temperatures and there is the potential for ammonia to rebound due to the degradation of organic material. Unfortunately, the existing wastewater treatment plants are not designed/well equipped to reliably remove ammonia and the impacts are more realized as flow increases even though they are operating below the environmental compliance approval rated capacities (annual average daily flow).

- Could you explain what is meant by deficits in floating water storage?

The supply of pressurized water is provide by the elevated tanks and pumps. The water storage needs to supply sufficient water to meet the balancing storage (25% of Max Day Demand), Fire Storage and Emergency Storage (25% of balancing storage + fire storage). To service the requirements for Russell and Embrun (has a deficit) additional capacity will need to be provided. The increase can be provided by additional storage at the Embrun Reservoir (central source for Russell, Embrun and Marionville) and increasing booster pump capacity.

- For the second sentence in that same constraint box (township must consider water supply blackout period) > Is that articulating a current constraint or a future constraint? Does that impact acute water access for users?

The current water agreement with the City of Ottawa has a four hour period from 6 PM to 10 PM where water is not transmitted through the pipe to the Embrun Reservoir. This requires the township to have enough stored water during the blackout period to meet the requirements. This is a current constraint that has the potential for acute challenges. This constraint is planned to be addressed by increasing the water storage at the Embrun Reservoir. The blackout period can also be discussed with the City of Ottawa in negotiating the next agreement.

Best Regards,
-Brad

BRADLEY YOUNG, Ph.D. / P.Eng.
Associate Partner / Senior Project Manager / Infrastructure

M 647-614-2462 **F** 613-860-1870
600–1400 Blair Towers Place, Ottawa, ON K1J 9B8 CANADA

From: Deacon, Lisa <[redacted]>
Sent: Monday, May 27, 2024 9:01 AM
To: Landry, Francois <FrancoisLandry@Russell.ca>; Bradley Young <Bradley.Young@cima.ca>
Cc: Bourgon, Jonathan <JonathanBourgon@Russell.ca>; Godin, Richard <RichardGodin@Russell.ca>
Subject: Russell Township Water/Wastewater PIC questions

EXTERNAL EMAIL

Good morning,

I have a few questions from the boards shared at the Russell Township Water and Wastewater Master Plan PIC. Specific snippets that related to my questions from the boards are attached.

- For capital costs of the wastewater treatment plant options, the local treatment plant option is more costly. Is the regional option less costly because it assumes cost-sharing? Or is it less costly for other reasons?The rated capacity for wastewater remains considerably higher than the average flow, so is it too much flow that causes the ammonia issues, or something else?
- Could you explain what is meant by deficits in floating water storage?
- For the second sentence in that same constraint box (township must consider water supply blackout period) > Is that articulating a current constraint or a future constraint? Does that impact acute water access for users?

Merci,

Lisa Deacon (she/elle)
Councillor
Conseillère
[redacted]

My working day may not be your working day.
Please do not feel obliged to reply to this email outside of your regular working hours.
****
Mes heures de travail sont peut-être différentes des vôtres.
Ne vous sentez pas obligé de répondre à ce courriel à l'extérieur de vos heures de travail normales.

From: Amy Langford
Sent: August 28, 2023 12:00 PM
To: CarlsbadSprings Radio
Cc: Landry, Francois; Bradley Young
Subject: RE: Township of Russell - Water and Wastewater Master Plan Update - Revised Notice of Study Commencement
Attachments: A001389-230824_REVISED_Notice of Commencement_e03.pdf; A001389-230824_REVISE_Avis de lancement_e02.pdf

Hi Candice,

Stakeholders who wish to be placed on the Project Contact List to receive notices and information or to provide comments at any time during the process can do so by contacting the Township of Russell Project Manager and/or the Consultant Project Manager, as shown on the attached Notices and below:

Francois Landry
Municipalité de Russell Township
Project Manager
613.443.1747
francoislandry@russell.ca

Bradley Young, Ph.D., P.Eng.
CIMA+
Project Manager
647.614.2462
bradley.young@cima.ca

Thanks,
Amy

AMY LANGFORD, P.Eng.
Project Engineer
Water and Wastewater / Infrastructure

T 613-860-2462 **M** 343 597-0161 **F** 613-860-1870
600-1400 Blair Towers Place, Ottawa, ON K1J 9B8 CANADA

Engineering for people

Follow us

From: CarlsbadSprings Radio
Sent: Monday, August 28, 2023 11:49 AM
To: Amy Langford <Amy.Langford@cima.ca>
Subject: Re: Township of Russell - Water and Wastewater Master Plan Update - Revised Notice of Study Commencement

EXTERNAL EMAIL

Dear Amy,
For stakeholders who want to register what email and address should they use?
Candice

On Fri, Aug 25, 2023 at 7:43 AM Amy Langford <Amy.Langford@cima.ca> wrote:

> Hi Candice,
>
> Study Notices will be published in the newspaper (Le Reflet). By default, Study Notices will be both emailed and mailed to stakeholders on the contact list who have requested to be added; however, individual stakeholders may request only emailed or only mailed Notices. Individuals from the public must reach out to the Project Team members (cc'd) to be added to the stakeholder contact list.
>
> Hope this provides clarification. Please feel free to reach out with additional questions.
>
> Amy
>
> ---
>
> **AMY LANGFORD,** P.Eng.
> Project Engineer
>
> Water and Wastewater / Infrastructure
>
> **T** 613-860-2462 **M** 343 597-0161 **F** 613-860-1870
> 600-1400 Blair Towers Place, Ottawa, ON K1J 9B8 CANADA

From: CarlsbadSprings Radio
Sent: Thursday, August 24, 2023 2:14 PM
To: Amy Langford <Amy.Langford@cima.ca>
Subject: Re: Township of Russell - Water and Wastewater Master Plan Update - Revised Notice of Study Commencement

EXTERNAL EMAIL

Good day,

Further to your notification above, can you please tell me how you will be sending out notices? The email above does not say if it will be by email or regular mail or both. Do people need to register to receive them?

Thank you.

Best regards, Candice Vetter

On Thu, Aug 24, 2023 at 10:17 AM Amy Langford <Amy.Langford@cima.ca> wrote:

La version française suivra.

Please find attached a Revised Notice of Study Commencement for the Municipal Class Environmental Assessment Study Master Plan Update for the Township of Russell. The Notice of Study Commencement was revised to update the study area figure to match the Urban Policy Areas for Russell and Embrun as well as the Trade and Industry Policy Areas for the Industrial Park in the Township of Russell based on the recently approved United Counties of Prescott and Russell Official Plan. All other study information in the Notice of Study Commencement remains unchanged.

The Revised Notice of Study Commencement will be mailed out to all in the contact list for whom we have a valid mailing address and will be posted on the Township's website here: https://www.russell.ca/en/your-township/water-and-wastewater-master-plan.aspx

---

Veuillez trouver ci-joint l'avis de lancement d'étude révisé de l'étude d'évaluation environnementale municipale de portée générale pour la mise à jour du plan directeur de la Municipalité de Russell. L'avis de lancement de l'étude a été révisé afin de mettre à jour la figure de la zone d'étude pour qu'elle corresponde aux zones de politique urbaine de Russell et d'Embrun ainsi qu'aux zones de politique commerciale et industrielle du parc industriel du canton de Russell, selon le Plan officiel des Comtés unis de Prescott et Russell récemment approuvé. Toute autre information relative à l'étude contenue dans l'avis de lancement de l'étude demeure inchangée.

L'avis révisé de lancement d'étude sera envoyé par la poste à toutes les personnes dont l'adresse postale est valide et sera également affiché sur le site Web de la municipalité ici : https://www.russell.ca/en/your-township/water-and-wastewater-master-plan.aspx

---

AMY LANGFORD, P.Eng.
Project Engineer

Water and Wastewater / Infrastructure

T 613-860-2462 **M** 343 597-0161 **F** 613-860-1870
600-1400 Blair Towers Place, Ottawa, ON K1J 9B8 CANADA

From: Amy Langford
Sent: Friday, August 4, 2023 10:03 AM
To: Amy Langford <Amy.Langford@cima.ca>
Cc: Landry, Francois <FrancoisLandry@Russell.ca>; Bradley Young <Bradley.Young@cima.ca>
Subject: Township of Russell - Water and Wastewater Master Plan Update - Notice of Study Commencement

La version française suivra.

Municipal Class Environmental Assessment Study

Hello,

Please find attached for your information, the Notice of Study Commencement for the Municipal Class Environmental Assessment Study Master Plan Update that the Township of Russell is initiating to plan for its future Water and Wastewater System needs. The Notice is also posted on the Township's website here: https://www.russell.ca/en/your-township/water-and-wastewater-master-plan.aspx

The project team wants to make sure that appropriate consultation and engagement opportunities are provided to review agencies and stakeholders that may have an interest in this project. Please kindly advise either of the project team members listed in the attached Notice should you have any comments, questions or concerns, or if you would like to have a pre-consultation meeting with the team.

Hard copies of the attached Notice of Study Commencement have been mailed out to all in the contact list for whom we have a valid mailing address. Please indicate if you wish to receive project notifications in digital format moving forward.

Étude d'évaluation environnementale municipale de portée générale

Bonjour,

Veuillez trouver ci-joint, à titre d'information, l'avis de lancement d'étude pour la mise à jour du plan directeur de l'étude d'évaluation environnementale municipale de portée générale entreprise par la Municipalité de Russell. Cette mise à jour adressera la planification pour les besoins futurs en infrastructures d'eau potable et des eaux usées. L'avis est affiché sur le site Web de la Municipalité au lien suivant : https://www.russell.ca/en/your-township/water-and-wastewater-master-plan.aspx

L'équipe de projet veut s'assurer que les organismes et les parties prenantes qui pourraient être intéressés par ce projet bénéficient des possibilités de consultation et de rétroaction.

SVP informer l'un ou l'autre des membres de l'équipe de projet dont le nom figure dans l'avis ci-joint si vous avez des commentaires, des questions ou des préoccupations, ou si vous souhaitez prendre part à une réunion de préconsultation avec l'équipe.

Des copies papier de l'avis de début d'étude ci-joint ont été postées à toutes les personnes figurant sur la liste de contact pour lesquelles nous disposons d'une adresse postale valide. Veuillez nous indiquer si vous souhaitez recevoir les notifications du projet en format numérique à l'avenir.

AMY LANGFORD, P.Eng.
Water and Wastewater / Infrastructure

T 613-860-2462 **M** 343 597-0161 **F** 613-860-1870
600-1400 Blair Towers Place, Ottawa, ON K1J 9B8 CANADA

Follow us

From: CarlsbadSprings Radio
Sent: July 31, 2023 11:16 AM
To: Landry, Francois
Subject: Re: New EA - questions from reporter

Thank you for your response. Maybe you can help with these questions. How much is this new consulting firm charging the township to do this EA? How much has the township paid for consulting reports and EAs regarding services and expansion over the last seven years? Who is checking the accuracy of these reports? I ask because I have seen the WSP report (which I am still reading) and there are numerous inaccuracies within it. It does not appear that the township is getting value for its money.
Best regards, Candice

On Mon, Jul 31, 2023 at 10:59 AM Landry, Francois <FrancoisLandry@russell.ca> wrote:

> Good morning,
>
> Thank you for your e-mail. Please note that we hope to have a response to you regarding an interview when our Executive Director returns on August 9.
>
> In the meantime, if you have any specific project-related questions, please send them to us by e-mail and we will try to assist as best as we can.
>
> Thank you
>
> Infrastructure Services
>
> Township of Russell
>
> ---
>
> **From:** CarlsbadSprings Radio
> **Sent:** Monday, July 31, 2023 10:17 AM

To: Landry, Francois <FrancoisLandry@Russell.ca>
Subject: New EA - questions from reporter

Dear M. Landry,

I am a reporter with CJRO News and I am seeking more information about the recently announced new EA for Water and Wastewater in Russell Township. Would you have time for an interview about it? The interview would be today or tomorrow, or Monday or Tuesday next week, would be by phone or in person at our Embrun studio, would take about 20 minutes, would be prerecorded (not live), would run on-air for about a week and would be a podcast. Please let me know by email or phone/text to . Thank you kindly.

Best regards,

Candice Vetter

From: Bradley Young
Sent: June 20, 2024 9:07 AM
To: Lee Sheets; 'francoislandry@russell.ca'
Cc: Amy Seymour
Subject: RE: Russell W&WW Master Plan Comments

Hi Lee,

Hope all is well. Sorry for the delayed response on this one. Please see the answers below and let us know if you have any additional question or comment.

Thanks,
-Brad

- The subject property can be serviced (sanitary) by gravity or be part of a pumping station solution servicing lands to the north. The attachment illustrates the land that can be serviced by gravity (yellow highlight) to existing PS3 and the red dot is an ideal location for the pumping station PS5. Further engineering will be undertaken to determine the best solution for the property, but both options should be available.

We have identified the need for a pump station to and have a similar location as shown in the attached image. The split of the lands will be taken into consideration.

- It should be noted that Area **C**, west of North Russell Road, is now proposed to be included in the gravity service area for PS3, currently tributary to PS1. [redacted]

Area C was previously and is planned to be included to PS3. We will consider the drainage of the subject lands to PS3.

- [redacted] We will provide a looped connection to the north. This should avoid a watermain on Eadie Road.

We will take this into consideration.

BRADLEY YOUNG, Ph.D. / P.Eng.
Associate Partner / Senior Project Manager / Infrastructure

M 647-614-2462 **F** 613-860-1870
600–1400 Blair Towers Place, Ottawa, ON K1J 9B8 CANADA

CIMA+ Engineering for people 30 YEARS

KINCENTRIC Best Employer CANADA 2019

From: Lee Sheets
Sent: Wednesday, May 29, 2024 4:18 PM
To: 'francoislandry@russell.ca' <francoislandry@russell.ca>; Bradley Young <Bradley.Young@cima.ca>
Subject: Russell W&WW Master Plan Comments

EXTERNAL EMAIL

On behalf of the owners of the property surrounding 912 Eadie Road (38.05 ac), fronting on Eadie Road, we offer the following comments on the boards presented at the Open House.

- The subject property can be serviced (sanitary) by gravity or be part of a pumping station solution servicing lands to the north. The attachment illustrates the land that can be serviced by gravity (yellow highlight) to existing PS3 and the red dot is an ideal location for the pumping station PS5. Further engineering will be undertaken to determine the best solution for the property, but both options should be available.
- It should be noted that Area **C**, west of North Russell Road, is now proposed to be included in the gravity service area for PS3, currently tributary to PS1. [redacted]
- [redacted] We will provide a looped connection to the north. This should avoid a watermain on Eadie Road.

Please feel free to contact me if you require any clarification or additional information.
Lee

J. Lee Sheets,

From: Bourgon, Jonathan <JonathanBourgon@Russell.ca>
Sent: July 15, 2024 7:38 AM
To: SHAWN MCNALLY
Cc: Landry, Francois; Bradley Young; Amy Seymour; Tarnowski, Mike
Subject: RE: Comments and Feedback Form

EXTERNAL EMAIL

Good morning,

I'll give my availability in the other chain of email, in order to have all proper staff involved.

Thanks,

Jonathan Bourgon
Tel/tél: 613-443-1747

From: SHAWN MCNALLY
Sent: Friday, July 12, 2024 11:21 AM
To: Bourgon, Jonathan <JonathanBourgon@Russell.ca>
Cc: Landry, Francois <FrancoisLandry@Russell.ca>; Bradley Young <Bradley.Young@cima.ca>; Amy Seymour <amy.seymour@cima.ca>; Tarnowski, Mike <[redacted]>
Subject: Re: Comments and Feedback Form

> Good morning Jonathan,
>
> Thank you for the offer, and we would like to take you up on it. Could we arrange a meeting sometime the week of July 22nd with you and Lee Sheets to discuss the servicing of our property. If you could let us know your availability that would be great.
>
> Thank you,
> Shawn
>
> On Jun 14, 2024, at 1:42 PM, Bourgon, Jonathan <JonathanBourgon@russell.ca> wrote:

Good afternoon Shawn,

There's seem to be some confusion about drainage area of each Pumping Stations. I'm available to meet with you to explain and discuss more the servicing of your property.

Regards,

Jonathan Bourgon, B.Eng
Executive Director Infrastructure Services
Directeur executif des services d'Infrastructure
Municipalité de RUSSELL Township | Tel: 613-443-1747 (x207)
www.russell.ca | Twitter | Facebook | Webcasts | Web diffusions

---

From: McNally
Sent: Friday, June 14, 2024 1:20 PM
To: Landry, Francois <FrancoisLandry@Russell.ca>; Bradley Young <bradley.young@cima.ca>
Cc: Bourgon, Jonathan <JonathanBourgon@Russell.ca>; Amy Seymour <amy.seymour@cima.ca>; Tarnowski, Mike <[redacted]>
Subject: Re: Comments and Feedback Form

Hello Brad,

Thank you for your response. I respectfully feel some of the questions may not have been answered clearly or fully. I have responded further in blue below for clearer understanding and response.

1. Why are you adding "New 59" to SPS1 when it is not an expansion lands, in the current Village Boundary, or needed for the 25 year growth forecast calculations?

The Area 59 is not included in the urban boundary, however, was used in the sizing of R-SPS4.

It appears New 59 to be flowing to SPS1 by portraying these lands in the Yellow zone that signifies ultimately a flow to SPS1.

By addressing services to New 59, you may be guiding growth of the Village in that area/direction when the Township Planning Department has significant justification evaluations for not having the Village grow in that area during the recent UCPR OP Review.

2. Will moving "Parcel C" to SPS3, currently tributary to SPS1, jeopardize the SPS3 existing area infrastructure capacity, affordability and competitiveness for the only part of the new expansion lands held by another owner?

The Parcel C is intended to convey wastewater to SPS3. The capacity of SPS3 and area infrastructure is accounted for in our assessment. SPS3 pumps wastewater directly to the Russell Lagoons.

Parcel C is currently to flow to SPS1 in the existing W&WW MP.

Are you changing Parcel C out of SPS1 to SPS3 to make room for New 59 in SPS1 - both of which are held by the same owner that controls 90% of the lands in your focus in this village.

[redacted]

3. What does "Parcel A" specify or represent? It is my understanding Parcel A is not a separate land parcel.

Area A should be included in Area B and will be combined.

If A should be included in Area B and will be combined, you are recommending as shown on the map that pump station SPS5 be placed on this property owned by Tartan. Is this correct?

[redacted]. We think the map should be clear for reviewers/comments.

We are looking to ensure we have full equal access to current available infrastructure in the ground in this area to be able to competitively offer affordable homes?

Thanks,
Shawn McNally

On Thursday, June 6, 2024 at 09:35:05 a.m. EDT, Bradley Young <bradley.young@cima.ca> wrote:

Good morning Shawn,

Thank you for your interest and questions regarding the information presented thus far. Please see answers to your questions below. Please let us know if you have any additional questions.

Thanks,

-Brad

The below questions are in relation to the presented Russell Sewage Pumping Station Map.

1. Why are you adding "New 59" to SPS1 when it is not an expansion lands, in the current Village Boundary, or needed for the 25 year growth forecast calculations?

The Area 59 is not included in the urban boundary, however, was used in the sizing of R-SPS4.

2. Will moving "Parcel C" to SPS3, currently tributary to SPS1, jeopardize the SPS3 existing area infrastructure capacity, affordability and competitiveness for the only part of the new expansion lands held by another owner?

The Parcel C is intended to convey wastewater to SPS3. The capacity of SPS3 and area infrastructure is accounted for in our assessment. SPS3 pumps wastewater directly to the Russell Lagoons.

3. What does "Parcel A" specify or represent? It is my understanding Parcel A is not a separate land parcel.

Area A should be included in Area B and will be combined.

BRADLEY YOUNG, Ph.D. / P.Eng.
Associate Partner / Senior Project Manager / Infrastructure

<image001.jpg>

M 647-614-2462 **F** 613-860-1870
600–1400 Blair Towers Place, Ottawa, ON K1J 9B8 CANADA

<image002.jpg>

From: McNally
Sent: Wednesday, May 29, 2024 10:10 PM
To: Bradley Young <Bradley.Young@cima.ca>; Francois Landry <francoislandry@russell.ca>
Subject: Comments and Feedback Form

Municipal Class Environmental Assessment Study

Master Plan Update for Russell Township Water and Wastewater Systems

Public Information Centre - May 8th, 2024

Comments and Feedback Form

The below questions are in relation to the presented Russell Sewage Pumping Station Map.

1. Why are you adding "New 59" to SPS1 when it is not an expansion lands, in the current Village Boundary, or needed for the 25 year growth forecast calculations?

2. Will moving "Parcel C" to SPS3, currently tributary to SPS1, jeopardize the SPS3 existing area infrastructure capacity, affordability and competitiveness for the only part of the new expansion lands held by another owner?

3. What does "Parcel A" specify or represent? It is my understanding Parcel A is not a separate land parcel.

Shawn McNally

From: Landry, Francois <FrancoisLandry@Russell.ca>
Sent: April 19, 2024 11:31 AM
To: Amy Langford; Bradley Young
Subject: C000-22000 - ALL - W&WW Master Plan Update

EXTERNAL EMAIL

FYI

François Landry
Gestionnaire de projets | Project Manager
Infrastructure Services d'infrastructure
Municipalité de RUSSELL Township
Cell.: 613-809-1963
www.russell.ca | Twitter | Facebook | Webcasts | Web diffusion

---

From: Bourgon, Jonathan <JonathanBourgon@Russell.ca>
Sent: Friday, April 19, 2024 8:34 AM
To: Rhonda Bradley
Subject: RE: Russell Township Master Water/Waste Water Update

Good morning Rhonda,

The Water/Wastewater Masterplan project team has identified the preliminary preferred alternatives and we are currently preparing for a public consultation to provide this information. The public meeting is scheduled to be held in May (the date to be confirm early next week) and the notice will be issued 2 weeks prior to the meeting. As you are on the contact list you will receive a copy sent directly to yourself in addition to the public announcement so please stay tuned.

Regards,

Jonathan Bourgon, B.Eng
Executive Director Infrastructure Services
Directeur executif des services d'Infrastructure
Municipalité de RUSSELL Township | Tel: 613-443-1747 (x207)
www.russell.ca | Twitter | Facebook | Webcasts | Web diffusions

From: Landry, Francois <FrancoisLandry@Russell.ca>
Sent: January 10, 2024 1:50 PM
To: Rhonda Bradley
Cc: Bradley Young; Bourgon, Jonathan; Amy Langford
Subject: RE: Township of Russell - Water and Wastewater Master Plan Update - Revised Notice of Study Commencement

EXTERNAL EMAIL

Hi Rhonda,
Thank you for your e-mail.

We will review the request and highly consider it.

Regards

François Landry
Gestionnaire de projets | Project Manager
Infrastructure Services d'infrastructure

Municipalité de RUSSELL Township
www.russell.ca | Twitter | Facebook | Webcasts | Web diffusion

---

From: Rhonda Bradley
Sent: Thursday, December 21, 2023 12:19 PM
To: Amy Langford <Amy.Langford@cima.ca>
Cc: Landry, Francois <FrancoisLandry@Russell.ca>; Bradley Young <Bradley.Young@cima.ca>; Bourgon, Jonathan <JonathanBourgon@Russell.ca>
Subject: Re: Township of Russell - Water and Wastewater Master Plan Update - Revised Notice of Study Commencement

Hi Amy - thanks for this information. It is very clear and thorough, and I appreciate it.

My understanding is that the Municipal Class EA document, prepared by the Municipal Engineers Association (MEA, 2023), outlines the minimum standards for communication and consultation and that they are careful to stress that these standards are a **minimum only.** This document clearly recommends that **proponents should tailor the consultation plan to reflect the project and the interested parties.**

The guidance document also says in the A.3.4.2 **Discretionary Points of Contact Section** are available including during the Phase 1 - To review and develop a clear problem statement. As the guidance suggests: "In this way, the mandatory public consultation in Phase 2 could be more meaningful."

As I make the case below, we are a relatively small community and we have several complexities which support greater effort in terms of notification, communication and two-way consultation.

- We are made up of several smaller communities, including Embrun, Russell, Marionville, Felton, Forget, North Russell, Pana and part of Limoges.
- We are also rural, occupying about 200 sq km, which presents well-documented participation challenges.
- We are also a bilingual community.
- Properly accommodating this language reality in relation to the complexities of the topic at hand also needs consideration.
- We have also been undergoing rapid growth which is bringing significant change to our community and this will have an impact on our natural assets and financial bottom line.
- There is a lot of local knowledge and history among local residents which could prove useful to the project team.

In addition,

- The Master Plan development process integrates with land use planning, and provides the opportunity to look at the full impact of decisions from a variety of perspectives, and
- Once adopted, the Master Plan sets the direction for, and will be used in support of, future investigations for the specific Schedule B and C, therefore Master Plans limit the scope of alternatives which can be considered in subsequent stages.

Therefore, I am reiterating my strong recommendation and request that the project team extend the process beyond the minimal requirements in order to be more reflective of our shared interest in **meaningful engagement** and successful outcomes at the OUTSET of this critical Master Plan project.

Specifically and again, I am asking the project team to review this request and agree to develop a communication/consultation plan that extends beyond the bare minimum requirements.

I look forward to your reply.

Rhonda Bradley

> On Dec 21, 2023, at 11:12 AM, Amy Langford <Amy.Langford@cima.ca> wrote:
>
> Hi Rhonda,
>
> Thanks again for providing input below. We greatly appreciate your interest and engagement on this project. Public engagement is an important component of the Municipal Class Environmental Assessment (EA) process. Our project team strives to provide opportunities for meaningful engagement and public feedback, which will provide more successful outcomes for the project.

The communication and consultation tools and methods that are being used for this Water and Wastewater Master Plan (hereafter referred to simply as "Master Plan") are in accordance with the requirements outlined in the Municipal Class EA document, prepared by the Municipal Engineers Association (MEA, 2023). Completing a Master Plan allows the Township to develop a long-range plan for water and wastewater servicing which integrates infrastructure requirements for existing and future land use at a Township-wide scale.

This Master Plan will be completed as outlined in the Municipal Class EA document framework for Approach 1 Master Plans, which includes: Phase 1 – Problem Definition, and Phase 2 – Alternative Solutions. An Approach 1 Master Plan is done at a broad level of assessment thereby requiring separate detailed investigations and further public engagement opportunities for projects with greater environmental and social impacts (i.e. Schedule B and C projects) that are identified within the Master Plan. The Master Plan would therefore become the basis for, and be used in support of, future investigations for the specific Schedule B and C projects identified within it. Schedule B projects would require further public consultation and the filing of separate Project File Report(s) for public review while Schedule C projects would have to fulfil Phases 3 and 4 with further public consultation prior to filing an Environmental Study Report for public review.

An Approach 1 Master Plan involves public consultation throughout the study and especially following development of alternative solutions when our project team anticipates that an in-person Public Consultation Centre (PCC) will be beneficial to stakeholders. Newspaper advertisements, social media posts, and advertisements on the Township's website will be published in both English and French to inform stakeholders and the public about the PCC. Everyone who has expressed interest in the Master Plan and has been added to the Stakeholder Contact List will receive a copy of the Notice of PCC via email. The advertisements will provide details on topic, location, time and date and will be advertised twice in each of the targeted newspapers, social media platforms, and the Township website.

The PCC will be held using a drop-in format where members of the project team from the Township and CIMA+ will be available to communicate study information to the general public and seek input for the Master Plan. The PCC will be designed to be interactive and present visual boards in both English and French to outline the decision-making process and aim to provide an appropriate level of technical complexity to obtain stakeholders' feedback on the preliminary preferred alternatives.

After being presented at the PCC, the bilingual visual boards will be available on the Township website. The project team will identify a period of time to return comment sheets. That being said, communication is open throughout the duration of the project for public comments to be received on the presented PCC material. The Master Plan Report will have a 30-day review period for comments when it is published. The Township website will provide directions on how to submit comments and add contact information to the Stakeholder Contact List.

Thanks,

Amy

AMY LANGFORD, P.Eng.
Project Engineer
Water and Wastewater / Infrastructure

T 613-860-2462 **M** 343 597-0161 **F** 613-860-1870
600-1400 Blair Towers Place, Ottawa, ON K1J 9B8 CANADA

Follow us

From: Rhonda
Sent: Friday, December 15, 2023 12:59 PM
To: Amy Langford <Amy.Langford@cima.ca>
Cc: Landry, Francois <FrancoisLandry@russell.ca>; Bradley Young <Bradley.Young@cima.ca>
Subject: Re: Township of Russell - Water and Wastewater Master Plan Update - Revised Notice of Study Commencement

EXTERNAL EMAIL

Thank you. I look forward to hearing from the project team.

Rhonda

> On Dec 15, 2023, at 12:56 PM, Amy Langford <Amy.Langford@cima.ca> wrote:

Hi Rhonda,

Thank you for your comments. Yes, we did receive your email and the project team is preparing a response.

Thanks,
Amy

AMY LANGFORD, P.Eng.
Project Engineer
Water and Wastewater / Infrastructure

T 613-860-2462 **M** 343 597-0161 **F** 613-860-1870
600-1400 Blair Towers Place, Ottawa, ON K1J 9B8 CANADA

Follow us

From: Rhonda Bradley
Sent: Friday, December 15, 2023 12:37 PM
To: Amy Langford <Amy.Langford@cima.ca>
Cc: Landry, Francois <FrancoisLandry@russell.ca>; Bradley Young <Bradley.Young@cima.ca>
Subject: Re: Township of Russell - Water and Wastewater Master Plan Update - Revised Notice of Study Commencement

Hi Amy - did you receive this email below?

Thank you.

Rhonda Bradley

On Dec 11, 2023, at 5:04 PM, Rhonda Bradley wrote:

Thank you Amy.

On the record, I would like to offer that one of the key challenges Township residents face in terms of fully participating and engaging in critical studies such as these, is that we are often presented complex information during the same meeting in which we are expected to offer comment and input, and then no other opportunities are offered. By the time we've absorbed the information and potential implications, the opportunity to input has passed. This puts us on very unequal footing with Township staff, and significantly diminishes residents' capacity to be informed and contribute meaningfully during these public engagement opportunities.

Can you tell us what communication and consultation goals and principles have been articulated for this project? Are you are designing a consultation process that enables meaningful participation. In other words, how much notice can we expect and will we be provided material and documents/or can we be provided material and documents in advance to review and consider prior to a public consultation centre meeting. What is the plan to enable a two-way communication process, as well as opportunities for information exchange and for those consulted to influence decision-making? Is the Township opting for the barest minimum in terms of consultation (the "Public Consultation Centre" you mention), or can we expect more than one opportunity to input? If so, what are the consultation engagement points beyond this PCC?

I appreciate this is a regional approach but I point to the York Region's 2022 Water/Waste Water Master Plan update. Appendix B - Consultation Summary - B.1 to B.4 (AODA).pdf
https://www.york.ca/media/106411/download?attachment

While the Township may be relatively smaller than the York region in terms of geography, we have an equal share of complexities. We are made up of several smaller communities, including Embrun, Russell, Marionville, Felton, Forget, North Russell, Pana and part of Limoges. We are also rural, which presents additional participation challenges. We are also a bilingual community. Properly accommodating this language reality in relation to the complexities of the topic at hand also needs consideration.

Big financial decisions are at stake for tax payers in relation to future water/waste water decisions, and the implications of climate change become more prominent every day, particularly with respect to water. So again, I ask, can you tell us what communication and consultation goals and principles have been articulated for this project? What is the full consultation plan? And when will you have dates established?

Thank again,

Rhonda

From: Amy Langford
Sent: December 11, 2023 3:51 PM
To: Rhonda
Cc: Landry, Francois; Bradley Young
Subject: RE: Township of Russell - Water and Wastewater Master Plan Update - Revised Notice of Study Commencement

Hi Rhonda,

Thank you for reaching out to inquire about the progress of the Township of Russell's Water and Wastewater Master Plan Update.

This project is still ongoing. We will be developing alternative solutions to present to stakeholders at a Public Consultation Centre early in 2024. We will be reaching out to you and the other stakeholders in the new year to notify you of the date and time for the Public Consultation Centre when those details are finalized.

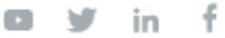
Please feel free to contact us with any questions or concerns.

Thanks,
Amy

AMY LANGFORD, P.Eng.
Project Engineer
Water and Wastewater / Infrastructure

T 613-860-2462 **M** 343 597-0161 **F** 613-860-1870
600-1400 Blair Towers Place, Ottawa, ON K1J 9B8 CANADA

Engineering for people

Follow us 

From: Rhonda
Sent: Friday, December 8, 2023 9:46 AM
To: Amy Langford <Amy.Langford@cima.ca>
Cc: Landry, Francois <FrancoisLandry@russell.ca>; Bradley Young <Bradley.Young@cima.ca>
Subject: Re: Township of Russell - Water and Wastewater Master Plan Update - Revised Notice of Study Commencement

EXTERNAL EMAIL

Hi there. Could I please have an update on the progress of this study?

Rhonda Bradley

On Aug 28, 2023, at 8:26 AM, Amy Langford <Amy.Langford@cima.ca> wrote:

Hi Rhonda,

Thanks for your interest in this project. The revised Notice of Commencement will be posted on the Township's website sometime this week.

Please let us know if you have any additional questions.

Thanks,
Amy

AMY LANGFORD, P.Eng.
Project Engineer
Water and Wastewater / Infrastructure

T 613-860-2462 **M** 343 597-0161 **F** 613-860-1870
600-1400 Blair Towers Place, Ottawa, ON K1J 9B8 CANADA

Follow us

From: Rhonda Bradley
Sent: Friday, August 25, 2023 10:57 AM
To: Amy Langford <Amy.Langford@cima.ca>
Cc: Landry, Francois <FrancoisLandry@Russell.ca>; Bradley Young <Bradley.Young@cima.ca>
Subject: Re: Township of Russell - Water and Wastewater Master Plan Update - Revised Notice of Study Commencement

EXTERNAL EMAIL

Hi Amy - thank you for forwarding this revised notice updating the study area figure. I am noticing that the Township's website still features the original notice map. I wanted to post your update to my social media but I don't want to use the link you provided as it may contribute to confusion … Do you know if the Township plans to update the notice on its website as well?

Thank you very much.

Rhonda

From: Amy Langford
Sent: Friday, August 4, 2023 10:03 AM
To: Amy Langford <Amy.Langford@cima.ca>
Cc: Landry, Francois <FrancoisLandry@Russell.ca>; Bradley Young <Bradley.Young@cima.ca>
Subject: Township of Russell - Water and Wastewater Master Plan Update - Notice of Study Commencement

La version française suivra.

Municipal Class Environmental Assessment Study

Hello,

Please find attached for your information, the Notice of Study Commencement for the Municipal Class Environmental Assessment Study Master Plan Update that the Township of Russell is initiating to plan for its future Water and Wastewater System needs. The Notice is also posted on the Township's website here: https://www.russell.ca/en/your-township/water-and-wastewater-master-plan.aspx

The project team wants to make sure that appropriate consultation and engagement opportunities are provided to review agencies and stakeholders that may have an interest in this project. Please kindly advise either of the project team members listed in the attached Notice should you have any comments, questions or concerns, or if you would like to have a pre-consultation meeting with the team.

Hard copies of the attached Notice of Study Commencement have been mailed out to all in the contact list for whom we have a valid mailing address. Please indicate if you wish to receive project notifications in digital format moving forward.

Étude d'évaluation environnementale municipale de portée générale

Bonjour,

Veuillez trouver ci-joint, à titre d'information, l'avis de lancement d'étude pour la mise à jour du plan directeur de l'étude d'évaluation environnementale municipale de portée générale entreprise par la Municipalité de Russell. Cette mise à jour adressera la planification pour les besoins futurs en infrastructures d'eau potable et des eaux usées. L'avis est affiché sur le site Web de la Municipalité au lien suivant : https://www.russell.ca/en/your-township/water-and-wastewater-master-plan.aspx

L'équipe de projet veut s'assurer que les organismes et les parties prenantes qui pourraient être intéressés par ce projet bénéficient des possibilités de consultation et de rétroaction.
SVP informer l'un ou l'autre des membres de l'équipe de projet dont le nom figure dans l'avis ci-joint si vous avez des commentaires, des questions ou des préoccupations, ou si vous souhaitez prendre part à une réunion de préconsultation avec l'équipe.

Des copies papier de l'avis de début d'étude ci-joint ont été postées à toutes les personnes figurant sur la liste de contact pour lesquelles nous disposons d'une adresse postale valide. Veuillez nous indiquer si vous souhaitez recevoir les notifications du projet en format numérique à l'avenir.

From: Bradley Young
Sent: August 28, 2023 10:32 AM
To: Laurie McCannell
Cc: Amy Langford
Subject: RE: matching maps

HI Laurie, well received. Please don't hesitate to send your questions to us as they arise.

Regards,
-Brad

From: Laurie McCannell
Sent: Monday, August 28, 2023 10:30 AM
To: Bradley Young <Bradley.Young@cima.ca>
Cc: Amy Langford <Amy.Langford@cima.ca>
Subject: Re: matching maps

EXTERNAL EMAIL

Hi Bradley,

I really appreciate you following up - thank-you.
Yes, Amy has answered my questions. Now, I am asking the County for confirmation of the perimeter of the newly approved Trade & Industry land in the 417 Industrial Park, because the map used in their 2022/2023 Official Plan still isn't the one shown in the revised Notice of Commencement (although it is closer). Depending upon their answer, I may have another question.

Best regards,
Laurie McCannell

On Mon, 28 Aug 2023 at 09:10, Bradley Young <Bradley.Young@cima.ca> wrote:

> Hi Laurie,
>
> I talked with Amy and see that you sent an email to myself. My sincere apologies I did not receive this email. I was able to locate it in my quarantine folder and have placed a request to IT to understand how a gmail address would be screened this way.
>
> Again, apologize for this and I'm happy you have received all the information requested thus far.

Best regards,

-Brad

From: Amy Langford <Amy.Langford@cima.ca>
Sent: Thursday, August 24, 2023 11:32 AM
To: Laurie McCannell
Cc: Bradley Young <Bradley.Young@cima.ca>; Landry, Francois <FrancoisLandry@russell.ca>
Subject: RE: matching maps

Hi Laurie,

The notice was published in the Le Reflet newspaper on Aug 2, 2023.

Thanks,

Amy

AMY LANGFORD, P.Eng.
Project Engineer

Water and Wastewater / Infrastructure

T 613-860-2462 **M** 343 597-0161 **F** 613-860-1870
600-1400 Blair Towers Place, Ottawa, ON K1J 9B8 CANADA

From: Laurie McCannell
Sent: Thursday, August 24, 2023 11:10 AM
To: Amy Langford <Amy.Langford@cima.ca>
Cc: Bradley Young <Bradley.Young@cima.ca>; Landry, Francois <FrancoisLandry@russell.ca>
Subject: Re: matching maps

EXTERNAL EMAIL

Thank-you very much for your answers. I have only 1 more question:

... and was published in the newspaper.

Please confirm in which newspaper edition this notice of commencement was published?

And 1 more comment:

By-law 2022-26

For what it's worth, the revised map in the notice of commencement still does not seem to match the current Prescott Russell County Official Plan map of the industrial park. I admit the County document is a bit confusing so I will ask them to clarify precisely what land they have re-designated for expanding the industrial park.

Best regards,

Laurie McCannell

On Thu, 24 Aug 2023 at 10:29, Amy Langford <Amy.Langford@cima.ca> wrote:

> Good Morning, Laurie:
>
> Please find responses to your questions below in green. Please feel free to reach out with any further questions or comments regarding this Master Plan Study.
>
> Thanks,
>
> Amy

AMY LANGFORD, P.Eng.
Project Engineer

Water and Wastewater / Infrastructure

T 613-860-2462 **M** 343 597-0161 **F** 613-860-1870
600-1400 Blair Towers Place, Ottawa, ON K1J 9B8 CANADA

From: Amy Langford
Sent: Wednesday, August 9, 2023 3:05 PM
To: Laurie McCannell
Cc: Bradley Young <Bradley.Young@cima.ca>; Landry, Francois <FrancoisLandry@Russell.ca>
Subject: RE: matching maps

Hi Laurie,

Thank you for your email. You have been added to the stakeholder contact list.

We are reviewing your questions regarding the Industrial Park boundaries and Class EA scope/process below and will respond in a timely manner.

Thanks,

Amy

AMY LANGFORD, P.Eng.
Water and Wastewater / Infrastructure

T 613-860-2462 **M** 343 597-0161 **F** 613-860-1870
600-1400 Blair Towers Place, Ottawa, ON K1J 9B8 CANADA

From: Laurie McCannell
Sent: Wednesday, August 9, 2023 10:08 AM
To: Amy Langford <Amy.Langford@cima.ca>
Subject: Fwd: matching maps

EXTERNAL EMAIL

Good morning,

Please confirm I am on the stakeholder contact list for this project. My family farm is involved in this water/wastewater servicing conversation.

I have received no reply from Mr. Young (forwarded email below).

Best regards,

Laurie McCannell

---------- Forwarded message ---------
From: **Laurie McCannell**
Date: Tue, 1 Aug 2023 at 09:41
Subject: matching maps
To: <bradley.young@cima.ca>

Municipal Class Environmental Assessment Study
Master Plan Update for Russell Township Water and Wastewater Systems
Notice of Study Commencement

July 19, 2023 **Public Notice**

The Corporation of the Township of Russell (Township) is initiating a Class Environmental Assessment (Class EA) study to update its 2016 Water and Wastewater Master Plan.

The 2016 Master Plan outlined a 20-year strategy for water and wastewater infrastructure upgrades based on growth forecasted at the time. Since the completion of the 2016 Master Plan, the pace of development within the Township's urban areas has exceeded what was previously projected. In addition, the proposed Official Plan Amendment expands the urban boundaries of the Township. These new areas will require water and wastewater servicing. This Master Plan study will identify new infrastructure or improvements to existing infrastructure to accommodate future development over a 20-year planning period.

Figure 1: Master Plan Study Area

The Process

The Master Plan will be carried out in accordance with the requirements of the Municipal Class Environmental Assessment document (last amended in March 2023), which is approved under the Ontario Environmental Assessment Act. The Master Plan will complete Phases 1 and 2 of the Class EA Process. Projects recommended by the Master Plan requiring additional studies will require project specific Schedule B and Schedule C Class EA studies outside of the scope of this Master Plan.

The Master Plan process includes public, indigenous and external agency consultation, an evaluation of alternative solutions, an assessment of potential impacts associated with the proposed improvements and development of measures to mitigate identified impacts.

Public Consultation

Public consultation is an integral component of the Class EA process, and we value your input during the planning process. A Public Information Centre (PIC) will be held in association with the Master Plan. Once a date for the PIC has been scheduled, notices will be published in local newspapers, on the Township's website (www.russell.ca) and distributed to all individuals and agencies who express an interest in this project.

If you wish to be placed on the Project Contact List to receive notices and information or to provide comments at any time during the process, you can do so by contacting:

Francois Landry
Municipalité de Russell Township
Project Manager
613.443.1747
francoislandry@russell.ca

Bradley Young, Ph.D., P.Eng.
CIMA+
Project Manager
647.614.2482
bradley.young@cima.ca

Under the Freedom of Information and Protection of Privacy Act and the Environmental Assessment Act, unless otherwise stated in the submission, any personal information such as name, address, telephone number and property location included in a submission will become part of the public record files for this matter and may be released, if requested, to any person.

www.facebook.com/MunRussellTwp www.twitter.com/MunRussellTwp

Good morning,

Please contact me with all information about the recently announced class EA to update the Township of Russell's wastewater and water master plan (see notice, above). If there's a contact list, please put me on it. Please ensure that if Russell Township is managing the contact list, I am put on it. Thank-you.

The map in that notice does not show the recent expansion of the Industrial park which is within the water servicing study area. The industrial park expansion was announced publicly by Russell Township in May 2023 and was approved via the Province of Ontario's approval of the upper counties' Official Plan in July 2023 (if the expansion isn't "official", I'd like to know that). The Ministry of Municipal Affairs and Housing has issued a Notice of Decision to approve the United Counties' New Official Plan, adopted by By-law 2022-26, as modified, and has repealed and replaced the previous Official Plan (By-law 99-36).

The map Russell Township provided to the public showing the industrial park as of May 2023 is:

The road along the (approximately) western edge of the green industrial park area, is Eadie Road.

1. Can you please clarify exactly what development areas are within the scope of the new EA studies?

Please refer to the new notice of study commencement map.

2. Can you also please clarify when and where the public notice for the class EA will be published?

> The public notice is published on our website at Russell.ca, and was published in the newspaper. Please refer to the attached revised notice of commencement.
>
> 3. What are the terms of reference for this Environmental Assessment?
>
> To review the need of water and sewer for the full township to reflect the new urban boundaries.
>
> I am aware there have been some recent changes to how EAs are conducted in Ontario - please let me know how I may remain engaged with this new process.
>
> You can refer to the attached notice of study commencement for details but in any case we will add you to the contact list.
>
> Thank-you for your help,
>
> Laurie McCannell
>
> (use this email address for all contact)

From: Laurie McCannell
Sent: April 26, 2024 3:41 PM
To: Amy Langford
Cc: Landry, Francois; Bradley Young
Subject: Re: Township of Russell - Water and Wastewater Master Plan Update - Notice of Public Information Centre

Great - that sounds good. Please do send me all the information when it becomes available for review.

Best regards,
Laurie

On Fri, 26 Apr 2024 at 08:44, Amy Langford <Amy.Langford@cima.ca> wrote:

> Hi Laurie,
>
> Thank you for your continued interest in the Township's Water and Wastewater Master Plan Study!
>
> The PIC boards will be available by email upon request after being presented at the PIC. The project team will identify a period of time to return comment sheets on the PIC boards. That being said, communication is open throughout the duration of the project for public comments to be received on the presented PIC material. The Township's website will provide directions on how to submit comments electronically for those that were unable to attend the PIC in person, and how to request for the PIC boards.
>
> Thanks,
>
> Amy
>
> ---
>
> **AMY LANGFORD**, P.Eng.
> Project Engineer

Water and Wastewater / Infrastructure

T 613-860-2462 **M** 343 597-0161 **F** 613-860-1870
600-1400 Blair Towers Place, Ottawa, ON K1J 9B8 CANADA

Follow us

From: Laurie McCannell
Sent: Thursday, April 25, 2024 5:48 AM
To: Amy Langford <Amy.Langford@cima.ca>
Cc: Landry, Francois <FrancoisLandry@russell.ca>; Bradley Young <Bradley.Young@cima.ca>
Subject: Re: Township of Russell - Water and Wastewater Master Plan Update - Notice of Public Information Centre

EXTERNAL EMAIL

Good morning and thank-you for this information.

Yes - I wish to continue receiving electronic updates for this project.

[redacted], so I followed the link you provide to review the information online. https://www.russell.ca/en/your-township/water-and-wastewater-master-plan.aspx

I did not find anything recent? Please tell me where I can review the new information, or attach the new documents in reply to this email.

Best regards,

Laurie

On Wed, 24 Apr 2024 at 16:12, Amy Langford <Amy.Langford@cima.ca> wrote:

> La version française suivra.
>
> ## Municipal Class Environmental Assessment Study – Notice of Public Information Centre
>
> Hello,
>
> Please find attached for your information, the Notice of Public Information Centre (PIC) that the Township of Russell is undertaking for the Water and Wastewater Master Plan.
>
> Your participation and feedback on the Master Plan are important to us. The project team wants to make sure that appropriate consultation and engagement is provided to review agencies, indigenous communities, and stakeholders that may have an interest in this project. You are invited to attend the upcoming **PIC on Wednesday May 8, 2024**, where key findings of our work and preliminary study recommendations will be presented. The details of the PIC, including location and time, are included in the attached notice.
>
> Hard copies of the attached Notice of PIC have been mailed out to all in the contact list for whom we have a valid mailing address. Please indicate if you wish to receive project notifications in digital format moving forward.
>
> Should you not be able to attend the meeting, the PIC related material will be available on the project webpage, listed below, for your review.
>
> https://www.russell.ca/en/your-township/water-and-wastewater-master-plan.aspx
>
> Kindly, let either of the project team members listed in the notice of any questions, comments or concerns you have in association with the Master Plan.

Étude d’évaluation environnementale municipale de portée générale – Avis d’un centre d’information publique

Bonjour,

Veuillez trouver ci-joint, à titre d'information, l'avis public du centre d'information publique (CIP) au sujet du plan directeur des infrastructures en eau potable et en eaux usées entrepris par la Municipalité de Russell.

Votre participation ainsi que vos commentaires sur le plan directeur sont importants pour nous. L'équipe de projet veut s'assurer que les organismes d'examen, les communautés autochtones et les parties prenantes susceptibles d'être intéressées par ce projet sont consultés et engagés de manière appropriée. Vous êtes invités à assister au prochain **CIP, le mercredi 8 mai 2024**, où seront présentées les principales conclusions de nos travaux et les recommandations préliminaires de l'étude. Les détails du CIP, y compris le lieu et l'heure, sont inclus dans l'avis ci-joint.

Des copies papier de l'avis du CIP ci-joint ont été postées à toutes les personnes figurant sur la liste de contact pour lesquelles nous disposons d'une adresse postale valide. SVP, veuillez nous indiquer si vous souhaitez recevoir les notifications du projet en format numérique à l'avenir.

Si vous ne pouvez pas assister à la réunion, les documents relatifs au CIP seront disponibles sur la page web du projet, mentionnée ci-dessous, pour que vous puissiez en prendre connaissance.

https://www.russell.ca/en/your-township/water-and-wastewater-master-plan.aspx

Si vous avez des questions, des commentaires ou des inquiétudes concernant le plan directeur, veuillez en faire part à l'un ou l'autre des membres de l'équipe de projet mentionnés dans l'avis.

AMY LANGFORD, P.Eng.
Project Engineer

Water and Wastewater / Infrastructure

T 613-860-2462 **M** 343 597-0161 **F** 613-860-1870
600-1400 Blair Towers Place, Ottawa, ON K1J 9B8 CANADA

Follow us

Do you really need to print this email? Let's protect the environment!

From: Landry, Francois <FrancoisLandry@Russell.ca>
Sent: August 10, 2023 7:59 AM
To: tom guntzel
Cc: Bourgon, Jonathan; Amy Langford; Bradley Young
Subject: RE: new EA
Attachments: 2023.07.14 - EA Notice of Commencement.pdf

EXTERNAL EMAIL

Hi Tom,

The Master Plan update encompasses all of the Russell Township, which includes the Industrial Park area. The attached map shown on the Master Plan Notice of Study Commencement includes the currently approved Settlement Boundaries, which will receive a minor update soon.

The former EA for the Industrial Park, which only looked at the servicing option, is separate from this Master Plan Update EA and is no longer under public review since the scope of the project is currently being modified.

The land designation was already approved by Council on April 19 2022, and it was done under the Planning process. On May 16, Council approved another plan to service the 417 industrial Park therefore another EA will need to be complete since the existing one is now absolute. We already put your name on the communication list if that future study proceeds.

Infrastructure Services
Municipalité de RUSSELL Township

-----Original Message-----
From: tom guntzel
Sent: Thursday, August 3, 2023 5:32 PM
To: Landry, Francois <FrancoisLandry@Russell.ca>
Subject: EA

Mr. Landry,

I was referring to the new EA that is dated July 19, 2023, as I assumed it would pertain to the enlarged Industrial area. From the map enlargement I received, it only refers to the old park boundaries. The former EA for the Industrial Park did not include the expansion lands to Eadie Road. I thought it would be necessary to have an EA to assess the suitability of changing the designation of this additional farm land. Is there a plan to address evaluating this new portion of the park?
Tom & Sharon Guntzel

-----Original Message-----
From: Landry, Francois
Sent: Thursday, August 3, 2023 10:14 AM
To: tom guntzel
Cc: Amy Langford <Amy.Langford@cima.ca>; Bourgon, Jonathan <JonathanBourgon@Russell.ca>
Subject: RE: new EA

Hi Tom,
We have a new EA for the Master Plan update however the older EA for the Vars Industrial Park servicing is complete. Were you referring to the new Master Plan EA in your email below?

François Landry
Gestionnaire de projets | Project Manager Infrastructure Services d'infrastructure

Municipalité de RUSSELL Township
Cell.: [redacted]
http://www.russell.ca/ | Twitter | Facebook | Webcasts | Web diffusion

-----Original Message-----
From: tom guntzel
Sent: Wednesday, July 26, 2023 2:56 PM
To: Landry, Francois <FrancoisLandry@Russell.ca>
Subject: new EA

Could you please put us on your list of interested citizens for any information about the new EA that has commenced regarding the servicing of the 417 Industrial Park. We would appreciate a return email to know that you have received our request.

Thank you,

Tom & Sharon Guntzel

From: Landry, Francois <FrancoisLandry@Russell.ca>
Sent: April 26, 2024 8:16 AM
To: Greg Wheeler
Cc: Bourgon, Jonathan; Amy Langford; Bradley Young
Subject: RE: Township water information session

EXTERNAL EMAIL

Hi Greg,
Thank you for your email and suggestions.

We also wanted to point out that we also engage the public through social media as well as to those who have registered to our newsletter, and other stakeholders such as Federal and Provincial Agencies by mail/email.

The strategies listed above, along with those mentioned in the e-mail below, are communication strategies used for our Environmental Assessments and Public Information Centers, and we believe should be adequate.

If you have any questions, please don't hesitate to contact us.

Thank you

François Landry
Gestionnaire de projets | Project Manager Infrastructure Services d'infrastructure

Municipalité de RUSSELL Township
Cell.: [redacted]
www.russell.ca | Twitter | Facebook | Webcasts | Web diffusion

-----Original Message-----
From: Greg Wheeler
Sent: Wednesday, April 24, 2024 3:16 PM
To: Landry, Francois <FrancoisLandry@Russell.ca>
Subject: Township water information session

Hello there—

I'm glad to see the township engaging the public on this important project. I wanted to point out a possible deficiency with the means listed for informing the public about the Information Centre. Those are: local newspapers, the Township website, and those who have already expressed an interest. As there is extremely limited local newspaper representation, and considering that most people likely do not habitually visit the Township website, that leaves only people who have already expressed an interest.

Personally, [redacted], and it seems expensive and important. I only bring this to your attention because I think the three methods for letting the general public know might not fulfill that job, even when all stacked together. I don't know what the remedy would be, or if the Township even wants one. I thought I would point it out, just in case there's an interest. I know it's hard to keep everyone informed at all times, considering budget and time constraints.Thanks for your attention.

Greg Wheeler

From: Landry, Francois <FrancoisLandry@Russell.ca>
Sent: August 3, 2023 10:10 AM
To: bob martin; Bradley Young
Cc: Bourgon, Jonathan; Amy Langford
Subject: RE: Master Plan Update for Russell Township Water and Wastewater Systems

EXTERNAL EMAIL

Hi,
Thank you for your email.
You will be placed on the list.

François Landry
Gestionnaire de projets | Project Manager
Infrastructure Services d'infrastructure

Municipalité de RUSSELL Township
www.russell.ca | Twitter | Facebook | Webcasts | Web diffusion

---

From: bob martin
Sent: Monday, July 24, 2023 4:10 PM
To: Landry, Francois <FrancoisLandry@Russell.ca>; bradley.young@cima.ca
Subject: Master Plan Update for Russell Township Water and Wastewater Systems

Good afternoon, Francois and Bradley.

Both my wife and I would like to be placed on the Project Contact List for the Municipal Class Environmental Assessment Study related to the Master Plan Update for Russell Township Water and Wastewater Systems.

Thank you in advance,
Bob & Janet Martin

From: Landry, Francois <FrancoisLandry@Russell.ca>
Sent: August 3, 2023 10:14 AM
To: tom guntzel
Cc: Amy Langford; Bourgon, Jonathan
Subject: RE: new EA

EXTERNAL EMAIL

Hi Tom,
We have a new EA for the Master Plan update however the older EA for the Vars Industrial Park servicing is complete. Were you referring to the new Master Plan EA in your email below?

François Landry
Gestionnaire de projets | Project Manager Infrastructure Services d'infrastructure

Municipalité de RUSSELL Township
Cell.: [redacted]
www.russell.ca | Twitter | Facebook | Webcasts | Web diffusion

-----Original Message-----
From: tom guntzel
Sent: Wednesday, July 26, 2023 2:56 PM
To: Landry, Francois <FrancoisLandry@Russell.ca>
Subject: new EA

Could you please put us on your list of interested citizens for any information about the new EA that has commenced regarding the servicing of the 417 Industrial Park. We would appreciate a return email to know that you have received our request.

Thank you,

Tom & Sharon Guntzel

From: Landry, Francois <FrancoisLandry@Russell.ca>
Sent: August 3, 2023 10:14 AM
To: Rhonda
Cc: Deacon, Lisa; Amy Langford; Bourgon, Jonathan
Subject: RE: Class EA to update 2016 water and wastewater master plan

EXTERNAL EMAIL

Hi,
Thank you for your email.
You will be placed on the list.

François Landry
Gestionnaire de projets | Project Manager Infrastructure Services d'infrastructure

Municipalité de RUSSELL Township
Cell.: [redacted]

-----Original Message-----
From: Rhonda
Sent: Sunday, July 23, 2023 8:53 AM
To: Landry, Francois <FrancoisLandry@Russell.ca>
Cc: Deacon, Lisa <[redacted]>
Subject: Class EA to update 2016 water and wastewater master plan

Mr. Laundry- please be advised, we wish to be added to the mailing/emailing communications list for this project. Please confirm you have received this email and we will be included in future communications regarding this EA.

Thank you,

Rhonda Bradley

From: Landry, Francois <FrancoisLandry@Russell.ca>
Sent: August 22, 2023 9:26 AM
To: Amy Langford; Bradley Young
Subject: FW: C000-22000 - W&WW Master Plan Revision

EXTERNAL EMAIL

Hi Amy,
Can you add the person below to the list, please and thank you.

François Landry
Gestionnaire de projets | Project Manager Infrastructure Services d'infrastructure

Municipalité de RUSSELL Township
Cell.: [redacted]
www.russell.ca | Twitter | Facebook | Webcasts | Web diffusion

-----Original Message-----
From: Rivet, Ginette <GinetteRivet@Russell.ca>
Sent: Tuesday, August 22, 2023 9:25 AM
To: Landry, Francois <FrancoisLandry@Russell.ca>
Subject: RE: C000-22000 - W&WW Master Plan Revision

-----Original Message-----
From: Landry, Francois <FrancoisLandry@Russell.ca>
Sent: Tuesday, August 22, 2023 8:26 AM
To: Rivet, Ginette <GinetteRivet@Russell.ca>
Subject: RE: C000-22000 - W&WW Master Plan Revision

courriel

François Landry
Gestionnaire de projets | Project Manager Infrastructure Services d'infrastructure

Municipalité de RUSSELL Township

Cell.: [redacted]
https://can01.safelinks.protection.outlook.com/?url=http%3A%2F%2Fwww.russell.ca%2F&data=05%7C01%7CFrancoisLandry%40Russell.ca%7C496d63c9375e4d699c4208dba3132220%7C77ebf43ffae34b84a065a1708d9b6513%7C0%7C0%7C638283074805312470%7CUnknown%7CTWFpbGZsb3d8eyJWIjoiMC4wLjAwMDAiLCJQIjoiV2luMzIiLCJBTiI6Ik1haWwiLCJXVCI6Mn0%3D%7C3000%7C%7C%7C&sdata=ATPEP%2FY5EgJMHs%2F97vHB1DyD99YEs3%2Bbvk8rX72EbVg%3D&reserved=0 | Twitter | Facebook | Webcasts | Web diffusion

-----Original Message-----
From: Rivet, Ginette <GinetteRivet@Russell.ca>
Sent: Tuesday, August 22, 2023 8:17 AM
To: Landry, Francois <FrancoisLandry@Russell.ca>
Subject: RE: C000-22000 - W&WW Master Plan Revision

Courriel ou adresse civique

-----Original Message-----
From: Landry, Francois <FrancoisLandry@Russell.ca>
Sent: Tuesday, August 22, 2023 8:12 AM
To: Rivet, Ginette <GinetteRivet@Russell.ca>
Subject: RE: C000-22000 - W&WW Master Plan Revision

Ok merci.
Laisse-moi savoir pour son adresse.merci stp

François Landry
Gestionnaire de projets | Project Manager Infrastructure Services d'infrastructure

Municipalité de RUSSELL Township
Cell.: [redacted]
https://can01.safelinks.protection.outlook.com/?url=http%3A%2F%2Fwww.russell.ca%2F&data=05%7C01%7CFrancoisLandry%40Russell.ca%7C496d63c9375e4d699c4208dba3132220%7C77ebf43ffae34b84a065a1708d9b6513%7C0%7C0%7C638283074805312470%7CUnknown%7CTWFpbGZsb3d8eyJWIjoiMC4wLjAwMDAiLCJQIjoiV2luMzIiLCJBTiI6Ik1haWwiLCJXVCI6Mn0%3D%7C3000%7C%7C%7C&sdata=ATPEP%2FY5EgJMHs%2F97vHB1DyD99YEs3%2Bbvk8rX72EbVg%3D&reserved=0 | Twitter | Facebook | Webcasts | Web diffusion The information in this e-mail is intended solely for the addressee(s) named, and is confidential. Any other distribution, disclosure or copying is strictly prohibited. If you have received this communication in error, please reply by e-mail to the sender and delete or destroy all copies of this message.
Les renseignements contenus dans le présent message électronique sont confidentiels et concernent exclusivement le(s) destinataire(s) désigné(s). Il est strictement interdit de distribuer ou de copier ce message. Si vous avez reçu ce message par erreur, veuillez répondre par courriel à l'expéditeur et effacer ou détruire toutes les copies du présent message

-----Original Message-----
From: Rivet, Ginette <GinetteRivet@Russell.ca>
Sent: Tuesday, August 22, 2023 8:10 AM
To: Landry, Francois <FrancoisLandry@Russell.ca>
Subject: RE: C000-22000 - W&WW Master Plan Revision

Il a vu ca dans le reflet

-----Original Message-----
From: Landry, Francois <FrancoisLandry@Russell.ca>
Sent: Tuesday, August 22, 2023 7:58 AM
To: Rivet, Ginette <GinetteRivet@Russell.ca>
Subject: C000-22000 - W&WW Master Plan Revision

Merci,
Est-ce que tu peux l'appeler pour avoir son adresse courriel?

Et lui demander s'il parle du Master Plan, car il y a plusieurs personnes qui sont confus.

Merci

François Landry
Gestionnaire de projets | Project Manager Infrastructure Services d'infrastructure

Municipalité de RUSSELL Township
Cell.: [redacted]

-----Original Message-----
From: Rivet, Ginette <GinetteRivet@Russell.ca>
Sent: Tuesday, August 22, 2023 7:55 AM
To: Landry, Francois <FrancoisLandry@Russell.ca>
Subject: FW: 4322 Message from On Call

Ajoute son nom pour les plans futurs

Merci Gino

For: Req On Call Agent
From: Jean Cloutier

Message: Wants their name to be added on the future plan.

DO NOT REPLY TO THIS EMAIL QUESTIONS CALL OUR ADMINISTRATIVE OFFICE AT 613-238-3262

Taken By: EI
Date/Time:08/11/2023 01:03 PM

Dlvd By: JR.D
Dlvd To: IVAN CLEMENT VIA PHONE
Date/Time:08/11/2023 01:13 PM

Message Dispatch History

08/11/2023 01:13 PM Auto Action Executed

08/11/2023 01:13 PM Message Delivered

08/11/2023 01:13 PM Dial 613-913-5281 IVAN

08/11/2023 01:06 PM E-Mail submitted to Queue 3221030015565HKW4719633

08/11/2023 01:06 PM Priority by Email

08/11/2023 01:06 PM E-Mail successfully sent 43221030015565HKW4719633

08/11/2023 01:05 PM Priority by Auto Action

08/11/2023 01:05 PM Auto Action Executed

08/11/2023 01:05 PM Message Added

,443221030015565HKW4759763

From: Amy Langford
Sent: March 6, 2024 9:29 AM
To: Landry, Francois; McNally
Cc: Bradley Young; Bourgon, Jonathan
Subject: RE: C000-22000 - ALL - W&WW Master Plan Update: Contact List

Hi Wendy,

Thank you for your interest in the Township of Russell's Water and Wastewater Master Plan Update study. You have been added to the stakeholder contact list and will receive all future project communications via email.

Thanks,
Amy

AMY LANGFORD, P.Eng.
Project Engineer
Water and Wastewater / Infrastructure

T 613-860-2462 **M** 343 597-0161 **F** 613-860-1870
600-1400 Blair Towers Place, Ottawa, ON K1J 9B8 CANADA

Engineering for people

Follow us

From: Landry, Francois <FrancoisLandry@Russell.ca>
Sent: Monday, March 4, 2024 1:11 PM
To: McNally
Cc: Amy Langford <Amy.Langford@cima.ca>; Bradley Young <Bradley.Young@cima.ca>; Bourgon, Jonathan <JonathanBourgon@Russell.ca>
Subject: C000-22000 - ALL - W&WW Master Plan Update: Contact List

EXTERNAL EMAIL

Hi Wendy,
We received your email.

Amy from CIMA Engineering will be able to add you to the contact list.

Thank you

François Landry
Gestionnaire de projets | Project Manager
Infrastructure Services d'infrastructure

Municipalité de RUSSELL Township
www.russell.ca | Twitter | Facebook | Webcasts | Web diffusion

---

From: McNally
Sent: Monday, March 4, 2024 12:23 PM
To: Landry, Francois <FrancoisLandry@Russell.ca>
Subject: Contact List

Hello Mr. Landry,

Re: Master Plan Update for Russell Township Water and Wastewater System

[redacted]

We wish to be placed on the Project Contact List to receive notices and information as it becomes available. [redacted]

We look forward to your study results and recommendations and would appreciate acknowledgement of this email.

Sincerely,

Wendy McNally

From: Landry, Francois <FrancoisLandry@Russell.ca>
Sent: April 22, 2024 7:08 AM
To: Common Unity
Cc: Amy Langford; Bradley Young; Rivet, Ginette
Subject: RE: Add to Contact List

EXTERNAL EMAIL

Hi,
We will add you to the contact list,
Thank you.

François Landry
Gestionnaire de projets | Project Manager
Infrastructure Services d'infrastructure

Municipalité de RUSSELL Township
www.russell.ca | Twitter | Facebook | Webcasts | Web diffusion

---

From: Common Unity
Sent: Sunday, April 21, 2024 2:03 AM
To: Landry, Francois <FrancoisLandry@Russell.ca>
Subject: Add to Contact List

Hello,

Can you please ensure that I am on the contact list to receive notification of the public meeting regarding the upcoming Township's Water/Wastewater Masterplan consultation.

Thank you,
Angela Miner

From: Landry, Francois <FrancoisLandry@Russell.ca>
Sent: April 22, 2024 7:09 AM
To: Charles Armstrong
Cc: Rivet, Ginette; Bourgon, Jonathan; Amy Langford; Bradley Young
Subject: RE: WATER/WASTE WATER MASTER PLAN

EXTERNAL EMAIL

Hi,
We will add you to the contact list, thank you.

François Landry
Gestionnaire de projets | Project Manager
Infrastructure Services d'infrastructure

Municipalité de RUSSELL Township
www.russell.ca | Twitter | Facebook | Webcasts | Web diffusion

---

From: Charles Armstrong
Sent: Friday, April 19, 2024 2:19 PM
To: Landry, Francois <FrancoisLandry@Russell.ca>
Subject: WATER/WASTE WATER MASTER PLAN

Good afternoon:

Please ensure I am on the contact list for the subject plan.

Thank you,

Charles Armstrong

From: Landry, Francois <FrancoisLandry@Russell.ca>
Sent: April 24, 2024 12:46 PM
To: LYNN MCKINNON
Cc: Amy Langford; Rivet, Ginette; Bradley Young
Subject: RE: Municipal Class Environmental Assessment Study Master Plan Update for Russell Township Water and Wastewater Systems

EXTERNAL EMAIL

Hi,
We will add you to the contact list.

Thank you

François Landry
Gestionnaire de projets | Project Manager
Infrastructure Services d'infrastructure
Municipalité de RUSSELL Township
www.russell.ca | Twitter | Facebook | Webcasts | Web diffusion

---

From: LYNN MCKINNON
Sent: Wednesday, April 24, 2024 12:22 PM
To: Landry, Francois <FrancoisLandry@Russell.ca>
Subject: Municipal Class Environmental Assessment Study Master Plan Update for Russell Township Water and Wastewater Systems

Good afternoon

Kindly add me to the Project Contact list for the above noted study.

Thank you
Lynn McKinnon

Lynn McKinnon Design Tel: Cel:

From: Landry, Francois <FrancoisLandry@Russell.ca>
Sent: April 24, 2024 12:46 PM
To: DENISE C
Cc: Rivet, Ginette; Amy Langford; Bradley Young
Subject: RE: Water and Wastewater Master Plan

EXTERNAL EMAIL

Hi,
We will add you to the contact list.

Thank you

François Landry
Gestionnaire de projets | Project Manager
Infrastructure Services d'infrastructure

Municipalité de RUSSELL Township
www.russell.ca | Twitter | Facebook | Webcasts | Web diffusion

---

From: DENISE C
Sent: Wednesday, April 24, 2024 9:59 AM
To: Landry, Francois <FrancoisLandry@Russell.ca>
Subject: Water and Wastewater Master Plan

Good morning,

I would like my name to be placed on the Project Contact List to receive notices and information on the above-mentioned subject matter.

Thank you.

Denise Cloutier

From: Landry, Francois <FrancoisLandry@Russell.ca>
Sent: April 24, 2024 2:23 PM
To: Eric Greer
Cc: Amy Langford; Rivet, Ginette; Bradley Young
Subject: RE: Master Plan Update for Russell Township Water and Wastewater Systems

EXTERNAL EMAIL

Hi,
You will be placed on the contact list,
Thank you.

François Landry
Gestionnaire de projets | Project Manager
Infrastructure Services d'infrastructure

Municipalité de RUSSELL Township
www.russell.ca | Twitter | Facebook | Webcasts | Web diffusion

---

From: Eric Greer
Sent: Wednesday, April 24, 2024 2:06 PM
To: Landry, Francois <FrancoisLandry@Russell.ca>
Subject: Master Plan Update for Russell Township Water and Wastewater Systems

I wish to be placed on the Project Contact List to receive notices and information

From: Landry, Francois <FrancoisLandry@Russell.ca>
Sent: May 8, 2024 7:45 AM
To: Melanie Millette
Cc: Amy Seymour; Bradley Young; Bourgon, Jonathan
Subject: RE: Master Plan Update for Russell Township Water and Wastewater Systems

EXTERNAL EMAIL

Hi Melanie,
We will include you in the contact list.

Regarding information, it will be available to the public after tonight's meeting. We hope to send you a link to the files tomorrow.

François Landry
Gestionnaire de projets | Project Manager
Infrastructure Services d'infrastructure
Municipalité de RUSSELL Township
Cell.: [redacted]
[redacted] | Facebook | Webcasts | Web diffusion

From: Melanie Millette
Sent: Tuesday, May 7, 2024 6:16 PM
To: Landry, Francois <FrancoisLandry@Russell.ca>
Subject: Master Plan Update for Russell Township Water and Wastewater Systems

Good evening
I would like to be included in any and all updates on the water and wastewater plan please.
Is it possible to be sent the information prior to the meeting so I can be prepared with any questions?
Thank you
Melanie

From: Landry, Francois <FrancoisLandry@Russell.ca>
Sent: April 30, 2024 7:19 AM
To: Gilberte Faucher
Subject: RE: public consultation

EXTERNAL EMAIL

Hi,
We will put you on the list, thank you.

François Landry
Gestionnaire de projets | Project Manager
Infrastructure Services d'infrastructure

Municipalité de RUSSELL Township
www.russell.ca | Twitter | Facebook | Webcasts | Web diffusion

---

From: Gilberte Faucher
Sent: Monday, April 29, 2024 10:56 PM
To: Landry, Francois <FrancoisLandry@Russell.ca>
Subject: public consultation

Can I be put on the list Gilberte Faucher

From: Landry, Francois <FrancoisLandry@Russell.ca>
Sent: May 22, 2024 10:48 AM
To: Joan Woodrooffe
Subject: RE: re industrial park

EXTERNAL EMAIL

Hi,
Thank you for your email.

We will add you to the contact list.

François Landry
Gestionnaire de projets | Project Manager
Infrastructure Services d'infrastructure

Municipalité de RUSSELL Township
www.russell.ca | Twitter | Facebook | Webcasts | Web diffusion

---

From: Joan Woodrooffe
Sent: Thursday, May 9, 2024 9:28 PM
To: Landry, Francois <FrancoisLandry@Russell.ca>
Subject: re industrial park

Please add the following names and emails so that we can receive notifications concerning the industrial park.

Thank you!

--
Joan

From: Gong, Qiaoqiao <[redacted]>
Sent: August 24, 2023 1:33 PM
To: Landry, Francois
Cc: Amy Langford; Bradley Young; Bourgon, Jonathan
Subject: RE: Project Contact List - Update of the 2016 Water and Wastewater Master Plan

EXTERNAL EMAIL

Hi Francois,

Great, thanks a lot for the information provided!

Zoe

Zoe (Qiaoqiao) Gong

From: Landry, Francois <FrancoisLandry@Russell.ca>
Sent: 2023/08/24 1:31 PM
To: Gong, Qiaoqiao <qiaoqiao.gong@ottawa.ca>
Cc: Amy Langford <Amy.Langford@cima.ca>; Bradley Young <Bradley.Young@cima.ca>; Bourgon, Jonathan <JonathanBourgon@Russell.ca>
Subject: RE: Project Contact List - Update of the 2016 Water and Wastewater Master Plan

Hi Zoe,
No problem, we will add you to the list.

Please also find attached to this email a Revised Notice of Study Commencement that was recently sent out to the various project stakeholders and to the people on the Project Contact List.

Regards,

François Landry
Gestionnaire de projets | Project Manager
Infrastructure Services d'infrastructure
Municipalité de RUSSELL Township
www.russell.ca | Twitter | Facebook | Webcasts | Web diffusion

From: Gong, Qiaoqiao <[redacted]
Sent: Thursday, August 24, 2023 1:25 PM
To: Landry, Francois <FrancoisLandry@Russell.ca>
Subject: Project Contact List - Update of the 2016 Water and Wastewater Master Plan

Hi Francois,

My name is Zoe Gong and work for the Infrastructure Planning unit for the City of Ottawa. I'd like to be placed on the Project Contact List to receive notices and information for the upcoming Update of the 2016 Water and Wastewater Master Plan, specifically on the increased water needs due to growth and implications to the Ottawa drinking water system.

Thanks a lot.

Zoe

Zoe (Qiaoqiao) Gong,M.Eng.,P.Eng.
Project Manager, Infrastructure Planning
Infrastructure and Water Services
[redacted]
City of Ottawa

'

'
'

This e-mail originates from the City of Ottawa e-mail system. Any distribution, use or copying of this e-mail or the information it contains by other than the intended recipient(s) is unauthorized. Thank you.

'

From: Landry, Francois <FrancoisLandry@Russell.ca>
Sent: May 24, 2024 9:13 AM
To: Jason Harps
Cc: Amy Seymour; Bradley Young
Subject: RE: Water Plan

EXTERNAL EMAIL

Hi Jason,
Thank you for your email. This is to confirm you are added to the contact list.

The master plan is currently unavailable at this time to the public. Once it is available, you will receive a link to the Plan.

Regards

François Landry
Gestionnaire de projets | Project Manager
Infrastructure Services d'infrastructure

Municipalité de RUSSELL Township
www.russell.ca | Twitter | Facebook | Webcasts | Web diffusion

---

From: Jason Harps
Sent: Tuesday, May 21, 2024 3:05 PM
To: Landry, Francois <FrancoisLandry@Russell.ca>
Subject: Water Plan

Good afternoon Francois,

I am reaching out to you requesting that I be notified of any water related infrastructure news for the 417 Industrial park.

Would you be kind enough to send me the link to the updated Master Plan?

Thank you
Jason Harps
Bona Building and Management Co. Ltd.
Vice President of Operations
Property and Resource Management

Sent: May 9, 2024 1:38 PM
To: 'Michel Richer Lafleche'
Cc: Bradley.Young@cima.ca
Subject: C000-22000 - ALL - W&WW Master Plan Update

Hi Michel,

I believe our administration would have sent you an email earlier this morning including a link to the PIC boards. Please let us know if otherwise, thank you.

François Landry
Gestionnaire de projets | Project Manager
Infrastructure Services d'infrastructure

Municipalité de RUSSELL Township
www.russell.ca | Twitter | Facebook | Webcasts | Web diffusion

---

From: Michel Richer Lafleche
Sent: Thursday, May 9, 2024 7:25 AM
To: Landry, Francois <FrancoisLandry@Russell.ca>; Bradley.Young@cima.ca
Subject: Municipal Class Environmental Assessment Study

Good morning, I would like to receive the subject matter project information as presented yesterday at the Township PIC, April 8, 2024.

Thank you,

Michel Richer

From: Landry, Francois
Sent: March 21, 2024 9:00 AM
To: R Thain
Cc: Carolyne Thain; Geneviève Thain; Côté, Florence
Subject: RE: Environmental Assessment Study

Hi
We will put both of you on the contact list, thank you.

François Landry
Gestionnaire de projets | Project Manager Infrastructure Services d'infrastructure

Municipalité de RUSSELL Township
www.russell.ca | Twitter | Facebook | Webcasts | Web diffusion

-----Original Message-----
From: R Thain
Sent: Tuesday, March 19, 2024 9:55 AM
To: Landry, Francois <FrancoisLandry@Russell.ca>
Cc: Geneviève Thain; Carolyne Thain
Subject: Environmental Assessment Study

To: Francois Landry, Project Manager
Re: Environmental Assessment Study

Salut Francois,

Yes, please add us to your project contact list.

Many thanks. Merci.

Richard

B4

Appendix B4: PIC Presentation Boards

Engineering for people

Municipalité de
RUSSELL
Township

WELCOME

Water & Wastewater Master Plan Update

Public Information Centre

Wednesday, May 8th , 2024

6:00 pm to 8:00 pm

Council Chambers, Township of Russell Office,

717 Notre-Dame St, Embrun, ON K0A 1W1

Key Instructions for this Meeting

Public Information Centre

1

Please Sign in

Meeting is a “Drop-in” format.

2

Review Display Materials

Our representatives will be pleased to discuss the study, or any questions or concerns that you may have.

3

Complete a Comment Sheet

Drop off your completed Comment Sheet in the Box tonight or return it to the people shown on the Comment Sheet by May 29, 2024

Municipalité de RUSSELL Township

Master Plan Context

- Master Plans are long range plans that integrate a high-level review of infrastructure servicing requirements for a broad study area with order of magnitude implementation costs.
- Master Plans identify individual infrastructure projects distributed geographically across the study area, to be implemented gradually over time.
- Master Plans fulfill **Phase 1 and Phase 2 of the Municipal Class Environmental Assessment planning process.**
- The Water & Wastewater Master Plan Update is being conducted under **Approach 1 for Master Planning**. The work completed under the Master Plan will provide supporting information for Schedule B and C projects. Recommended Schedule B projects will require public review of the project file while Schedule C projects will require additional investigation to fulfill Phases 3 and 4 of the Municipal Class EA process.
- A **Master Plan Report will be prepared** at the end of the study and made available for public review.

Municipalité de RUSSELL Township

Overview of Activities under the Class EA Process

Phase 1 Getting Started

- Review available information/data
- Identify Problem / Opportunity Statement

NOTICE OF COMMENCEMENT
July 19, 2023

REVISED NOTICE OF COMMENCEMENT
August 24, 2023

Phase 2 Exploring the Options

- Consider ways to address servicing needs and identify potential impacts
- Assess and shortlist **Servicing Solution(s)**

PUBLIC INFORMATION CENTRE
May 8, 2024

WE ARE HERE

- Evaluate and select **Preliminary Preferred Servicing Solution(s)**
- Confirm Preferred Servicing Solutions based on **public and review agency input**

NOTICE OF COMPLETION (Future)

Phase 3 Conceptualizing the Preferred Solution

- Develop design concepts to implement the Preferred Servicing Solutions from Phase 2
- Identify impacts and mitigation measures
- Evaluate options and select the recommended **Preliminary Preferred Design Concepts**

Phase 4 Documenting the Process

- **Prepare a Report** and satisfy the documentation requirements of the Class Environmental Assessment process
- Make report available for **public review**

Phase 5 Implementing the Recommendations

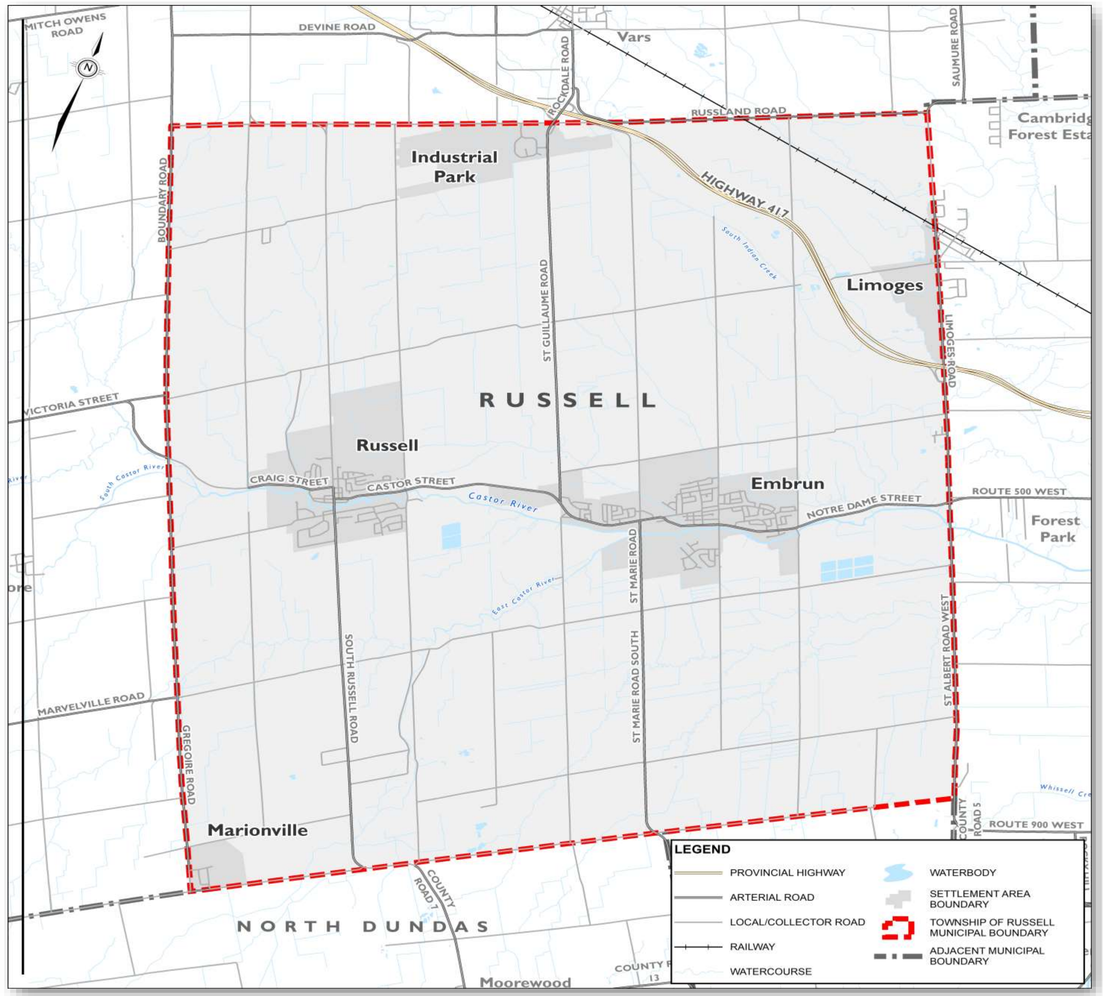
- Complete detailed design of the recommended solution
- Initiate construction

Phases 1 and 2 of the Class EA Process will be completed during the Master Plan. Projects identified as Exempt will proceed to implementation. Projects identified as Schedule B require filing of the Project File for public review. Projects identified as Schedule C will require completion of Phase 3 and 4 of the Class EA Process.

Problem/Opportunity Statement

The Township of Russell is building out within the Urban Boundaries of Russell, Embrun and Marionville in accordance with the Township of Russell and United Counties of Prescott and Russell Official Plans.

The existing infrastructure will need upgrading to accommodate the immediate challenges and long-term growth. The preferred solutions to address the capacity deficits will comply with applicable regulations, add the required capacity and be assessed for the environmental and financial sustainability of the projects.



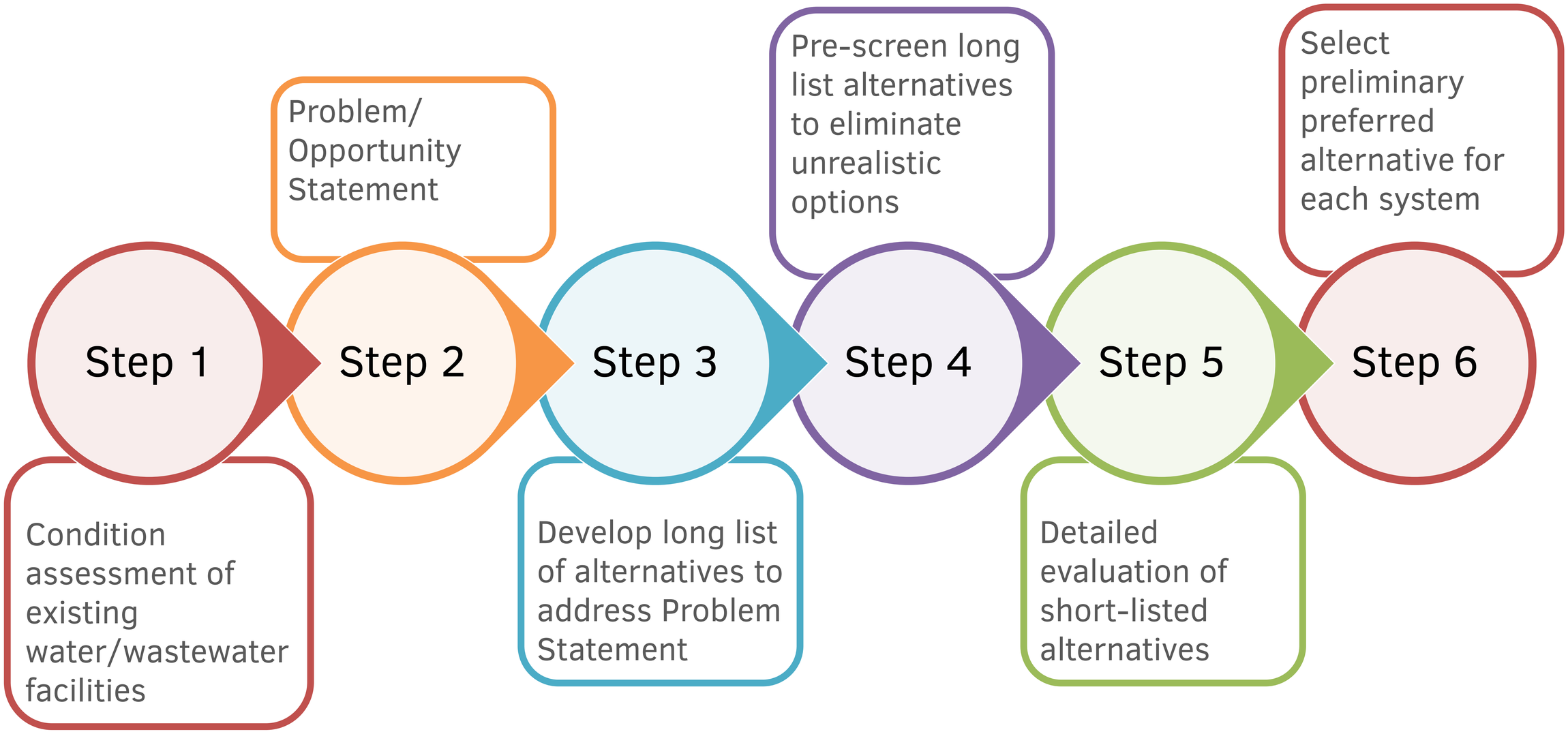
Study Area Limits – Water and Wastewater Master Plan Update

Highway 417 Industrial Park

Per the Township's Council Meeting held on May 16, 2023, "Option 3: Alternate water and sewage servicing model for currently undeveloped lands in the Park" was approved by Council as the preferred alternative for servicing the Highway 417 Industrial Park. Option 3 involves developing the existing Park 'as is', and further evaluating lands directly north of Route 100 and East of St Guillaume for both water and sewage servicing.

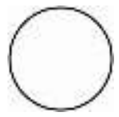
- Servicing of the Highway 417 Industrial Park is contingent on funding from future developers.
- This Master Plan evaluated if the current water supply feedermain has capacity should lands identified for future servicing in the Highway 417 Industrial Park be serviced.
- The future buildout wastewater capacity will account for the Highway 417 Industrial Park as more information becomes available.

Process for Selecting the Preliminary Preferred Water/Wastewater Servicing Strategies



Evaluation Methodology

Short listed alternatives were assessed relative to each other, and assigned a score based on potential net impact and available mitigation measures. Scores were assigned based on the following scoring approach:

				
Potential impacts are significant, implementation of substantial mitigation measures are required. Risk cannot be eliminated.	Potential impacts are major, implementation of extensive mitigation measures required to reduce/eliminate risks.	Potential impacts are moderate, implementation of many mitigation measures required to reduce/eliminate risks.	Potential impacts are minor and can be easily mitigated through implementation of standard mitigation measures.	Potential impacts are negligible, no mitigation required.

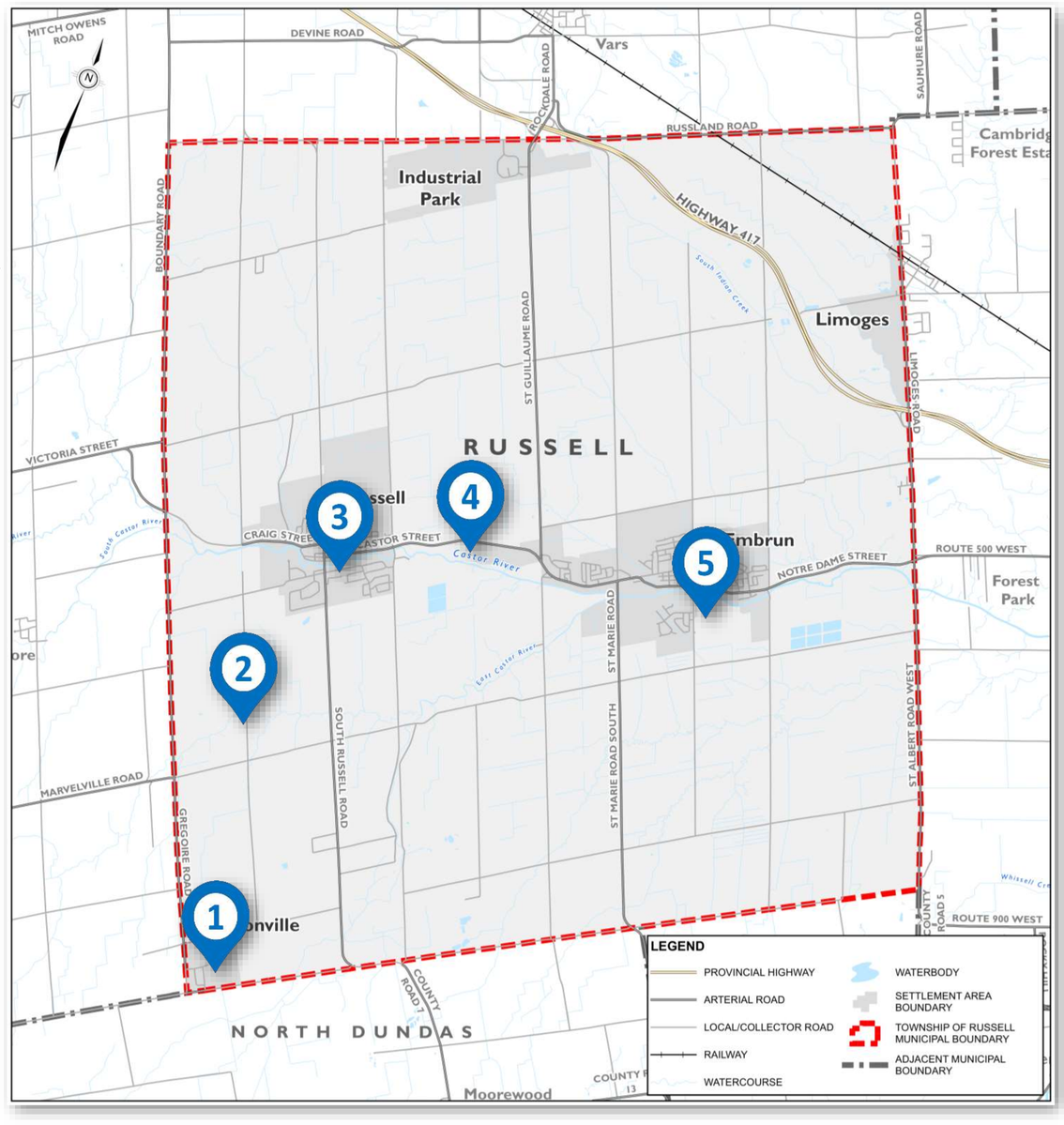
Least Preferred → Most Preferred

Municipalité de RUSSELL Township

Township Water Infrastructure

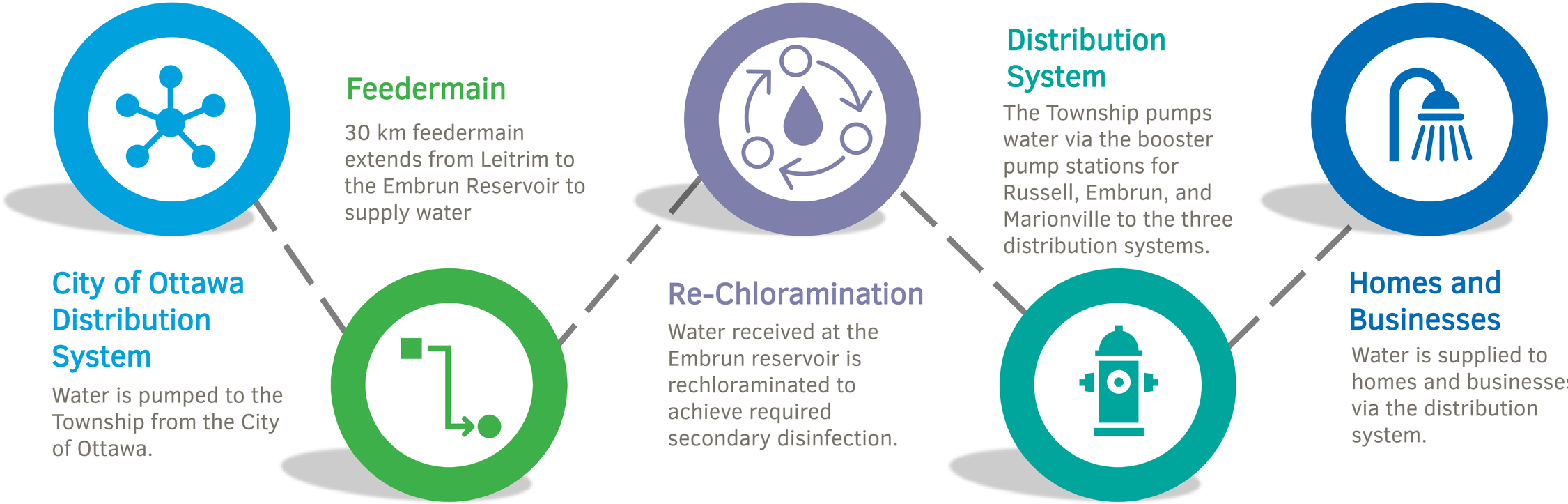
The Municipality owns and operates several major water infrastructure sites, as shown in the map and below:

1. Marionville Water Tower
2. Marionville Booster Pumping Station
3. Russell Water Tower
4. Embrun Reservoir and Embrun/Russell Booster Pumping Stations
5. Embrun Water Tower



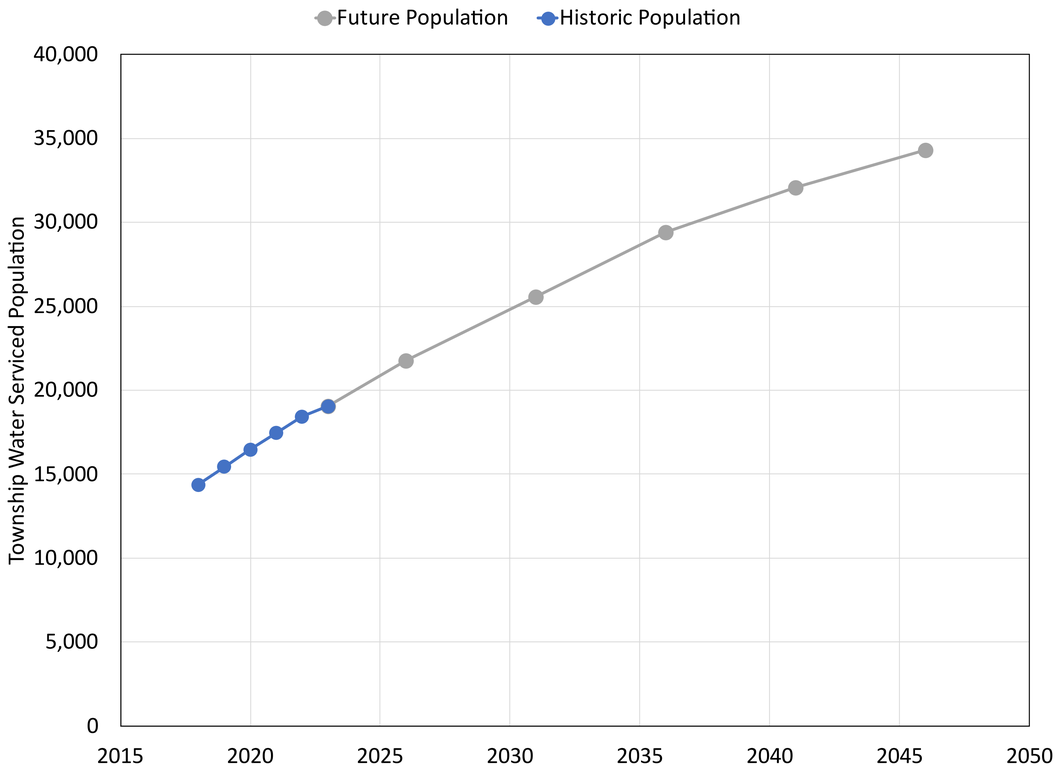
What is the source of our drinking water?

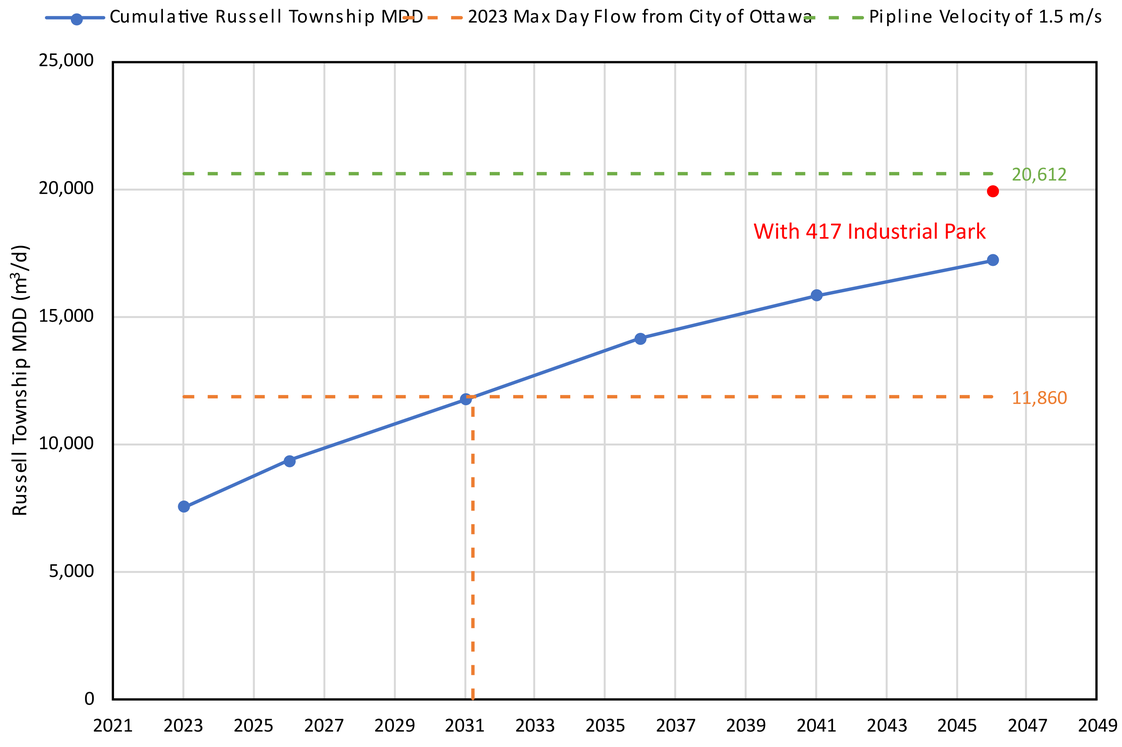
The City of Ottawa supplies drinking water to the Township from the Leitrim Road Pumping Station through an approximately 30 km long, 450 mm diameter feedermain connecting to the Eadie Road Metering Station and extending to the Embrun Reservoir. Given the long distance and residence time in the watermain from Ottawa, the water is rechloraminated at the Embrun Reservoir to achieve the required residual for secondary disinfection before distribution to Russell, Embrun and Marionville.



Water Supply Existing/Future Conditions

Parameter	Existing	Future (2046)
Population (Embrun, Russell & Marionville)	19,050	34,325
Maximum Daily Demand, m^3/d	7,602	17,197
Existing City of Ottawa Water Supply Agreement, m^3/d	11,860	11,860 (5,337 shortfall)



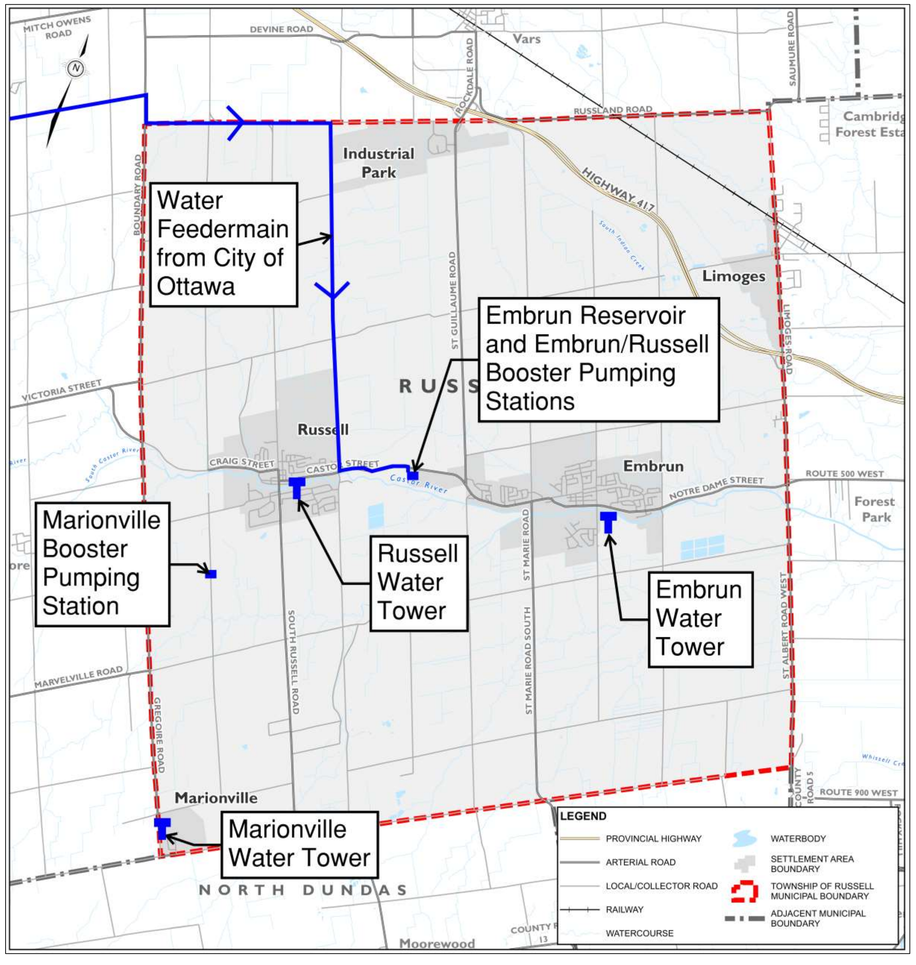


**According to City of Ottawa Design Guidelines, a watermain is designed to operate under normal conditions at a velocity of 1.5 m/s. the current feedermain is able to produce 20,612 m^3/d without upgrades to the pipe. Discussions with the City of Ottawa will be required to determine the impacts of the City's infrastructure.*

Township Water Supply

Key Infrastructure:

- City of Ottawa supplies drinking water to the Township with a maximum daily supply agreement of 11,860 m^3/d
- Water is rechloraminated at the Embrun Reservoir to achieve the required residual for secondary disinfection before distribution to Russell, Embrun and Marionville



- Current water feedermain from the City of Ottawa has sufficient capacity to meet current and future water demands
- Existing water supply system is effective to operate

CONSTRAINT

- Existing water supply agreement with the City of Ottawa is insufficient to meet 2046 water demands
- Additional water supply required by 2031 based on population growth projections

Shortlisted Alternative Servicing Strategies:

1. Expansion of Existing Service from Ottawa
   - Renegotiate water supply agreement with City of Ottawa to increase maximum daily supply to meet 2046 water demands
2. Obtain Water Supply from Clarence-Rockland
   - Construct an additional water feedermain to Limoges to supplement water supply with contributions from City of Clarence-Rockland.

Municipalité de RUSSELL Township

Water Supply Alternatives Evaluation Results

Evaluation Criteria	Alternative 1: Expansion of Existing Service from Ottawa Renegotiate water supply agreement with City of Ottawa to increase maximum daily supply	Rating	Alternative 2: Obtain Water Supply from Clarence-Rockland Construct an additional water feedermain to Limoges to supplement water supply with contributions from City of Clarence-Rockland.	Rating
Social	• No significant impact on social as no additional feedermain construction required.	●	• Moderate impact to social, requires mitigation measures during construction of new feedermain • Feedermain can be routed along right-of-ways to mitigate impacts to undisturbed areas • Moderate truck traffic and lane closures during construction.	◑
Technical	• Similar O&M responsibility to existing conditions with only one feedermain from City of Ottawa • No redundancy for feedermain that must be mitigated with adequate water storage in the Township	◕	• Increased redundancy with water supply from two sources (Ottawa and Clarence-Rockland). • Increased O&M responsibility with an additional feedermain from Limoges with supply from City of Clarence-Rockland.	◑
Natural Environment	• No significant impact on natural environment as no additional feedermain construction required.	●	• Moderate impact to natural environment, requires mitigation measures during construction of new feedermain. • Feedermain can be routed along right-of-ways to mitigate disturbing naturized areas.	◑
Financial	• Minimal capital investment required if the City of Ottawa booster pumping station requires upgrades to accommodate increase water servicing to the Township. • Minimal increase in O&M costs. • Total Capital Cost: Upgrades to City Booster Station may be required. To be confirmed following discussions with City of Ottawa.	◕	• Large capital investment required for new feedermain construction. • Moderate increase in O&M costs. • Total Capital Cost: High level estimate of $70M for feedermain to Clarence Rockland, plus any required upgrades to the Clarence Rockland Water Treatment Plant and Booster Pumping	◔
Overall	**Preliminary Preferred Alternative**	✓	**Alternative Not Recommended**	**X**

Township Water Storage and Booster Pumping

Key Infrastructure:

- Water storage is provided at the Embrun Reservoir, and water towers in Russell, Embrun, and Marionville

- Overall existing total water storage within the Township is sufficient to meet 2046 maximum daily demand per MECP Guidelines.
- Reduce frequency of pumping in peak hydro time of use period (7 AM and 7 PM) to improve booster pumping station energy efficiency

CONSTRAINT

- Deficits in floating (elevated) water storage in Russell/Marionville and Embrun will require additional water booster pumping capacity
- Township must consider water supply blackout period (6:00 pm – 10:00 pm daily) when supply from Ottawa is not available

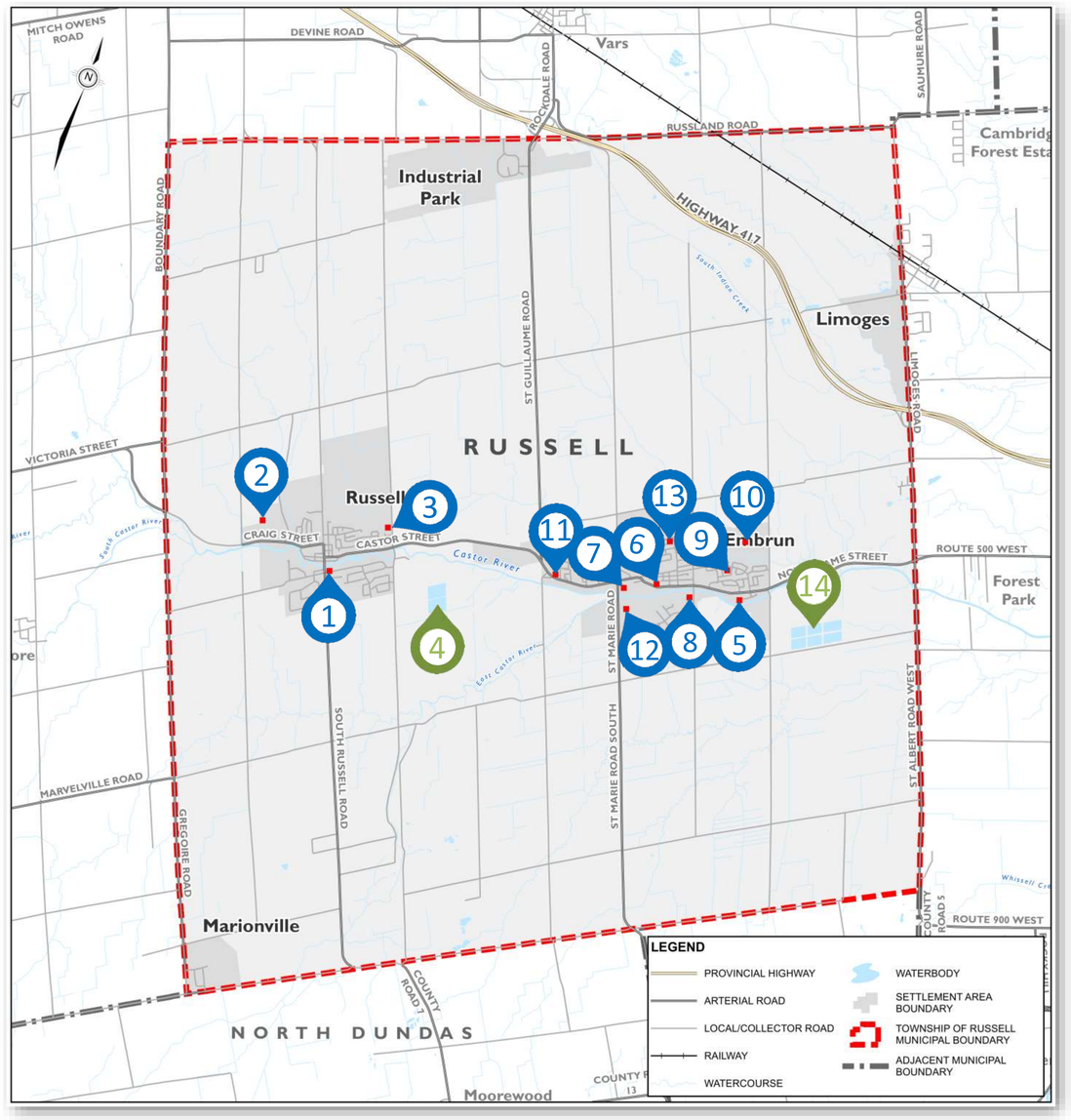
Preferred Alternative Water Storage and Booster Pumping:

1. Expansion of Embrun Reservoir Capacity
   - To provide the required buffer to account for 2046 storage requirements and account for the supply black-out period.
2. Increase Russell and Embrun Booster Pumping Capacities
   - Increase pumping capacity to firm capacity to meet 2046 maximum daily demand and fire flow requirements.

Township Wastewater Infrastructure

The Municipality owns and operates several wastewater infrastructure sites, as shown in the map and below:

1. Russell SPS1
2. Russell SPS2
3. Russell SPS3
4. Russell Wastewater Treatment Plant
5. Embrun SPS1
6. Embrun SPS2
7. Embrun SPS3
8. Embrun SPS4
9. Embrun SPS5
10. Embrun SPS6
11. Embrun SPS7
12. Embrun SPS8
13. Embrun SPS9
14. Embrun Wastewater Treatment Plant

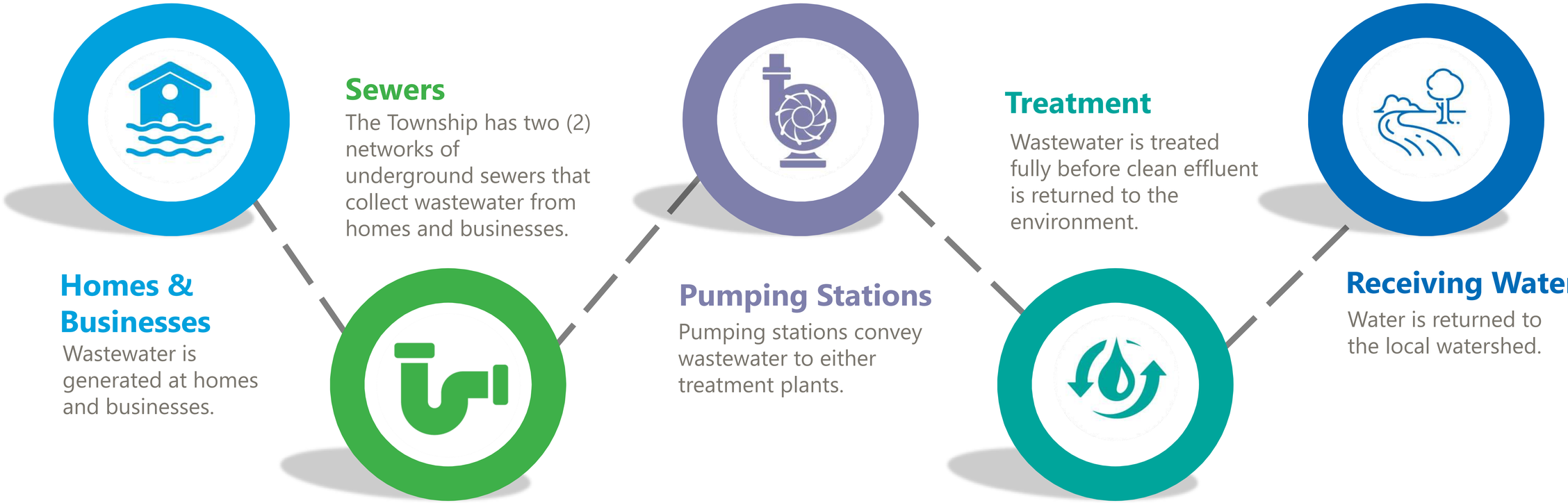


Wastewater Infrastructure in Russell Township

How is Wastewater Managed?

The Township consists two (2) distinct wastewater systems:

- Russell
- Embrun



Wastewater Treatment in the Township

Two (2) Wastewater Treatment Plants (WWTP) are present in the Township of Russell utilizing lagoon technology. The Russell Lagoons consist of five (5) cells while the Embrun Lagoons consist of eight (8) cells.

Russell Wastewater Treatment Plant

Embrun Wastewater Treatment Plant

Wastewater Treatment Plant Upgrades

Both the Russell and Embrun Wastewater Treatment Plants have limitations removing ammonia. Short-term upgrades are required to meet effluent ammonia concentrations regulated by each plant's Environmental Compliance Approval (ECA), while long-term upgrades are required to meet the future capacity from the projected growth demand within Russell and Embrun.

The Township has proactively engaged in an Assimilative Capacity Study (ACS) to protect the long-term aquatic health and water quality of the Castor River. The outcome of the ACS will inform the Township's wastewater effluent regulations and steer capital planning for short/long term upgrades.

The Castor River

Short-Term Upgrade Alternatives

MBBR Media Tank (Above), MBBR Media (Below)

SAGR Construction

Fixed Media Implemented within a Lagoon

- Achieve compliance and protect Castor River aquatic health and water quality
- A short-term upgrade should allow for adequate treatment up to the current rated capacity and minimize throw away costs when implementing a long-term solution.

CONSTRAINT

- The Russell WWTP was unable to meet effluent ammonia compliance in 2023
- The Embrun WWTP was unable to meet effluent ammonia compliance in 2021, 2022, and 2023
- Unlikely to meet effluent ammonia compliance without process optimization and/or an upgrade

Short-Term Upgrade Alternative Strategies:

1. Implement Effluent Polishing Prior to Discharge
   - Effluent polishing allows for reduce ammonia concentrations during discharge, recycling flowrate during non-discharge months allows for continuous ammonia reduction (Moving Bed Biofilm Reactor or Submerged Attached Growth Reactor)
2. Introduce Fixed Media within Existing the Lagoons
   - Fixed media may allow for prolonged ammonia treatment in the colder months due to microbe growth on the media

Municipalité de RUSSELL Township

Long-Term Upgrade Alternatives

Lagoon Treatment

Mechanical Wastewater Treatment Plant

- The preferred long-term upgrade should allow for effluent quality to meet or exceed stringent regulations from the on-going Assimilative Capacity Study of the Castor River.
- Review a system wide approach for Russell and Embrun where both facilities require expansions or new facilities

CONSTRAINT

- Significant footprint and capital cost required for treatment plants
- The technology selection for a new wastewater treatment plant may be limited depending on effluent regulations

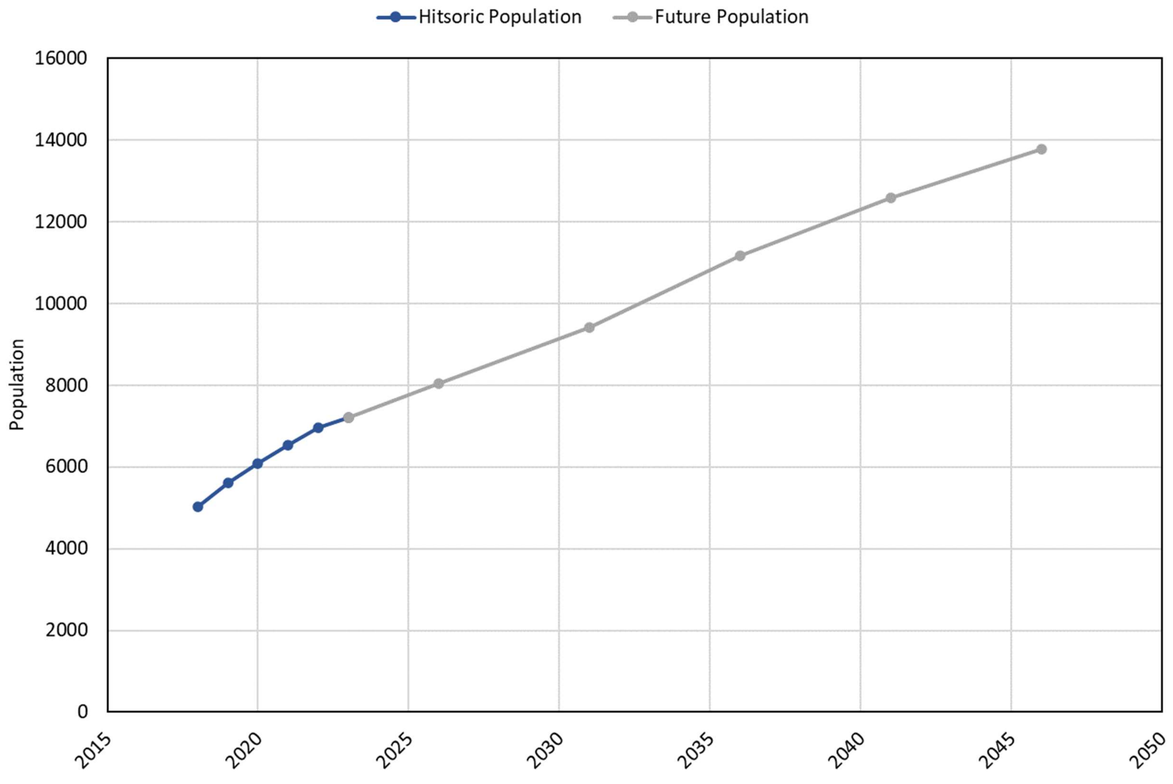
Long-Term Upgrade Alternative Strategies:

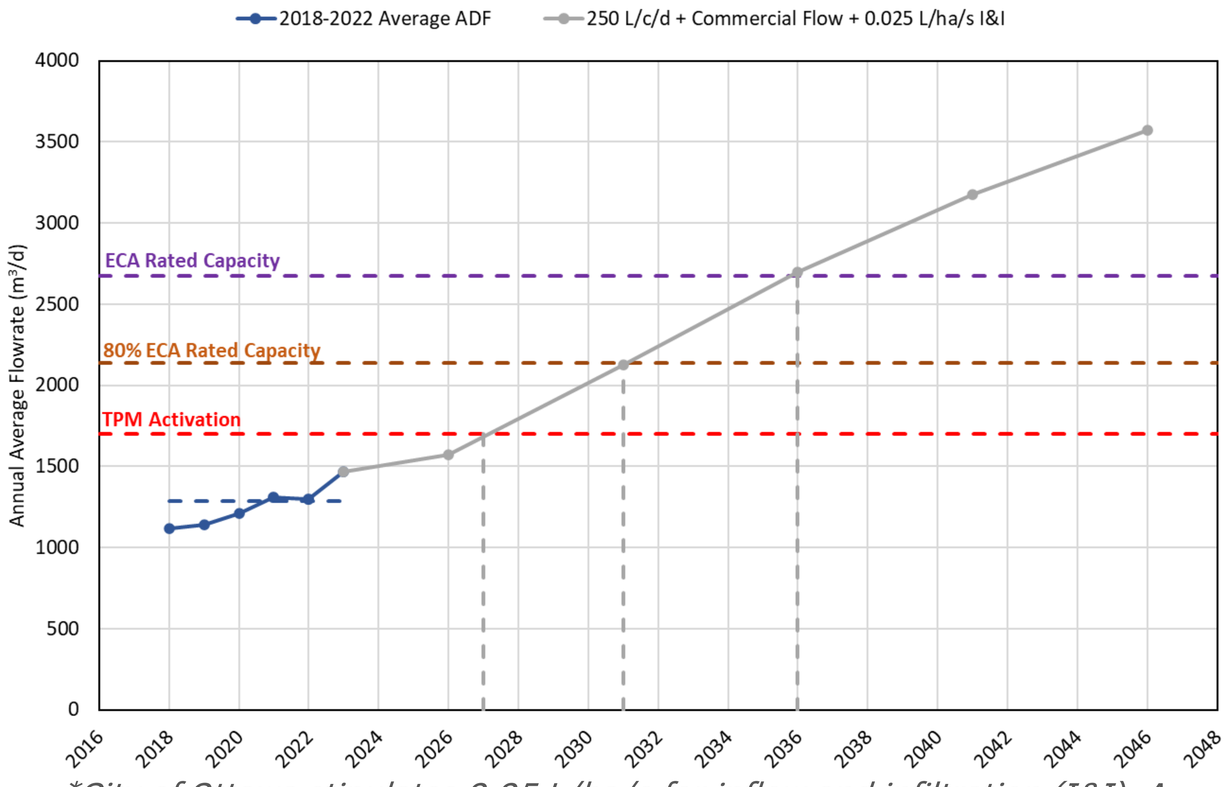
1. Expansion of Existing Lagoon Technology
   - Construction of lagoon cells six (6) and seven (7) at the Russell WWTP and cells nine (9), ten (10), and eleven (11) at the Embrun WWTP; plants continue to operate as seasonal discharge and require significant add-on treatment
2. New Wastewater Treatment Plant
   - A mechanical wastewater treatment plant is constructed for Russell and Embrum, and technology is selected based effluent limits such that the plant can maintain environmental compliance

Russell Existing/Future Conditions

Parameter	Existing	Future (2046)	Buildout*
Population	7,205	13,770	17,323
Average Day Flowrate, m^3/d	1,287	3,572	4,656
WWTP Rated Capacity, m^3/d	2,675	2,675 (897 shortfall)	2,675 (1,981 shortfall)

**Buildout refers to the development of the entire Secondary Plan settlement boundary. Buildout population projections were calculated based on development densities specified in the Secondary Plans and Official Plan.*





**City of Ottawa stipulates 0.05 L/ha/s for inflow and infiltration (I&I). A midpoint was taken considering the historically low I&I seen Russell. Russell Wastewater Treatment Plant is subject to a phosphorus loading limit prior to agreement with the South Nation Conservation Authority.*

Short-Term Russell WWTP Alternatives Evaluation Results

Evaluation Criteria	Alternative 1: SAGR	Rating	Alternative 2: MBBR	Rating	Alternative 3: Fixed Media	Rating
Social	• No change in site location • Land acquisition likely required • Low aesthetic impacts to surrounding properties where expansion is built • Minor to no odour addition to the WWTP • Moderate truck traffic during construction	◑	• No change in site location • Land likely to be controlled by the Township • Low aesthetic impacts to surrounding properties where expansion is built • Minor to no odour addition to the WWTP • Moderate truck traffic during construction	◕	• No change in site location • Land controlled by the Township • No aesthetic impact to surrounding properties • No odour addition to the WWTP • Low truck traffic during construction	◕
Technical	• Approvals required (MECP, etc.) • Requires Schedule B EA • Proven to meet effluent criteria at rated capacity flowrates • Large excavation required • Moderate compatibility with existing infrastructure • No compatibility with any long-term upgrade/expansion	◑	• Approvals required (MECP, etc.) • Exempt from additional EA requirements • Proven to meet effluent criteria at rated capacity flowrates • Moderate excavation required • Moderate compatibility with existing infrastructure • High compatibility with long-term upgrade/expansion as tankage could be repurposed	◕	• Approvals required (MECP, etc.) • Exempt from additional EA requirements • Less proven in Ontario to meet effluent criteria at rated capacity flowrates • No excavation required • High compatibility with existing infrastructure • No compatibility with long-term upgrade/expansion.	◔
Natural Environment	• Moderate impact to natural environment, requires mitigation measures • No significant impact on receiving water as effluent limits likely achieved.	◕	• Moderate impact to natural environment, requires mitigation measures • No significant impact on receiving water as effluent limits likely achieved	◕	• Low impact to natural environment, requires some mitigation measures • Likely significant impact on receiving water as effluent limits likely not achieved.	◔
Financial	• Large capital investment required • All costs are sunk as no reuse for long-term WWTP solution • Moderate increase in O&M costs • Total CAPEX Costs: $11M plus land acquisition if required	◑	• Large capital investment required • Potential for tank reuse, limiting future capital costs • Moderate increase in O&M costs • Total CAPEX Costs: $9M	◕	• Alternative deemed unlikely to meet technical requirements, no costing performed • Total CAPEX Costs: N/A	N/A
Overall	**Alternative Not Recommended**	**X**	**Preliminary Preferred Alternative***	**✓**	**Alternative Not Recommended**	**X**

**Russell Lagoons have more capacity than Embrun and process optimization as a short-term solution is recommended to be implemented prior to investing in the large infrastructure project*

Municipalité de RUSSELL Township

Long-Term Russell WWTP Alternatives Evaluation Results

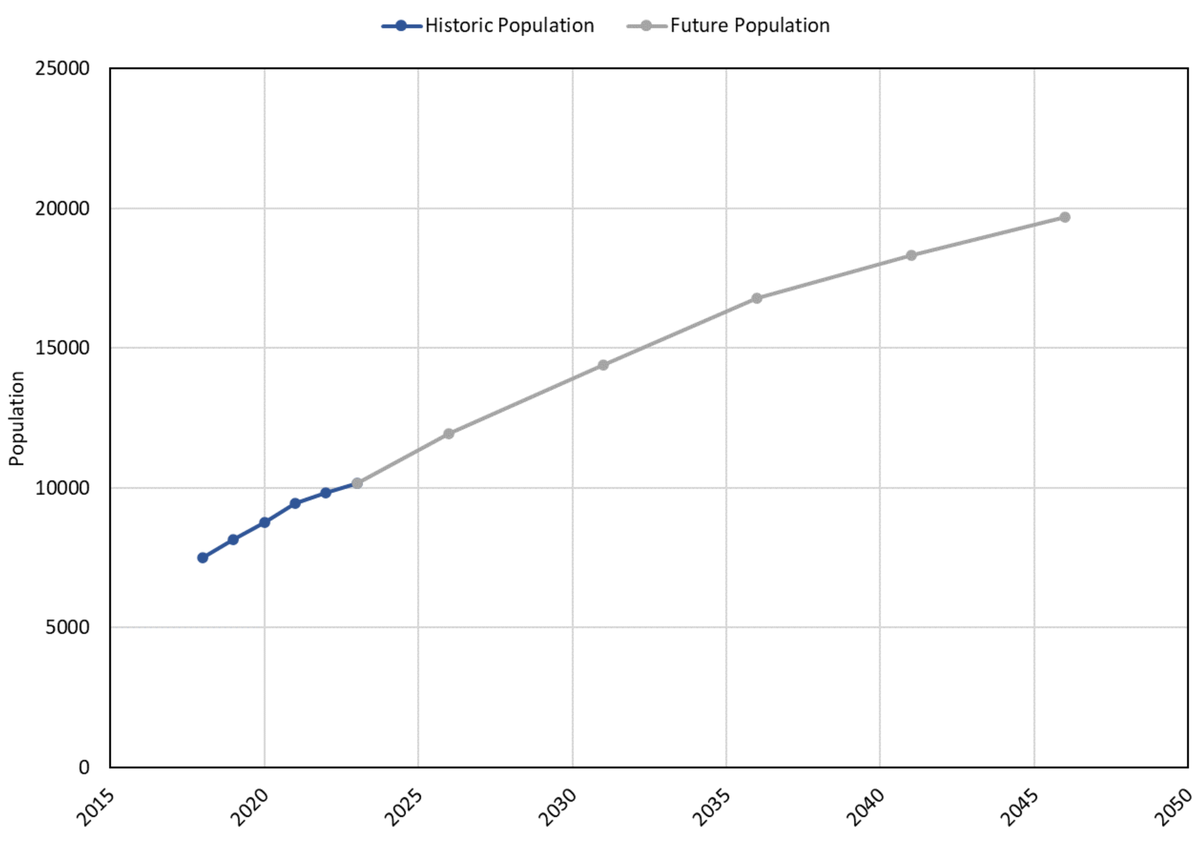
Evaluation Criteria	Alternative 1: Expansion of Existing Lagoon Technology	Rating	Alternative 2: New Wastewater Treatment Plant	Rating
Social	• No change in site location • Likely to limit growth of Russell • Requires land for expansion not controlled by the Township • High aesthetic impact to surrounding properties • Moderate odour addition to the WWTP • High truck traffic during construction	◔	• No change in site location • Will not limit growth of Russell • Required land for expansion controlled by the Township • Low aesthetic impacts to surrounding properties • Minor odour addition to the WWTP • High truck traffic during construction	◕
Technical	• Approvals required (MECP, etc.) • Will not meet effluent criteria at future flowrates • Large excavation required • High compatibility with existing infrastructure • Limited ability for future expansion and phasing	○	• Approvals required (MECP, etc.) • Will meet effluent criteria at future flowrates • Moderate excavation required • No compatibility with existing infrastructure • High ability for future expansion and phasing	◕
Natural Environment	• High impact to natural environment, requires mitigation measures • Significant impact on receiving water as effluent limits not achieved	○	• Moderate impact to natural environment, requires mitigation measure • No impact on receiving water as effluent limits achieved	◕
Financial	• Alternative deemed unlikely to meet technical requirements, no costing performed • Total CAPEX Costs: N/A	N/A	• High capital investment required • Moderate future expansion costs • Potential for tank reuse of short-term solution • High increase in O&M cost • Total CAPEX Costs: $50M	◔
Overall	**Alternative Not Recommended***	**X**	**Preliminary Preferred Alternative**	✓

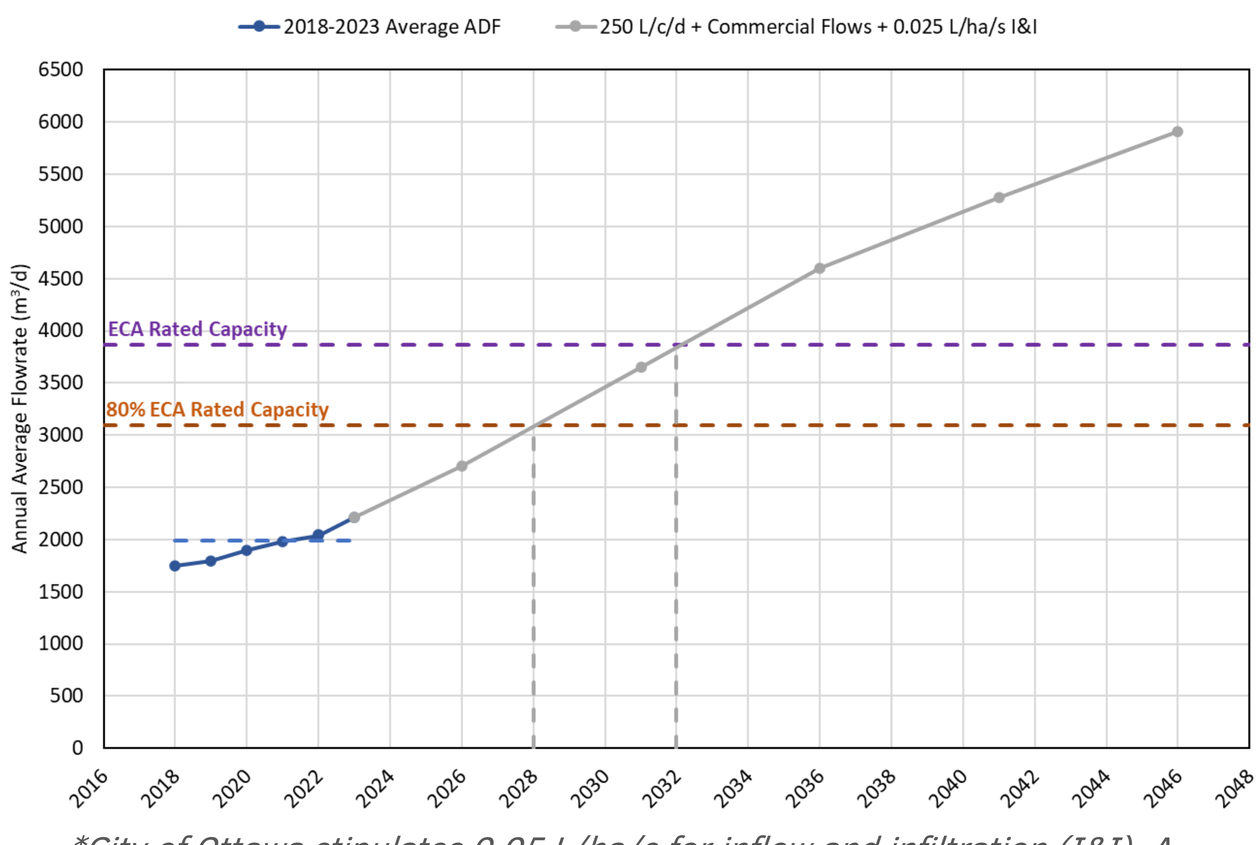
**ACS study is indicating effluent limits that are beyond the capability of lagoon technology.*

Embrun Existing/Future Conditions

Parameter	Existing	Future (2046)	Buildout*
Population	10,157	19,697	23,902
Average Day Flowrate, m^3/d	1,986	5,907	7,144
WWTP Rated Capacity, m^3/d	3,865	3,865 (2,042 shortfall)	3,865 (3,279 shortfall)

**Buildout refers to the development of the entire Secondary Plan settlement boundary. Buildout population projections were calculated based on development densities specified in the Secondary Plans and Official Plan.*





**City of Ottawa stipulates 0.05 L/ha/s for inflow and infiltration (I&I). A midpoint was taken considering the historically low I&I seen Embrun.*

Municipalité de RUSSELL Township

Short Term Embrun WWTP Alternatives Evaluation Results

Evaluation Criteria	Alternative 1: SAGR	Rating	Alternative 2: MBBR	Rating	Alternative 3: Fixed Media	Rating
Social	• No change in site location • Land acquisition likely required • Low aesthetic impacts to surrounding properties where expansion is built • Minor to no odour addition to the WWTP • Moderate truck traffic during construction	◑	• No change in site location • Land likely to be controlled by the Township • Low aesthetic impacts to surrounding properties where expansion is built • Minor to no odour addition to the WWTP • Moderate truck traffic during construction	◕	• No change in site location • Land controlled by the Township • No aesthetic impact to surrounding properties • No odour addition to the WWTP • Low truck traffic during construction	◕
Technical	• Approvals required (MECP, etc.) • Requires Schedule B EA • Proven to meet effluent criteria at rated capacity flowrates • Large excavation required • Moderate compatibility with existing infrastructure • No compatibility with any long-term upgrade/expansion	◑	• Approvals required (MECP, etc.) • Exempt from additional EA requirements • Proven to meet effluent criteria at rated capacity flowrates • Moderate excavation required • Moderate compatibility with existing infrastructure • High compatibility with long-term upgrade/expansion as tankage could be repurposed	◕	• Approvals required (MECP, etc.) • Exempt from additional EA requirements • Less proven in Ontario to meet effluent criteria at rated capacity flowrates • No excavation required • High compatibility with existing infrastructure • No compatibility with long-term upgrade/expansion.	◔
Natural Environment	• Moderate impact to natural environment, requires mitigation measures • No significant impact on receiving water as effluent limits likely achieved.	◕	• Moderate impact to natural environment, requires mitigation measures • No significant receiving on course water as effluent limits likely achieved	◕	• Low impact to natural environment, requires some mitigation measures • Likely significant impact on receiving water as effluent limits likely not achieved.	◔
Financial	• Large capital investment required • All costs are sunk as no reuse for long-term WWTP solution • Moderate increase in O&M costs • Total CAPEX Costs: $14M plus land acquisition if required	◑	• Large capital investment required • Potential for tank reuse, limiting future capital costs • Moderate increase in O&M costs • Total CAPEX Costs: $10M	◕	• Alternative deemed unlikely to meet technical requirements, no costing performed • Total CAPEX Costs: N/A	N/A
Overall	**Alternative Not Recommended**	**X**	**Preliminary Preferred Alternative**	**✓**	**Alternative Not Recommended**	**X**

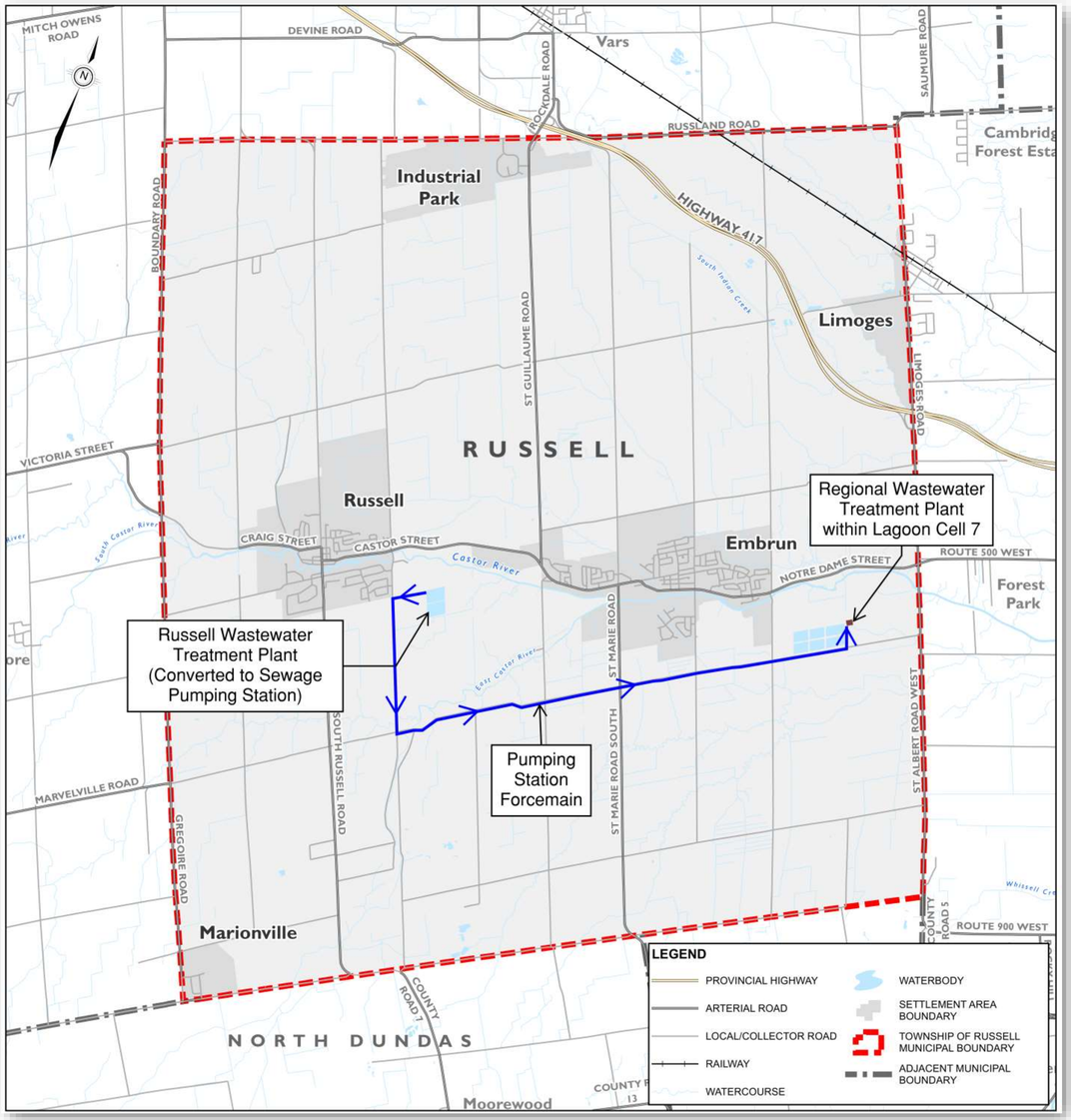
Long-Term Embrun WWTP Alternatives Evaluation Results

Evaluation Criteria	Alternative 1: Expansion of Existing Lagoon Technology	Rating	Alternative 2: New Wastewater Treatment Plant	Rating
Social	• No change in site location • Likely to limit growth of Embrun • Requires land for expansion not controlled by the Township • High aesthetic impact to surrounding properties • Moderate odour addition to the WWTP • High truck traffic during construction	◔	• No change in site location • Will not limit growth of Embrun • Required land for expansion controlled by the Township • Low aesthetic impacts to surrounding properties • Minor odour addition to the WWTP • High truck traffic during construction	◕
Technical	• Approvals required (MECP, etc.) • Will not meet effluent criteria at future flowrates • Large excavation required • High compatibility with existing infrastructure • Limited ability for future expansion and phasing	○	• Approvals required (MECP, etc.) • Will meet effluent criteria at future flowrates • Moderate excavation required • No compatibility with existing infrastructure • High ability for future expansion and phasing	◕
Natural Environment	• High impact to natural environment, requires mitigation measures • Significant impact on receiving water as effluent limits not achieved	○	• Moderate impact to natural environment, requires mitigation measure • No impact on receiving water as effluent limits achieved	◕
Financial	• Alternative deemed unlikely to meet technical requirements, no costing performed • Total CAPEX Costs: N/A	N/A	• High capital investment required • Moderate future expansion costs • Potential for tank reuse of short-term solution • High increase in O&M cost • Total CAPEX Costs: $60M	◔
Overall	**Alternative Not Recommended***	**X**	**Preliminary Preferred Alternative**	✓

**ACS study is indicating effluent limits that are beyond the capability of lagoon technology.*

Municipalité de RUSSELL Township

Regional Wastewater Treatment Plant



Preliminary Forcemain Layout from Russell WWTP to a Regional WWTP

- A Regional Wastewater Treatment Plant could save O&M costs as only one (1) plant would be functional
- Less capital invest required versus constructing new separate wastewater treatment plants for Russell/Embrun
- Reuse of the short-term alternative tankage likely possible to reduce capital costs

CONSTRAINT

- Pumping station required in Russell as Regional Plant preferred location is in Embrun
- Treatment technology selected largely dependent on the ongoing Assimilative Capacity Study of the Castor River

Regional Wastewater Treatment Plant Location Selection:

1. Russell Wastewater Treatment Plant
   - Requires pumping a larger flow from Embrun
   - Non-centralized location if Limoges were to send wastewater to be treated
2. Embrun Wastewater Treatment Plant
   - Smaller pump station required to pump flow from Russell to Embrun than vice versa
   - Centralized location if surrounding communities were to send wastewater to be treated
   - **Preferred Location**

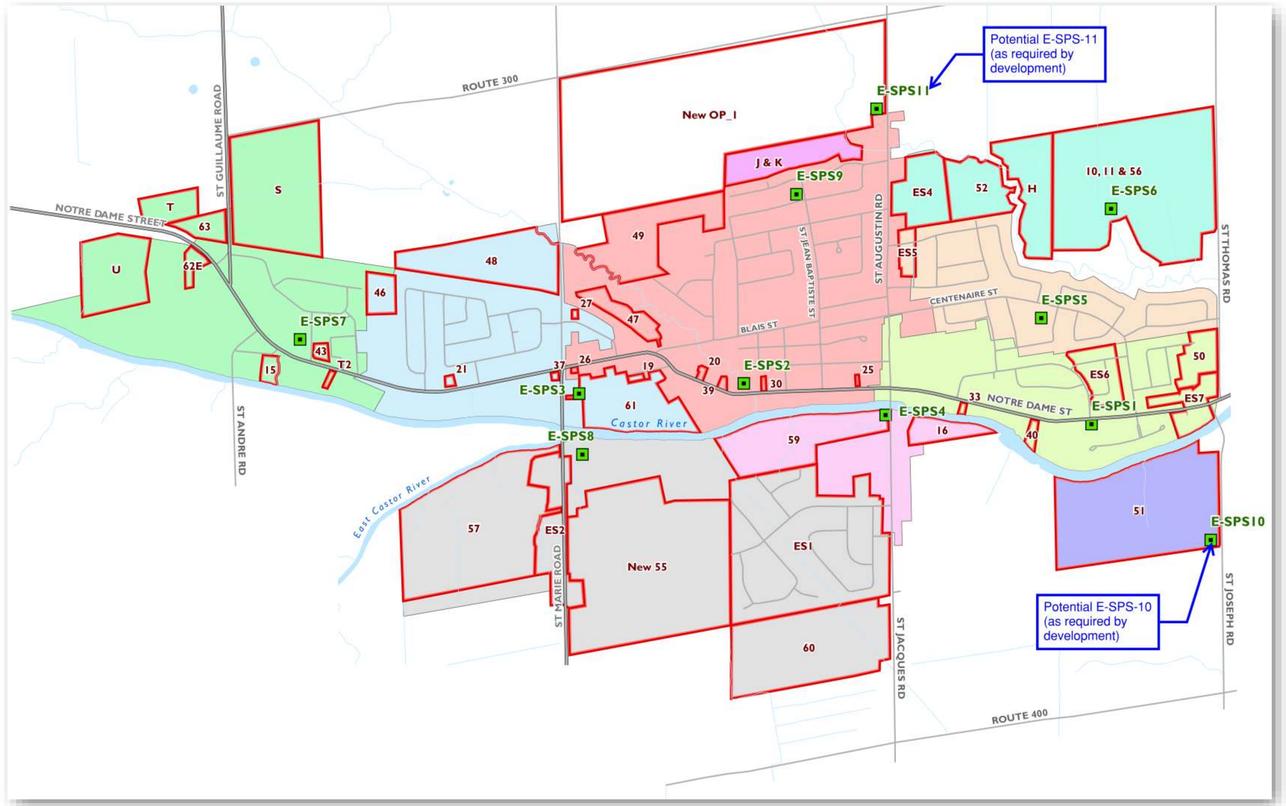
Municipalité de RUSSELL Township

Local WWTPs vs Regional WWTP Evaluation Results

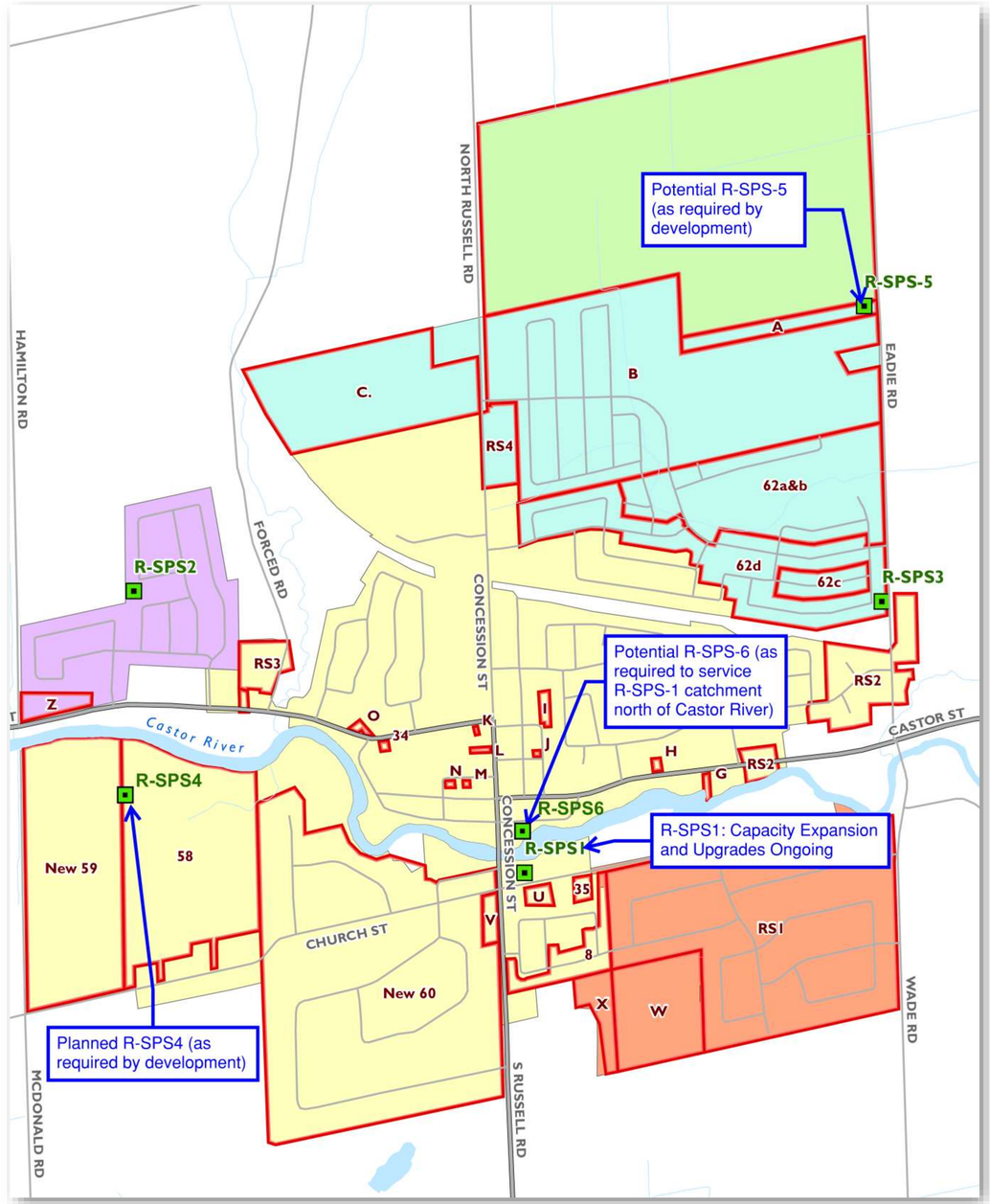
Evaluation Criteria	Alternative 1: Local (Embrun and Russell) Wastewater Treatment Plants	Rating	Alternative 2: Regional Wastewater Treatment Plant	Rating
Social	• No change in site location • Will not limit growth of Russell & Embrun • Likely requires several land acquisitions for expansion • Moderate aesthetic impacts to both surrounding properties • Minor odour addition to both WWTPs • High truck traffic in both Russell and Embrun during construction	◔	• No change in site location • Will not limit growth of Russell & Embrun • Likely requires limited land acquisition for expansion • Moderate aesthetic impacts to surrounding properties • Minor odour addition to the WWTP • High localised truck traffic during construction	◕
Technical	• Approvals required for both WWTPs (MECP, etc.) • Will meet effluent criteria at future flowrates for both Russell and Embrun • Large excavation required for Russell and Embrun • Some compatibility with existing infrastructure after short-term upgrades implemented • High ability for future expansion and phasing	◑	• Approvals required (MECP, etc.) • Will meet effluent criteria at future flowrates • Moderate excavation required • Some compatibility with existing infrastructure after Embrun's short-term upgrade implemented • High ability for future expansion and phasing	◕
Natural Environment	• High impact to natural environment for both WWTPs, requires mitigation measures • Increased GHG emissions with two (2) WWTPs • No impact on receiving water as effluent limits achieved	◔	• High impact to natural environment but localised, requires mitigation measure • Reduced GHG emissions with one (1) WWTP • No impact on receiving water as effluent limits achieved	◑
Financial	• High capital investment required • High future expansion costs • Potential for tank reuse of short-term solution • Total Capital Costs: $110M • Net Present Value: $140M	◔	• Moderate capital investment required • Moderate future expansion costs • Potential for tank reuse of short-term solution • Total Capital Costs: $95M • Net Present Value: $115M	◑
Overall	**Alternative Not Recommended**	X	**Preliminary Preferred Alternative**	✓

Sanitary Collection System Upgrades

- Existing pumping stations, sewers and forcemains may need to be upgraded to accommodate new development (development led funding).
- New pumping stations could be built in existing areas to free-up and reallocate pumping capacity in a more efficient manner (development led funding).
- New pumping stations to be added as required in new development areas (development led funding).



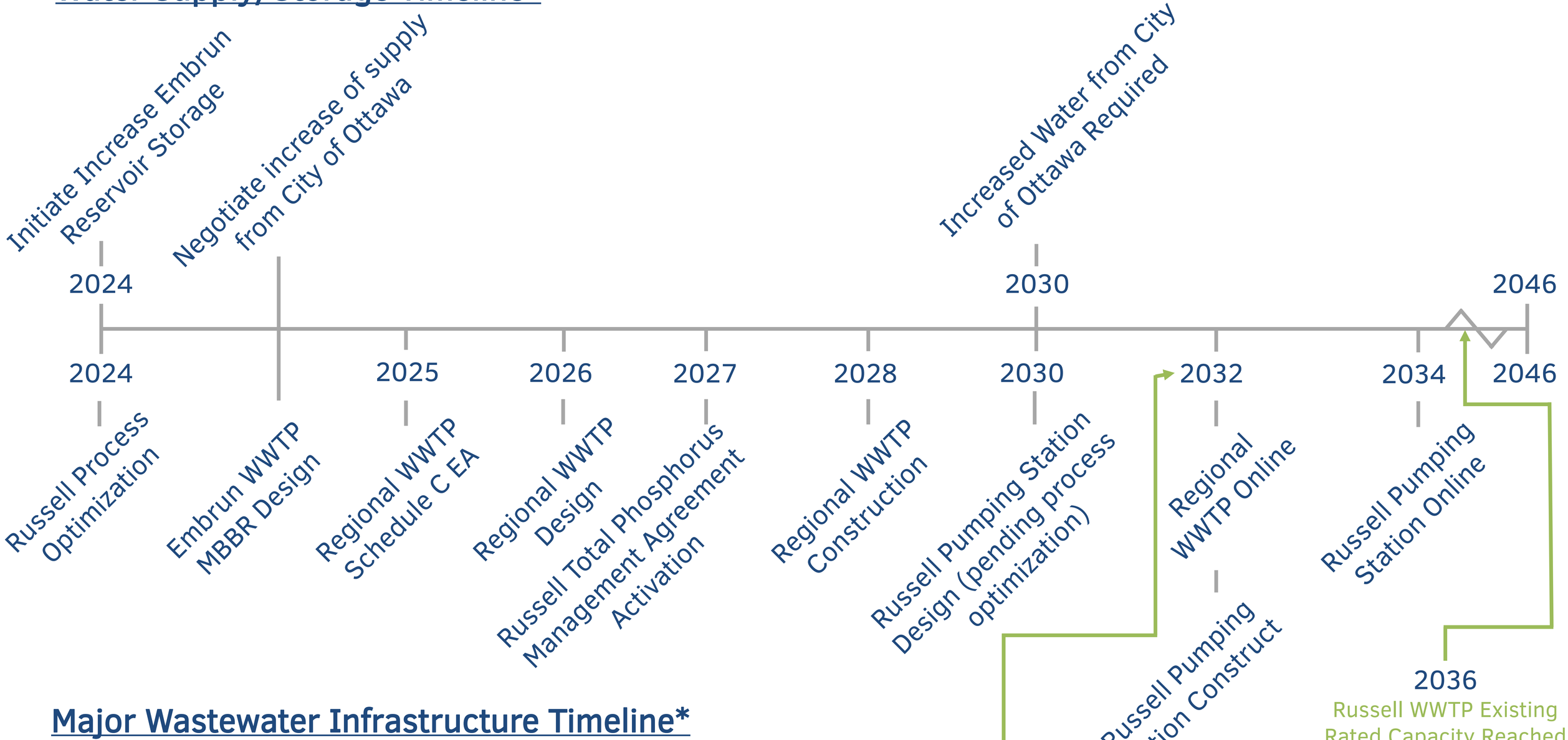
Embrun Sewage Pumping Station Catchment Areas



Russell Sewage Pumping Station Catchment Areas

Township of Russell Timeline

Water Supply/Storage Timeline*



Major Wastewater Infrastructure Timeline*

**Watermain and wastewater sewerage updated as required to accommodate projected future flowrates*

Municipalité de RUSSELL Township

Preliminary Preferred Water and Wastewater Servicing Alternatives

Summary of preliminary preferred alternatives:

Servicing Area	Preliminary Preferred Servicing Alternatives
Water Supply	Expansion of Existing Service from the City of Ottawa
Water Storage and Booster Pumping	Expansion of Embrun Reservoir and Russell/Embrun Booster Pumping Station Capacities
Russell Wastewater Treatment Plant	Short Term Alternative: Process optimization, if unsuccessful review timeline to Regional plant or MBBR to reduce ammonia Long Term Alterative: Convert to pumping station to convey wastewater to Regional WWTP in Embrun
Embrun Wastewater Treatment Plant	Short Term Alternative: MBBR to reduce ammonia concentrations Long Term Alternative: New Regional Wastewater Treatment Plant to service Russell and Embrun

Municipal Class EA Requirements

Summary of Municipal Class Environmental Assessment requirements for each project identified in this Master Plan.

No further Class EA Requirements

- Expansion of Existing Water Service from Ottawa
  - Pending discussions with City of Ottawa

Schedule C

- New Regional Wastewater Treatment Plant

Exempt

- Russell Wastewater Treatment Plant Short Term Upgrades
- Embrun Wastewater Treatment Plant Short Term Upgrades
- Expansion of Embrun Water Reservoir
- Pumping Capacity Increase of Russell and Embrun Water Booster Pumping Station

What are the Next Steps?

After this Public Information Centre, the project team will:

- Review and consider input received during this meeting.
- Confirm the preliminary recommendations presented tonight for the Township's water and wastewater servicing alternatives.
- Prepare a Master Plan Report summarizing the study findings.
- Notice of Study Completion and Master Plan Report on the public record for comments during a 30-day comment period.

May 2024

Compile comments from PIC and confirm recommendations

Early Q3 2024

Master Plan Report

Q3 2024

Notice of Study Completion and Start of 30-Day Comment Period

Municipalité de RUSSELL Township

Next Steps & Comments

Questions or comments?

Should you have any questions about this presentation or the project, please fill out a comment sheet tonight or contact:

Municipalité de RUSSELL Township

CIMA+
Engineering for **people**

Francois Landry

Gestionnaire de projets | Project Manager
Infrastructure Services d'infrastructure
Municipalité de RUSSELL Township
717 Notre-Dame St, Embrun ON K0A 1W1
Phone: 613-443-1747
Email: FrancoisLandry@Russell.ca

Bradley Young, Ph.D., P.Eng.

Senior Project Manager
CIMA+
600-1400 Blair Towers Place,
Ottawa, Ontario, K1J 9B8
Phone: 647-614-2462
Email: Bradley.Young@cima.ca

Please provide your comments and questions by May 29, 2024

Municipalité de
RUSSELL
Township

BIENVENUE

Mise à jour du plan directeur pour les systèmes d’eau potable et d’eaux usées

Centre d'information publique

Mercredi 8 mai 2024

18h00 à 20h00

Salle du conseil, bureau de la Municipalité de Russell

717, rue Notre-Dame, Embrun, ON K0A 1W1

Instructions pour cette réunion

Centre d'information publique

1

Veuillez-vous inscrire

La réunion est de type "Drop-in".

2

Examiner le matériel affiché

Nos représentants se feront un plaisir de discuter de l'étude ou de répondre à toute question ou préoccupation que vous pourriez avoir.

3

Remplir une feuille de commentaires

Déposez votre feuille de commentaires remplie dans la boîte ce soir ou renvoyez-la aux personnes indiquées sur la feuille de commentaires avant le **29 mai 2024**

Municipalité de RUSSELL Township

Contexte du Plan directeur

- Les plans directeurs sont des plans à long terme qui intègrent un examen de haut niveau des besoins en infrastructure pour une zone d'étude, ainsi qu'un estimé des coûts de mise en œuvre associé à ces besoins.
- Les plans directeurs identifient des projets d'infrastructure individuels répartis géographiquement dans la zone d'étude, à mettre en œuvre progressivement au fil du temps.
- Les plans directeurs complètent **les phases 1 et 2 du processus de planification de l'évaluation environnementale municipale de portée générale** pour ces projets.
- La mise à jour du plan directeur pour les systèmes d'eau potable et d'eaux usées est réalisée dans le cadre de **l'approche 1** pour les plans directeurs. Le plan directeur fournira de l'information à l'appui des projets catégorisés à l'annexe B et C. Les projets recommandés de l'annexe B nécessiteront un examen public du dossier de projet, tandis que les projets de l'annexe C nécessiteront une enquête supplémentaire pour compléter les phases 3 et 4 du processus d'évaluation environnementale municipale de portée générale.
- **Le plan directeur** sera préparé à la fin de l'étude et mis à la disposition du public pour examen.

Aperçu des activités dans le cadre du processus d'évaluation environnementale par catégorie

Phase 1 Démarrage

- Examen des informations/données disponibles
- Identification de l'énoncé du problème / des opportunités

AVIS DE LANCEMENT D'ÉTUDE
19 juillet 2023

AVIS DE LANCEMENT D'ÉTUDE RÉVISÉ
24 août 2023

Phase 2 Exploration des options

- Examen des moyens de répondre aux besoins en services municipaux et identification des impacts potentiels
- Évaluation et présélection des solutions

CENTRE D'INFORMATION PUBLIQUE
8 mai 2024

- Évaluation et sélection préliminaire des solutions préférée(s)
- Confirmation des solutions choisies sur la base des commentaires du public et des agences d'examen

AVIS D'ACHEVEMENT (futur)

NOUS SOMMES ICI

Phase 3 Développement de la solution préférée

- Élaboration de concepts de mise en œuvre des solutions de la phase 2
- Identification des impacts et des mesures d'atténuation
- Évaluation des options et sélection préliminaire **des concepts préférentiels** recommandés

Phase 4 Documenter le processus

- **Préparation d'un rapport** et satisfaire aux exigences de documentation pour l'évaluation environnementale de portée générale
- Mettre le rapport à la **disposition du public pour examen**

Phase 5 Mise en œuvre des recommandations

- Conception détaillée de la solution recommandée
- Lancement de la construction

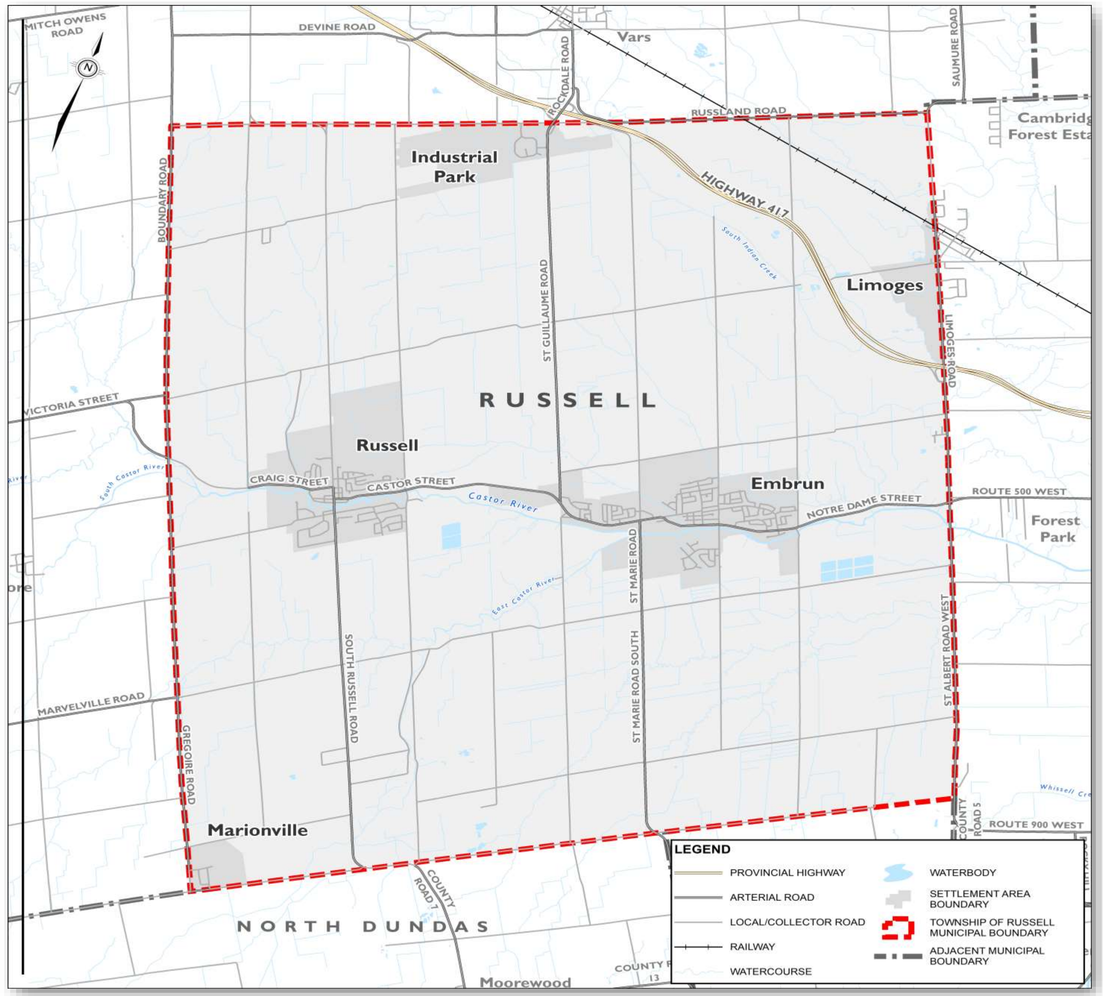
Les phases 1 et 2 de la procédure d'évaluation environnementale de portée générale seront complétées à mesure de l'élaboration du plan directeur. Les projets exemptés passeront à la phase de mise en œuvre. Les projets catégorisés à l'annexe B nécessiteront le dépôt du dossier de projet en vue d'un examen public. Les projets catégorisés à l'annexe C devront compléter les phases 3 et 4 de la procédure d'évaluation environnementale de portée générale.

Municipalité de RUSSELL Township

Énoncé du problème/des opportunités

La Municipalité de Russell se développe à l'intérieur des limites urbaines de Russell, Embrun et Marionville conformément aux plans officiels de la Municipalité de Russell et des comtés unis de Prescott et Russell.

L'infrastructure existante devra être améliorée pour répondre aux besoins immédiats et aux besoins long-terme liés à la croissance. Les solutions privilégiées pour remédier aux déficits de capacité seront conformes aux règlements applicables, ajouteront la capacité requise et seront évaluées en fonction de la viabilité environnementale et financière des projets.



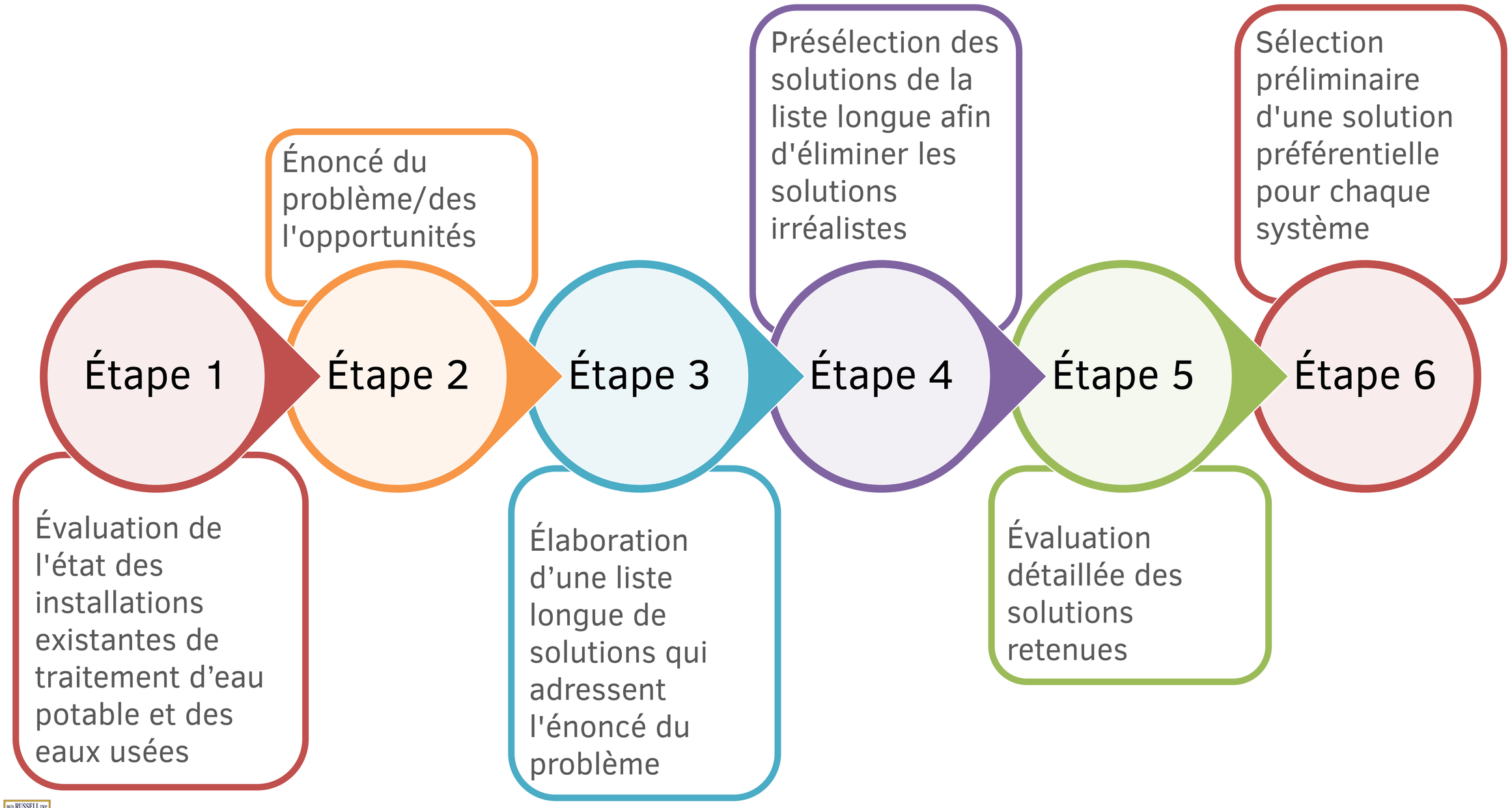
Limites de la zone d'étude - Mise à jour du plan directeur pour l'eau et les eaux usées

Parc industriel de l'autoroute 417

Lors de la réunion du conseil municipal qui s'est tenue le 16 mai 2023, le conseil a approuvé l'option 3, soit un «modèle alternatif de desserte d'eau et d'égout pour les terrains non aménagés du parc », comme solution privilégiée pour la desserte du parc industriel de l'autoroute 417. L'option 3 consiste à développer le parc existant « tel quel » et à poursuivre l'évaluation des terrains situés directement au nord de la route 100 et à l'est du chemin Saint-Guillaume pour leurs desserte en eau potable et en égouts.

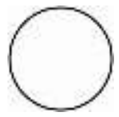
- La desserte du parc industriel de l'autoroute 417 dépend du financement des futurs promoteurs.
- Ce plan directeur a permis d'évaluer si l'actuel système d'alimentation en eau potable a la capacité nécessaire pour desservir les futurs terrains désignés à être desservis dans le Parc Industriel de l'autoroute 417.
- La capacité de traitement des eaux usées à l'avenir tiendra compte du parc industriel de l'autoroute 417 à mesure que l'information nécessaire se concrétise et devient disponible.

Processus de sélection des stratégies préférées préliminaires pour les services des systèmes d’eau potable et d’eaux usées



Méthodologie d'évaluation

Les solutions présélectionnées ont été évaluées les unes par rapport aux autres et une note leur a été attribuée en fonction de l'impact net potentiel et des mesures d'atténuation disponibles. Les notes ont été attribuées selon l'approche suivante :

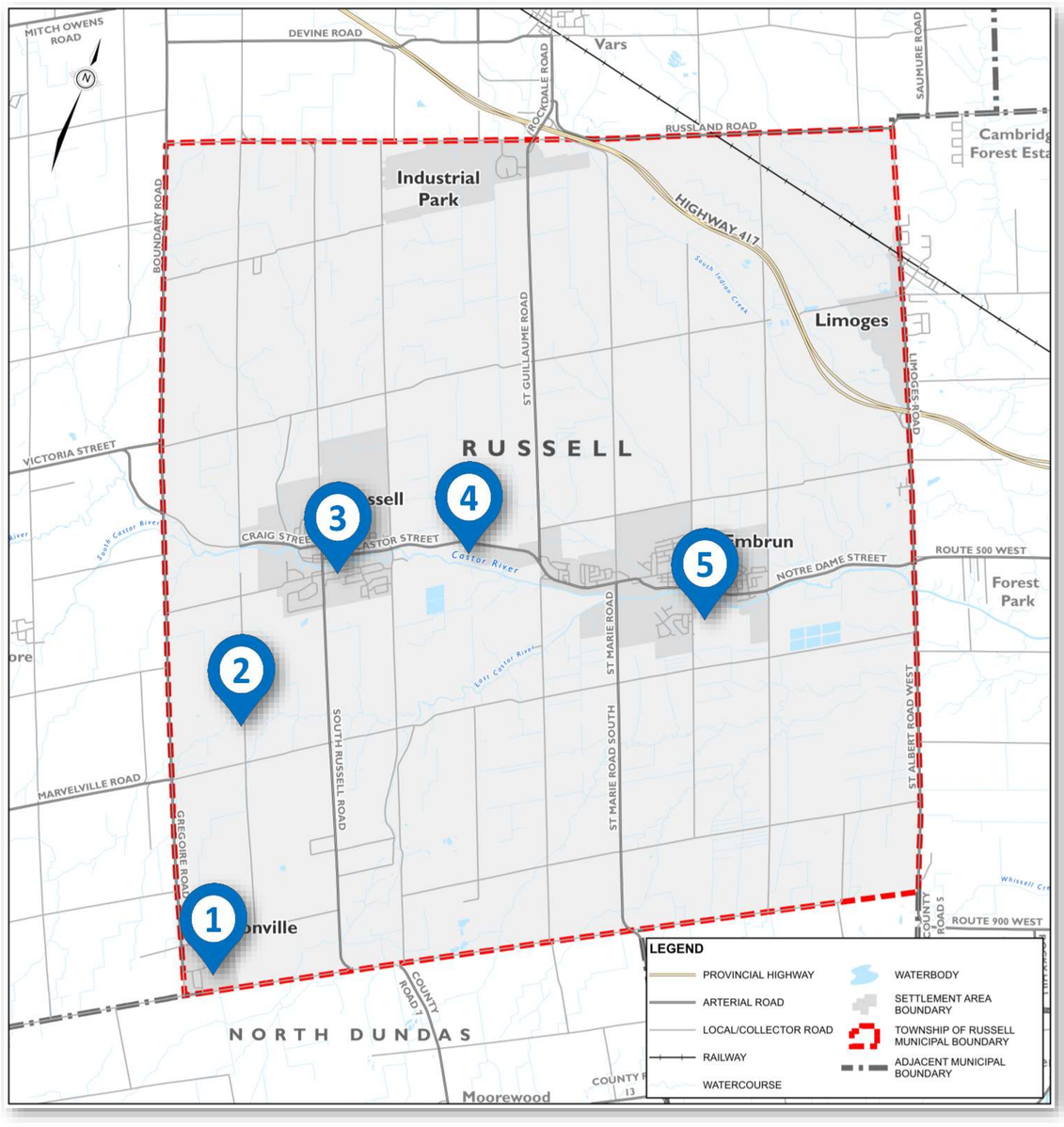
				
Les impacts potentiels sont importants et la mise en œuvre de mesures d'atténuation substantielles est nécessaire. Le risque ne peut être éliminé.	Les impacts potentiels sont importants, la mise en œuvre de mesures d'atténuation étendues est nécessaire pour réduire/éliminer les risques.	Les impacts potentiels sont modérés, la mise en œuvre de nombreuses mesures d'atténuation est nécessaire pour réduire/éliminer les risques.	Les impacts potentiels sont mineurs et peuvent être facilement atténuées par la mise en œuvre de mesures d'atténuation standard.	Les impacts potentiels sont négligeables, aucune mesure d'atténuation n'est nécessaire.

Le moins préféré → Le plus préféré

Infrastructure d’eau potable de la Municipalité

La municipalité possède et exploite plusieurs grandes infrastructures d’eau potable, comme le montre la carte et la liste ci-dessous :

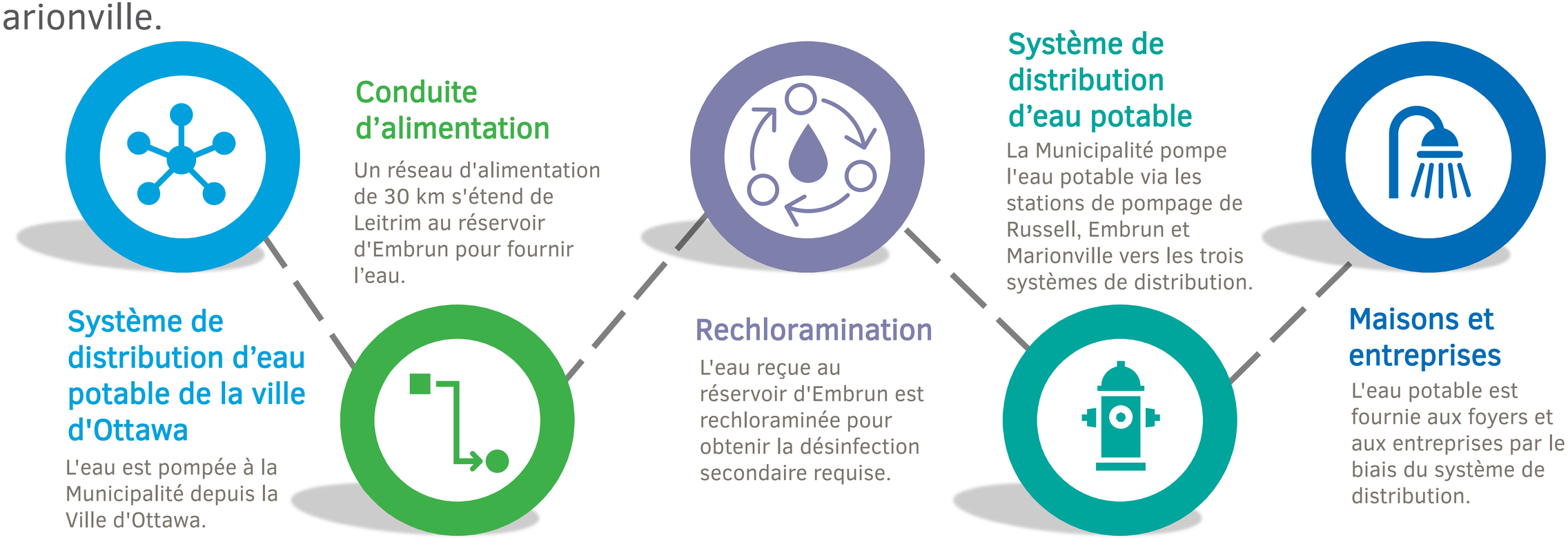
1. Château d'eau de Marionville
2. Station de surpression de Marionville
3. Château d'eau de Russell
4. Réservoir d'Embrun et station de surpression d’Embrun/Russell
5. Château d'eau d’Embrun



Municipalité de RUSSELL Township

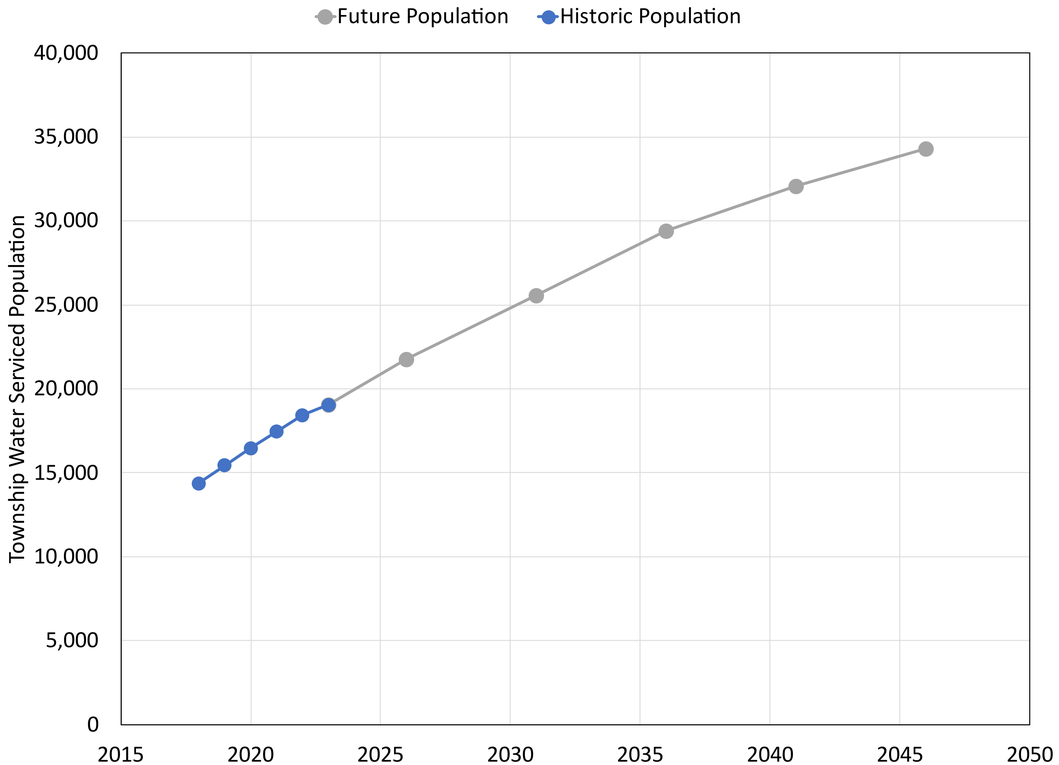
Quelle est la source de notre eau potable?

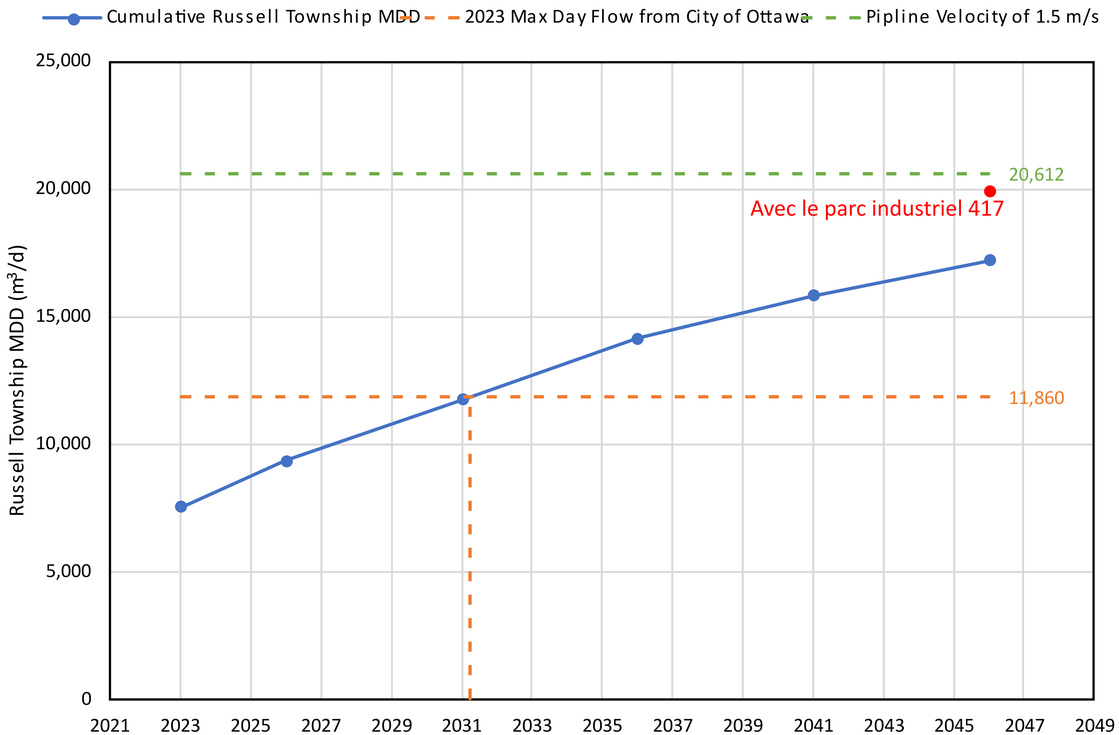
La Ville d'Ottawa approvisionne la Municipalité de Russell en eau potable à partir de la station de pompage du Leitrim, par l'intermédiaire d'une conduite d'alimentation d'environ 30 km de long et de 450 mm de diamètre, qui se raccorde à la station de comptage du chemin Eadie et se prolonge jusqu'au réservoir d'Embrun. Compte tenu de la longue distance et du temps de séjour dans la conduite principale à partir d'Ottawa, l'eau est rechloraminée au réservoir d'Embrun afin d'obtenir le résiduel requis pour la désinfection secondaire avant d'être distribuée à Russell, Embrun et Marionville.



Approvisionnement en eau – Conditions actuelles/futures

Paramètres	Existant	Futur (2046)
Population (Embrun, Russell et Marionville)	19 050	34 325
Demande maximale journalière, m^3/j	7 602	17 197
Accord actuel d'approvisionnement en eau de la Ville d'Ottawa, m^3/j	11 860	11 860 (deficit de 5 337)



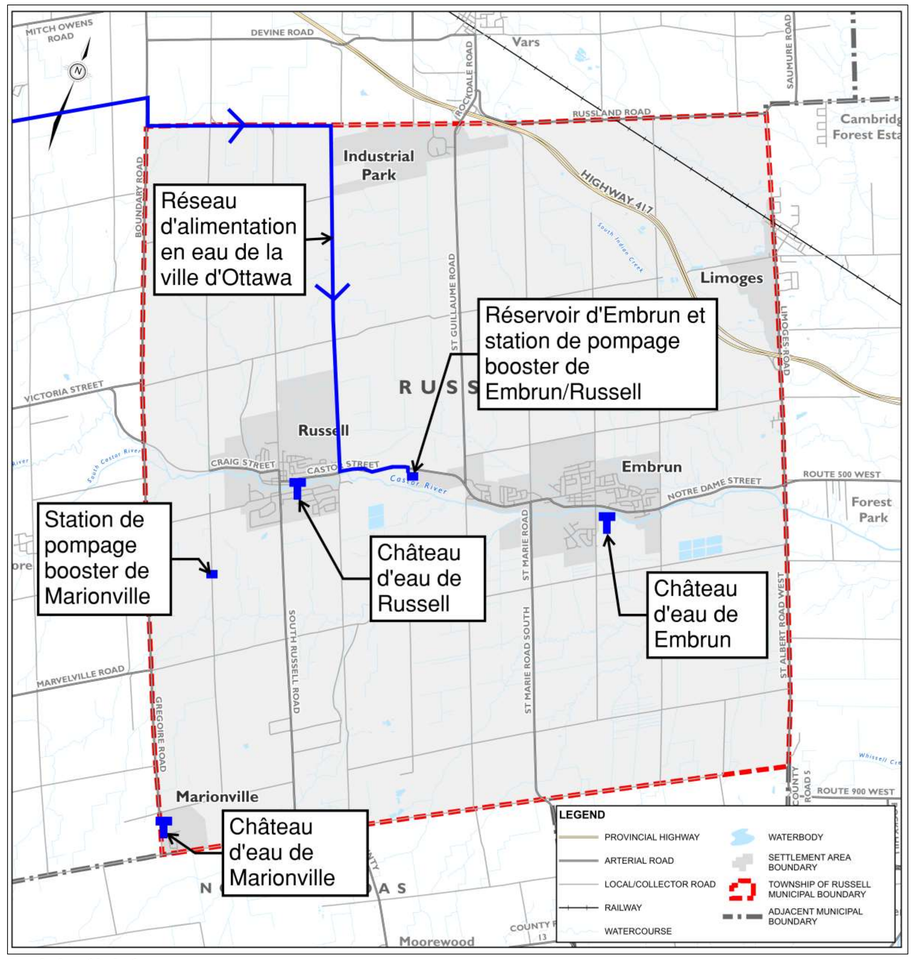


** Selon les directives de conception de la Ville d'Ottawa, une conduite principale est conçue pour fonctionner dans des conditions normales à une vitesse de 1,5 m/s. La conduite d'alimentation actuelle peut acheminer 20 612 m^3/j sans que des améliorations soient apportées à la conduite. Des discussions avec la Ville d'Ottawa seront nécessaires pour déterminer les impacts de l'infrastructure de la ville.*

Approvisionnement en eau potable de la Municipalité

Infrastructures clés :

- La Ville d'Ottawa fournit de l'eau potable à la Municipalité par l'entremise d'un accord d'approvisionnement quotidien maximum de 11 860 m^3/j.
- L'eau est rechloraminée au réservoir d'Embrun afin d'obtenir le résiduel requis pour la désinfection secondaire avant d'être distribuée à Russell, Embrun et Marionville.



- Le réseau d'alimentation en eau actuel de la Ville d'Ottawa a une capacité suffisante pour répondre à la demande d'eau actuelle et future.
- Le système d'approvisionnement en eau existant est efficace.

CONTRAINTE

- L'accord d'approvisionnement en eau existant avec la Ville d'Ottawa est insuffisant pour répondre à la demande d'eau en 2046.
- Un approvisionnement en eau supplémentaire sera nécessaire d'ici 2031 selon les projections de croissance de la population.

Stratégies de desserte alternatives présélectionnées :

1. Expansion du service existant à partir d'Ottawa
   - Renégocier l'entente d'approvisionnement en eau avec la Ville d'Ottawa afin d'augmenter l'approvisionnement quotidien maximal pour répondre à la demande d'eau en 2046.
2. Obtenir un approvisionnement en eau de Clarence-Rockland
   - Construire un nouvel aqueduc provenant de Limoges pour compléter l'approvisionnement en eau avec des contributions de la Cité de Clarence-Rockland.

Résultats de l'évaluation des alternatives en matière d'approvisionnement en eau

Critères d'évaluation	Alternative 1 : Expansion de l'approvisionnement existant à partir d'Ottawa Renégociation de l'accord d'approvisionnement en eau avec la Ville d'Ottawa afin d'augmenter l'approvisionnement quotidien maximum.	Évaluation	Alternative 2 : Approvisionnement en eau par Clarence-Rockland Construction d'une nouvelle conduite d'alimentation en eau jusqu'à Limoges pour compléter l'approvisionnement en eau avec des contributions de la Cité de Clarence-Rockland.	Évaluation
Social	• Pas d'impact significatif sur le plan social car aucune construction de conduite d'alimentation supplémentaire est nécessaire.	●	• Impact social modéré, nécessitant des mesures d'atténuation lors de la construction de la nouvelle conduite. • La nouvelle conduite peut être acheminée le long des emprises existantes afin d'atténuer les impacts sur les zones non perturbées. • Circulation modérée de camions et fermetures de voies pendant la construction.	◑
Technique	• Responsabilités d'exploitation et d'entretien similaire aux conditions existantes avec une seule voie d'alimentation de la ville d'Ottawa. • Aucune redondance pour la conduite d'alimentation devant être compensée par un stockage d'eau adéquat dans la Municipalité.	◕	• Augmentation de la redondance avec un approvisionnement en eau provenant de deux sources (Ottawa et Clarence-Rockland). • Augmentation des responsabilités en matière d'exploitation et d'entretien grâce à l'ajout d'une nouvelle conduite provenant de Limoges et alimenté par la Cité de Clarence-Rockland.	◑
Environnement naturel	• Pas d'impact significatif sur l'environnement naturel car aucune construction de conduite d'alimentation supplémentaire est nécessaire.	●	• Impact modéré sur l'environnement naturel, nécessitant des mesures d'atténuation lors de la construction d'une nouvelle conduite. • La nouvelle conduite peut être acheminée le long des emprises afin d'atténuer la perturbation des zones naturalisées.	◑
Financier	• Investissement minimal requis si la station de pompage de la Ville d'Ottawa doit être modernisée pour permettre l'augmentation de l'approvisionnement en eau de la Municipalité. • Augmentation minime des coûts d'exploitation et d'entretien. • Coût total : Des améliorations à la station de pompage de la ville pourraient être nécessaires. À confirmer à la suite de discussions avec la Ville d'Ottawa.	◕	• Investissement important pour la construction d'une nouvelle conduite. • Augmentation modérée des coûts de fonctionnement et d'entretien. • Coût total : Estimation de haut niveau de 70M$ pour la nouvelle conduite jusqu'à Clarence Rockland, ainsi que toutes améliorations nécessaires à la station de traitement d'eau de Clarence Rockland et à la station de surpression.	◔
Résultat global	**Alternative préférée préliminaire**	✓	**Alternative non recommandée**	**X**

Stockage et pompage d’eau potable de la Municipalité

Infrastructures clés :

- Le réservoir d'Embrun et les châteaux d'eau de Russell, Embrun et Marionville assurent le stockage de l’eau potable.

- Le stockage total d'eau potable dans la Municipalité est suffisant pour répondre à la demande journalière maximale de 2046 selon les directives du MECP.
- Réduire la fréquence de pompage pendant les périodes de pointe (7h00 à 19h00) pour améliorer l'efficacité énergétique de la station de pompage

CONTRAINTE

- Les déficits en capacité de stockage en réservoirs surélevés à Russell/Marionville et Embrun nécessiteront une capacité de pompage supplémentaire.
- La Municipalité doit tenir compte d’une période d'interruption journalière de l'approvisionnement en eau (de 18h à 22h tous les jours).

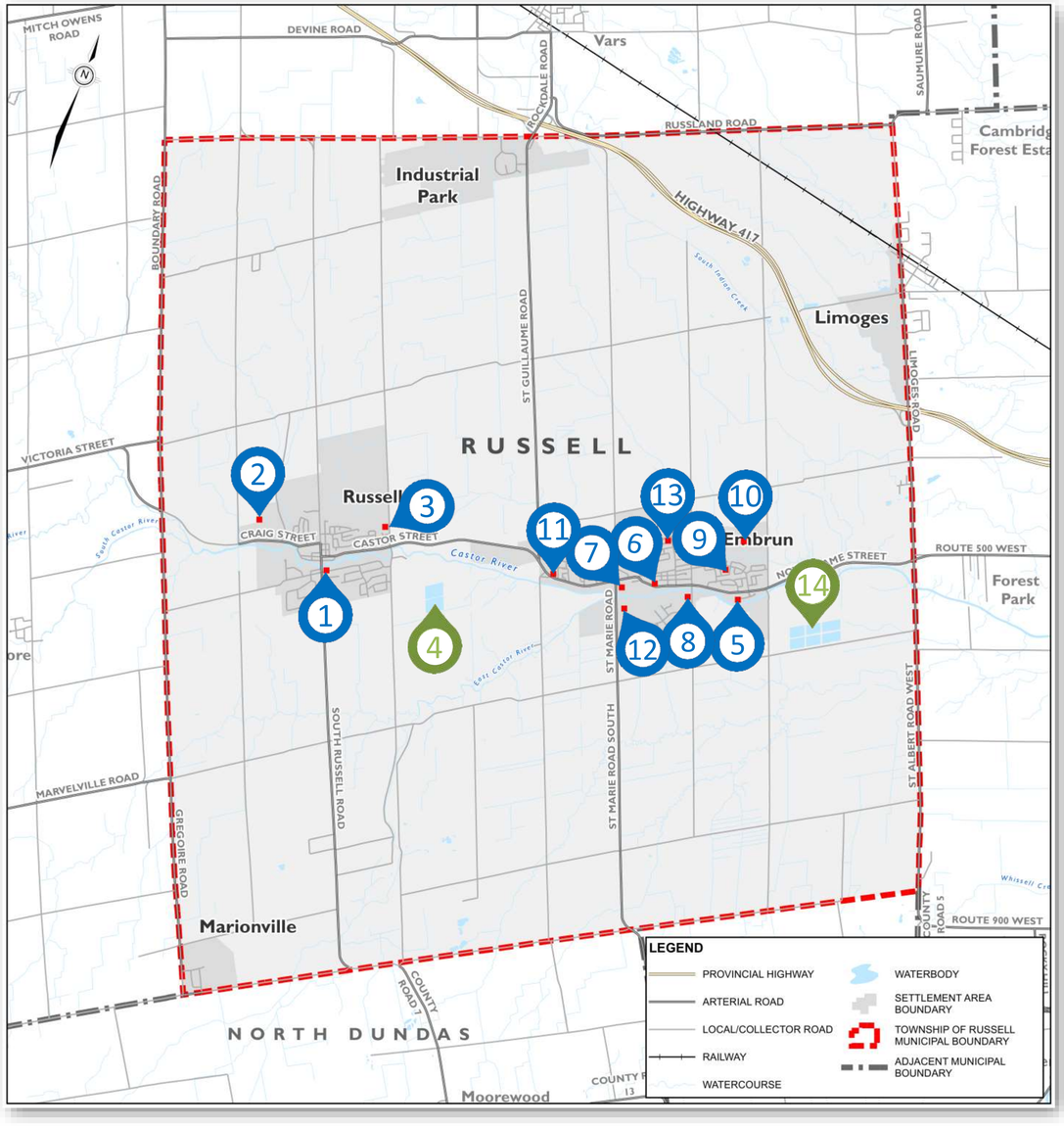
Stratégie privilégiée pour stockage et pompage d’eau potable :

1. Augmentation de la capacité du réservoir d'Embrun
   - Afin de fournir la marge de manœuvre nécessaire pour répondre aux besoins de stockage de 2046 et tenir compte de la période d'interruption en approvisionnement
2. Augmenter les capacités de pompage de Russell et d'Embrun
   - Obtenir une capacité ferme permettant de répondre à la demande quotidienne maximale de 2046 et aux exigences en matière de débit d'incendie.

Infrastructure d’eaux usées de la Municipalité

La municipalité possède et exploite plusieurs infrastructures de traitement des eaux usées, comme le montrent la carte et la liste ci-dessous :

1. Poste de pompage des eaux usées 1 (SPS) de Russell
2. SPS2 de Russell
3. SPS3 de Russell
4. Station d’épuration des eaux usées de Russell
5. SPS1 d’Embrun
6. SPS2 d’Embrun
7. SPS3 d’Embrun
8. SPS4 d’Embrun
9. SPS5 d’Embrun
10. SPS6 d’Embrun
11. SPS7 d’Embrun
12. SPS8 d’Embrun
13. SPS9 d’Embrun
14. Station d’épuration des eaux usées d’Embrun

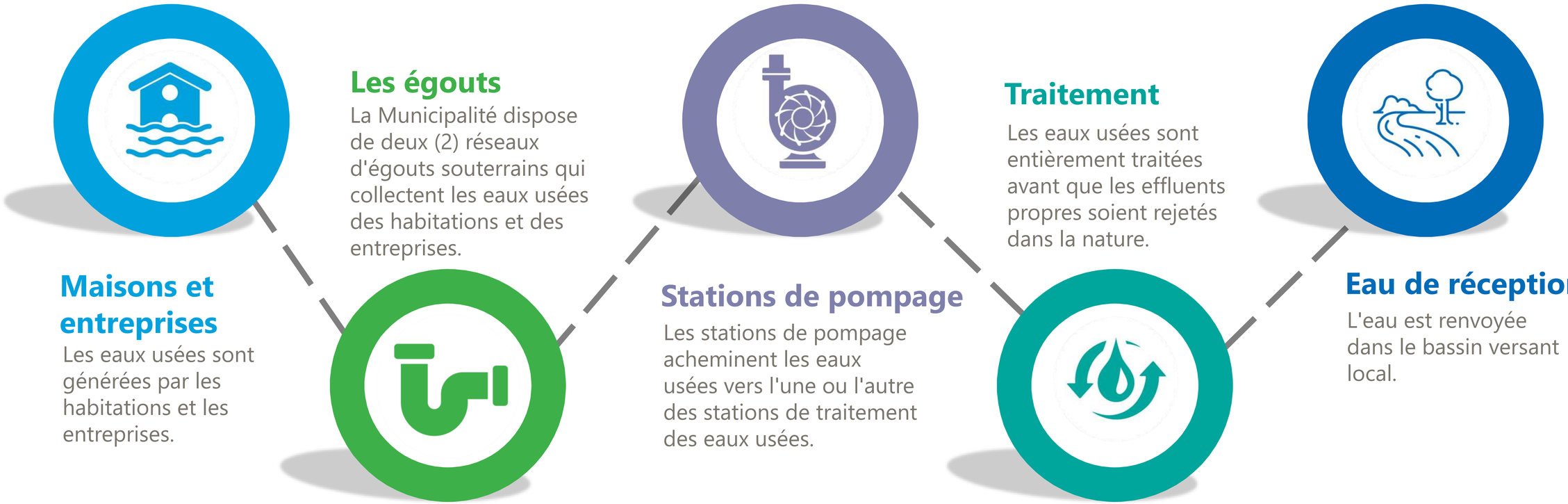


Infrastructure d’eaux usées de la Municipalité de Russell

Comment les eaux usées sont-elles gérées?

La Municipalité opère deux (2) systèmes distincts de traitement des eaux usées :

- Russell
- Embrun



Traitement des eaux usées dans la Municipalité

Deux (2) stations d’épuration des eaux usées sont présentes dans la Municipalité de Russell et utilisent la technologie des bassins de lagunage. La station de traitement des eaux usées de Russell est constituée de cinq (5) cellules, tandis que la station de traitement des eaux usées d'Embrun est constituée de huit (8) cellules.

Station d’épuration des eaux usées de Russell

Station d’épuration des eaux usées d'Embrun

Amélioration du traitement des eaux usées

Les stations de traitement des eaux usées de Russell et d'Embrun ont toutes deux des limites à respecter pour l'élimination de l’azote ammoniacal. Des améliorations à court terme sont nécessaires pour respecter les normes de rejet d’azote ammoniacal tel que réglementées par l'approbation de conformité environnementale de chaque station. Des améliorations à long terme sont nécessaires pour répondre à la demande future qui sera générée par la croissance projetée à Russell et à Embrun.

La Municipalité a entreprise, de manière proactive, une étude de la capacité d'assimilation afin de protéger la santé aquatique et la qualité de l'eau de la rivière Castor à long terme. Les résultats de l'étude de la capacité d'assimilation serviront de base aux normes de rejet futures pour la Municipalité et orienteront la planification des dépenses en capital pour les mises à niveau à court et à long terme.

La rivière Castor

Solutions d'amélioration à court terme

Réservoir de RBGS (en haut), les medias de RBGS (en bas)

Construction de SAGR

Médias fixes installés dans une lagune

- Assurer la conformité aux normes et protéger la santé aquatique et la qualité de l'eau de la rivière Castor.
- Une amélioration à court terme devrait permettre un traitement adéquat jusqu'à la capacité nominale actuelle et minimiser les coûts irrécupérables lors de la mise-en-œuvre d'une solution à long terme.

CONTRAINTE

- La station d'épuration des eaux usées de Russell n'a pas respecté ses normes de rejet en matière d'azote ammoniacal en 2023.
- La station d'épuration des eaux usées d'Embrun n'a pas respecté ses normes de rejet en matière d'azote ammoniacal en 2021, 2022, et 2023.
- Il est peu probable que la conformité des effluents à pour l'azote ammoniacal soit respectée sans optimisation du procédé et/ou sans mise-à-niveau.

Stratégies alternatives d'amélioration à court terme :

1. Mise en œuvre d'un polissage des effluents avant leur rejet
   - Le polissage de l'effluent permet de réduire les concentrations d'azote ammoniacal pendant le rejet, la recirculation du débit pendant les mois sans rejet permet une réduction continue de l'azote ammoniacal (RBGS ou SAGR).
2. Installation de médias fixes dans les étangs existants
   - Les médias fixes peuvent permettre un traitement prolongé de l'azote ammoniacal pendant les mois les plus froids en raison de la croissance des microbes sur les médias.

Municipalité de RUSSELL Township

Solutions d'amélioration à long terme

Traitement en étangs

Station d’épuration des eaux usées mécanisée

- La mise-à-niveau privilégiée à long terme devrait permettre à la qualité de l'effluent de respecter ou de surpasser les normes strictes de l'étude en cours sur la capacité d'assimilation de la rivière Castor.
- Examiner une approche à l'échelle du système pour Russell et Embrun où chaque installation a besoin d'être agrandie ou remplacées.

CONTRAINTE

- Les stations d’épuration des eaux usées requièrent du terrain et des coûts d'investissement importants.
- Le choix de la technologie pour une nouvelle station d'épuration peut être limité en fonction des normes de rejet.

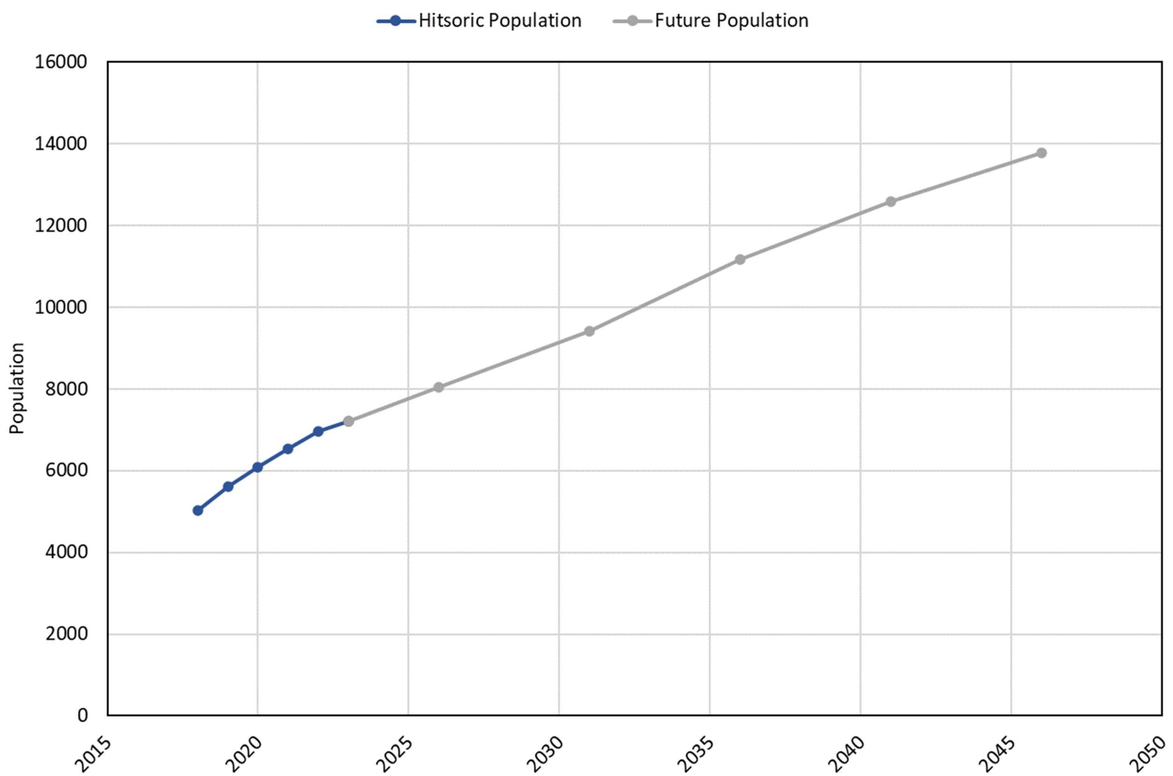
Solutions d'amélioration à long terme:

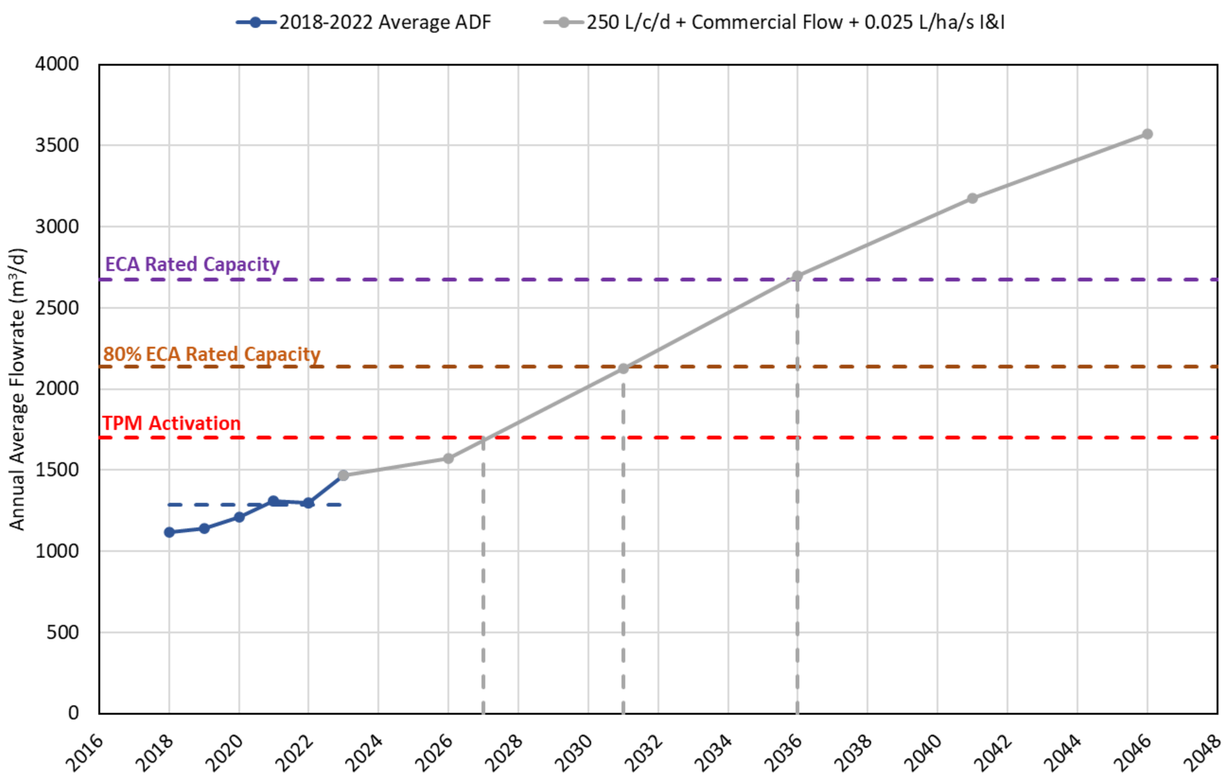
1. Expansion des étangs
   - Construction des cellules six (6) et sept (7) à Russell et des cellules neuf (9), dix (10) et onze (11) à Embrun; les stations continuent de fonctionner avec décharges saisonnières et nécessitent un traitement supplémentaire important.
2. Novelle station d’épuration des eaux usées mécanisée
   - Une station d’épuration des eaux usées mécanisée est construite pour Russell et Embrun, et la technologie est sélectionnée en fonction que la station puisse respecter les normes de rejet.

Conditions existant/futures de Russell

Paramètres	Existant	Futur (2046)	Ultime*
Population	7 205	13 770	17 323
Débit moyen journalier, m^3/j	1 287	3 572	4 656
Capacité de traitement des eaux usées existante, m^3/j	2 675	2 675 (deficit de 897)	2 675 (deficit de 1 981)

**Ultime se réfère au développement de l'ensemble de la zone de peuplement du plan secondaire. Les projections de population à l'ultime ont été calculées basé sur les densités de développement spécifiées dans les plans secondaires et le Plan Officiel.*





** La ville d'Ottawa stipule 0,05 L/ha/s pour l'écoulement et l'infiltration (I&I). Un point médian a été choisi compte tenu de la faiblesse historique de l'infiltration et de l'écoulement à Russell. L'usine d'épuration des eaux usées de Russell est soumise à une limite de charge de phosphore avant l'accord avec l'Office de protection de la nature de la Nation Sud.*

Résultats de l'évaluation des alternatives à court terme pour la station de traitement des eaux usées de Russell

Critères d'évaluation	Alternative 1: SAGR	Eval-uation	Alternative 2: RBGS	Eval-uation	Alternative 3: Médias fixes	Eval-uation
Social	• Aucun changement dans l'emplacement du site. • Acquisition de terrains probablement nécessaire. • Faibles impacts esthétiques sur les propriétés avoisinantes en cas d'agrandissement. • Augmentation mineure ou nulle d'odeurs à la station d'épuration. • Circulation modérée de camions pendant la construction.	◑	• Aucun changement dans l'emplacement du site. • Terrains nécessaires susceptibles d'être contrôlés par la Municipalité. • Faibles impacts esthétiques sur les propriétés avoisinantes en cas d'agrandissement. • Augmentation mineure ou nulle d'odeurs à la station d'épuration. • Circulation modérée de camions pendant la construction.	◕	• Aucun changement dans l'emplacement du site. • Terrains nécessaires susceptibles d'être contrôlés par la Municipalité. • Aucun impact esthétique sur les propriétés avoisinantes • Aucun ajout d'odeur à la station de traitement des eaux usées. • Faible trafic de camions pendant la construction.	◕
Technique	• Approbations requises (MECP, etc.) • Nécessite d'une ÉE de catégorie B. • Solution éprouvée qui satisfera les normes de rejet à la capacité nominale. • Excavation importante requise. • Compatibilité modérée avec l'infrastructure existante. • Aucune compatibilité avec une mise-à-niveau/expansion à long terme.	◑	• Approbations requises (MECP, etc.) • Exempté des futures ÉE. • Solution éprouvée qui satisfera les normes de rejet à la capacité nominale. • Excavation modérée requise. • Compatibilité modérée avec l'infrastructure existante. • Compatibilité élevée avec une mise à niveau/expansion à long terme, les réservoirs pouvant être réaffectés.	◕	• Approbations requises (MECP, etc.) • Exempté des futures ÉE. • Solution moins éprouvée en Ontario pour répondre aux critères d'effluents à la capacité nominale. • Aucune excavation n'est requise. • Compatibilité élevée avec l'infrastructure existante. • Aucune compatibilité avec une mise-à-niveau/expansion à long terme.	◔
Environnement naturel	• Impact modéré sur l'environnement naturel, nécessite des mesures d'atténuation. • Pas d'impact significatif sur le cours d'eau car les normes de rejet seront probablement respectées.	◕	• Impact modéré sur l'environnement naturel, nécessite des mesures d'atténuation. • Pas d'impact significatif sur le cours d'eau car les normes de rejet seront respectées.	◕	• Faible impact sur l'environnement naturel, nécessitant quelques mesures d'atténuation. • Impact significatif probable sur le cours d'eau, car les normes de rejet ne seront probablement pas respectées.	◔
Financier	• Investissement important necessaire. • Tous les coûts sont irrécupérables car il n'y a pas de réutilisation pour une solution long terme. • Augmentation modérée des coûts d'exploitation et d'entretien. • Coût total : 11M$, plus l'acquisition de terrains si nécessaire.	◑	• Investissement important necessaire. • Possibilité de réutiliser les réservoirs, ce qui limite les coûts d'investissement futurs. • Augmentation modérée des coûts de exploitation et d'entretien. • Coût total : 9M$	◕	• Alternative jugée peu susceptible de répondre aux exigences techniques, aucune estimation de coûts a été effectué. • Coût total : N/A	N/A
Résultat global	**Alternative non recommandée**	**X**	**Alternative préférée préliminaire***	**✓**	**Alternative non recommandée**	**X**

Municipalité de RUSSELL Township

** Les étangs de Russell ont une capacité supérieure à ceux d'Embrun et il est recommandé de mettre en œuvre l'optimisation du processus en tant que solution à court terme avant d'investir dans un grand projet d'infrastructure.*

Résultats de l'évaluation des alternatives à long terme pour la station de traitement des eaux usées de Russell

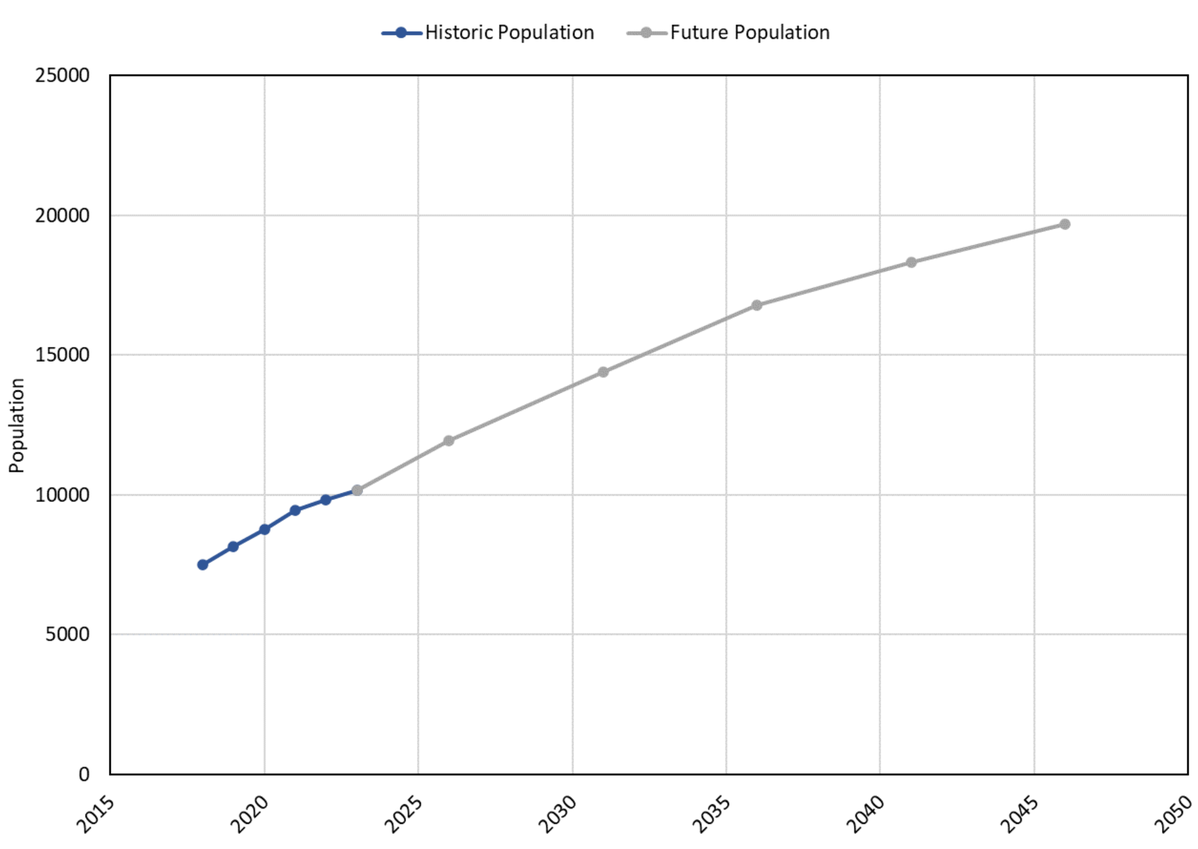
Critères d'évaluation	Alternative 1 : Extension de la technologie de lagunage existante	Évaluation	Alternative 2: Novelle station de traitement des eaux usées mécanique	Évaluation
Social	• Aucun changement dans l'emplacement du site. • Susceptible de limiter la croissance de Russell. • Le terrain nécessaire à l'expansion n'appartient pas à la Municipalité. • Impact esthétique élevé sur les propriétés avoisinantes. • Augmentation modérée d'odeurs à la station d'épuration des eaux usées. • Circulation élevée de camions pendant la construction.	◔	• Aucun changement dans l'emplacement du site. • Ne limitera pas la croissance de Russell. • Le terrain nécessaire à l'expansion appartient à la Municipalité. • Faible impact esthétique sur les propriétés avoisinantes. • Augmentation mineure d'odeurs à la station d'épuration des eaux usées. • Circulation importante de camions pendant la construction.	◕
Technique	• Approbations requises (MECP, etc.). • Ne respectera pas les normes de rejets pour les débits futurs. • Excavation importante requise. • Compatibilité élevée avec l'infrastructure existante. • Possibilité limitée d'expansion future et de séquençage des mises-à-niveau.	○	• Approbations requises (MECP, etc.). • Respectera les normes de rejet pour les débits futurs. • Excavation modérée requise. • Aucune compatibilité avec l'infrastructure existante. • Capacité élevée pour de l'expansion future et pour le séquençage des mises-à-niveau.	◕
Environnement naturel	• Impact élevé sur l'environnement naturel, nécessite des mesures d'atténuation. • Impact significatif sur le cours d'eau, les normes de rejet n'étant pas respectées.	○	• Impact modéré sur l'environnement naturel, nécessite des mesures d'atténuation. • Pas d'impact sur de cours d'eau car les normes de rejet seront respectées.	◕
Financier	• Alternative jugée peu susceptible de répondre aux exigences techniques, aucune estimation de coûts a été effectué. • Coût total : N/A	N/A	• Investissement en capital élevé. • Coûts d'expansion futurs modérés. • Possibilité de réaffectation des réservoirs pour une solution à court terme. • Forte augmentation des coûts d'exploitation et d'entretien. • Coût total : 50M$	◔
Résultat global	**Alternative non recommandée***	**X**	**Alternative préférée préliminaire**	✓

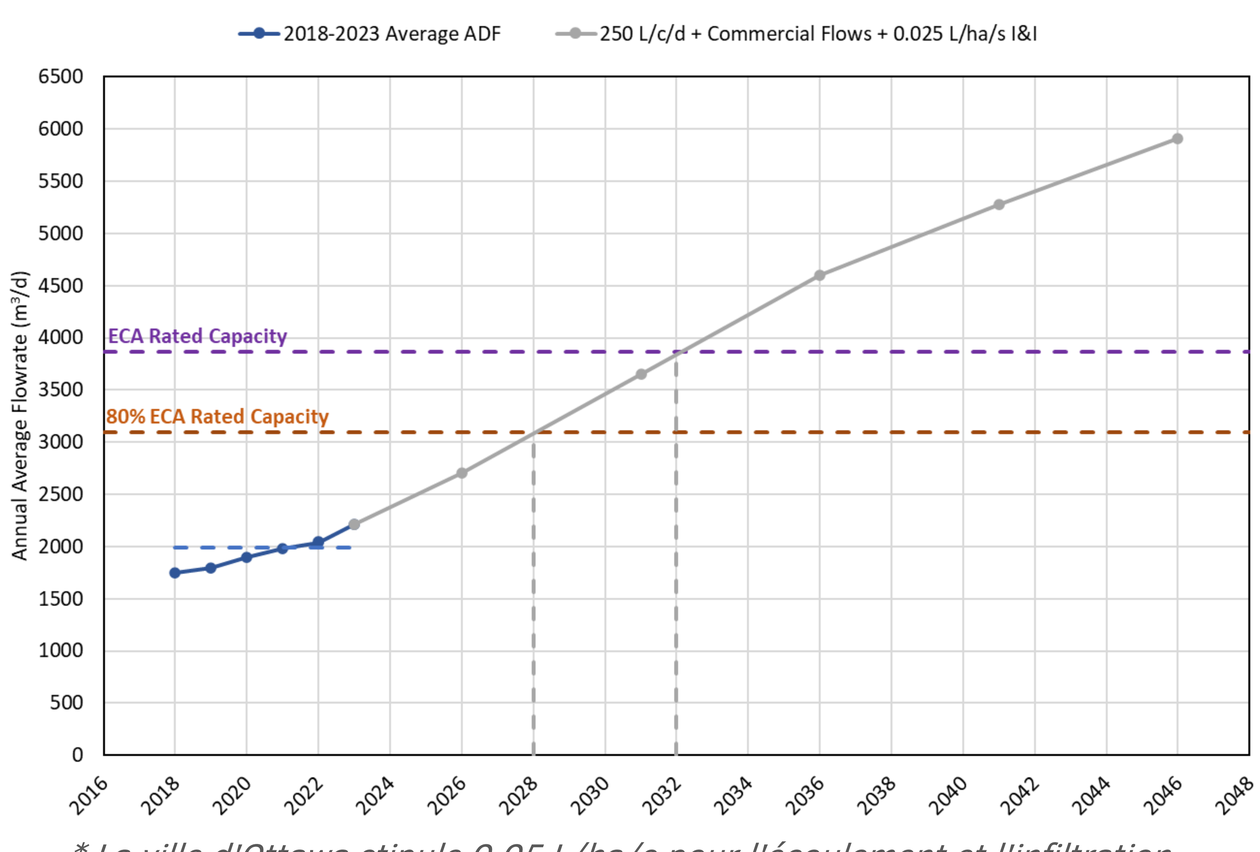
**L'étude ACS indique que des normes de rejet qui dépassent la capacité de la technologie de lagunage sont requises.*

Conditions existant/futures d'Embrun

Paramètres	Existant	Futur (2046)	Ultime*
Population	10 157	19 697	23 902
Débit moyen journalier, m^3/j	1 986	5 907	7 144
Capacité de traitement des eaux usées existante, m^3/j	3 865	3 865 (deficit de 2 042)	3 865 (deficit de 3 279)

**Ultime se réfère au développement de l'ensemble de la zone de peuplement du plan secondaire. Les projections de population à l'ultime ont été calculées basé sur les densités de développement spécifiées dans les plans secondaires et le Plan Officiel.*





** La ville d'Ottawa stipule 0,05 L/ha/s pour l'écoulement et l'infiltration (I&I). Un point médian a été choisi compte tenu de la faiblesse historique de l'infiltration et de l'écoulement à Embrun.*

Municipalité de RUSSELL Township

Résultats de l'évaluation des alternatives à court terme pour la station de traitement des eaux usées d'Embrun

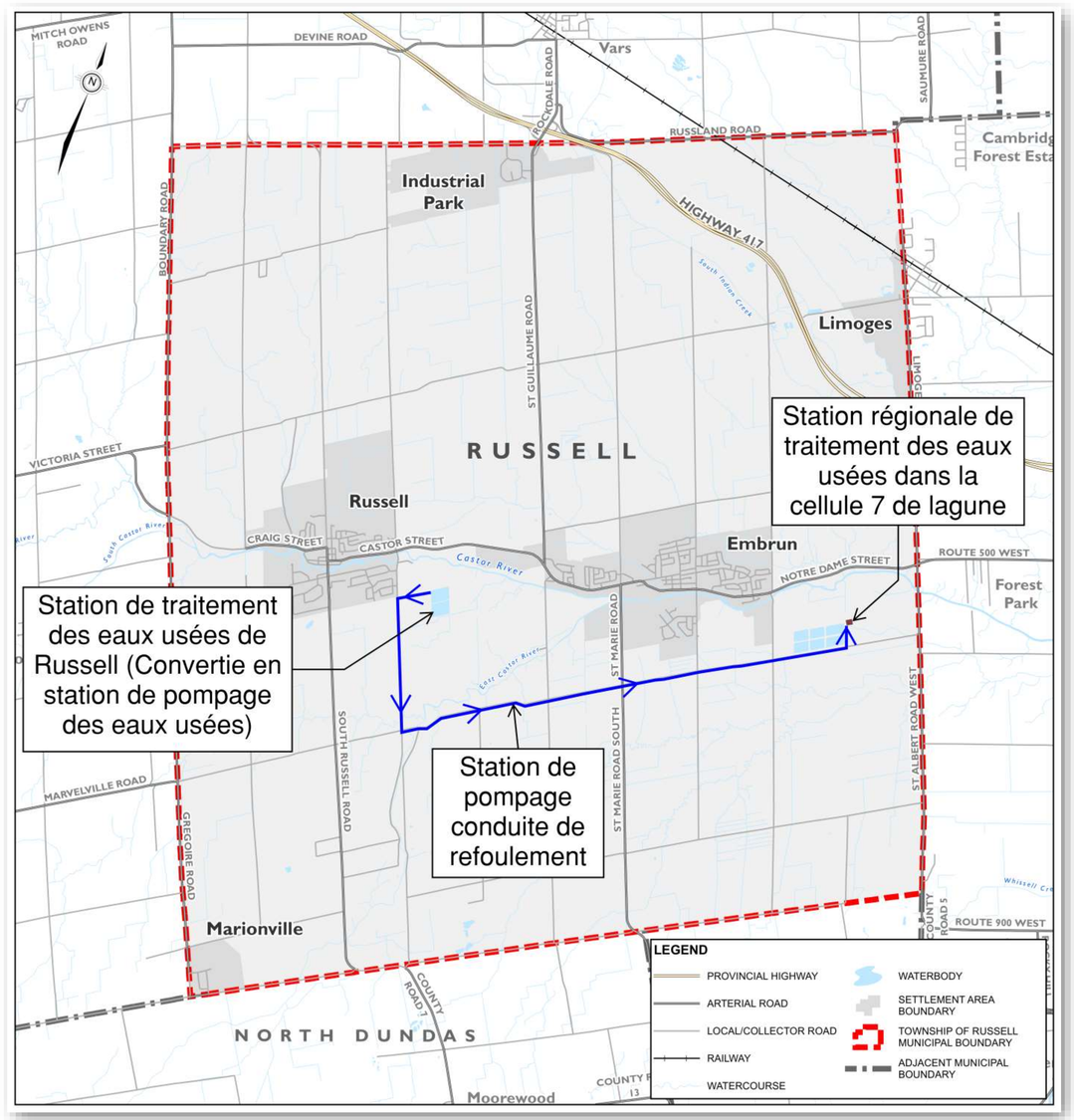
Critères d'évaluation	Alternative 1: SAGR	Eval-uation	Alternative 2: MBBR	Eval-uation	Alternative 3: Médias fixes	Eval-uation
Social	• Aucun changement dans l'emplacement du site. • Acquisition de terrains probablement nécessaire. • Faibles impacts esthétiques sur les propriétés avoisinante en cas d'agrandissement. • Augmentation mineure ou nulles d'odeurs à la station d'épuration. • Circulation modérée de camions pendant la construction.	◑	• Aucun changement dans l'emplacement du site. • Terrain susceptible d'être contrôlé par la Municipalité. • Faibles impacts esthétiques sur les propriétés environnantes en cas d'agrandissement. • Ajout mineure ou nulle d'odeurs à la station de traitement des eaux usées. • Circulation modérée de camions pendant la construction.	◕	• Aucun changement dans l'emplacement du site. • Terrain susceptible d'être contrôlé par la Municipalité. • Aucun impact esthétique sur les propriétés environnantes. • Aucun ajout d'odeur à la station de traitement des eaux usées. • Faible trafic de camions pendant la construction.	◕
Technique	• Approbations requises (MECP, etc.) • Nécessite d'une ÉE de catégorie B. • Solution éprouvée qui satisfera les normes de rejet à la capacité nominale. • Excavation importante requise. • Compatibilité modérée avec l'infrastructure existante. • Aucune compatibilité avec une mise-à-niveau/expansion à long terme.	◑	• Approbations requises (MECP, etc.) • Exempté des futures ÉE. • Solution éprouvée qui satisfera les normes de rejet à la capacité nominale. • Excavation modérée requise. • Compatibilité modérée avec l'infrastructure existante. • Compatibilité élevée avec une mise à niveau/expansion à long terme, les réservoirs pouvant être réaffectés.	◕	• Approbations requises (MECP, etc.) • Exempté des futures ÉE. • Solution moins éprouvée en Ontario pour répondre aux critères d'effluents à la capacité nominale. • Aucune excavation n'est requise. • Compatibilité élevée avec l'infrastructure existante. • Aucune compatibilité avec une mise-à-niveau/expansion à long terme.	◔
Environnement naturel	• Impact modéré sur l'environnement naturel, nécessite des mesures d'atténuation. • Pas d'impact significatif sur le cours d'eau car les normes de rejet seront probablement respectées.	◕	• Impact modéré sur l'environnement naturel, nécessite des mesures d'atténuation. • Pas d'impact significatif sur le cours d'eau car les normes de rejet seront respectées.	◕	• Faible impact sur l'environnement naturel, nécessite quelques mesures d'atténuation. • Impact significatif probable sur le cours d'eau, car les normes de rejet ne seront probablement pas respectées.	◔
Financier	• Investissement important necessaire. • Tous les coûts sont irrécupérables car il n'y a pas de réutilisation pour une solution long terme. • Augmentation modérée des coûts d'exploitation et d'entretien. • Coût total : 14M$, plus l'acquisition de terrains si nécessaire.	◑	• Investissement important necessaire. • Possibilité de réutiliser les réservoirs, ce qui limite les coûts d'investissement futurs. • Augmentation modérée des coûts de exploitation et d'entretien. • Coût total : 10M$	◕	• Alternative jugée peu susceptible de répondre aux exigences techniques, aucune estimation de coûts a été effectué. • Coût total : N/A	N/A
Résultat global	**Alternative non recommandée**	**X**	**Alternative préférée préliminaire**	✓	**Alternative non recommandée**	**X**

Résultats de l'évaluation des alternatives à long terme pour la station de traitement des eaux usées d'Embrun

Critères d'évaluation	Alternative 1 : Extension de la technologie de lagunage existante	Évaluation	Alternative 2: Novelle station de traitement des eaux usées mécanique	Évaluation
Social	• Aucun changement dans l'emplacement du site. • Susceptible de limiter la croissance d'Embrun. • Le terrain nécessaire à l'expansion n'appartient pas à la Municipalité. • Impact esthétique élevé sur les propriétés avoisinantes. • Augmentation modérée d'odeurs à la station d'épuration des eaux usées. • Circulation élevée de camions pendant la construction.	◔	• Aucun changement dans l'emplacement du site. • Ne limitera pas la croissance d'Embrun. • Le terrain nécessaire à l'expansion appartient à la Municipalité. • Faible impact esthétique sur les propriétés avoisinantes. • Augmentation mineure d'odeurs à la station d'épuration des eaux usées. • Circulation importante de camions pendant la construction.	◕
Technique	• Approbations requises (MECP, etc.). • Ne respectera pas les normes de rejets pour les débits futurs. • Excavation importante requise. • Compatibilité élevée avec l'infrastructure existante. • Possibilité limitée d'expansion future et de séquençage des mises-à-niveau.	○	• Approbations requises (MECP, etc.). • Respectera les normes de rejet pour les débits futurs. • Excavation modérée requise. • Aucune compatibilité avec l'infrastructure existante. • Capacité élevée pour de l'expansion future et pour le séquençage des mises-à-niveau.	◕
Environnement naturel	• Impact élevé sur l'environnement naturel, nécessite des mesures d'atténuation. • Impact significatif sur le cours d'eau, les normes de rejet n'étant pas respectées.	○	• Impact modéré sur l'environnement naturel, nécessite des mesures d'atténuation. • Pas d'impact sur de cours d'eau car les normes de rejet seront respectées.	◕
Financier	• Alternative jugée peu susceptible de répondre aux exigences techniques, aucune estimation de coûts a été effectué. • Coût total : N/A	N/A	• Investissement en capital élevé. • Coûts d'expansion futurs modérés. • Possibilité de réaffectation des réservoirs pour une solution à court terme. • Forte augmentation des coûts d'exploitation et d'entretien. • Coût total : 60M$	◔
Résultat global	**Alternative non recommandée***	**X**	**Alternative préférée préliminaire**	✓

**L'étude ACS indique que des normes de rejet qui dépassent la capacité de la technologie de lagunage sont requises.*

Station régionale d’épuration des eaux usées



Tracé préliminaire de la conduite de refoulement de la station de traitement des eaux usées de Russell à une usine régionale d’épuration des eaux usées

- Une station régionale de traitement d’épuration des eaux usées pourrait permettre de réduire les coûts d’exploitation et d'entretien puisqu'une seule station serait exploitée.
- Moins d'investissement en capital que la construction de nouvelles stations d'épuration distinctes pour Russell/Embrun.
- La réaffectation des réservoirs à court terme est probablement possible afin de réduire les coûts.

CONTRAINTE

- Station de pompage nécessaire à Russell, l'usine régionale étant située de préférence à Embrun.
- La technologie de traitement choisie dépendra largement de l'étude en cours sur la capacité d'assimilation de la rivière Castor.

Sélection de l'emplacement de l’usine régionale d’épuration des eaux usées:

1. Station d’épuration des eaux usées à Russell
   - Nécessite le pompage d'un débit plus important à partir d'Embrun.
   - Emplacement non centralisé si Limoges devait envoyer ses eaux usées à traiter.
2. Station d’épuration des eaux usées à Embrun
   - Poste de pompage plus petite pour pomper le débit de Russell à Embrun que l'inverse.
   - Emplacement centralisé si les communautés avoisinantes devaient envoyer leurs eaux usées à traiter.
   - **Emplacement préféré**

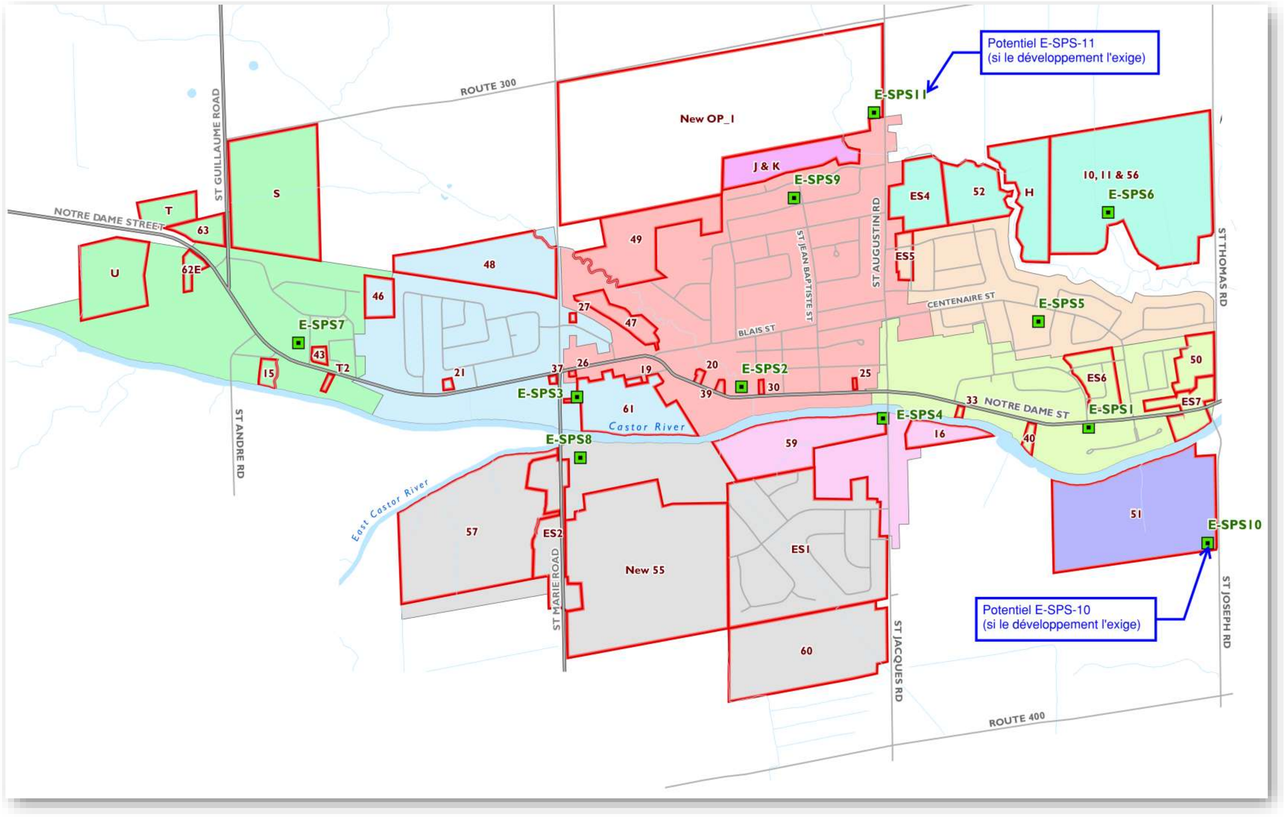
Municipalité de RUSSELL Township

Résultats de l'évaluation des stations de traitement des eaux usées locales ou d'une régionale

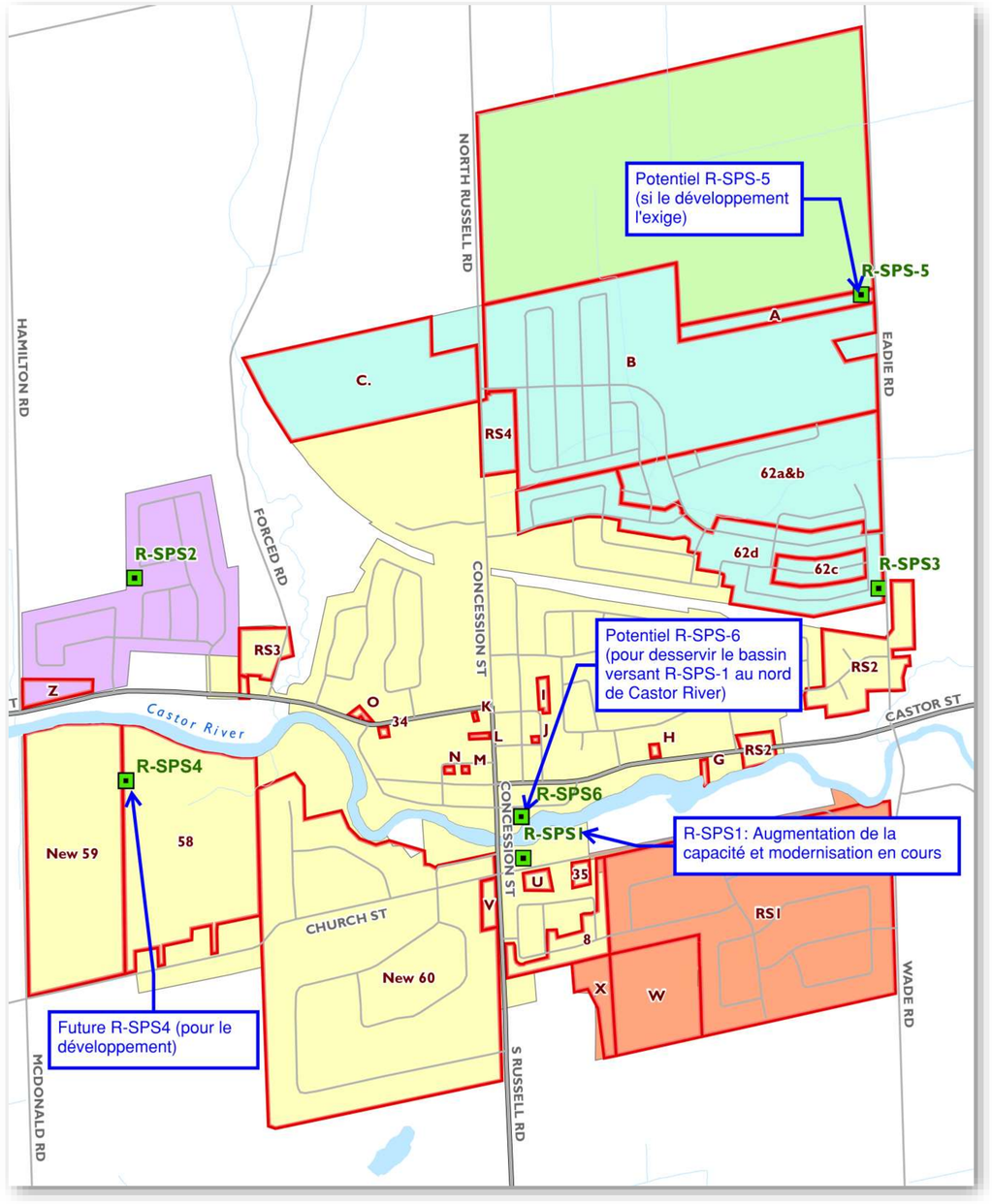
Critères d'évaluation	Alternative 1 : Stations locales (Embrun et Russell) d'épuration des eaux usées	Eval-uation	Alternative 2 : Station régionale d'épuration des eaux usées	Eval-uation
Social	• Aucun changement dans l'emplacement du site. • Ne limitera pas la croissance de Russell et d'Embrun. • L'expansion nécessitera probablement plusieurs acquisitions de terrains. • Impacts esthétiques modérés sur les propriétés avoisinantes des deux endroits. • Augmentation mineure d'odeurs aux deux stations d'épuration. • Circulation importante de camions à Russell et à Embrun pendant la construction.	◔	• Aucun changement dans l'emplacement du site. • Ne limitera pas la croissance de Russell et d'Embrun. • Nécessite probablement une acquisition limitée de terrains pour l'expansion. • Impacts esthétiques modérés sur les propriétés avoisinantes. • Augmentation mineure d'odeurs mineures à la station d'épuration. • Circulation importante de camions localisée pendant la construction.	◕
Technique	• Approbations requises pour les deux stations d'épuration (MECP, etc.). • Respect des normes de rejets pour les débits futurs de Russell et d'Embrun. • Travaux d'excavation importants requis pour Russell et Embrun. • Compatibilité avec l'infrastructure existante après la mise en œuvre des améliorations à court terme. • Capacité élevée pour de l'expansion future et pour le séquençage des mises-à-niveau.	◑	• Approbations requises (MECP, etc.). • Respectera les normes de rejet pour les débits futurs. • Excavation modérée requise. • Une certaine compatibilité avec l'infrastructure existante après la mise en œuvre de l'amélioration à court terme d'Embrun. • Capacité élevée pour de l'expansion future et pour le séquençage des mises-à-niveau.	◕
Environnement naturel	• Impact élevé sur l'environnement naturel pour les deux stations de traitement des eaux usées, nécessite des mesures d'atténuation. • Augmentation des émissions de gaz à effet de serre avec deux (2) stations d'épuration des eaux usées. • Pas d'impact significatif sur le cours d'eau car les normes de rejet seront respectées.	◔	• Impact élevé sur l'environnement naturel localisé, nécessite des mesures d'atténuation. • Réduction des émissions de gaz à effet de serre grâce à une (1) station de traitement des eaux usées. • Pas d'impact significatif sur le cours d'eau car les normes de rejet seront respectées.	◑
Financier	• Investissement en capital élevé. • Coûts d'expansion futurs élevés. • Possibilité de réaffectation des réservoirs pour une solution à court terme. • Coût total : 110M$ • Valeur actualisée nette : 140M$	◔	• Investissement modéré en capital. • Coûts d'expansion futurs modérés. • Possibilité de réaffectation des réservoirs pour une solution à court terme. • Coût total : 95M$ • Valeur actualisée nette : 115M$	◑
Résultat global	**Alternative non recommandée**	**X**	**Alternative préférée préliminaire**	✓

Améliorations au système d’égouts

- La capacité de certains postes de pompage, égouts et conduites de refoulement devra être augmentée pour accommoder les besoins de nouveaux développements. (Financement lié au développement)
- De nouveaux postes de pompages pourraient être construits dans les aires existantes afin de libérer et réaffecter la capacité de pompage de manière plus efficace. (Financement lié au développement)
- De nouveaux postes de pompage au sein des nouveaux développements devront être ajoutés selon les besoins. (Financement lié au développement)



Zones de desserte des postes de pompage – Embrun



Zones de desserte des postes de pompage – Russell

Chronologie des Travaux

Calendrier de l'approvisionnement en eau et du stockage *

- 2024 — Augmentation de capacité de stockage du réservoir d'Embrun
- 2024 — Négocier une augmentation de l'approvisionnement avec la ville d'Ottawa
- 2024 — Optimisation du procédé à l'usine de Russell
- 2025 — Conception du RBGS à l'usine d'Embrun
- 2025 — ÉE catégorie C pour l'usine régionale
- 2026 — Conception de l'usine régionale
- 2027 — L'activation de l'entente de gestion en phosphore - Russell
- 2028 — Construction de l'usine régionale
- 2030 — Conception du poste de pompage de Russell (selon l'optimisation du procédé)
- 2030 — Augmentation de la quantité d'eau fournie par la Ville d'Ottawa
- 2032 — Usine régionale en opération
- 2032 — Construction du poste de pompage de Russell
- 2034 — Poste de pompage de Russell en opération
- 2036 — Capacité atteinte à l'usine de Russell existante
- 2046 — Capacité atteinte à l'usine d'Embrun existante

Calendrier des infrastructures majeures de traitement des eaux usées *

Usine = Usine d'épuration des eaux usées

Municipalité de RUSSELL Township

**Travaux d'aqueducs et d'égouts au fur et à mesure que les futurs debits se réalisent.*

Solutions préférées préliminaires pour l'approvisionnement en eau et le traitement des eaux usées

Résumé des alternatives préférées préliminaires :

Zone de service	Solutions préférées préliminaires
Approvisionnement en eau	Expansion du service existant à partir de la ville d'Ottawa.
Stockage d'eau et pompage d'appoint	Augmentation des capacités du réservoir d'Embrun et de la station de surpression de Russell/Embrun.
La station de traitement des eaux usées de Russell	Solution à court terme : Optimisation du procédé, en cas d'échec: révision de la chronologie de l'usine régionale ou RBGS pour réduire l'azote ammoniacal à l'effluent. Solution à long terme : Conversion en poste de pompage pour acheminer les eaux usées vers la station d'épuration des eaux usées régionale d'Embrun.
La station de traitement des eaux usées d'Embrun	Solution à court terme : RBGS pour réduire l'azote ammoniacal à l'effluent. Solution à long terme : Nouvelle station régionale d'épuration des eaux usées pour desservir Russell et Embrun.

Exigences municipales en matière d'évaluation environnementale

Résumé des exigences en matière d'évaluation environnementale (EE) municipale de portée générale pour chaque projet identifié dans le présent plan directeur.

Aucune autre exigence en matière d'EE

- Expansion du service d'eau existant d'Ottawa
  - En attente de discussions avec la ville d'Ottawa

Schedule C

- Nouvelle station régionale d’épuration des eaux usées

Exempté

- L'amélioration à court terme de la station d’épuration des eaux usées de Russell
- L'amélioration à court terme de la station d’épuration des eaux usées d’Embrun
- Agrandissement du réservoir d'eau d'Embrun
- Augmentation de la capacité de pompage de la station de surpression de Russell et d'Embrun

Quelles sont les prochaines étapes?

Après ce centre d'information publique, l'équipe de projet :

- Complétera l’examen et la prise en compte des commentaires reçues au cours de cette réunion.
- Confirmera les recommandations préliminaires présentées ce soir pour les solutions de desserte en eau potable et en eaux usées de la Municipalité.
- Préparera un rapport sur le plan directeur résumant les conclusions de l'étude.
- Publiera l'avis d'achèvement de l'étude et du rapport sur le plan directeur dans le registre public pour commentaires pendant une période de 30 jours.

Mai 2024

Compilation des commentaires du CIP et confirmation des recommandations

Début du troisième trimestre 2024

Rapport sur le plan directeur

Troisième trimestre 2024

Avis d'achèvement de l'étude et début de la période de consultation de 30 jours

Prochaines étapes & Commentaires

Questions ou commentaires?

Si vous avez des questions concernant cette présentation ou le projet, SVP remplir une feuille de commentaires ce soir ou contacter:

François Landry

Gestionnaire de projets | Project Manager
Infrastructure Services d'infrastructure
Municipalité de RUSSELL Township
717 Notre-Dame St, Embrun ON K0A 1W1
Phone: 613-443-1747
Email: FrancoisLandry@Russell.ca

Bradley Young, Ph.D., P.Eng.

Senior Project Manager
CIMA+
600-1400 Blair Towers Place,
Ottawa, Ontario, K1J 9B8
Phone: 647-614-2462
Email: Bradley.Young@cima.ca

SVP, envoyer vos commentaires et de vos questions avant le 29 mai 2024

C

Appendix C: Assimilative Capacity Study

Engineering for people

Hutchinson

Environmental Sciences Ltd.

Assimilative Capacity Study of the Castor River downstream of the Russell & Embrun Wastewater Treatment Plants

Prepared for: Russell Township
Job #: 230090b

June 21, 2024

Draft Report

93 Kimberley Avenue, Bracebridge, ON P1L 1Z8 | 705-645-0021

Signatures

Report Prepared by:

Joel Harrison, Ph.D.
Aquatic Scientist

Report Reviewed by:

Deborah Sinclair, M.A.Sc.
Senior Aquatic Scientist

Executive Summary

Hutchinson Environmental Sciences Ltd. was retained by Russell Township to complete an Assimilative Capacity Study of the Castor River to inform effluent criteria for expansions of the Russell and Embrun wastewater treatment plants (WWTPs). The Russell and Embrun lagoon systems currently have rated capacities of 2,675 m^3/d and 3,865 m^3/d, respectively; mass-balance modelling was performed to establish effluent limits for future rated capacities of 3,500 m^3/d and 6,000 m^3/d, for the Russell and Embrun plants, respectively (2-WWTP scenario), and for a single mechanical WWTP located at Embrun with a rated capacity of 9,500 m^3/d (combined WWTP scenario).

Mass-balance modelling of total phosphorus (TP), total suspended solids (TSS), total ammonia nitrogen (TAN), nitrate nitrogen (NO_3-N) and 5-day carbonaceous biochemical oxygen demand (cBOD5) was based on Provincial Water Quality Monitoring Network data collected at Russell where 75th-percentile concentrations of pH and TP exceeded Provincial Water Quality Objectives (PWQOs). The Castor River is Policy 2 for TP and, thus, effluent limits were established based on maintaining the magnitude of existing TP loading. 7Q20 low-flow values determined for the Castor River based on the Water Survey of Canada gauge at Russell were prorated based on watershed areas to yield 7Q20 values for the lagoon discharge locations. A desktop review revealed that there are no species at risk in the study area and that the Castor River is classified as warmwater fish habitat with known walleye spawning areas.

For a two-plant scenario with effluent discharge of 3,500 m^3/d at Russell and 6,000 m^3/d at Embrun, effluent concentrations could be as high as TSS = 25.5 mg/L, NO_3-N = 4.5 mg/L, and cBOD5 = 9.7 mg/L without exceeding guidelines downstream of either outfall. For a combined treatment facility (at Embrun) discharging 9,500 m^3/d, effluent concentrations could be as high as TSS = 21.5 mg/L, NO_3-N = 4.5 mg/L, and cBOD5 = 10.85 mg/L without exceeding guidelines downstream. The recommended effluent limit for TSS is 15 mg/L The recommended effluent limits for cBOD5 are 9.7 mg/L (2 WWTPs) and 10.85 mg/L (combined WWTP). No change is recommended to the existing hydrogen sulphide limits (non-detectable). No limit is recommended for NO_3-N at this time.

Based on maintaining existing loading, recommended future TP effluent limits are 0.286 mg/L for Russell and 0.360 for Embrun, or 0.333 mg/L for a combined facility. The Total Phosphorus Management Plan requirement of the current Russell ECA will need to be fulfilled prior to expansion of the WWTP.

Mass-balance modelling for TAN was done on a seasonal basis. An effluent TAN concentration of 3.07 mg/L or less meets the UIA-N PWQO during the winter, based on modelling for two separate WWTPs. During the non-winter period, the maximum effluent TAN concentrations possible without exceeding the UIA-N guideline range from 0.45 mg/L to 1.41 mg/L, depending on the month, based on modelling for two separate WWTPs. Based on modelling for treatment by a combined plant, the maximum effluent TAN concentrations to meet the UIA-N PWQO downstream would be 2.73 mg/L in winter and 0.54–1.09 mg/L in the non-winter months.

Table of Contents

List of Figures

List of Tables

Appendices

1. Introduction

Hutchinson Environmental Sciences Ltd. (HESL) has been retained by Russell Township to complete an Assimilative Capacity Study (ACS) of the Castor River to inform effluent criteria for the Russell and Embrun wastewater treatment plants (WWTPs). Russell Township owns and operates the Russell and Embrun Lagoons. Both lagoons currently discharge seasonally (in spring and fall) to the Castor River. The Township is experiencing significant development pressure and population growth; the purpose of the ACS is to inform future facility expansions. The Township requested this ACS to support future Environmental Compliance Approval (ECA) effluent criteria for the Russell (Table 1) and Embrun (Table 2) WWTPs.

Table 1. Existing effluent criteria for the Russell Sewage Lagoon, as specified by the amended ECA, issued 21 August 2015 (Number 3202-9XMPMQ).

Parameter	Objective	Limit	Metric
cBOD5	20 mg/L	30 mg/L	Seasonal Average
TSS	20 mg/L	30 mg/L	Seasonal Average
TP	0.4 mg/L	0.5 mg/L	Seasonal Average
		(1 kg/d load)	(Annual Avg. for load)
TAN (fall*)	1.0 mg/L	2.0 mg/L	Seasonal Average
TAN (spring*)	5.0 mg/L	10.0 mg/L	Seasonal Average
pH	6.5–8.5 (inclusive)	6.0–9.5 (inclusive)	Single Sample Result
H_2S	–	Non-detectable	Seasonal Average

**Spring discharge to begin after the liquid surface in the lagoon has become substantially free of ice cover and ending no later than April 30. Fall discharge to begin no earlier than October 1 and ending no later than December 15.*

Table 2. Effluent criteria for the Embrun Sewage Lagoon, as specified by the amended ECA, issued 16 December 2022 (Number 5774-CFZNL3).

Parameter	Objective	Limit	Metric
cBOD5	20 mg/L	30 mg/L	Seasonal Average
		23,190 kg (spring)	Seasonal Load
		19,132 kg (fall)	Seasonal Load
TSS	20 mg/L	30 mg/L	Seasonal Average
		23,190 kg (spring)	Seasonal Load
		19,132 kg (fall)	Seasonal Load
TP	0.5 mg/L	0.56 mg/L	Seasonal Average
		433 kg (spring)	Seasonal Load
		357 kg (fall)	Seasonal Load
TAN (fall*)	1.0 mg/L	2.0 mg/L	Seasonal Average
		1,275 kg	Seasonal Load
TAN (spring*)	5.0 mg/L	10.0 mg/L	Seasonal Average
		7,730 kg	Seasonal Load
pH	6.5–8.5 (inclusive)	6.0–9.5 (inclusive)	Single Sample Result
H_2S	0.1 mg/L (in spring)	Non-detectable	Seasonal Average

**Spring discharge not exceeding 773,000 m^3 between March 15 and April 30. Fall discharge not exceeding 637,725 m^3 between October 1 and December 15.*

2. Background

2.1 Study Area

The study area is located in eastern Ontario, approximately 35 km southeast of Ottawa (Figure 1). The bedrock geology in the area is calcareous, characterized by the Ontario Geological Survey[1] as consisting of limestone, dolostone, shale, arkose, sandstone, and siltstone. The Russell WWTP discharges to the Castor River approximately 1.5 km downstream (east) of Wade Road where there is a Provincial Water Quality Monitoring Network (PWQMN) monitoring site and Water Survey of Canada (WSC) flow gauge (Figure 2). The Embrun WWTP discharges to the Castor River approximately 1.5 km downstream of the eastern boundary of the municipality's developed area (i.e., east of the St. Joseph Road bridge; Figure 3). The nearby Village of Limoges WWTP also discharges into the Castor River, approximately 4 km downstream of the Embrun discharge location (Figure 1).

Watershed land-cover upstream of the study area is predominantly agricultural (61% "Agricultural and Undifferentiated Rural Land Use") and wetland (17% "Swamp") according to provincial mapping accessed via the Ministry of Natural Resources and Forestry (MNRF)'s Ontario Watershed Information Tool (OWIT); urban development (8% "Community/Infrastructure"), forest (5% Deciduous Treed, 3% Mixed Treed, 1% Coniferous Treed), and other types cover the remaining 22% of the watershed upstream of the lagoons (MNRF 2023).

2.1 Wastewater Characterization

2.1.1 Russell Lagoon

The Russell Sewage Lagoon is a 5-cell system that discharges seasonally to the Castor River (Figure 2). The rated capacity of the Russell facility is 2,675 m^3/d with a maximum operating capacity of 2,000 m^3/d subject to a Total Phosphorus Management Agreement with South Nation Conservation Authority. As per the ECA, the spring discharge period is "after the liquid surface in the lagoon has become substantially free of ice cover" to April 30.

The fall discharge period is October 1 to December 15. Average effluent concentrations of 5-day carbonaceous biochemical oxygen demand (cBOD5), hydrogen sulfide (H_2S), total phosphorus (TP), and total suspended solids (TSS) were below ECA limits for both fall and spring discharges between 2018 and 2022 (Table 3; Table 4). The average total ammonia nitrogen (TAN) concentrations during the spring discharge period were below the ECA limit of 10 mg/L during 2018–2022 (Table 3) but the TAN concentration was 2.65 mg/L during the fall discharge period in 2020, exceeding the ECA limit of 2 mg/L; otherwise, the seasonal average TAN concentration was in the range of 0.5–0.9 mg/L during fall discharges

[1] *https://www.hub.geologyontario.mines.gov.on.ca/*

(Table 4). The total spring discharge volume ranged from 158,169 to 397,009 m^3 and the total fall discharge volume ranged from 108,045 to 185,544 m^3 (Table 5).

Table 3. Russell lagoon average effluent chemistry and pH ranges during spring discharges.

Year	cBOD5	H_2S	NO_3-N	pH (min)	pH (max)	TAN	TP	TSS
2018	2.95	0.0	1.99	6.68	7.44	5.28	0.13	9.10
2019	7.65	0.0	3.89	6.59	6.84	5.71	0.13	4.15
2020	2.94	0.0	2.20	7.23	9.26	9.05	0.05	4.92
2021	2.84	0.0	2.73	7.51	7.90	7.17	0.05	3.45
2022	3.05	0.0	5.27	6.80	7.55	6.72	0.06	3.21
Limit:	30.00	<MDL	–	6.00	9.50	10.00	0.50	30.00

** concentrations are in mg/L except for pH.*

Table 4. Russell lagoon average effluent chemistry and pH ranges during fall discharges.

Year	cBOD5	H_2S	NO_3-N	pH (min)	pH (max)	TAN	TP	TSS
2018	1.86	0.0	2.01	6.08	7.51	0.89	0.08	8.14
2019	5.33	0.0	1.16	7.93	8.60	0.60	0.25	3.67
2020	2.50	0.0	1.11	6.30	7.91	2.65	0.05	8.00
2021	2.50	0.0	0.82	6.52	8.26	0.64	0.07	4.50
2022	2.63	0.0	0.51	7.13	7.92	0.54	0.13	2.22
Limit:	30.00	<MDL	–	6.00	9.50	2.00	0.50	30.00

** concentrations are in mg/L except for pH.*

Table 5. Russell lagoons seasonal discharge volumes (m^3).

Season	ECA Period	ECA Max.	2022	2021	2020	2019	2018
Spring	thaw* to Apr 30	–	239,120	158,169	397,009	237,962	309,681
Fall	Oct 1 – Dec 15	–	185,050	164,429	108,045	140,768	185,544

** "after the liquid surface in the lagoon has become substantially free of ice cover".*

2.1.2 Embrun Lagoon

The Embrun Sewage Lagoon is an 8-cell system that discharges seasonally to the Castor River (Figure 3). The rated capacity of the Embrun facility is 3,865 m^3/d. For the spring discharge period the total permitted discharge volume is 773,00 m^3. As per the amended (2022) ECA, spring discharge begins after March 15, when the "liquid surface in the polishing cell from which the discharge is to take place has become partially free of ice cover", and ends no later than April 30. For the fall discharge period (October 1 – December 15) the total permitted discharge volume is 637,725 m^3.

Average effluent concentrations of cBOD5, H_2S, TP, and TSS were below ECA limits for both fall and spring discharges between 2018 and 2022 (Table 3Table 6; Table 7). The average TAN concentrations during the spring discharge period were above the ECA limit of 10 mg/L in 2021 and 2022 (Table 6) and the average TAN concentrations during the fall discharge period were above the limit of 2 mg/L in 2020, 2021, and 2022 (Table 7).

The total spring discharge volume ranged from 300,309 to 623,931 m^3 (vs. ECA maximum of 773,000 m^3) and the total fall discharge volume ranged from 212,501 to 412,247 m^3 (vs. ECA maximum of 637,725; Table 8).

Table 6. Embrun lagoon average effluent chemistry and pH ranges during spring discharges.

Year	cBOD5	H_2S	NO_3-N	pH (min)	pH (max)	TAN	TP	TSS
2018	5.67	0.0	0.89	8.00	9.19	9.06	0.22	12.70
2019	14.15	0.0	0.43	7.29	8.89	9.33	0.30	9.92
2020	3.28	0.0	2.90	6.40	7.94	7.45	0.07	10.44
2021	6.17	0.0	0.29	7.17	7.76	19.99	0.22	14.33
2022	3.57	0.0	1.74	6.60	8.43	12.04	0.11	3.07
Limit	30.00	0.1	–	6.00	9.50	10.00	0.56	30.00

** concentrations are in mg/L except for pH.*

Table 7. Embrun lagoon average effluent chemistry and pH ranges during fall discharges.

Year	cBOD5	H_2S	NO_3-N	pH (min)	pH (max)	TAN	TP	TSS
2018	2.11	0.0	0.64	6.97	8.37	0.27	0.39	5.44
2019	3.50	0.0	1.19	7.29	8.09	1.04	0.10	17.67
2020	7.42	0.0	0.45	6.42	6.73	3.81	0.14	18.88
2021	1.96	0.0	0.81	6.38	7.27	4.80	0.11	4.30
2022	2.50	0.0	1.00	6.41	7.88	4.40	0.38	5.66
Limit	30.00	–	–	6.00	9.50	2.00	0.56	30.00

** concentrations are in mg/L except for pH.*

Table 8. Embrun lagoons seasonal discharge volumes (m^3).

Season	ECA Period	ECA Max.	2022	2021	2020	2019	2018
Spring	Mar 15 – Apr 30	773,000	539,111	300,309	623,921	578,599	498,581
Fall	Oct 1 – Dec 15	637,725	287,398	412,247	310,896	264,538	212,501

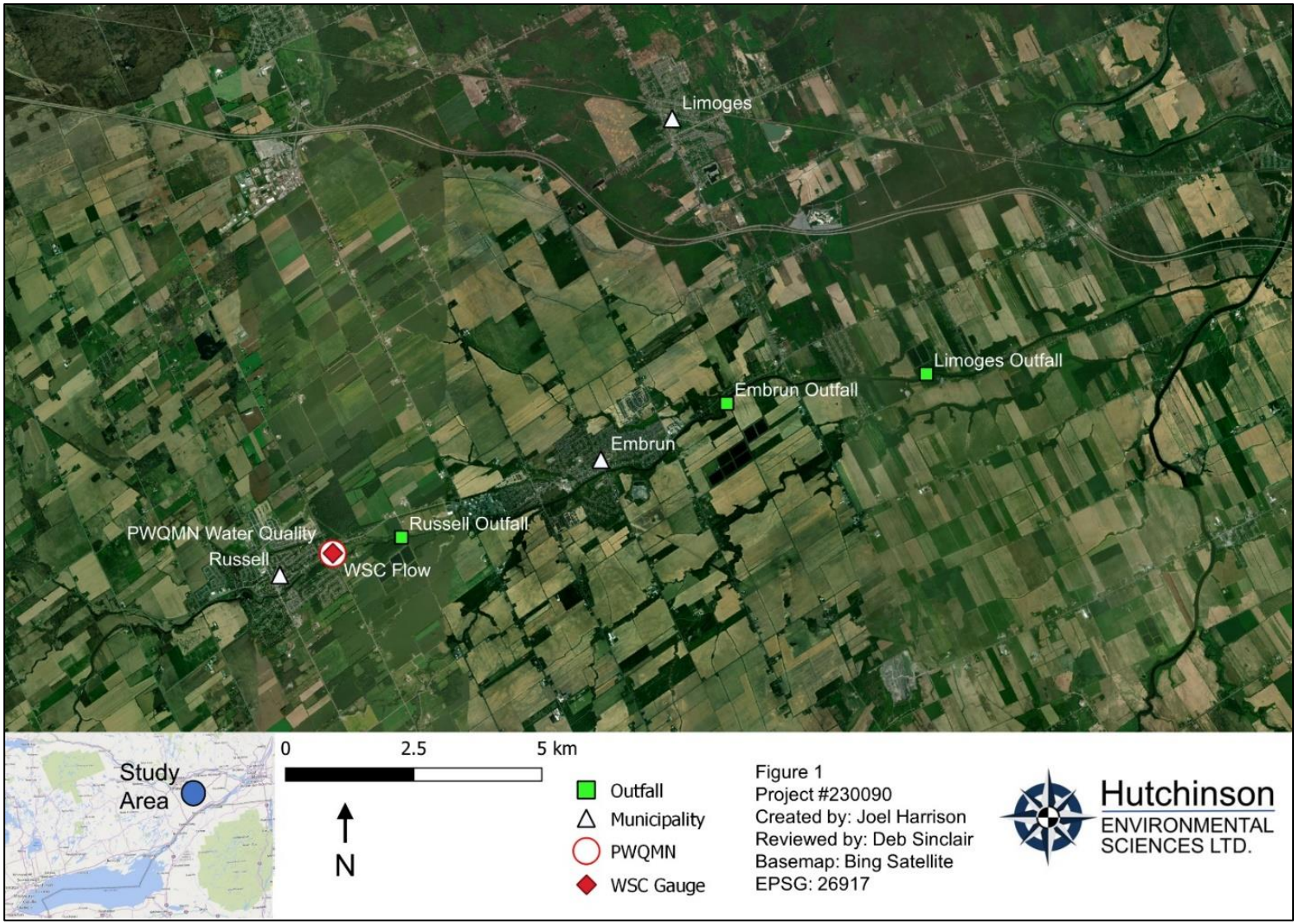


Figure 1. Sites of interest within the study area.

Figure 2. Russell wastewater lagoon, outfall location, and monitoring sites.

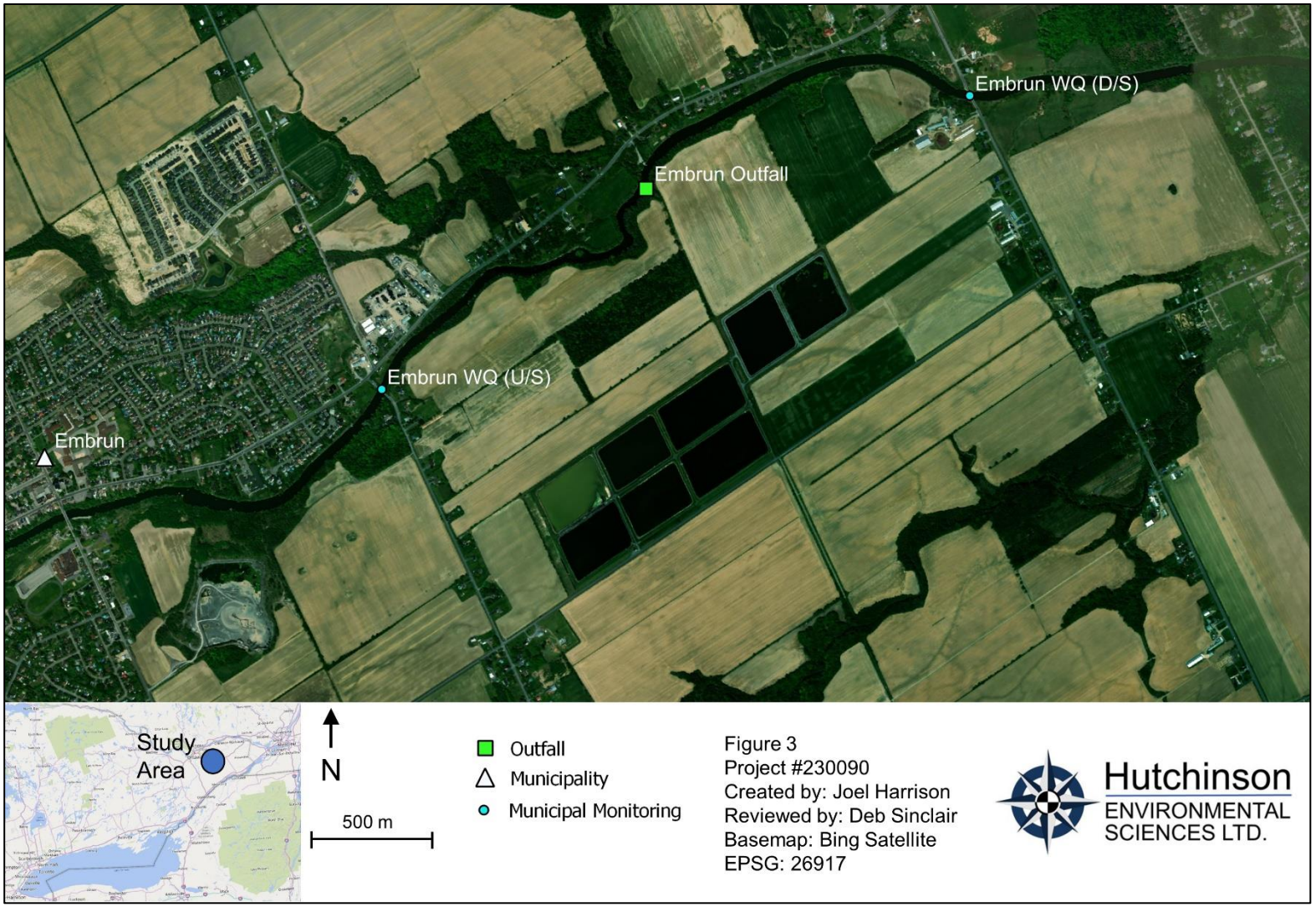


Figure 3. Embrun wastewater lagoon, outfall location, and monitoring sites..

2.2 Receiver Characterization

2.2.1 Castor River Flow

The flow of the Castor River is monitored by the Water Survey of Canada (WSC) in Russell, at Wade Rd., at gauge 02LB006 (45.2625°, -75.3436°). Daily discharge data for the period 1991–2021 were used for this study. The average flow during this period was 5.7 m^3/s. As is typical of rivers in central and eastern Ontario, peak flow of the Castor River occurs in April, due to snowmelt (i.e., “spring freshet”), with low flows occurring in late summer and early fall (Figure 4).

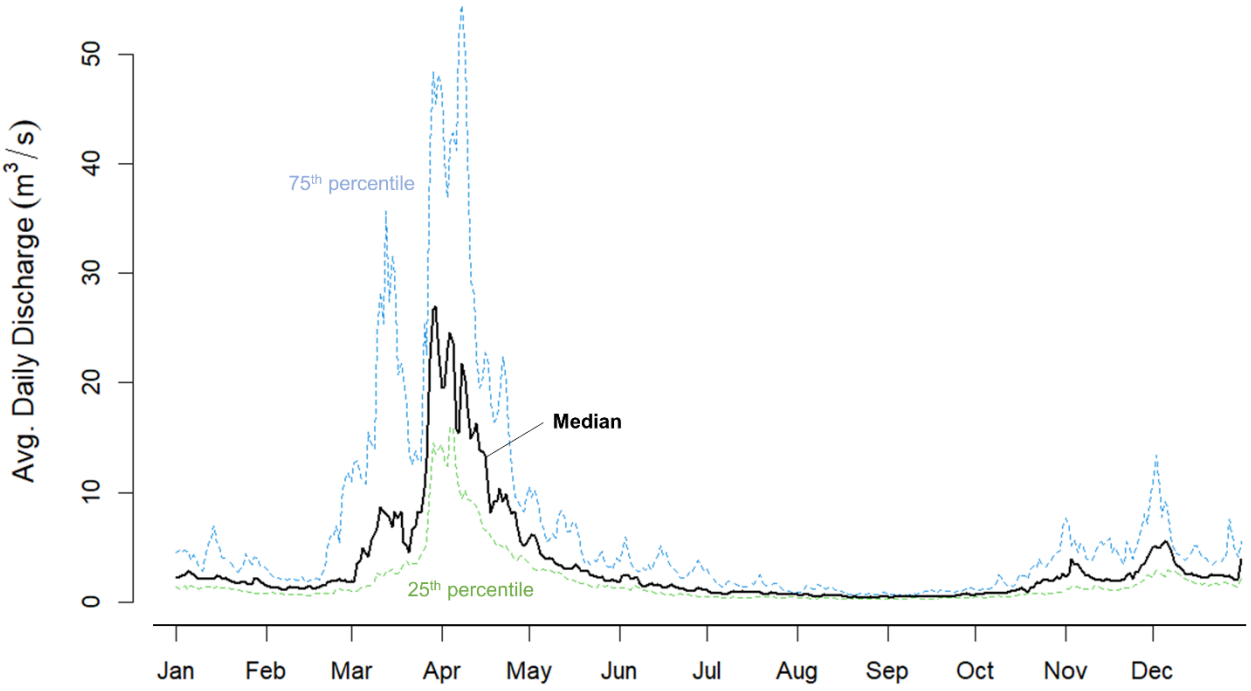


Figure 4. Seasonal hydrograph (1991–2021) of the Castor River at Russell (WSC-02LB006).

The 7Q20 hydrological design flow was estimated using frequency analysis for entire years, consistent with plans for a change from the current seasonal discharge schedule to a continuous discharge in the future. Seven-day-rolling-average flows were calculated for the Castor River based on daily discharge data from WSC station 02LB006 (‘Castor River at Russell’) for the period 1991–2021. Various theoretical data distributions were fit to the annual minima of the 7-day rolling averages using the statistical computing language R (R Core Team 2022). The 7Q20 was calculated as the 5th percentile of the fitted distribution. For each fit of a distribution to the measured data the root mean squared error (RMSE) error was calculated. The distribution with the lowest RMSE was used to estimate the 7Q20 for the WSC gauge. In addition, the Nash-Sutcliffe Efficiency (NSE), a measure of the fraction of explained variation (comparable to the R^2 value reported for regression models), is presented. The 7Q20 values determined for the WSC gauge were prorated based on watershed areas to yield 7Q20 values for the lagoon discharge locations (Table 9).

Based on minimization of RMSE, the 7Q20 values of 0.096 m^3/s for Russell and 0.153 m^3/s for Embrun, based on fitting the Generalized Extreme Value distribution, were used for this study; these values were then reduced by 10% to account for potential climate-change effects, yielding adjusted 7Q20 flows of 0.086 m^3/s and 0.138 m^3/s for Russell and Embrun, respectively.

Table 9. Estimates of the 7Q20 design flow statistic.

Distribution	Goodness of Fit		7Q20 (m^3/s)	
	RMSE	NSE	Russell	Embrun
Generalized Extreme Value	0.039	0.933	0.096	0.153
Log-Pearson Type 3	0.041	0.925	0.098	0.156
Gamma	0.041	0.924	0.093	0.148
Weibull	0.042	0.922	0.070	0.111
Gumbel	0.044	0.912	0.094	0.149
Lognormal	0.093	0.614	0.102	0.162
Inverse-Gamma	0.299	-2.996	0.106	0.168
(5^{th} Percentile)	–	–	0.096	0.152

Note: The drainage areas upstream of the WSC gauge (438 ha), the Russell outfall (439 ha), and the Embrun outfall (696 ha) were calculated using OWIT.

The 7Q20 flow was also modelled for winter (November–April) and on a monthly basis for the non-winter period, to align with periods for deriving seasonal and monthly TAN limits (Table 10). 7Q20 values of 0.252 m^3/s for Russell and 0.400 m^3/s for Embrun, based on fitting the Log-Pearson Type 3 distribution, were adjusted for climate change, resulting in 7Q20 flows of 0.227 m^3/s and 0.360 m^3/s for Russell and Embrun, respectively, for the winter period. Climate-change adjusted monthly 7Q20 flows for the non-winter period ranged from 0.077 to 0.551 m^3/s at Russell and from 0.122–0.873 m^3/s at Embrun. The complete set of 7Q20 estimations for the TAN modelling (i.e., from fitting of the various distributions to winter and month-specific data) with associated error metrics are included as Appendix A.

Table 10. Seasonal estimates of the 7Q20 design flow statistic used for TAN modelling.

		7Q20 (m^3/s)	Pro-rated 7Q20 (incl. climate-change adjustment)	
Period	Distribution	WSC Gauge	Russell	Embrun
May	Log-Pearson Type 3	0.611	0.551	0.873
Jun	Lognormal	0.254	0.229	0.206
Jul	Lognormal	0.132	0.119	0.189
Aug	Gamma	0.085	0.077	0.122
Sep	Log-Pearson Type 3	0.112	0.101	0.160
Oct	Gumbel	0.136	0.123	0.195
Nov–Apr	Log-Pearson Type 3	0.252	0.227	0.360

2.2.2 Castor River Water Quality

The water quality of the Castor River is monitored through the PWQMN program at station #18207014502 ("Castor River – Wade Rd, Upstrm Russell Lagoon,Discharge"; 45.2624°, -75.3436°); the station is located approximately 1.5 km upstream of the Russell outfall and 8.6 km upstream of the Embrun outfall (Figure 1).

Water quality data from the PWQMN station was assessed against applicable Provincial Water Quality Objectives (PWQOs) to determine the policy status of the river to receive treated effluent in accordance with MECP policies and guidelines (MOE 1994):

- Policy 1 - In areas which have water quality better than the PWQO, water quality shall be maintained at or above the objectives;

- Policy 2 - Water quality which presently does not meet the PWQO shall not be degraded further, and all practical measures shall be taken to upgrade the water quality to the objectives.

Comparisons were made against the Canadian Water Quality Guidelines for the Protection of Aquatic Life (CWQG) for nitrate (NO_3-N; CCME 2012), nitrite (NO_2-N, CCREM 1987) and total suspended solids (TSS; CCME 2002) because PWQOs are not available for these parameters.

Based on PWQMN data, ambient concentrations of TP and TSS are relatively high, with the median TP concentration of 0.043 mg/L above than the PWQO of 0.030 mg/L. The 75th-percentile TP concentration (0.062 mg/L) is above the PWQO. The pH of the Castor River at this location is alkaline, with the 75th percentile (8.66) above the upper pH objective of 8.5. The 75th-percentile concentrations of *E. coli*, NO_2-N, NO_3-N, and unionized ammonia nitrogen (UIA-N) were all below PWQO/CWQG values. The Castor River at the PWQMN station is therefore Policy 2 for TP and pH, and Policy 1 for all other parameters. It is MECP policy that *water quality which presently does not meet the PWQO shall not be degraded further, and all practical measures shall be taken to upgrade the water quality to the objectives* (MOE 1994a).

A second source of water quality for the study area is municipal monitoring. The Township of Russell conducts water quality monitoring of the Castor River upstream and downstream of the lagoon outfalls (Table 12).

Based on the Township of Russell's monitoring (Table 13), there is little evidence of wastewater impacts on the Castor River downstream of the Russell lagoon. As median concentrations, cBOD5, conductivity, TKN, TP, and TSS were actually lower downstream than upstream of the lagoon discharge. The differences in other monitored parameters were minor.

Similarly, the differences up- and downstream of the Embrun lagoon outfall (Table 13) were relatively minor, except in the case of ammonia: TAN was appreciably enriched downstream; however, UIA exceeded PWQO only twice downstream (vs. no upstream guideline exceedances).

Table 11. Summary of Castor River water quality at PWQMN station (#18207014502).

	Guideline Value	Guideline Type	Median	75th%ile	Units	# Data	# Years	Period
cBOD5	–	–	1.1	1.5	mg/L	29	5	2000–2004
E. coli	100	PWQO	46	87	MPN/100mL	14	2	2000–2001
NO_2-N	0.06	CWQG	0.01	0.02	mg/L	117	19	2000–2021
NO_3-N	3.0	CWQG	0.61	1.73	mg/L	117	19	2000–2021
TAN	–	–	0.024	0.037	mg/L	117	19	2000–2021
TAN (Nov–Apr)		–	0.030	0.036	mg/L	28	18	2000–2021
TAN (May)		–	0.021	0.056	mg/L	14	13	2000–2021
TAN (Jun)		–	0.032	0.042	mg/L	16	15	2000–2021
TAN (Jul)		–	0.029	0.047	mg/L	17	16	2000–2021
TAN (Aug)		–	0.023	0.029	mg/L	15	13	2000–2021
TAN (Sep)		–	0.011	0.012	mg/L	13	13	2000–2021
TAN (Oct)		–	0.019	0.040	mg/L	14	13	2000–2021
UIA-N	0.0164	PWQO	0.001	0.003	mg/L	90	16	2003–2021
pH*	6.5–8.5	PWQO	8.38	8.66	–	86	15	2003–2021
TP	0.030	PWQO	0.042	0.062	µg/L	118	19	2000–2021
TSS	Bkg.+5	CWQG	5.9	10.3	mg/L	113	19	2000–2021

**Min. pH = 7.47; 25th-percentile pH = 8.12.*

Table 12. Locations of municipal water quality monitoring stations around the lagoons.

Lagoon	Location	Proximity to Outfall	Latitude	Longitude
Russell	Wade Rd. bridge	1.53-km upstream	45.2625	-75.3437
	St. Andre bridge	1.42-km downstream	45.2657	-75.3084
Embrun	St. Joseph bridge	1.51-km upstream	45.2772	-75.2579
	City Rd #5 bridge	1.55-km downstream	45.2863	-75.2264

Table 13. Summary of Castor River water quality up- and downstream of lagoon outfalls based on monitoring by Russell Township (2018–2022).

Parameter (units)	Site	Russell median	# data (exceeded)	Embrun median	# data (exceeded)
cBOD5	Up	3.0	27	1.0	32
(mg/L)	Down	2.0	27	1.0	32
Conductivity	Up	848	27	830	32
(µS/cm)	Down	833	27	825	32
DO	Up	12.1	24 (0)	10.8	28 (0)
(mg/L)	Down	12.1	24 (0)	11.3	28 (0)
Dissolved Reactive	Up	0.013	27	0.013	32
Phosphorus (mg/L)	Down	0.013	27	0.018	32
NO_2-N	Up	0.10	26 (25)*	0.10	31 (31)*
(mg-N/L)	Down	0.10	26 (26)*	0.10	31 (31)*

NO_3-N	Up	1.59	27 (0)	2.88	32 (12)
(mg-N/L)	Down	1.85	27 (4)	2.93	32 (14)
pH	Up	7.80	24 (0)	7.32	28 (0)
(pH units)	Down	7.91	24 (0)	7.43	28 (0)
TAN	Up	0.05	27	0.06	32
(mg-N/L)	Down	0.09	27	0.26	32
Temperature	Up	6.7	24	3.6	28
(°C)	Down	6.7	24	3.1	28
Total Kjeldahl Nitrogen	Up	0.88	27	0.91	32
(TKN; mg-N/L)	Down	0.87	27	1.07	32
TP	Up	0.033	27 (14)	0.040	32 (24)
(mg/L)	Down	0.023	27 (11)	0.041	32 (24)
TSS	Up	9.0	27 (9)	11.0	32 (6)
(mg/L)	Down	8.0	27 (9)	10.0	32 (6)
UIA	Up	0.000	24 (0)	0.000	27 (0)
(mg-N/L)	Down	0.001	24 (0)	0.001	27 (2)

** Apparent method detection limit for nitrite (0.1 mg-N/L) is higher than guideline (0.06 mg-N/L).*

3. Species At Risk

A background information request for Species at Risk (SAR) in the vicinity of the study area was submitted to South Nation Conservation, the MNRF, and MECP. A desktop review for SAR was also completed and included a search of the Natural Heritage Information Centre, Land Information Ontario database, and the Aquatic SAR Mapping provided by DFO.

The Castor River is classified as warmwater fish habitat and there are known Walleye (*Sander vitreus*) spawning areas in the Castor River. The fish community consists of sunfish, minnows, and sportfish commonly found in Ontario. MNRF did not identify any SAR (email correspondence with D. Ferland, Management Biologist, March 15, 2024).

The Aquatic SAR Mapping and Land Information Ontario database did not identify any aquatic SAR within the vicinity of the study area; however, the Natural Heritage Information Centre database identified Great Redhorse (*Moxostoma valenciennesi*), a vulnerable species in Ontario due to its restricted range and few populations, as present within the study area.

4. Mass-balance Modelling

4.1 Mass-balance Methodology

4.1.1 Mass-balance Model

Mass-balance models are typically used to define WWTP effluent limits. This type of model does not assume any mixing zone—it is based on the fully-mixed waterbody concentrations and treats all parameters as conservative parameters that do not undergo any assimilation processes after discharge. While

simplistic, this type of model is used to predict “worst-case” or maximum concentrations in the receiver for comparison against the relevant water quality objectives.

The water quality of the Castor River downstream of each lagoon is a function of the upstream discharges and concentrations, as per the mass-balance equation:

$$C = \frac{Q_e \times C_e + Q_s \times C_s}{Q_e + Q_s}$$

where:

C is the concentration of the parameter of interest downstream of the lagoon discharge,
Q_e is the flow of effluent,
C_e is the concentration of the parameter of interest in the effluent,
Q_s is the flow of the Castor River, and
C_s is the concentration of the parameter of interest in the Castor River, upstream of the lagoon discharge.

In order to predict effluent concentrations corresponding with instream guideline concentrations, the equation above is rearranged to predict C_e:

$$C_e = \frac{C \times (Q_e + Q_s) - Q_s \times C_s}{Q_e}$$

Parameters modelled include those regulated by the existing ECAs: TP, TSS, and TAN. Although pH and H_2S are also regulated by the ECAs, these parameters were not modeled to determine effluent limits because pH is more influenced by alkalinity reactions than by dilution and the H_2S limits are below the method detection limit. Hydrogen ion concentration and water temperature were modelled to allow calculation of the TAN concentration corresponding to the UIA-N guideline downstream of the lagoon discharge (i.e., what fraction of the TAN would be present as UIA-N). NO_3-N and cBOD5 were also modeled to assess the effect of nitrification (biological conversion of ammonia to nitrate) and effluent cBOD5 concentrations on downstream water quality.

Two scenarios were modelled, both assuming continuous effluent discharge. One scenario assumed separate WWTPs at Russell and Embrun and the other a single, combined plant at Embrun. For the two-plant scenario, modelling the maximum effluent concentrations possible without exceeding PWQO downstream of Russell would entail very stringent limits at Embrun (i.e., the Russell discharge would exhaust most of the total available assimilative capacity); therefore, the same effluent concentrations were modelled for both WWTPs, and varied to establish limits (i.e., maximal effluent concentrations possible without exceeding downstream PWQOs at either location).

4.1.2 Mass-balance Inputs

The water quality input data (C_s) for upstream of the Russell outfall comprised the 75th-percentile values from the PWQMN monitoring at Wade Rd. (Figure 2; Table 11). The effluent flows (Q_e) modelled were 3,500 m^3/d for the Russell WWTP and 6,000 m^3/d for the Embrun WWTP. A combined WWTP scenario of 9,500 m^3/d was also modelled. Castor River flows were based on 7Q20 flows (Table 9; Table 10), adjusted for climate change (see below). The Castor River flow downstream of the Russell outfall was calculated as the sum of the upstream flow (Q_s) and the effluent flow (Q_e).

The mass-balance modelling (for the separate WWTPs scenario) was performed in series: the input values for upstream of Embrun were the modelled (output) values for downstream of Russell, after correcting for the influence of the East Castor River which joins the Castor River upstream of Embrun. The flow of the East Castor River was calculated as the difference between the flow of the Castor River downstream of the Russell outfall and the flow upstream of the Embrun outfall. The chemical concentrations in the East Castor River were assumed to be equivalent to those of the Castor River upstream of Russell (i.e., based on PWQMN data) as no water quality data were available for the East Castor River and the catchment characteristics of the two watercourses are similar (Michelle Cavanagh, South Nation Conservation, Personal Communication).

For all parameters except for ammonia, the assessment was performed based on one set of input values for each location, to determine effluent limits for a future continuous discharge scenario. TAN and UIA-N were modelled for the winter (November–April) and non-winter (May–October, monthly) periods due to the relationship between water temperature and the fraction of TAN that is present as UIA-N. The winter period was chosen to align with the current winter period for TAN for the downstream Limoges WWTP. Effluent temperatures were assumed to equal the seasonal 75th percentile temperatures of the Castor River for the two-lagoon scenario. For the combined (mechanical) WWTP scenario, effluent temperatures of 21.50°C and 14.47°C were used for the non-winter and winter periods, respectively, based on data from previous ACS projects completed by HESL (Table 14).

For TAN modelling, the 75th percentile effluent pH values from municipal WWTP monitoring (2018–2022) were used as the input effluent pH values (7.77 and 7.89 for Russell and Embrun, respectively); the weighted-average of the two values (pH = 7.845; weighting based on the rated capacities) was used for the combined-WWTP scenario. Given that the measured pH of the lagoons may overestimate the pH of effluent from a mechanical treatment plant (e.g., due to algal photosynthesis in lagoons), additional modelling was performed in order to present TAN limits across a range of effluent pH values. As with the Castor River concentration data, 75th percentile values from the PWQMN dataset were used for ambient pH and temperatures for the May–Oct (monthly) and Nov–Apr (combined) periods (data in Section 4.2.3).

For TSS, the CWQG is 5 mg/L above the background concentration. For Russell, the background TSS concentration was calculated as the 75th percentile concentration at the PWQMN station. For Embrun, the background TSS concentration was calculated as the modelled TSS concentration upstream of the Embrun outfall (i.e., based on the mass-balance model).

For dissolved oxygen (DO), the PWQO is dependent on water temperature and whether protection is to be afforded to cold-water or warm-water biota. For this assessment, a DO concentration of 4 mg/L was used as the PWQO; this concentration is protective of warm-water biota (see Section 3) at temperatures of 20°C and above (MOE 1994a). For the modelling, it was conservatively assumed that oxygen depletion by cBOD5 was instantaneous.

Table 14. Example effluent temperature data (75th percentiles) from a subset of the previous ACS projects completed by HESL.

Watercourse	WWTP	Period	Effluent Temp (°C)
Baxter Creek	Millbrook	Jun–Sep	21.20
Speed River	Guelph	Jun–Sep	21.20
Grand River	Caledonia	May–Sep	21.50
Grand River	Caledonia	Non-winter Avg.	21.30
Grand River	Caledonia	Oct–Apr*	14.54
Baxter Creek	Millbrook	Oct–May	14.40
Baxter Creek	Millbrook	Winter Avg.	14.47

**Weighted average calculated based on 75th percentile effluent temperature for Oct-Dec and Jan-Apr.*

Temperature and streamflow data were adjusted to account for future climate change. Depending on future rates of greenhouse-gas emissions, the average annual temperature of Ontario is predicted to increase by 1.5–2.3°C by 2050, relative to 1986–2005 temperatures (Zhang et al. 2019). Cator River water temperature data were therefore increased by 1.5°C to account for potential climate-change impacts.

Increased precipitation is predicted for all of Ontario during the spring months, and extreme weather events (e.g., storms) followed by longer, drier summers, will likely be more frequent. Reducing the 7Q20 streamflow by 10% is a measure recently used for other ACS work in Ontario to account for the effect of potentially drier summers on river flows. The prorated 7Q20 flows were thus reduced by 10% to account for potential climate change. Note that this was a conservative approach as a timeseries analysis revealed no decreasing trends thus far in precipitation for the study area or in annual minimum flows of the Castor River (see Appendix B).

4.2 Mass-balance Results

4.2.1 cBOD5, TSS, and NO_3-N

For a two-plant scenario with effluent discharge of 3,500 m^3/d at Russell and 6,000 m^3/d at Embrun, effluent concentrations could be as high as TSS = 25.5 mg/L, NO_3-N = 4.5 mg/L, and cBOD5 = 9.7 mg/L without exceeding guidelines downstream of either outfall (Table 15).

Table 15. Mass-balance model results for cBOD5, TSS, and NO_3-N for Russell and Embrun.

	Russell upstream	Russell effluent	Russell downstream	East Castor	Embrun upstream	Embrun effluent	Embrun downstream	Guideline
Flow	0.086	0.041	0.127	0.052	0.179	0.069	0.248	–
TSS	10.3	25.5	15.2	10.3	13.6	25.5	17.0	15.3, 18.6
NO_3-N	1.73	4.50	2.62	1.73	2.36	4.50	2.96	3.0
cBOD5	1.50	9.70	0.00	1.50	0.00	9.70	0.00	–
DO	9.65	–	5.52	9.65	6.72	–	4.0	4.0

Note: units are mg/L, except for flow (m^3/s). The TSS guideline is 15.3 mg/L for Russell and 18.6 mg/L for Embrun.

For a combined treatment facility (at Embrun) discharging 9,500 m^3/d, effluent concentrations could be as high as TSS = 21.5 mg/L, NO_3-N = 4.5 mg/L, and cBOD5 = 10.85 mg/L without exceeding guidelines downstream (Table 16).

Table 16. Mass-balance model results for cBOD5, TSS, and NO_3-N for a combined WWTP at Embrun under 7Q20 flow conditions.

	Upstream	Effluent	Downstream	Guideline
Flow	0.138	0.110	0.248	–
TSS	10.3	21.5	15.27	15.3
NO_3-N	1.73	4.5	2.96	3.0
cBOD5	1.50	10.85	0.00	–
DO	9.65	–	4.00	4.0

Note: units are mg/L, except for flow (m^3/s).

4.2.2 TP

With upstream TP concentrations above PWQO (Table 11), the Castor River is Policy 2. It is MECP policy that water quality which presently does not meet the PWQO shall not be degraded further, and all practical measures shall be taken to upgrade the water quality to the objectives. For existing wastewater treatment systems this requires maintaining of the existing phosphorus loads and a reduction in effluent TP concentrations. For Russell, the effluent TP loading limit must be maintained at 1 kg/d (365 kg/y), which corresponds to a TP concentration limit of 0.286 mg/L at a discharge of 3,500 m^3/d. The total annual TP loading limit for Embrun is 790 kg/y, which at an effluent flow of 6,000 m^3/d corresponds to a TP concentration limit of 0.360 mg/L. For a combined facility with discharge of 9,500 m^3/d, a TP concentration limit of 0.333 mg/L is required to maintain the existing total loading limit of 3.16 kg/d (Table 17).

Table 17. TP limits.

	Russell	Embrun	Combined
Spring load (kg)	–	433	–
Fall load (kg)	–	357	–
Total Load (kg/y)	365	790	1,155
Daily Load (kg/d)	1.00	2.16	3.16
Proposed Flow (m^3/d)	3,500	6,000	9,500
TP Concentration (mg/L)	0.286	0.360	0.333
Existing Limit (mg/L)	0.500	0.560	–

The Russell WWTP is subject to the South Nation Total Phosphorus Management (TPM) Plan, a phosphorus-offsetting program for the South Nation River watershed that was initiated as a pilot program by the Ministry of Environment based on the rationale that "in many cases even the highest level of sewage treatment will not solve … water quality problems" (South Nation Conservation 2006). The TPM approach requires a reduction of 4 kg of non-point-source (i.e., agricultural) phosphorus loading for every 1 kg of point-source (i.e., WWTP) loading.

The existing ECA for the Russell Lagoons contains a requirement for TPM:

> *(1) The Owner shall enter into a Total Phosphorus Management (TPM) agreement with South Nation Conservation designed to offset 123 kg/yr of Total Phosphorus loading from the Works to Castor River prior to the Average Daily Flow reaching 2,000 m^3/d. The detailed proposal for the TPM shall be prepared by the Owner and submitted to the Regional Director for review and approval upon the Average Daily Flow reaching 1,700 m^3/d.*
>
> *(2) Until the agreement under subsection (1) above is reached, the Average Daily Flow to the Works shall not exceed 2,000 m^3/d.*

The ECA for the Embrun facility does not contain any conditions related to TPM. The TPM requirement of the current Russell ECA will need to be fulfilled prior to expansion of the WWTP.

4.2.3 TAN

Mass-balance modelling for TAN was done on a seasonal basis (winter vs. monthly for the non-winter period); the winter period was defined as Nov–Apr, consistent with the period for the existing ECA limit for TAN at the downstream Limoges WWTP. In winter, only ~2% of downstream TAN (NH_4^++NH_3) is present as UIA-N (NH_3); this is represented by parameter f, the fraction of TAN that is UIA-N (Table 18). An effluent TAN concentration of 3.07 mg/L or less meets the UIA-N PWQO of 0.0164 mg/L during the winter period, based on modelling for two separate WWTPs (Table 18). In non-winter months, the maximum effluent TAN concentration at which the UIA-N PWQO is not exceeded is lower due to higher water temperatures and pH; a greater percentage (~3–10%) of the downstream TAN is in the unionized (NH_3) form (Table 19). Moreover, the non-winter Castor River 7Q20 flows are generally lower than the winter 7Q20, so there is less dilution of effluent in the non-winter period (Table 20). During the non-winter period, the maximum effluent TAN concentrations without exceeding the UIA-N guideline of 0.0164 mg/L range from 0.45 mg/L to 1.41 mg/L, depending on the month, based on modelling for two separate WWTPs (Table 19). Based on

modelling for treatment by a combined plant, the maximum effluent TAN concentrations to meet the UIA-N PWQO downstream would be 2.73 mg/L in winter and 0.54–1.09 mg/L in the non-winter months (Table 20). The differences between the maximum effluent TAN concentrations for 2 WWTPs vs. a combined plant reflect the different effluent temperatures that were modelled: the lagoon effluent was assumed to be at ambient temperature, whereas the effluent of a mechanical plant was assumed to be 21.3°C (see Table 14).

Table 18. Mass-balance results for TAN for the winter (Nov–Apr) period for separate WWTPs.

	Russell upstream	Russell effluent	Russell downstream	East Castor	Embrun upstream	Embrun effluent	Embrun downstream
Flow (m^3/s)	0.227	0.041	0.268	0.133	0.401	0.069	0.470
TAN (mg/L)	0.036	3.07	0.496	0.036	0.343	3.07	0.746
Temp (°C)	8.20	8.20	8.20	8.20	8.20	8.20	8.20
pH	8.30	7.77	8.17	8.30	8.21	7.89	8.14
[H+]	$5.01x10^{-9}$	$1.70x10^{-8}$	$6.82x10^{-9}$	$5.01x10^{-9}$	$6.22x10^{-9}$	$1.29x10^{-8}$	$7.21x10^{-9}$
pKa	9.792	9.792	9.792	9.79	9.792	9.792	9.792
f	0.031	0.009	0.023	0.03	0.025	0.012	0.022
UIA-N (mg/L)	0.0011	0.0289	0.0114	0.0011	0.0087	0.0380	0.0163

Table 19. Mass-balance results for TAN for the non-winter period for separate WWTPs.

	Russell			East Castor	Embrun		
	Upstream	*Effluent*	*Downstream*		*Upstream*	*Effluent*	*Downstream*
May (17.8°C; pKa = 9.47)							
Flow (m^3/s)	0.551	0.041	0.592	0.322	0.914	0.069	0.983
TAN (mg/L)	0.056	1.140	0.130	0.056	0.104	1.140	0.177
pH	8.72	7.77	8.53	8.72	8.59	7.89	8.48
$[H^+]$	$1.91x10^{-9}$	$1.70x10^{-8}$	$2.94x10^{-9}$	$1.91x10^{-9}$	$2.57x10^{-9}$	$1.29x10^{-8}$	$3.30x10^{-9}$
f	0.150	0.019	0.103	0.150	0.116	0.025	0.092
UIA-N (mg/L)	0.008	0.022	0.013	0.008	0.012	0.029	0.016
June (24.4°C; pKa = 9.26)							
Flow (m^3/s)	0.229	0.041	0.270	0.135	0.405	0.069	0.474
TAN (mg/L)	0.042	0.700	0.141	0.042	0.108	0.700	0.195
pH	8.46	7.77	8.26	8.46	8.32	7.89	8.22
$[H^+]$	$3.45x10^{-9}$	$1.70 x10^{-8}$	$5.482x10^{-9}$	$3.45x10^{-9}$	$4.80x10^{-9}$	$1.29x10^{-8}$	$5.99x10^{-9}$
f	0.136	0.031	0.090	0.136	0.102	0.040	0.083
UIA-N (mg/L)	0.006	0.022	0.013	0.006	0.011	0.028	0.016
July (26.0°C; pKa = 9.22)							
Flow (m^3/s)	0.119	0.041	0.160	0.070	0.230	0.069	0.299
TAN (mg/L)	0.047	0.480	0.157	0.047	0.123	0.480	0.206
pH	8.55	7.77	8.19	8.55	8.27	7.89	8.15
$[H^+]$	$2.82x10^{-9}$	$1.70x10^{-8}$	$6.42x10^{-9}$	$2.82x10^{-9}$	$5.32x10^{-9}$	$1.29x10^{-8}$	$7.01x10^{-9}$
f	0.178	0.035	0.087	0.178	0.103	0.045	0.079
UIA-N (mg/L)	0.008	0.017	0.014	0.008	0.013	0.022	0.016
August (25.6°C; pKa = 9.23)							
Flow (m^3/s)	0.077	0.041	0.118	0.045	0.163	0.069	0.232
TAN (mg/L)	0.029	0.450	0.174	0.029	0.134	0.450	0.229
pH	8.75	7.77	8.15	8.75	8.25	7.89	8.11
$[H^+]$	$1.78x10^{-9}$	$1.70x10^{-8}$	$7.02x10^{-9}$	$1.78x10^{-9}$	$5.57x10^{-9}$	$1.29x10^{-8}$	$7.76x10^{-9}$
f	0.250	0.034	0.078	0.250	0.096	0.044	0.071
UIA-N (mg/L)	0.007	0.015	0.014	0.007	0.013	0.020	0.016
September (17.5°C; pKa = 9.48)							
Flow (m^3/s)	0.101	0.041	0.142	0.059	0.201	0.069	0.270
TAN (mg/L)	0.012	0.800	0.238	0.012	0.171	0.800	0.333
pH	9.04	7.77	8.26	9.04	8.38	7.89	8.19
$[H^+]$	$9.17x10^{-10}$	$1.70x10^{-8}$	$5.52x10^{-9}$	$9.17x10^{-10}$	$4.16x10^{-9}$	$1.29x10^{-8}$	$6.41x10^{-9}$
f	0.264	0.019	0.056	0.264	0.073	0.025	0.049
UIA-N (mg/L)	0.003	0.015	0.013	0.003	0.013	0.020	0.016
October (12.3°C; pKa = 9.65)							
Flow (m^3/s)	0.123	0.041	0.164	0.072	0.236	0.069	0.305
TAN (mg/L)	0.040	1.410	0.379	0.040	0.275	1.410	0.534
pH	8.54	7.77	8.20	8.54	8.28	7.89	8.15
$[H^+]$	$2.87x10^{-9}$	$1.70x10^{-8}$	$6.36x10^{-9}$	$2.87x10^{-9}$	$5.30x10^{-9}$	$1.29x10^{-8}$	7.0231E-09
f	0.072	0.013	0.034	0.072	0.040	0.017	0.031
UIA-N (mg/L)	0.003	0.018	0.013	0.003	0.011	0.024	0.016

Table 20. Mass-balance results for TAN for the winter period (Nov–Apr) for a combined facility.

	Upstream	Effluent	Downstream
Flow (m^3/s)	0.360	0.110	0.470
TAN (mg/L)	0.036	2.77	0.676
Temp (°C)	8.20	14.47	9.67
pH	8.30	7.83	8.14
[H+]	5.01×10^{-9}	1.48×10^{-8}	7.30×10^{-9}
pKa	9.792	9.581	9.742
f	0.031	0.017	0.024
UIA-N (mg/L)	0.0011	0.0483	0.0164

Table 21. Mass-balance results for TAN for the non-winter period for a combined facility at Embrun.

	Upstream	Effluent	Downstream	Upstream	Effluent	Downstream
	May			*June*		
Flow (m^3/s)	0.873	0.110	0.983	0.364	0.110	0.474
TAN (mg/L)	0.056	1.090	0.172	0.042	0.740	0.204
Temp (°C)	17.78	21.30	18.17	24.38	21.30	23.66
pH	8.720	7.845	8.483	8.463	7.845	8.225
[H+]	1.91×10^{-9}	1.43×10^{-8}	3.29×10^{-9}	3.45×10^{-9}	1.43×10^{-8}	5.96×10^{-9}
pKa	9.473	9.361	9.460	9.265	9.361	9.287
f	0.150	0.030	0.095	0.136	0.030	0.080
UIA-N (mg/L)	0.008	0.032	0.016	0.006	0.022	0.016
	July			*August*		
Flow (m^3/s)	0.189	0.110	0.299	0.122	0.110	0.232
TAN (mg/L)	0.047	0.540	0.228	0.029	0.520	0.262
Temp (°C)	26.00	21.30	24.27	25.600	21.300	23.562
pH	8.550	7.845	8.153	8.750	7.845	8.113
[H+]	2.82×10^{-9}	1.43×10^{-8}	7.03×10^{-9}	1.78×10^{-9}	1.43×10^{-8}	7.70×10^{-9}
pKa	9.215	9.361	9.268	9.227	9.361	9.290
f	0.178	0.030	0.071	0.250	0.030	0.062
UIA-N (mg/L)	0.008	0.016	0.016	0.007	0.015	0.016
	September			*October*		
Flow (m^3/s)	0.160	0.110	0.270	0.195	0.110	0.305
TAN (mg/L)	0.012	0.710	0.296	0.040	1.090	0.418
Temp (°C)	17.50	21.30	19.05	12.30	21.30	15.55
pH	9.038	7.845	8.197	8.543	7.845	8.156
[H+]	9.17×10^{10}	1.43×10^{-8}	6.36×10^{-9}	2.87×10^{-9}	1.43×10^{-8}	6.98×10^{-9}
pKa	9.482	9.361	9.432	9.653	9.361	9.546
f	0.264	0.030	0.055	0.072	0.030	0.039
UIA-N (mg/L)	0.003	0.021	0.016	0.003	0.032	0.016

5. Discussion

5.1 MECP Guidance

The MECP has three documents that direct the discharge requirements for wastewater treatment plants. In Policies, Guidelines and Provincial Water Quality Objectives of the Ministry of Environment and Energy (MOE 1994a) the MOE provides direction on the management of surface water and groundwater quality and quantity for the Province of Ontario. In Deriving Receiving Water Based, Point-Source Effluent Requirements for Ontario Waters (MOE 1994b), the MOE provides guidance with regard to the requirements for point-source discharges and the procedures for determining effluent requirements for an Environmental Compliance Approval (ECA). In the Guideline F-5 Series Levels of Treatment for Municipal and Private Sewage Treatment Works Discharging to Surface Waters (MOE 1994c), the levels of treatment required are described, along with guidance on deriving effluent limits (concentrations and loading).

The purpose of this ACS was to establish effluent limits for expanded treatment flows from Russell and Embrun. The Castor River is a Policy 2 receiver for TP. The existing phosphorus loads must therefore be maintained by lowering the TP effluent limits. Alternatively, watershed reductions through the TPM would be required to compensate for an increase in TP loading at a ratio of 4 kg of P offset per 1 kg of additional P loading from WWTP discharge.

Effluent limits derived herein for cBOD5, TAN, and TSS (i.e., the Policy 1 parameters) are based on the assimilative capacity of the Castor River (i.e., the maximum effluent concentration for each parameter that is diluted by upstream flow to a downstream concentration that meets the respective PWQO/CWQG).

5.2 Climate-Change Adjustments

To be conservative, mass-balance model input data were adjusted to account for potential climate-change effects on water temperature (+1.5°C) and river discharge (90% of 7Q20). It was noted (Section 4.1.2) that a trend analysis of local data revealed no declining trends in annual minimum discharge or precipitation (Appendix B). It is therefore reasonable to discuss how much influence these (conservative) climate-change assumptions affected the results of the mass-balance modelling. The climate-change adjustments had the greatest effect on mass-balance estimates of effluent TAN concentrations (vs. TP, TSS, etc.) corresponding to downstream PWQO because ammonia speciation depends on temperature, with a greater fraction of TAN in unionized form at higher temperature (i.e., for a given TAN concentration and pH, UIA-N is higher at higher temperature). For the combined treatment scenario, in the absence of the climate-change adjustment, the effluent TAN concentration corresponding to a downstream UIA-N concentration of 0.0164 mg/L (PWQO) would be 3.73 mg/L (vs. 3.12 mg/L with CC-adj.) during winter and during the non-winter period it would be 0.536 mg/L (vs. 0.475 mg/L with CC-adj.). Based on this comparison, it is apparent that the climate-change adjustments had a relatively minor effect on the modelled effluent TAN concentration when water temperatures were highest (i.e., the non-winter period). The importance of pH in controlling ammonia speciation is discussed in the following section.

5.3 Ammonia and pH

5.3.1 Ammonia Speciation

The term “total ammonia” (TAN) refers to the sum of the concentrations of the ammonium ion (NH_4^+) and ammonia (NH_3; referred to herein as UIA-N). It is the unionized form of ammonia (UIA-N) that is of concern from an environmental toxicity perspective, and thus the PWQO is expressed as 20 µg/L of NH_3 (equivalent to 16.4 µg-N/L, or 0.0164 mg-N/L). The speciation (and thus toxicity) of TAN is temperature- and pH-dependent, with more of the TAN present as UIA-N at higher temperature and higher pH. For instance, at a pH of 6.5 and temperature of 10°C, almost none (<0.1%) of the TAN is in unionized form, whereas at pH 9 and 30°C, almost half (45%) is unionized (MOE 1994a). At a given time of year (i.e., for a given water temperature), the effluent TAN concentration that would entail a downstream ammonia PWQO exceedance is therefore highly dependent on the downstream pH.

5.3.2 Castor River and Effluent pH

Based on the long-term record of pH determined at the Castor Rd. PWQMN station, the Castor River has extremely high pH for an Ontario watercourse: the station’s 75th-percentile pH for the non-winter period (May–Oct) is 8.81; this is higher than at 98% of the province’s PWQMN stations (based on data from 2000–2022 for all active stations; Appendix C). That is, it has the 11th-highest pH out of 565 stations in Ontario with available field pH data, based on the 75th percentile pH for each station (i.e., the summary statistic used for an ACS). The high pH is likely largely a consequence of the region’s bedrock geology (see Section 2.1).

The pH of the effluent also strongly affects TAN speciation downstream of the WWTP outfall. The mass-balance modelling was conducted based on historical effluent pH data from the lagoons. For a combined (mechanical) WWTP, it may be reasonable to expect a somewhat lower effluent pH, as the lagoon pH has likely been increased somewhat by algal photosynthesis. A lower effluent pH would increase the allowable TAN concentration of the effluent. For instance, the maximum possible effluent TAN concentration without exceeding PWQO in July was 0.54 mg/L assuming an effluent pH of 7.845 (Table 21); at a slightly lower pH of 7.5, effluent TAN could be as high as 1.07 mg/L without exceeding the UIA-N PWQO downstream.

6. Recommendations

The following recommendations are based on our background review of the available water quality data for the Castor River and its assimilative capacity, as determined by mass-balance modelling. Recommended effluent limits for two scenarios (i.e., 2 lagoon systems in series vs. a combined mechanical WWTP) are provided in Table 22. The ACS found that discharge at these concentrations will maintain water quality within PWQO/CWQGs.

Slightly different effluent limits were established based on the two scenarios modelled; this was due to the apportioning of the assimilative capacity between the two locations while modelling the same effluent concentrations for the 2-WWTP scenario (e.g., for cBOD5/DO, there was some small excess assimilative capacity downstream of Russell), and, in the case of TSS, because the water quality guideline was relative to the background concentration (which was higher upstream of Embrun due to the enrichment downstream

of Russell). As noted in Section 4.2.3, the differences between the maximum possible effluent TAN concentrations for 2 WWTPs vs. a combined plant reflect the different effluent temperatures that were modelled: the lagoon effluent was assumed to be at ambient temperature, whereas the effluent of a mechanical plant was assumed to be 21.3°C; this entails slightly lower limits for the lagoons relative to a mechanical plant in the summer (when air temperatures are above room temperature) and slightly higher limits for the lagoons in fall, winter, and spring (Table 22). Modelling was not conducted for hydrogen sulfide (H_2S) as the existing limits are for undetectable concentrations; it is recommended that this limit is maintained in the future. The stringent recommended TAN limits are largely due to the high pH of the Castor River; it is recommended that Russell Township's monitoring of the Castor River's water quality (particularly pH and TAN), upstream and downstream of the lagoon outfalls continue.

The MECP requested that NO_3-N be evaluated as part of the ACS as it has a CWQG and can be enriched in some WWTP effluents. Mass-balance modelling determined that an effluent concentration of 4.5 mg/L will meet the CWQG for NO_3-N downstream (Section 4.2.1). Effluent criteria for nitrate are not proposed since the average effluent concentrations (Section 2.1) of the effluent is low, and have typically been below 4.5 mg-N/L.

Table 22. Recommended effluent limits (mg/L).

	2 WWTPs		Combined	
	Russell	Embrun	WWTP	Rationale
cBOD5	9.70	9.70	10.85	Meets Policy 1
H_2S	<MDL	<MDL	<MDL	No change to existing limit
TP	0.286	0.360	0.333	Policy 2; maintains existing P loading
TSS	15	15	15	More stringent than Policy 1 requirements
TAN – Nov–Apr	3.07	3.07	2.73	Meets Policy 1
TAN – May	1.14	1.14	1.09	Meets Policy 1
TAN – Jun	0.70	0.70	0.74	Meets Policy 1
TAN – Jul	0.48	0.48	0.54	Meets Policy 1
TAN – Aug	0.45	0.45	0.52	Meets Policy 1
TAN – Sep	0.80	0.80	0.71	Meets Policy 1
TAN – Oct	1.41	1.41	1.09	Meets Policy 1

Note: Concentration below laboratory method detection limit is denoted by "<MDL".

7. References

Canadian Council of Ministers of the Environment (CCME). 2012. Canadian water quality guidelines for the protection of aquatic life: Nitrate. In: Canadian environmental quality guidelines, Canadian Council of Ministers of the Environment, Winnipeg.

Canadian Council of Ministers of the Environment (CCME). 2002. Canadian water quality guidelines for the protection of aquatic life: Total particulate matter. In: Canadian environmental quality guidelines, 1999, Canadian Council of Ministers of the Environment, Winnipeg

Canadian Council of Resource and Environment Ministers (CCREM). 1987. Canadian water quality guidelines. Prepared by the Task Force on Water Quality Guidelines.

Ministry of Natural Resources and Forestry (MNRF) 2023. Ontario Watershed Information Tool. https://www.lioapplications.lrc.gov.on.ca/OWIT/Index.html?viewer=OWIT.OWIT&locale=en-ca.

Ontario Ministry of Environment and Energy (MOE). 1994a. Water management policies guidelines and water quality objectives of the Ministry of Environment and Energy, July 1994. ISBN 0-7778-8473-9 rev.

Ontario Ministry of the Environment (MOE). 1994b. Deriving receiving water based point source effluent requirements for Ontario waters. PIBS#3302 Procedure B-1-5.

Ontario Ministry of the Environment (MOE). 1994c. *Levels of Treatment for Municipal and Private Sewage Treatment Works Discharging to Surface Waters.* Procedure F-1-5.

R Core Team (2022). R: A language and environment for statistical computing. R Foundation for Statistical Computing, Vienna, Austria. URL https://www.R-project.org/.

South Nation Conservation 2006. Total Phosphorus Management Instruments.

Zhang, X., Flato, G., Kirchmeier-Young, M., Vincent, L., Wan, H., Wang, X., Rong, R., Fyfe, J., Li, G., Kharin, V.V. 2019. Changes in Temperature and Precipitation Across Canada; Chapter 4 in Bush, E. and Lemmen, D.S. (Eds.) Canada's Changing Climate Report. Government of Canada, Ottawa, Ontario, pp 112-193.

Appendix A – 7Q20 Estimates for TAN Modelling

Period	Distribution	7Q20 (m^3/s)	RMSE	NSE	AIC	BIC
May	the5thPercentile	0.593686	NA	NA	NA	NA
May	**Log-Pearson Type 3**	**0.610743**	0.106254	0.989727	NA	NA
May	Generalized Extreme Value	0.613019	0.144585	0.980978	81.96542	85.96203
May	Weibull	0.477385	0.219848	0.956021	80.79385	83.45826
May	Gamma	0.592665	0.346484	0.890763	79.43544	82.09985
May	Gumbel	0.58664	0.379798	0.868747	80.17715	82.84156
May	Lognormal	0.652776	0.871567	0.308797	79.75838	82.42279
May	Inverse-Gamma	0.678984	2.805822	-6.16347	82.2517	84.91611
Jun	the5thPercentile	0.345114	NA	NA	NA	NA
Jun	Weibull	0.159327	0.258829	0.863673	52.75736	55.42177
Jun	Gumbel	0.160949	0.277423	0.843382	55.05377	57.71818
Jun	Gamma	0.204984	0.314448	0.798788	51.22305	53.88745
Jun	Log-Pearson Type 3	0.295778	0.656155	0.123866	NA	NA
***Jun**	**Lognormal**	**0.254233**	0.721297	-0.05873	48.92207	51.58648
Jun	Generalized Extreme Value	0.296147	0.990408	-0.99612	50.34432	54.34094
Jun	Inverse-Gamma	0.286328	2.358936	-10.3237	48.16033	50.82474
Jul	the5thPercentile	0.149357	NA	NA	NA	NA
Jul	**Lognormal**	**0.132224**	0.140958	0.977526	29.39139	32.0558
Jul	Generalized Extreme Value	0.152229	0.24084	0.93439	29.42083	33.41744
Jul	Log-Pearson Type 3	0.150856	0.284408	0.908506	NA	NA
Jul	Weibull	0.04561	0.286827	0.906943	40.68818	43.35259
Jul	Gamma	0.077491	0.31781	0.885753	38.93647	41.60088
Jul	Gumbel	0.035198	0.448672	0.772297	45.76382	48.42823
Jul	Inverse-Gamma	0.155918	2.053121	-3.76803	27.77261	30.43702
Aug	the5thPercentile	0.095793	NA	NA	NA	NA
Aug	**Gamma**	**0.085016**	0.085903	0.928949	-2.9366	-0.2722
Aug	Gumbel	0.087004	0.087834	0.925718	-2.27024	0.394171
Aug	Generalized Extreme Value	0.107529	0.0944	0.914198	-4.78347	-0.78686
Aug	Log-Pearson Type 3	0.108269	0.101579	0.90065	NA	NA
Aug	Weibull	0.053435	0.104901	0.894046	0.755414	3.419823
Aug	Lognormal	0.106661	0.111888	0.879461	-6.52798	-3.86357
Aug	Inverse-Gamma	0.11474	0.714062	-3.90942	-5.10906	-2.44465
Sep	the5thPercentile	0.111171	NA	NA	NA	NA
Sep	**Log-Pearson Type 3**	**0.112185**	0.02267	0.986344	NA	NA
Sep	Generalized Extreme Value	0.114019	0.034425	0.968509	-10.948	-6.84615
Sep	Weibull	0.097132	0.050576	0.932028	-13.2267	-10.4921
Sep	Gamma	0.1155	0.083104	0.81648	-13.8952	-11.1606
Sep	Gumbel	0.112751	0.093336	0.768509	-12.9307	-10.1961
Sep	Lognormal	0.125819	0.18636	0.07712	-13.0023	-10.2677
Sep	Inverse-Gamma	0.130366	0.564964	-7.48164	-10.1453	-7.41067
Oct	the5thPercentile	0.181543	NA	NA	NA	NA
Oct	**Gumbel**	**0.136142**	0.095307	0.972223	36.05594	38.79053
Oct	Generalized Extreme Value	0.180634	0.10803	0.964312	34.25295	38.35484
Oct	Gamma	0.147652	0.109768	0.963154	34.17668	36.91127
Oct	Log-Pearson Type 3	0.180831	0.131111	0.947433	NA	NA
Oct	Weibull	0.101567	0.140075	0.939999	36.83763	39.57223
Oct	Lognormal	0.182622	0.330557	0.66586	31.97546	34.71005
Oct	Inverse-Gamma	0.195369	2.054828	-11.9118	34.35432	37.08891
Nov-Apr	the5thPercentile	0.320893	NA	NA	NA	NA
Nov-Apr	**Log-Pearson Type 3**	**0.251706**	0.084034	0.956813	NA	NA
Nov-Apr	Generalized Extreme Value	0.260889	0.113425	0.92132	30.73911	34.9427

Nov-Apr	Weibull	0.20207	0.130388	0.896026	29.78113	32.58353
Nov-Apr	Gamma	0.24754	0.182506	0.796294	28.42086	31.22326
Nov-Apr	Gumbel	0.249177	0.19968	0.756152	29.01012	31.81252
Nov-Apr	Lognormal	0.270475	0.365574	0.182666	28.8617	31.6641
Nov-Apr	Inverse-Gamma	0.27835	1.062825	-5.90831	32.10317	34.90556

** The 7Q20 for June was selected based on a comparison of the R-based estimates to the results of a Hyfran analysis rather than based on RMSE; this was due to the large variability in the estimates for June based on different distributions (0.159–0.286 m^3/s). The Hyfran software recommended a value of 0.251 m^3/s based on fitting of an exponential distribution; this is comparable to the 0.254 m^3/s estimate based on the Lognormal distribution (i.e., using R); therefore, the value of 0.254 m^3/s was used for the modelling for the month of June.*

Appendix B – Time Series Analyses

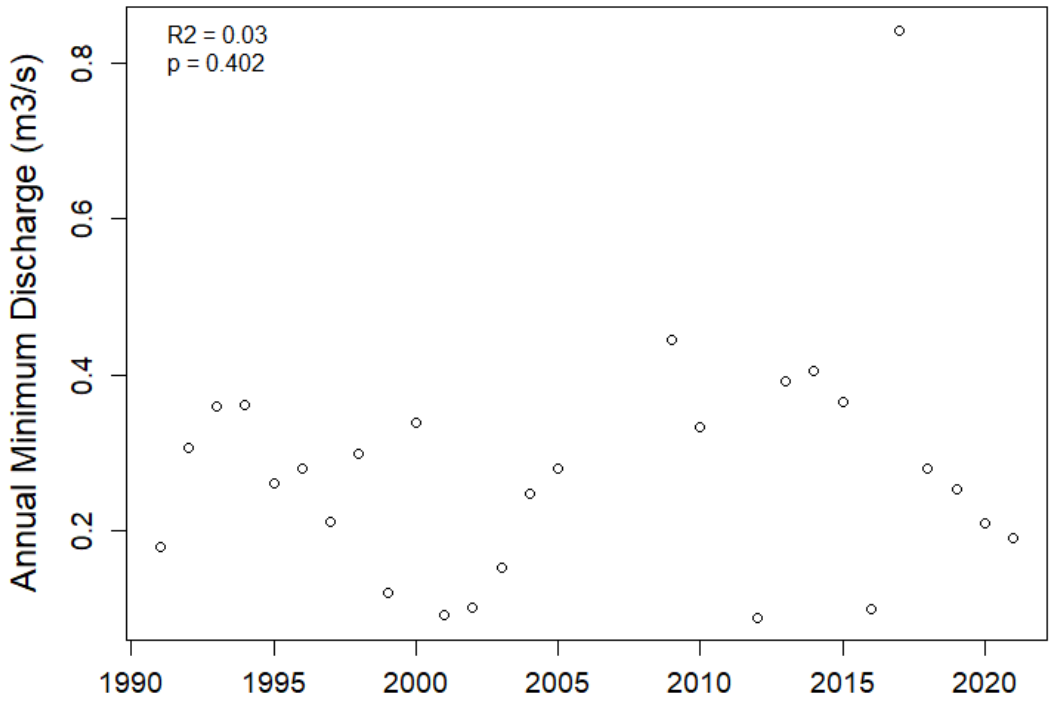


Figure B.1. Time series of annual minimum discharge of the Castor River at WSC station 02LB006 (based on 7-day running averages).

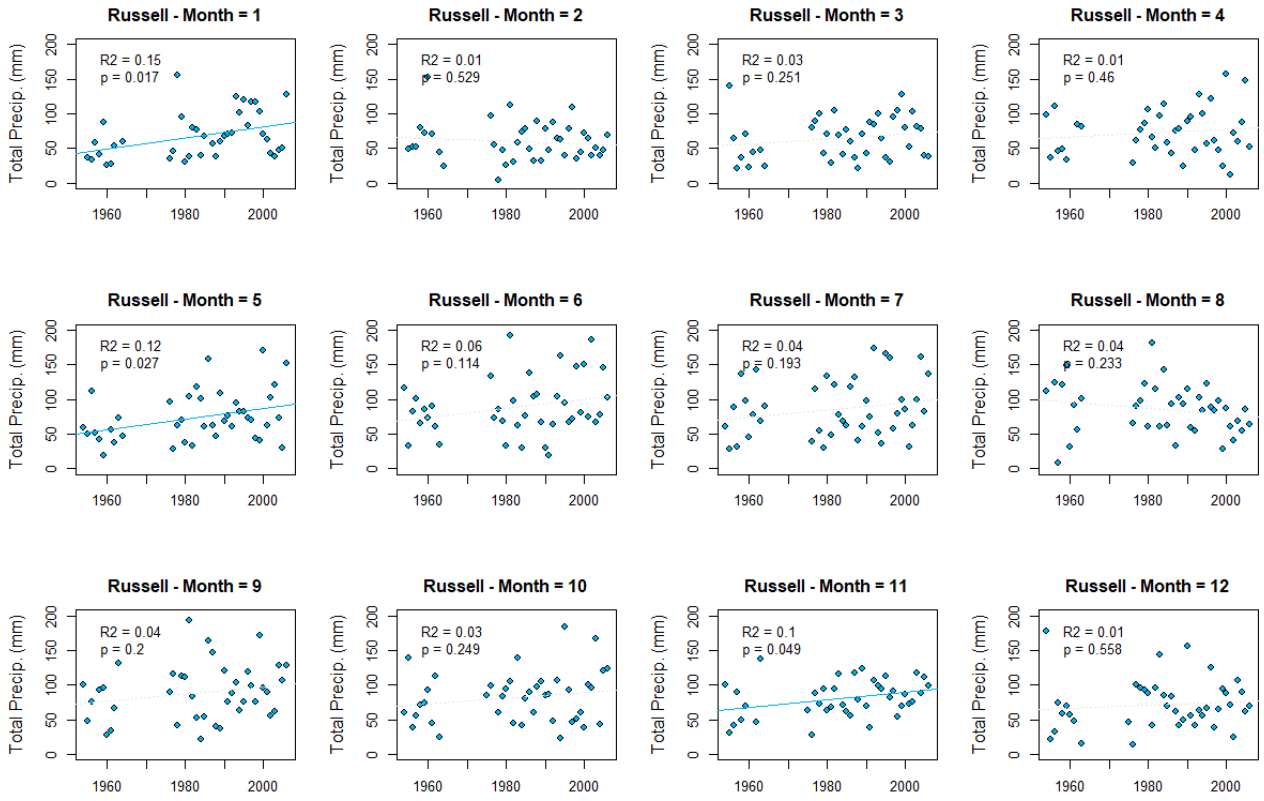


Figure B.2. Timeseries of total monthly precipitation based on all available monthly data (1954–2006) from Environment Canada meteorological station 6107247 in Russell.

Appendix C – Castor River pH vs. other PWQMN Stations

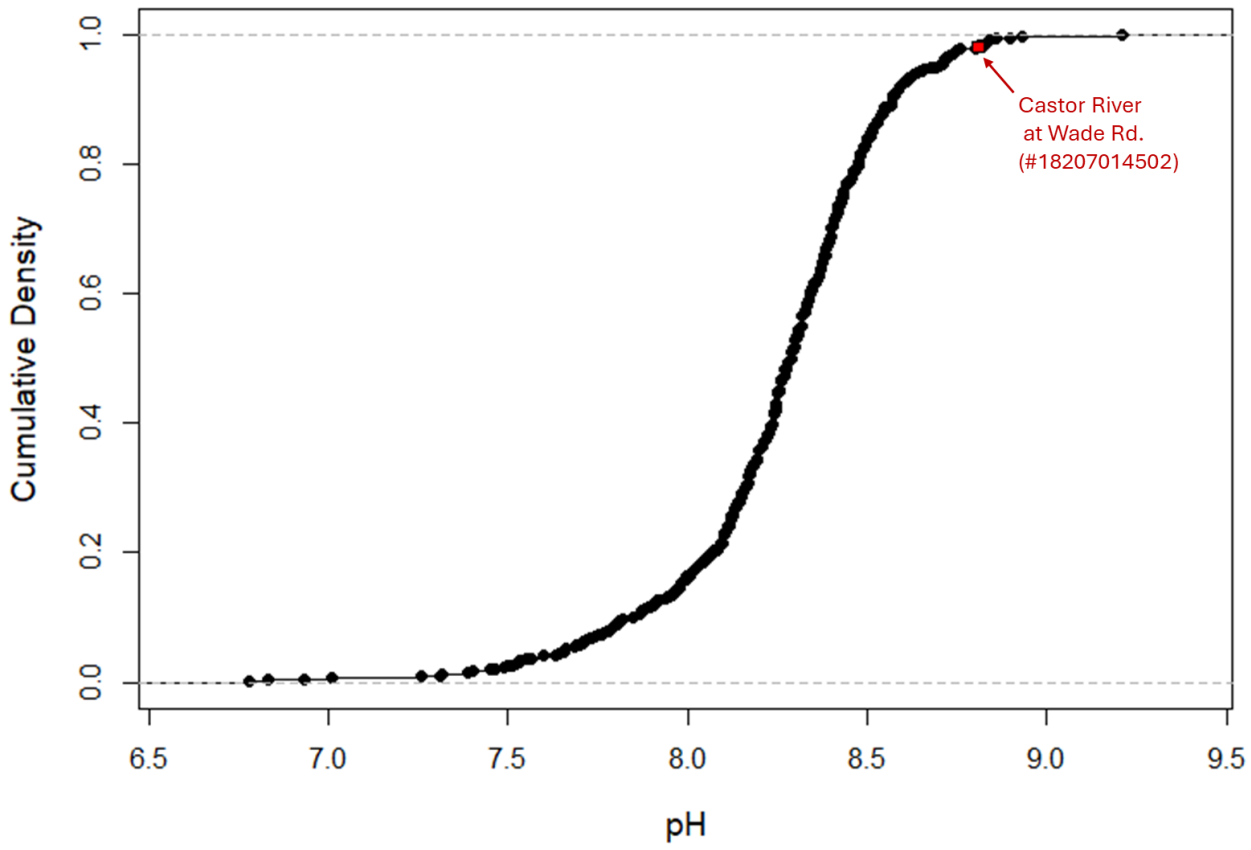


Figure C.1. Empirical cumulative distribution function (ECDF) of 75th-percentile pH for the Oct–May period for all active PWQMN stations, based on all available field pH data from 2000 to 2022.

D

Appendix D: Township Flow Monitoring Final Report

Engineering for people

CIVICA
Water Management Solutions

Prepared for

Township of Russell and Embrun

Report for

Sanitary Sewer Flow Monitoring

July 12, 2024

[redacted]

[redacted]

www.civi.ca

STATEMENT OF QUALIFICATIONS AND LIMITATIONS

The attached report (the "Report") has been prepared by Civica Infrastructure Inc. (the "Consultant") at the request of, and for the exclusive use of The Corporation of the Township of Russell and Embrun (the "Client") in accordance with the terms of agreement between the Consultant and the Client, including the scope of work detailed therein (the "Agreement").

Please note that the information, data, analysis, recommendations, and conclusions contained in the Report was prepared for the specific purposes described in the Report and the Agreement and may be based upon information which has not been independently verified by the Consultant. The Consultant shall be entitled to rely upon the accuracy and completeness of information that was provided to the Consultant and has no obligation to update such information. The material in this report reflects the Consultant's best professional judgement in the light of the information available to it at the time of preparation and publication.

The Consultant agrees that the Report represents its professional judgement as described above and that the Information has been prepared for the specific purpose and use described in the Report and the Agreement. The Consultant makes no other representations, any guarantees, or warranties whatsoever, whether expressed or implied, with respect to the Report or any part thereof.

The Report is to be treated as confidential and may not be used or relied upon by third parties, except as agreed in writing by the Consultant and the Client. Neither possession of the Report, nor a copy of it, carries the right of publication. The Report shall not be disclosed, produced, or reproduced, in whole or in part, neither published in any manner, without the written consent of the Consultant and the Client.

The Consultant expressly excludes liability to any party except the Client for either any use of or reliance upon the Report.

This Statement of Qualifications and Limitations is attached to, and forms part of the Report and any usage of the Report is subject to the terms therein.

July 12, 2024 **CIVICA Ref: T[redacted]**

Township of Russell
717 Notre-Dame
Embrun, ON
K0A 1W1

Attention: Amy/Francois

RE: Township of Russell & Embrun - I&I Flow Monitoring

Dear Amy/Francois,

Civica Infrastructure Inc. (Civica) is pleased to submit this Final Report on the flow monitoring results collected for The Corporation of the Township of Russell and Embrun. This document outlines the results of the flow monitoring conducted and details the flow metrics for the monitored area. The objective is to determine the flow conditions at the monitoring locations to help perform a sanitary sewer capacity analysis and identify actions required to improve I&I in the sanitary sewer system.

Do not hesitate to contact us with any comments.

Sincerely,

CIVICA INFRASTRUCTURE INC.

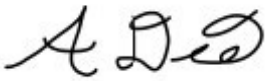
Frew Tadesse, M.Sc.,M.Eng.
Project Manager in Field Services
Civica Infrastructure Inc.

Document History & QA/QC

Prepared by:

Stefany Coronel, B.Eng.
Project Analyst
Civica Infrastructure Inc.

Reviewed by:



Adrian Dieleman
Design & Development Lead in Field Services
Civica Infrastructure Inc.

Approved for Release:

Frew Tadesse, M.Sc., M.Eng.
Project Manager in Field Services
Civica Infrastructure Inc.

TABLE OF CONTENTS

List of Tables

List of Figures

1.0 Introduction

Civica Infrastructure Inc. (Civica) was retained by The Township of Russell and Embrun (the City) to collect flow and rainfall data to characterize the existing dry and wet weather flow conditions within the sanitary sewer networks of the City. The study used eight (8) sanitary sewer flow monitors in conjunction with rainfall monitoring to assess levels of inflow and infiltration (I&I) within the study area. This report summarizes the methodologies, analysis, results, and recommendations from the monitoring data collected between October 2023 and May 2024.

1.1 Objective

The objective of this project was to install, operate, and analyze the data collected from flow meters installed within the sanitary sewers. The primary purpose of the flow monitoring is to determine dry-weather flow metrics and wet-weather flow at the selected locations in the Township of Russell and Embrun. The collected flow data will be used to perform a sanitary sewer capacity analysis and identify required improvements to the existing sanitary sewer system.

1.2 Study Area

The flow monitoring locations were selected by Civica Infrastructures Inc. and were approved by the Township of Russell and Embrun. Upon site inspection, it was concluded that all the sites were appropriate for the installation of A/V sensor along with a Downward Ultrasonic sensor to provide redundancy. Therefore, Detectronic (Detect) flow meters were used at eight (8) stations. The study area is in the Township of Russell and Embrun located in Ontario. A schematic showing the flow monitoring locations and the rain gauge location can be seen in

Civica Infrastructure Inc. • 330 Rodinea Road, Unit 3, Vaughan, Ontario, Canada, L6A 4P5 • 905-417-9792 | www.civi.ca | info@civi.ca

Figure 1-3**. Figure 1-2** outlines the connectivity diagram of the flow meters installed during the monitoring period. As shown in the diagram FM02 is located in the catchment area for FM04 and FM05 is located in the catchment area for FM06. The area between these pairs of stations are bracket areas, and the flows generated by at the bracket areas are bracket flows which need special consideration. Both areas were analyzed using a different approach. FM02 was located directly downstream of a pumping station. The pumped flow and the gravity flow were easily distinguishable in the FM04 flow data. For this reason, it was possible to separate the pumped and gravity flow and analyse them separately. Hence the FM04 bracket area, which corresponds directly to the gravity flow was analysed and reported on directly. This was not an option for FM06 because the pumped flow captured at FM05 was not easily distinguished from the gravity flow due to attenuation. Therefore, the total flow for FM06 was analyzed and reported on.

Civica Infrastructure Inc. • 330 Rodinea Road, Unit 3, Vaughan, Ontario, Canada, L6A 4P5 • 905-417-9792 | www.civi.ca | info@civi.ca

Table 1-1 provides location summary for each sensor. The flow monitoring assignment was completed in April-May 2024.

Civica Infrastructure Inc. • 330 Rodinea Road, Unit 3, Vaughan, Ontario, Canada, L6A 4P5 • 905-417-9792 | www.civi.ca | info@civi.ca

Table 1-1: Flow Monitoring and RG Location Summary

Station	Address	Start Date	End Date	Land Use	Equipment Installed
TRE23_FM1	1144 Concession St, Russell, ON K4R 1G5	Nov 13, 2023	May 16, 2024	Residential	Detect AV + Downward Sensor
TRE23_FM2	111 County Rd 3, Russell, ON K4R 1A1	Nov 15, 2023	May 16, 2024	Residential	Detect AV + Downward Sensor
TRE23_FM3	114-166 Pioneer Rd, Russell, ON	Oct 01, 2023	Apr 09, 2024	Residential	Detect AV + Downward Sensor
TRE23_FM4 (Bracket)	89-57 Craig St, Russell, ON K4R 1A2	Oct 01, 2023	Apr 09, 2024	Residential	Detect AV + Downward Sensor
TRE23_FM5	785 County Rd 3, Embrun, ON K0A 1W1	Oct 01, 2023	Apr 09, 2024	Residential	Detect AV + Downward Sensor
TRE23_FM6	1215 Ste Marie St, Embrun, ON K0A 1W0	Oct 01, 2023	Apr 09, 2024	Residential	Detect AV + Downward Sensor
TRE23_FM7	1264 Ste Marie St, Embrun, ON K0A 1W0	Oct 01, 2023	Apr 09, 2024	Residential	Detect AV + Downward Sensor
TRE23_FM8	1138 Notre-Dame St, Embrun, ON K0A 1W0	Nov 14, 2023	May 16, 2024	Residential	Detect AV + Downward Sensor
TRE23_RG1	1084 Concession St, Russell, ON K4R 1A6	Oct 02, 2023	May 17, 2024	Residential	Detect
TRE23_RG2	717 Notre-Dame St, Embrun, ON K0A 1W1	Oct 02, 2023	May 17, 2024	Residential	Detect

In October 2023, five flow meters and two RG's were monitored and installed as follows:

- Russell: TRE23_FM3, TRE23_FM4, TRE23_RG1
- Embrun: TRE23_FM5, TRE23_FM6, TRE23_FM7, TRE23_RG2

In November 2023:

- Russell: TRE23_FM1, TRE23_FM2
- Embrun: TRE23_FM08

Civica Infrastructure Inc. • 330 Rodinea Road, Unit 3, Vaughan, Ontario, Canada, L6A 4P5 • 905-417-9792 | www.civi.ca | info@civi.ca

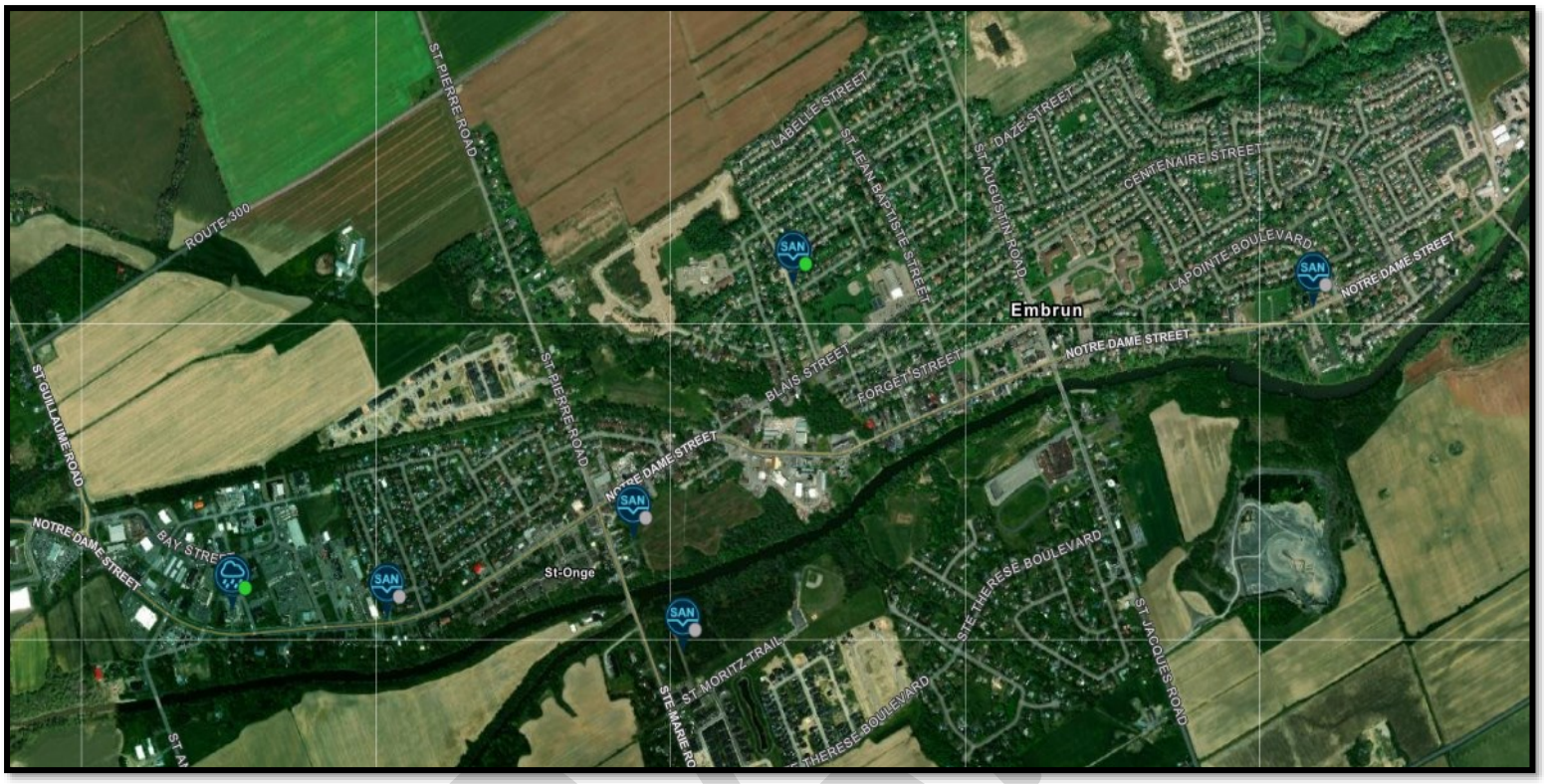


Figure 1-1: Flow Monitoring Location in Embrun

Civica Infrastructure Inc. • 330 Rodinea Road, Unit 3, Vaughan, Ontario, Canada, L6A 4P5 • 905-417-9792 | www.civi.ca | info@civi.ca

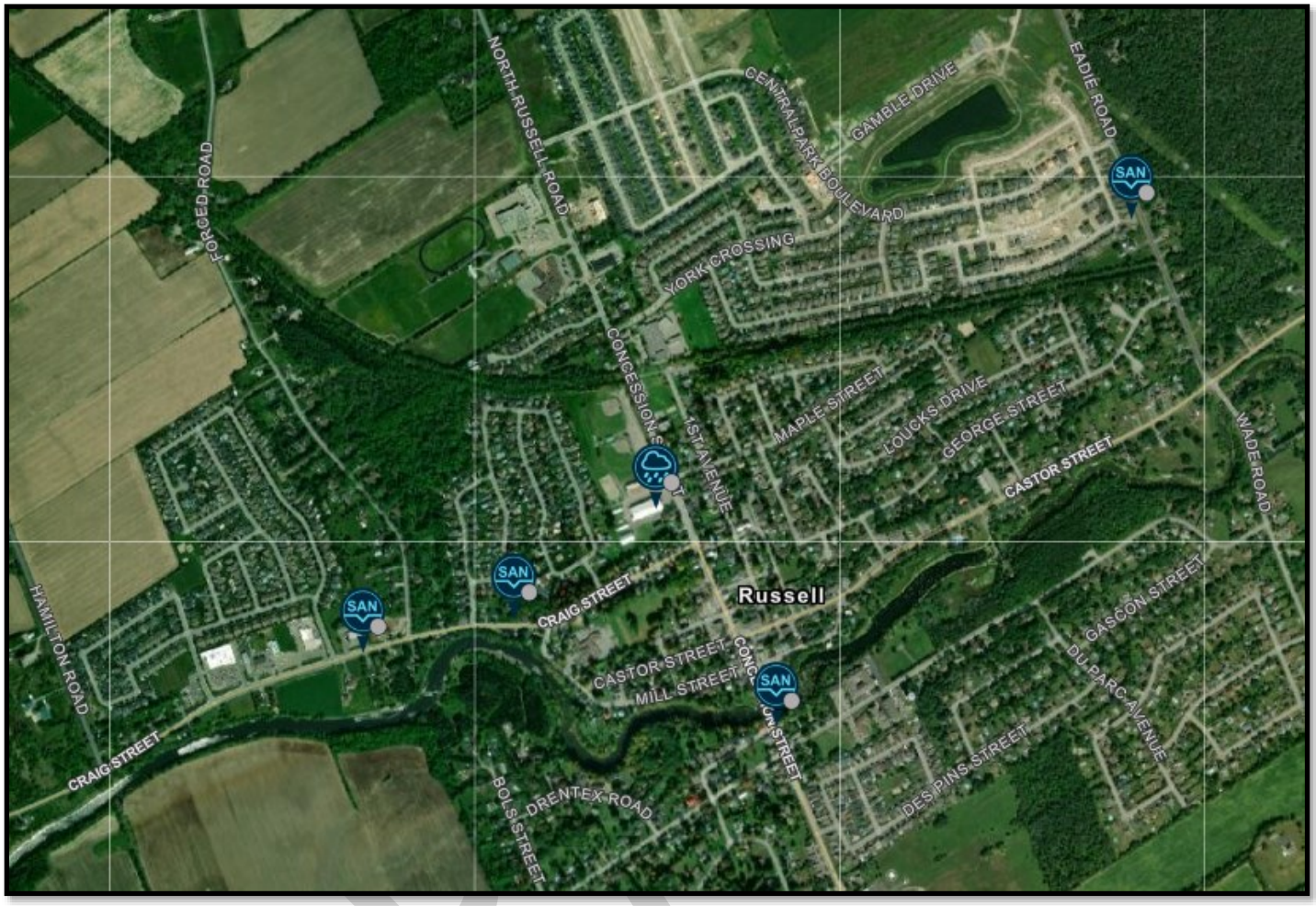


Figure 1-2: Flow Monitoring Location in Russell

Civica Infrastructure Inc. • 330 Rodinea Road, Unit 3, Vaughan, Ontario, Canada, L6A 4P5 • 905-417-9792 | www.civi.ca | info@civi.ca

Figure 1-3: Flow and Rainfall Monitoring Locations in Russell

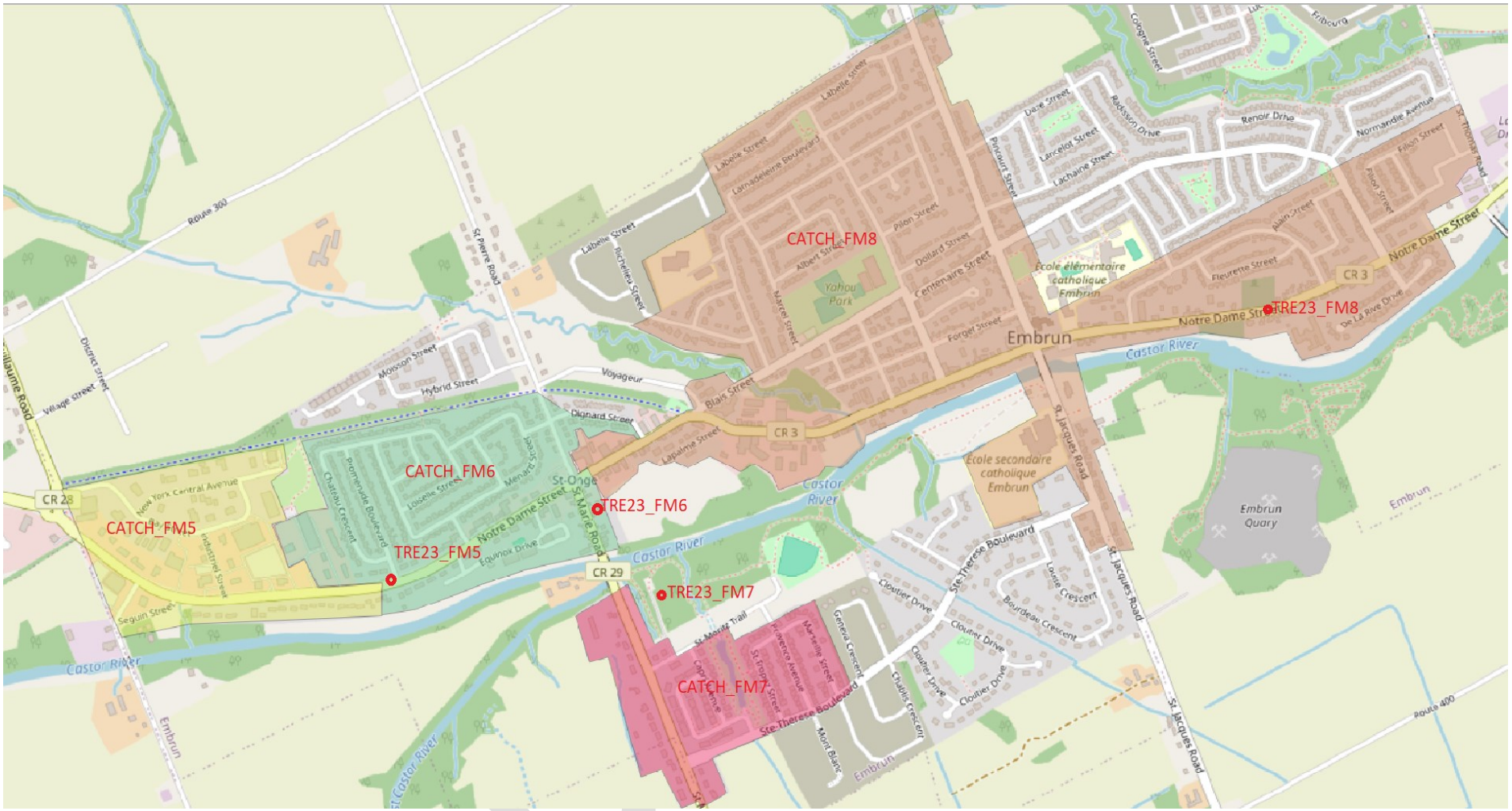


Figure 1-4: Flow and Rainfall Monitoring Locations in Russell

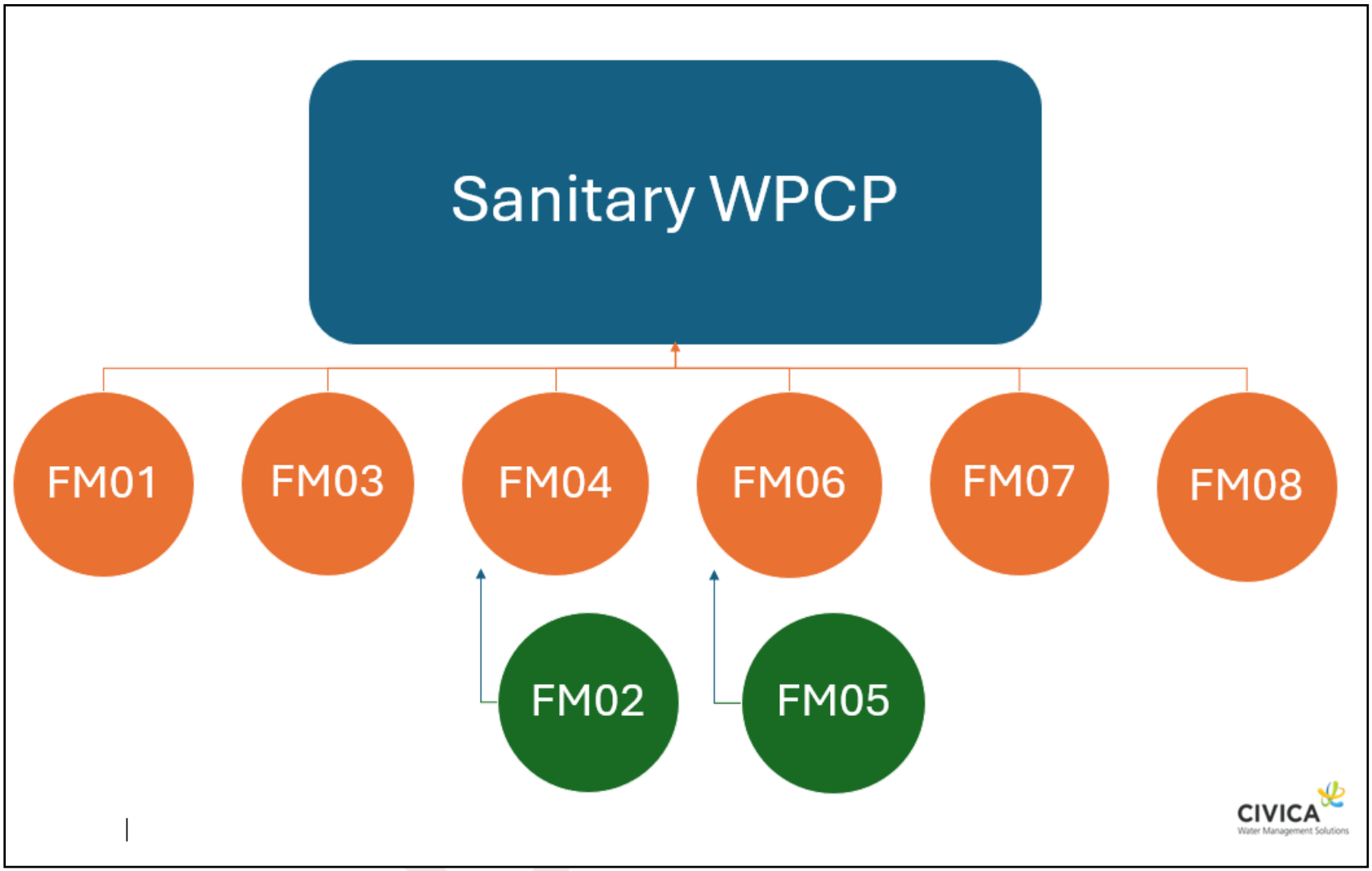


Figure 1-2: Russell and Embrun Flow Monitor Connectivity Diagram

2.0 Methodology

To collect sufficient data to characterize the dry-weather flow (DWF) and wet-weather flow (WWF) conditions, eight (8) flow monitors and two (2) rain gauges were installed within the study area.

The data collected during the study was hosted and analyzed by Civica's DataCurrent software system. During the monitoring period, automated alarming was setup for each location to alert Civica staff of any potential data quality issues.

2.1 Rainfall Analysis (IDF)

The frequency and magnitude of storms are important for assessing the suitability of the data for model calibration. Increased frequency and greater storm magnitude increases reliability and accuracy of RDII analysis. Events greater than 15mm are generally considered to be significant and were used as the minimum cut-off point for events included in an RDII analysis.

Detectronic Rain Gauge Data Loggers connected to a Novalynx Tipping Buckets were used in this project to monitor precipitation. The rain gauges collected data in 5-minute intervals and sent that data daily through telemetry to Civica's servers. The gauges were calibrated after installation according to manufacturer specifications and inspected as required to ensure that no leaves or debris were accumulating in the funnel of the gauge over the course of the study.

The data from both rain gauges were used to support the flow monitoring data analysis. An Intensity-Duration-Frequency (IDF) analysis was performed to classify and compare the measured storms to the Stratford WWTP IDF design storm.

2.2 Flow Monitoring Data

Area-velocity (A/V) flow meters and mounting rings were used at all sites to quantify the flow in the catchment area and to capture high resolution data. The flow meters collected data in a 5-minute interval to ensure high-resolution flow data was recorded. The flow meters were calibrated on-site after installation, monthly for regular maintenance, and for quality assurance purposes. The data collected during this project was collected, managed, and analyzed using the DataCurrent software system. Data collected from the meters was sent daily through telemetry and was uploaded to the DataCurrent system. This system allowed for automated alarms that alerted Civica staff of potential flow meter issues (ex. low battery, debris build up, surcharge, etc.).

2.2.1 Data QA/QC and Process

The data retrieved remotely from the on-site data loggers is immediately sent through a comprehensive data screening and QA/QC process and stored in a database on the cloud. The real-time data will be organized and presented through Civica's DataCurrent software. The data screening applies real-time verification of the data by testing values of velocities, levels, and flow against:

- Trend analysis for identifying debris build up.
- Dry weather flow confidence limits (e.g., 99% confidence limits)
- Dry weather flow trends for average, peak, and minimum
- Response during wet weather conditions (rainfall and snowmelt)

Civica Infrastructure Inc. • 330 Rodinea Road, Unit 3, Vaughan, Ontario, Canada, L6A 4P5 • 905-417-9792 | www.civi.ca | info@civi.ca

Confidence limits and trend analysis will incorporate statistics previously collected by Civica. These verification tests ensure that data which measures outside of normal limits can be evaluated prior to data certification and application to further analysis. This methodology ensures the best data reliability and accuracy of coverage. Quality Assurance and Quality Control (QA/QC) of monitoring data is critical to ensure accurate and reliable analysis results.

2.2.2 Analysis of Flow Monitoring Data

A sanitary sewer system receives two flow components that have been analyzed during this project:

1) Dry-Weather Flow (DWF); and,

2) Wet-Weather Flow (WWF)

The DWF component is separated into population generated sewage flow and groundwater infiltration (GWI). Population sewage flow is produced by routine water usage in the residential, commercial, and industrial areas of a given sanitary collection system. Dry-weather GWI will enter the collection system when the relative depth of the groundwater table is higher than the elevation of the sewer, and when the condition of the sanitary sewer pipe allows infiltration through defects, such as cracks, misaligned joints, and broken pipelines. GWI is not specific to a single rainfall event. Instead, it affects the collection system over an entire year (including the dry-weather season).

The following GWI generation thresholds were used to compare the City of Stratford results to acceptable limits:

Percent of GWI in Average DWF – The percentage of estimated GWI is calculated based on 85 percent of the minimum flow measured between 2 and 6 AM where the ratio of GWI to the average DWF is as evaluated as follows. The following evaluation ranges for I&I prioritization have been adopted from York Region's Inflow and Infiltration Reduction Strategy Report (2021):

I&I Severity	Base Infiltration (%)
Low	<40%
Medium	40-60%
High	>60%

The WWF component includes stormwater inflow, trench infiltration, and groundwater infiltration. WWF is generally a response to a meteorological change within the study area. The WWF is often divided into 2 different components based on the ambient temperature and precipitation within a study area. The WWF components are as follows:

1) Rainfall Derived I-I (RDII); and,
2) Snowmelt Derived I-I (SDII).

There are several physical and residual factors that impact the rate of extraneous flow into the sanitary sewer after a wet-weather event. The analysis completed within the study focuses on the factors that are easily measured and quantifiable, such as sanitary flow and rainfall. **Figure 2-1** illustrates the flow monitoring response to rainfall.

Civica Infrastructure Inc. • 330 Rodinea Road, Unit 3, Vaughan, Ontario, Canada, L6A 4P5 • 905-417-9792 | www.civi.ca | info@civi.ca

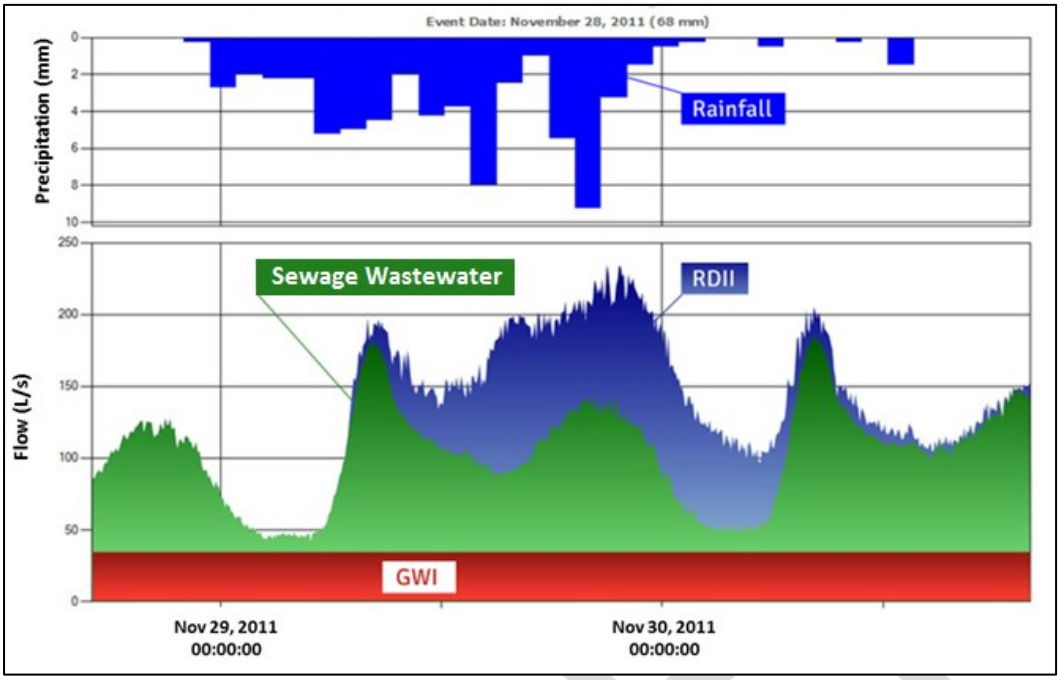


Figure 2-1: Sanitary Flow Components

Peak I&I per Area (I&I peak) in L/s/ha – the calculated peak I&I over the catchment area.

Peak I&I per hectare is the main metric used to assess the overall I&I condition of a catchment and is based off the peak RDII flow measured at a flow monitoring station divided by the area upstream. This metric is useful for comparing the I&I between two catchments and to prioritize field investigations aimed at identifying sources of I&I.

In this report design criteria adopted by other municipalities in Southern Ontario was utilized for data comparison.

I&I allowance used by other municipalities in Southern Ontario is 0.26 L/s/ha and is treated in this report as a goal to reduce I&I levels to. To prioritize areas based on I&I severity the following evaluation ranges for I&I prioritization have been adopted:

I&I Severity	Peak I&I Rate (L/s/ha)
Low	≤0.26
Low - Medium	0.26 - 0.50
High - Medium	0.50 – 1.00
High	>1.00

% of Rain Entering the System (Cv) – The calculated total amount of rainfall (m^3) that falls on a given catchment that is observed at the downstream monitoring station.

The % of rainfall entering the sanitary system (Cv) is a simple metric used to evaluate the percentage of total rainfall volume that falls on a catchment and enters the sanitary sewer system. Catchments that allow

>5% of rainfall volume into the sanitary system are deemed “high priority” and should be prioritized for field investigations to reduce Cv below 5%.

I&I Severity	Cv (%)
Low	<5%
High	>5 %

The wet-weather analysis separates the dry and wet-weather contributions. The peak wet-weather response is then compared with the peak rainfall intensity. The events have been “normalized” by correlating storm intensities over the time of concentration of the catchment with measured peak I&I flow rates during events with greater than 15 mm of rainfall.

2.3 I&I Projections

Once the peak I&I rates captured are plotted against the peak rainfall intensity for all storms greater than or equal to 15 mm, a trendline of linear regression can be established. The relationship found between the peak rainfall intensity for the flow monitor and the I&I rate is used to extrapolate the projected peak I&I flow. Using the storm intensities found in Stratford WWTP IDF curve, the peak I&I rate for a 2-year storm, 25-year storm and 100-year storm can be projected.

2.4 Time of Concentration (Tc) Calculation

Time of concentration (Tc) is the average travel time needed for rainwater to flow from the surface to the flow meter in the form of inflow and infiltration. The total travel time consists of 3 parts:

1 - Overland flow travel time
2 - Travel time through various defects and sources throughout the flow monitoring catchment
3 - Travel time through the pipe network to the flow monitoring station

The Tc represents the duration for which the rainfall intensity is most deterministic of I&I flow rate for each flow monitoring catchment. Once Tc is known the peak intensity over Tc is calculated for each rainfall event. As a starting point, network travel time is estimated by identifying the longest path upstream of the flow meter and summing the flow travel times for each pipe. Individual pipe travel time is estimated using Manning’s equation to obtain a theoretical flow velocity, assuming the pipes are 50% full. Once the network portion of the travel time is known, it is used as a starting point for estimating the total travel time, which ultimately is estimated using statistical optimization to correlate rainfall with I&I flow response. Tc is optimized statistically by performing linear regression of rainfall intensity vs RDII for all Tc's between Tc = network travel time and Tc = 1 day (1440 minutes) and choosing the Tc with the highest R^2 value. In the example shown in **Figure 2-2,** where network travel time is 133 minutes, 720 minutes would be chosen for the station Tc.

Civica Infrastructure Inc. • 330 Rodinea Road, Unit 3, Vaughan, Ontario, Canada, L6A 4P5 • 905-417-9792 | www.civi.ca | info@civi.ca

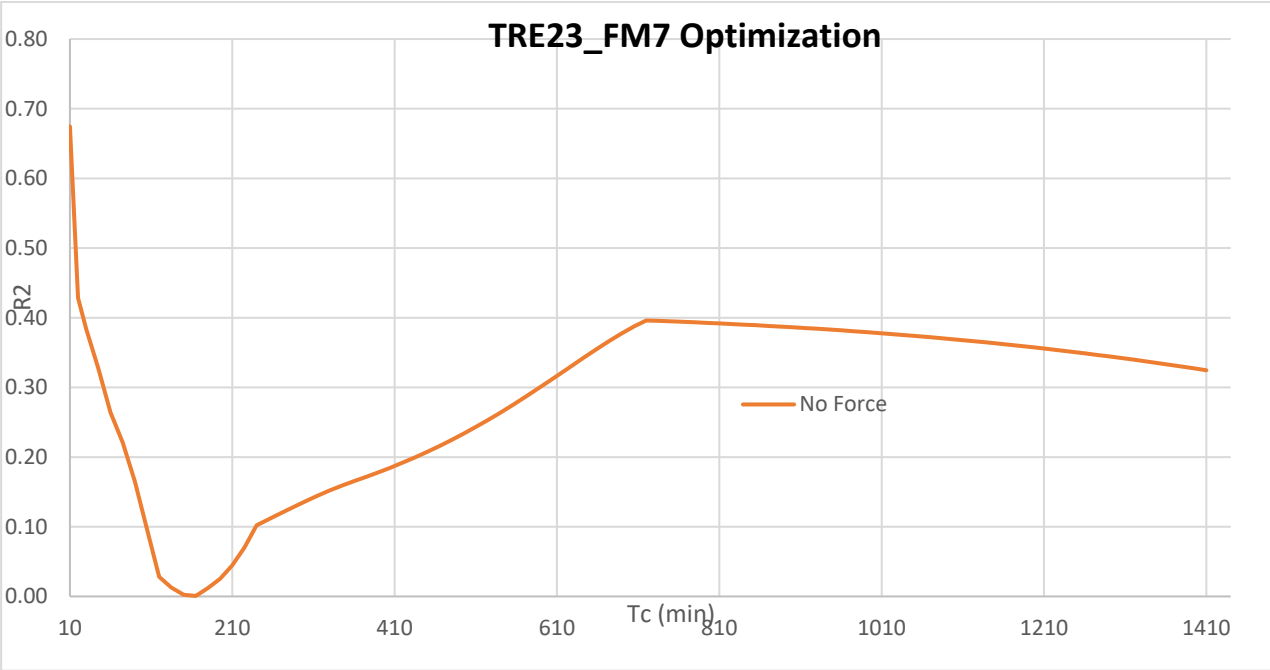


Figure 2-2: Time of Concentration Optimization

2.5 Drainage Area Calculations

The values for drainage used in this analysis were calculated by Civica for each flow monitoring catchment according to the delineation shown in

Civica Infrastructure Inc. • 330 Rodinea Road, Unit 3, Vaughan, Ontario, Canada, L6A 4P5 • 905-417-9792 | www.civi.ca | info@civi.ca

Figure 1-3**.**

3.0 Flow Monitoring Results

Rain and flow monitoring began October 2023. This study used eight (8) flow meters in the sanitary systems, with locations selected by Civica and were approved by the Township of Russell and Embrun. The flow monitors were placed to assess the DWF and I&I in the total system. Two (2) rain gauges were installed, within the study area.
Table *3-1* summarizes the catchment areas, Tc, pipe diameters, and start and end date for each flow monitoring station. Data charts for the entire monitoring duration for each station are found in **Appendix A-1**.

Table 3-1: Sanitary Flow Monitoring Station Summary

Station Name	Station Area (ha)	Station Tc (min)	Station Pipe Diameter (mm)	Start Date	End Date
TRE23_FM1	14.84	1410	450	Nov 13, 2023	May 16, 2024
TRE23_FM2	28.54	240	200	Nov 15, 2023	May 16, 2024
TRE23_FM3	33.48	615	450	Oct 01, 2023	Apr 09, 2024
TRE23_FM4 (Bracket)	44.74	1410	200	Oct 01, 2023	Apr 09, 2024
TRE23_FM5	29.67	1410	250	Oct 01, 2023	Apr 09, 2024
TRE23_FM6	71.99	1335	375	Oct 01, 2023	Apr 09, 2024
TRE23_FM7	25.59	720	300	Oct 01, 2023	Apr 09, 2024
TRE23_FM8	159.3	1410	400	Nov 14, 2023	May 16, 2024

3.1 Rainfall Analysis

The number and magnitude of significant storms is important for assessing the suitability of the data for WWF analysis. The greater the number, and the greater the range in magnitude of storms, the more reliable and accurate the assessment of the wet-weather flow. Events greater than 15 mm are considered significant, as these are roughly twice the size of an average storm and were used as the minimum cut-off point for events included in an RDII analysis.

Civica installed two (2) rain gauges for the purpose of wet-weather analysis. RG01 was installed at 1084 Concession St, Russell, ON and RG02 was installed at 717 Notre-Dame St, Embrun, ON. A total of nine (9) events, 15 mm or greater were captured by RG01 and a total of nine (9) events, 15 mm or greater were captured by RG02 over the duration of the flow monitoring period. The rain events included in the WWF analysis ranged from 15 mm to 40 mm. The storm with the highest precipitation captured by RG01 occurred on December 17th, 2023, and had a precipitation volume of 39.3mm over a duration of 28 hours and had a

Civica Infrastructure Inc. • 330 Rodinea Road, Unit 3, Vaughan, Ontario, Canada, L6A 4P5 • 905-417-9792 | www.civi.ca | info@civi.ca

rainfall intensity of a 2-5-year storm for a 4-hr return period. The storm with the highest precipitation captured by RG02 occurred on December 17th, 2023, and had a precipitation volume of 32.8mm over a duration of 32 hours and had a rainfall intensity of a 2-year storm for a 4-hr return period.

A summary of the rainfall amount and intensity for events greater than 15 mm captured in the study areas is presented below **Table 3-2** and **Table 3-3.**

Table 3-4 summarizes the rain gauges assigned to flow meters and the distance between the centroid of the catchment area and the assigned rain gauge.

An IDF chart illustrating the analysis of each captured rainfall event is provided in **Appendix A-2.**

Table 3-2: Rainfall Events Over 15mm Captured by RG01

Event	Duration (hrs)	Total Precipitation (mm)	Peak intensity over Tc (mm/hr)				Return Period (4-hr Timestep)
			2-hr	3-hr	4-hr	6-hr	
Oct 07, 2023	14.75	16.50	5.00	3.58	2.75	1.83	< 2 Yr
Dec 09, 2023	22.67	24.00	3.63	3.42	3.25	3.04	< 2 Yr
Dec 17, 2023	28.58	39.25	4.25	4.00	4.00	3.58	< 2 Yr
Dec 27, 2023	54.42	16.50	1.38	1.25	1.13	0.83	< 2 Yr
Jan 10, 2024	8.58	22.00	5.00	4.25	3.63	3.33	< 2 Yr
Jan 26, 2024	29.25	22.00	3.13	2.75	2.50	2.08	< 2 Yr
Mar 09, 2024	30.50	35.00	2.50	2.33	2.19	2.08	< 2 Yr
Apr 03, 2024	54.33	37.25	5.00	4.25	3.63	3.25	< 2 Yr
Apr 11, 2024	25.92	22.75	3.50	3.08	2.44	1.92	< 2 Yr
May 05, 2024	25.17	17.25	4.13	3.58	3.19	2.50	< 2 Yr

Table 3-3: Rainfall Events Over 15mm Captured by RG02

Event	Duration (hrs)	Total Precipitation (mm)	Peak intensity over Tc (mm/hr)				Return Period (4-hr Timestep)
			2-hr	3-hr	4-hr	6-hr	
Oct 06, 2023	29.83	19.50	4.25	3.00	2.38	1.58	< 2 Yr
Dec 09, 2023	22.50	20.50	2.63	2.50	2.38	2.08	< 2 Yr
Dec 17, 2023	31.83	32.75	3.38	3.25	3.13	2.92	< 2 Yr
Jan 09, 2024	14.92	20.00	2.50	2.17	2.06	1.79	< 2 Yr
Jan 13, 2024	16.92	15.25	2.75	2.25	2.00	1.46	< 2 Yr
Mar 09, 2024	29.83	33.50	2.63	2.42	2.38	1.96	< 2 Yr
Apr 03, 2024	50.50	27.75	4.75	4.08	3.69	3.00	< 2 Yr
Apr 11, 2024	53.67	23.00	3.13	2.75	2.06	1.79	< 2 Yr
May 05, 2024	19.67	15.00	3.75	3.33	2.81	2.13	< 2 Yr

Civica Infrastructure Inc. • 330 Rodinea Road, Unit 3, Vaughan, Ontario, Canada, L6A 4P5 • 905-417-9792 | www.civi.ca | info@civi.ca

Table 3-4: Rain Gauges Assigned to Flow Monitoring Station

Station Name	Assigned Rain Gauge	Distance (km) from assigned rain gauge to the centroid of the catchment area[1]
TRE23_FM1	TRE23_RG1	0.6
TRE23_FM2	TRE23_RG1	1.0
TRE23_FM3	TRE23_RG1	2.1
TRE23_FM4 (bracket)	TRE23_RG1	0.6
TRE23_FM5	TRE23_RG2	0.5
TRE23_FM6 (bracket)	TRE23_RG2	1.3
TRE23_FM7	TRE23_RG2	1.6
TRE23_FM8	TRE23_RG2	3.3

[1]The centroid of the bracket area was used where applicable

3.2 Dry-Weather Flow Analysis

Flows during dry days outside of the recessive influence of past rain events were selected to characterize the dry-weather flow generation rates. The following dry-weather flow (DWF) parameters have been calculated:

- Average Dry-Weather Flow (L/s and L/c/d)
- Average Daily Maximum Dry-Weather Flow (L/s)
- Average Daily Minimum Dry-Weather Flow (L/s)
- Dry-Weather Groundwater Infiltration (L/s and L/ha/d)
- % of GWI in Average DWF

The average DWF is a combination of sewage and groundwater infiltration, with sewage typically being the largest proportion. The Minimum DWF typically occurs at night-time (between 1:00 am and 3:00 am), and for smaller sewersheds it is typically 70-90% groundwater infiltration (GWI). (The percentage of GWI is typically less in large sewersheds, due to a larger proportion of the customer sewage flow arriving at the basin outlet after a longer delay in transit).

For the purposes of this study, the GWI is considered to be 85% of the minimum DWF. Dry-weather GWI will enter the sewer system when the depth of the groundwater table is higher than the elevation of the pipeline, and reaches joint, or pipe defects; as well as, when the condition of the sewer pipe allows for infiltration (e.g. water level outside of the pipe is higher than inside). Seasonal variations of GWI occur due to changes in groundwater table elevations and soil saturation. Typically, rates increase during springtime after snowmelt, and can remain relatively constant over weeks, and months thereafter.

The DWF results for all flow monitors for the entire monitoring period are presented in **Table 3-5**. Refer to **Appendix A-3** for dry-weather flow patterns and detailed analysis results.

Civica Infrastructure Inc. • 330 Rodinea Road, Unit 3, Vaughan, Ontario, Canada, L6A 4P5 • 905-417-9792 | www.civi.ca | info@civi.ca

Table 3-5: Summary of DWF Results

Station	Total Area (ha)	Avg DWF	Avg Daily Max DWF	Avg Daily Min DWF	Minimum DWF based GWI		
		L/s	L/s	L/s	L/s	L/ha/d	% GWI
TRE23_FM1	14.84	5.41	15.40	0.42	0.36	2,074.91	6.59
TRE23_FM2	28.54	0.83	2.21	0.160	0.14	412.91	16.36
TRE23_FM3	33.48	2.58	5.72	0.01	0.01	12.21	0.18
TRE23_FM4 (bracket)	44.74	1.52	3.87	0.10	0.08	387.89	5.36
TRE23_FM5	29.67	0.82	2.48	0.30	0.25	735.96	30.91
TRE23_FM6	71.99	6.06	11.30	1.94	1.65	1,983.47	27.28
TRE23_FM7	25.59	1.67	3.79	0.42	0.36	1,212.66	21.58
TRE23_FM8	159.3	11.90	21.92	3.01	2.56	1,388.01	21.52

3.3 Wet-Weather Flow Analysis

The wet-weather analysis separates the dry and wet-weather contributions to each catchment area. The peak wet-weather response is compared with the peak rainfall intensity. The events have been "normalized" by correlating storm intensities over the time of concentration of the catchment, with the measured peak inflow and infiltration (I&I) flow rates during events with greater than 15 mm of rainfall. Wet-weather flow (WWF) includes stormwater inflow, trench infiltration, and groundwater infiltration, and is generally a response to a rain event within the study area. Analysis of the individual RDII responses, including peak flow (L/s), peak rate (L/s/ha) and volumetric coefficient (Cv%), recorded during each rainfall event captured during the flow monitoring period for each flow monitor are summarized in the following section.

Refer to **Appendix A-4** for the detailed wet-weather analysis results.

3.3.1 FM01 WWF Analysis

A total of nine (9) rain events greater than or equal to 15 mm were captured by the FM01 flow monitor. For this station, due to small catchment size, there was a large amount of noise or variability in the flow rate. To account for this the 90-minute average flow was used for I/I analysis. The wet-weather flow responses for the FM01 catchment area are summarized below in **Table 3-6**. The maximum peak I&I rate observed was 0.75 L/s/ha during the March 09th,2024 event. This would classify as **high I&I Severity** and is higher than 0.26 L/s/ha, which is a frequently used I&I allowance in other municipalities in Ontario. As shown in **Figure 3-2** the 25 year projected I/&I rate is 1.3 which is considered **high I&I Severity** and is higher than the allowance.

Table 3-6: FM01 WWF Analysis

Event	Total Precipitation (mm)	Duration (hours)	Peak Intensity Over Tc (mm/hr)	Peak I&I Flow (L/s)	Peak I&I Rate (L/s/ha)	Volumetric Coefficient (%)
Dec 09, 2023	24.00	22.67	1.00	2.76	0.186	3.33 %
Dec 17, 2023	38.75	28.58	1.50	8.11	0.546	11.79 %
Dec 27, 2023	16.50	54.42	0.40	9.81	0.286	15.13 %
Jan 10, 2024	22.00	8.58	0.90	3.03	0.204	4.67 %
Jan 26, 2024	22.00	29.25	0.70	4.45	0.300	4.15 %
Mar 09, 2024	34.25	30.50	1.40	11.06	0.745	19.13 %
Apr 03, 2024	37.25	54.33	1.30	6.84	0.461	11.11 %
Apr 11, 2024	22.75	25.92	0.90	4.25	0.286	8.20 %

Civica Infrastructure Inc. • 330 Rodinea Road, Unit 3, Vaughan, Ontario, Canada, L6A 4P5 • 905-417-9792 | www.civi.ca | info@civi.ca

Event	Total Precipitation (mm)	Duration (hours)	Peak Intensity Over Tc (mm/hr)	Peak I&I Flow (L/s)	Peak I&I Rate (L/s/ha)	Volumetric Coefficient (%)
May 05, 2024	17.25	25.17	3.20	8.96	0.215	3.30 %
Average	**26.08**	**31.05**	**0.98**	**12.04**	**0.81**	**8.98 %**
Maximum	**38.75**	**54.42**	**1.50**	**18.19**	**1.23**	**19.13 %**

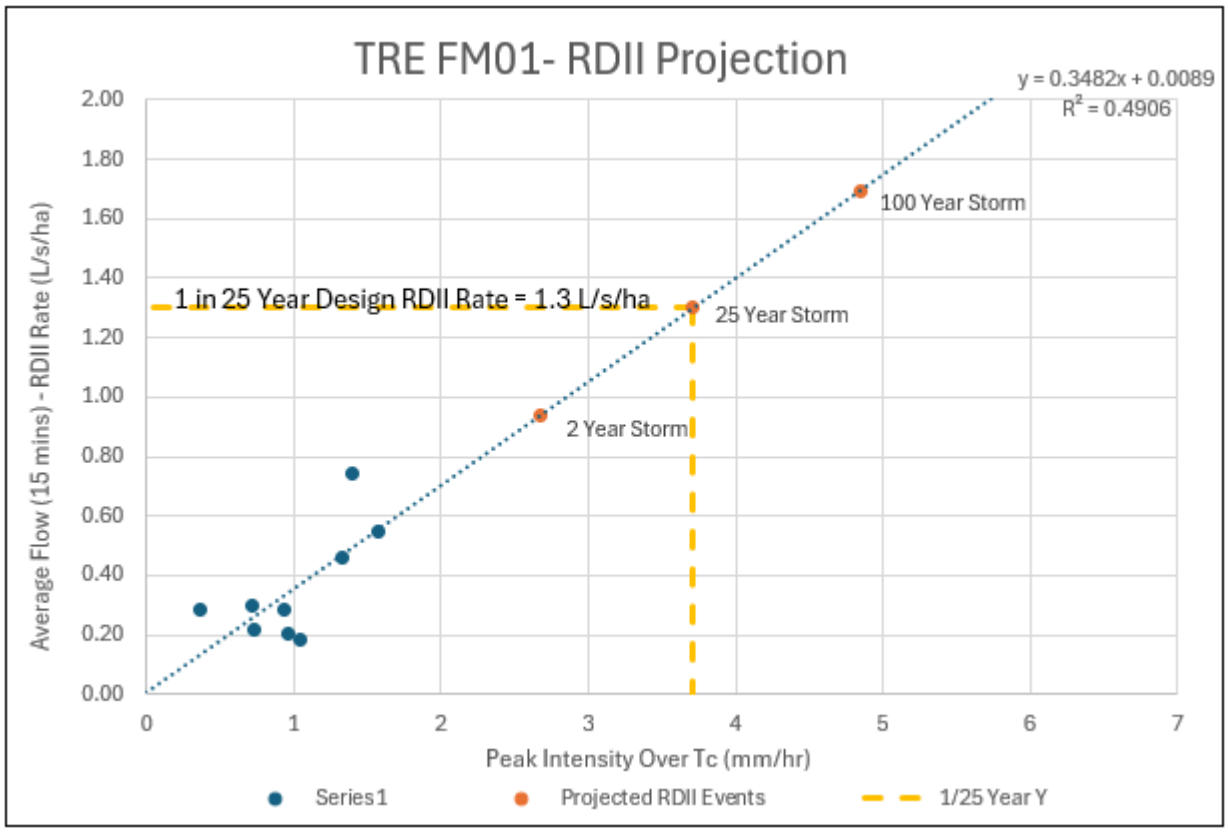


Figure 3-1: FM01 RDII Projection

Table 3-7: FM01 Projected RDII rate per storm size

Projected Events	Peak Intensity Over Tc (mins) Tc = 1410 min	Projected RDII Flow
Return Frequency	mm/hr	Peak Rate (L/s/ha)
5 Year Storm	2.7	0.94
25 Year Storm	3.7	1.30
100 Year Storm	4.8	1.70

3.3.2 FM02 WWF Analysis

A total of nine (9) rain events greater than or equal to 15 mm were captured by the FM02 flow monitor. The wet-weather flow responses for the FM02 catchment area are summarized below in **Table 3-8**. The maximum peak RDII rate observed was 0.05 L/s/ha during the Dec 09th, 2023 event. This would classify as **Low I&I Severity** and is less than the 0.26 L/s/ha allowance. As shown in **Figure 3-3** the 25 year projected I/&I rate is 0.156 which is considered **Low I&I Severity** and is less than the allowance.

Table 3-8: FM02 WWF Analysis

Event	Total Precipitation (mm)	Duration (hours)	Peak Intensity Over Tc (mm/hr)	Peak I&I Flow (L/s)	Peak I&I Rate (L/s/ha)	Volumetric Coefficient (%)
Dec 09, 2023	24.00	22.67	3.20	1.41	0.05	0.22 %
Dec 17, 2023	39.25	28.58	4.00	1.05	0.04	0.19 %
Dec 27, 2023	16.50	54.42	1.10	0.92	0.03	0.68 %
Jan 10, 2024	22.00	8.58	3.60	0.60	0.02	0.09 %
Jan 26, 2024	22.00	29.25	2.50	0.83	0.03	0.20 %
Mar 09, 2024	35.00	30.50	2.20	0.35	0.01	0.03 %
Apr 03, 2024	37.25	54.33	3.60	1.16	0.04	0.30 %
Apr 11, 2024	22.75	25.92	2.40	0.63	0.02	0.23 %
May 05, 2024	17.25	25.17	3.20	0.96	0.03	0.32 %
Average	**26.22**	**31.05**	**2.87**	**0.88**	**0.03**	**0.25 %**
Maximum	**39.25**	**54.42**	**4.00**	**1.41**	**0.05**	**0.68 %**

Civica Infrastructure Inc. • 330 Rodinea Road, Unit 3, Vaughan, Ontario, Canada, L6A 4P5 • 905-417-9792 | www.civi.ca | info@civi.ca

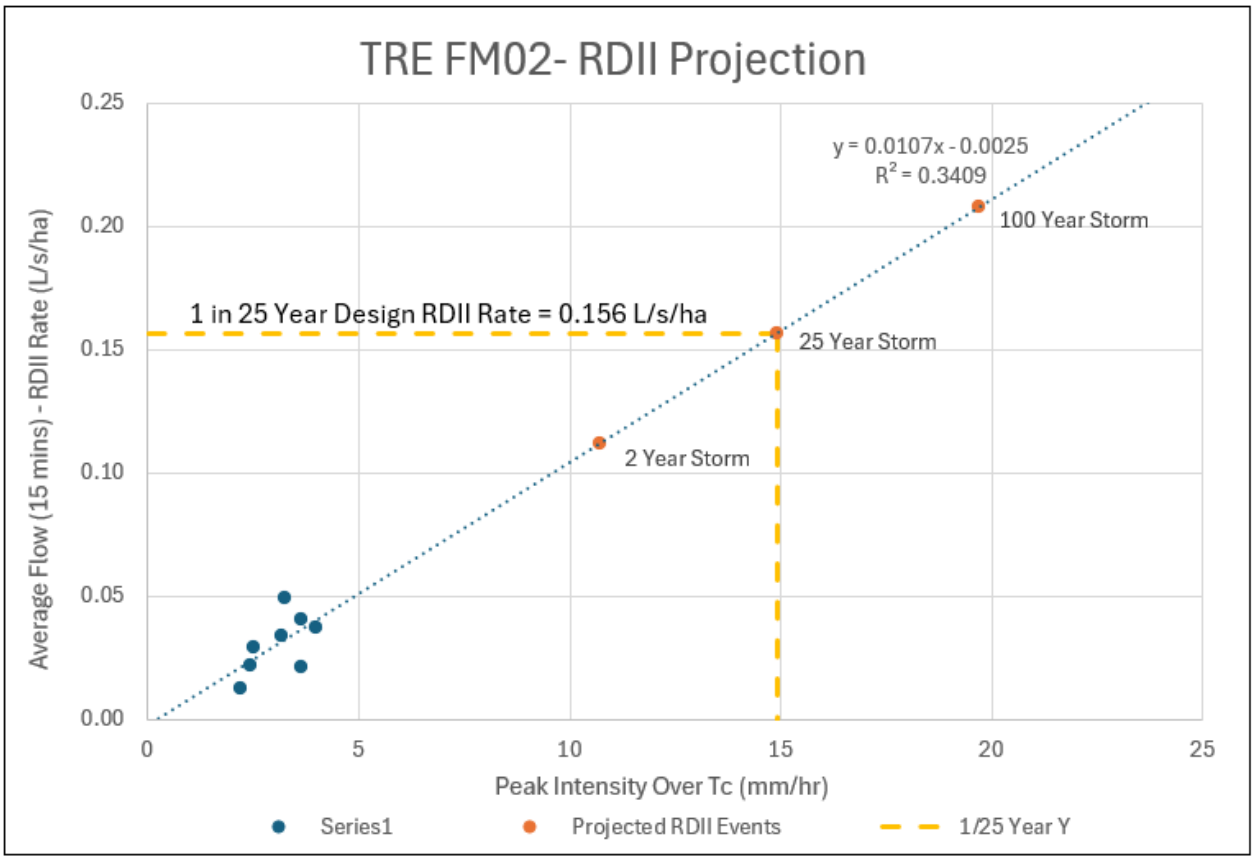


Figure 3-2: FM02 RDII Projection

Table 3-9: FM02 Projected RDII rate per storm size

Projected Events	Peak Intensity Over Tc (mins) Tc = 240 min	Projected RDII Flow
Return Frequency	mm/hr	Peak Rate (L/s/ha)
5 Year Storm	10.7	0.11
25 Year Storm	14.9	0.16
100 Year Storm	19.7	0.21

3.3.3 FM03 WWF Analysis

A total of eight (8) rain events greater than or equal to 15 mm of rain were captured by the FM03 flow monitor. The wet-weather flow responses for the FM03 catchment area are summarized below in **Table 3-10**. The maximum peak RDII rate observed was 0.11 L/s/ha during the December 17th, 2023, event. This would classify as **Low I&I Severity** and is less than the 0.26 L/s/ha allowance. As shown in **Figure 3-4** the 25

year projected I/&I rate is 0.346 which is considered **Low - Medium I&I Severity** and is more than the allowance.

Table 3-10: FM03 WWF Analysis

Event	Total Precipitation (mm)	Duration (hours)	Peak Intensity Over Tc (mm/hr)	Peak I&I Flow (L/s)	Peak I&I Rate (L/s/ha)	Volumetric Coefficient (%)
Oct 07, 2023	16.50	14.75	1.20	0.93	0.03	0.12 %
Dec 09, 2023	24.00	22.67	2.30	3.40	0.10	0.46 %
Dec 17, 2023	39.25	28.58	2.70	3.70	0.11	1.04 %
Dec 27, 2023	16.50	54.42	0.50	2.54	0.08	1.78 %
Jan 10, 2024	22.00	8.58	2.10	1.43	0.04	0.22 %
Jan 26, 2024	22.00	29.25	1.40	1.93	0.06	0.40 %
Mar 09, 2024	35.00	30.50	1.90	1.61	0.05	0.28 %
Apr 03, 2024	37.25	54.33	2.50	3.01	0.09	0.66 %
Average	**26.56**	**30.39**	**1.83**	**2.32**	**0.07**	**0.62 %**
Maximum	**39.25**	**54.42**	**2.70**	**3.70**	**0.11**	**1.78 %**

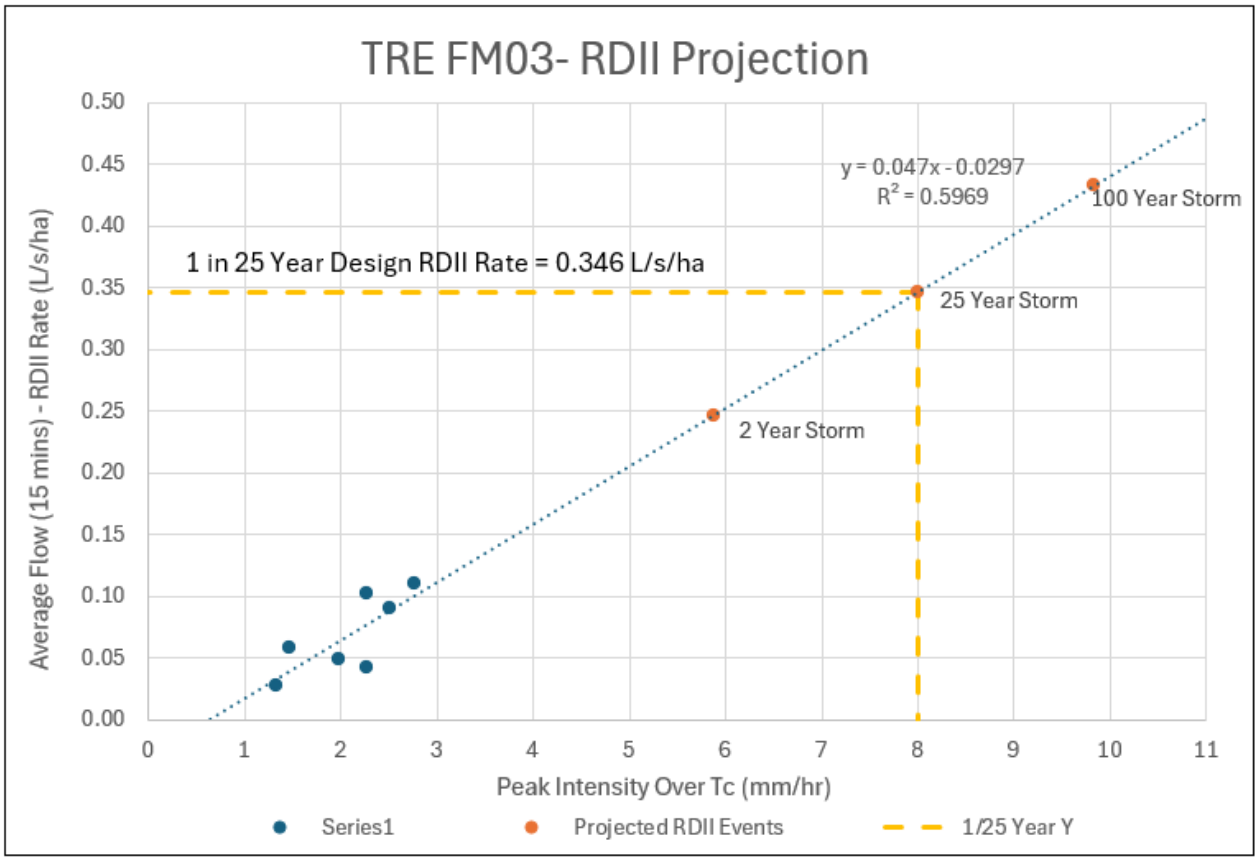


Figure 3-3: FM03 RDII Projection

Civica Infrastructure Inc. • 330 Rodinea Road, Unit 3, Vaughan, Ontario, Canada, L6A 4P5 • 905-417-9792 | www.civi.ca | info@civi.ca

Table 3-11: FM03 Projected RDII rate per storm size

Projected Events	Peak Intensity Over Tc (mins) Tc = 615 min	Projected RDII Flow
Return Frequency	mm/hr	Peak Rate (L/s/ha)
5 Year Storm	5.9	0.25
25 Year Storm	8.0	0.35
100 Year Storm	9.8	0.43

3.3.4 FM04 (bracket) WWF Analysis

A total of seven (7) rain events greater than or equal to 15 mm of rain were captured by the FM04 flow monitor. For FM04, due to the frequent pumping cycles in the flow data the 5 minute logging interval was not sufficient to analyze the total flow, therefore only the gravity flow portion of the flow was analyzed independently. The wet-weather flow responses for the FM04 catchment area are summarized below in **Table 3-12**. The maximum peak RDII rate observed was 0.12 L/s/ha during the March 09th event. This would classify as **Low I&I Severity** and is less than the 0.26 L/s/ha allowance. As shown in **Figure 3-5** the 25 year projected I/&I rate is 0.136 which is considered **Low I&I Severity** and is less than the allowance.

Table 3-12: FM04 WWF Analysis

Event	Total Precipitation (mm)	Duration (hours)	Peak Intensity Over Tc (mm/hr)	Peak I&I Flow (L/s)	Peak I&I Rate (L/s/ha)	Volumetric Coefficient (%)
Oct 07, 2023	16.50	14.75	0.70	1.59	0.10	0.61 %
Dec 09, 2023	24.00	22.67	1.00	1.21	0.07	0.52 %
Dec 17, 2023	38.75	28.58	1.50	1.83	0.11	1.31 %
Dec 27, 2023	16.50	54.42	0.40	1.48	0.09	1.64 %
Jan 10, 2024	22.00	8.58	0.90	1.49	0.09	0.71 %
Jan 26, 2024	22.00	29.25	0.70	1.67	0.10	0.56 %
Mar 09, 2024	34.25	30.50	1.40	1.87	0.12	1.32 %
Average	**24.86**	**26.96**	**0.94**	**1.72**	**0.09**	**0.95 %**
Maximum	**38.75**	**54.42**	**1.50**	**2.78**	**0.12**	**1.64 %**

Civica Infrastructure Inc. • 330 Rodinea Road, Unit 3, Vaughan, Ontario, Canada, L6A 4P5 • 905-417-9792 | www.civi.ca | info@civi.ca

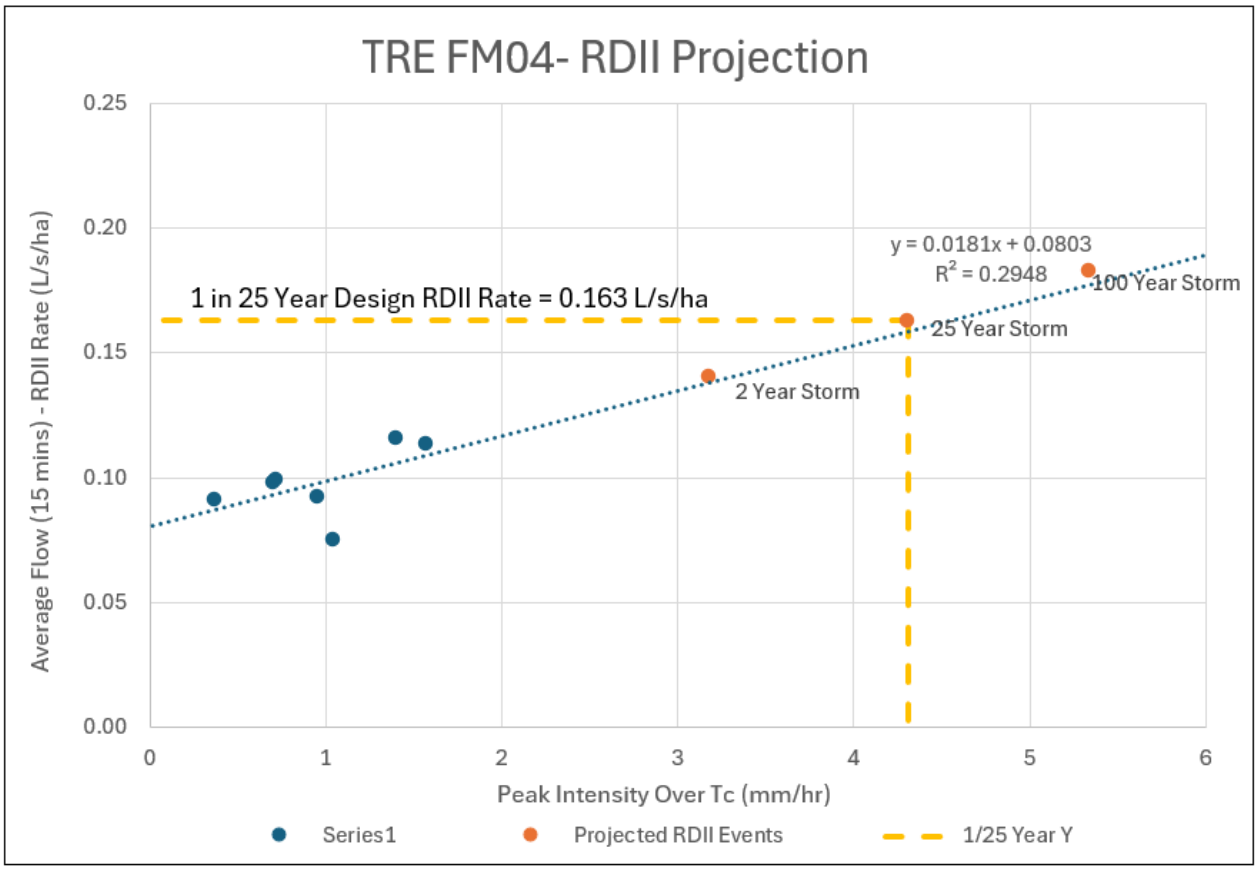


Figure 3-4: FM04 RDII Projection

Table 3-13: FM04 (Bracket) Projected RDII rate per storm size

Projected Events	Peak Intensity Over Tc (mins) Tc = 1410 min	Projected RDII Flow
Return Frequency	mm/hr	Peak Rate (L/s/ha)
5 Year Storm	3.2	0.141
25 Year Storm	4.3	0.163
100 Year Storm	5.3	0.183

Civica Infrastructure Inc. • 330 Rodinea Road, Unit 3, Vaughan, Ontario, Canada, L6A 4P5 • 905-417-9792 | www.civi.ca | info@civi.ca

3.3.5 FM05 WWF Analysis

A total of seven (7) rain events greater than or equal to 15 mm of rain were captured by the FM05 flow monitor. The wet-weather flow responses for the FM05 catchment area are summarized below in **Table 3-14**. The maximum peak RDII rate observed was 0.34 L/s/ha during the December 17th, 2023 event. This would classify as **Low- medium I&I Severity** and is greater than the 0.26 L/s/ha allowance. As shown in **Figure 3-6** the 25 year projected I/&I rate is 1.56 which is considered **high I&I Severity** and is greater than the allowance.

Table 3-14: FM05 WWF Analysis

Event	Total Precipitation (mm)	Duration (hours)	Peak Intensity Over Tc (mm/hr)	Peak I&I Flow (L/s)	Peak I&I Rate (L/s/ha)	Volumetric Coefficient (%)
Oct 06, 2023	19.50	29.83	0.70	0.91	0.03	0.25 %
Dec 09, 2023	20.50	22.50	0.90	2.47	0.08	0.59 %
Dec 17, 2023	32.25	31.83	1.30	10.06	0.34	3.01 %
Jan 09, 2024	20.00	14.92	0.90	0.63	0.02	0.09 %
Jan 13, 2024	15.25	16.92	0.60	0.28	0.01	0.02 %
Mar 09, 2024	33.50	29.83	1.40	7.92	0.27	3.37 %
Apr 03, 2024	27.75	50.50	1.00	2.64	0.09	0.52 %
Average	**24.11**	**28.05**	**0.97**	**3.56**	**0.12**	**1.12 %**
Maximum	**33.50**	**50.50**	**1.40**	**10.06**	**0.34**	**3.37 %**

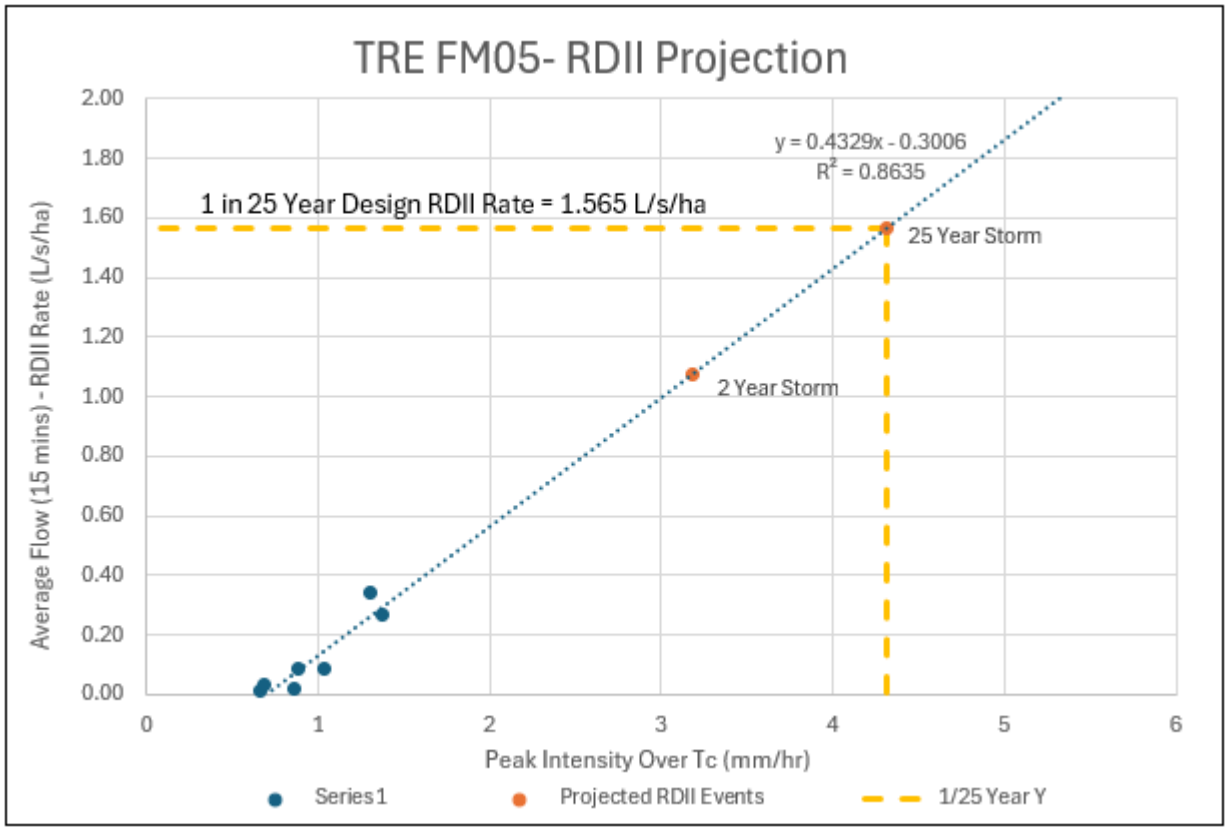


Figure 3-5: FM05 RDII Projection

Table 3-15: FM05 Projected RDII rate per storm size

Projected Events	Peak Intensity Over Tc (mins) Tc = 1410 min	Projected RDII Flow
Return Frequency	mm/hr	Peak Rate (L/s/ha)
5 Year Storm	3.2	1.08
25 Year Storm	4.3	1.57
100 Year Storm	5.3	2.01

3.3.6 FM06 (total) WWF Analysis

A total of seven (7) rain events greater than or equal to 15 mm of rain were captured by the FM06 flow monitor. The wet-weather flow responses for the FM06 catchment area are summarized below in **Table 3-16**. The maximum peak RDII rate observed was 0.22 L/s/ha during the December 17th,2023 event. This would classify as **Low I&I Severity** and is less than the 0.26 L/s/ha allowance. As shown in **Figure 3-7** the 25 year projected I/&I rate is 0.779 which is considered **High - Medium I&I Severity** and is greater than the allowance.

Table 3-16: FM06 WWF Analysis

Event	Total Precipitation (mm)	Duration (hours)	Peak Intensity Over Tc (mm/hr)	Peak I&I Flow (L/s)	Peak I&I Rate (L/s/ha)	Volumetric Coefficient (%)
Oct 06, 2023	19.50	29.83	0.70	3.75	0.05	0.21 %
Dec 09, 2023	20.25	22.50	0.90	5.88	0.08	0.72 %
Dec 17, 2023	32.50	31.83	1.30	15.77	0.22	2.85 %
Jan 09, 2024	20.00	14.92	0.90	5.53	0.08	0.45 %
Jan 13, 2024	15.25	16.92	0.70	3.86	0.05	0.46 %
Mar 09, 2024	33.00	29.83	1.40	11.19	0.16	2.55 %
Apr 03, 2024	27.75	50.50	1.10	4.98	0.07	1.06 %
Average	24.04	28.05	1.00	7.28	0.10	1.19 %
Maximum	33.00	50.50	1.40	15.77	0.22	2.85 %

Civica Infrastructure Inc. • 330 Rodinea Road, Unit 3, Vaughan, Ontario, Canada, L6A 4P5 • 905-417-9792 | www.civi.ca | info@civi.ca

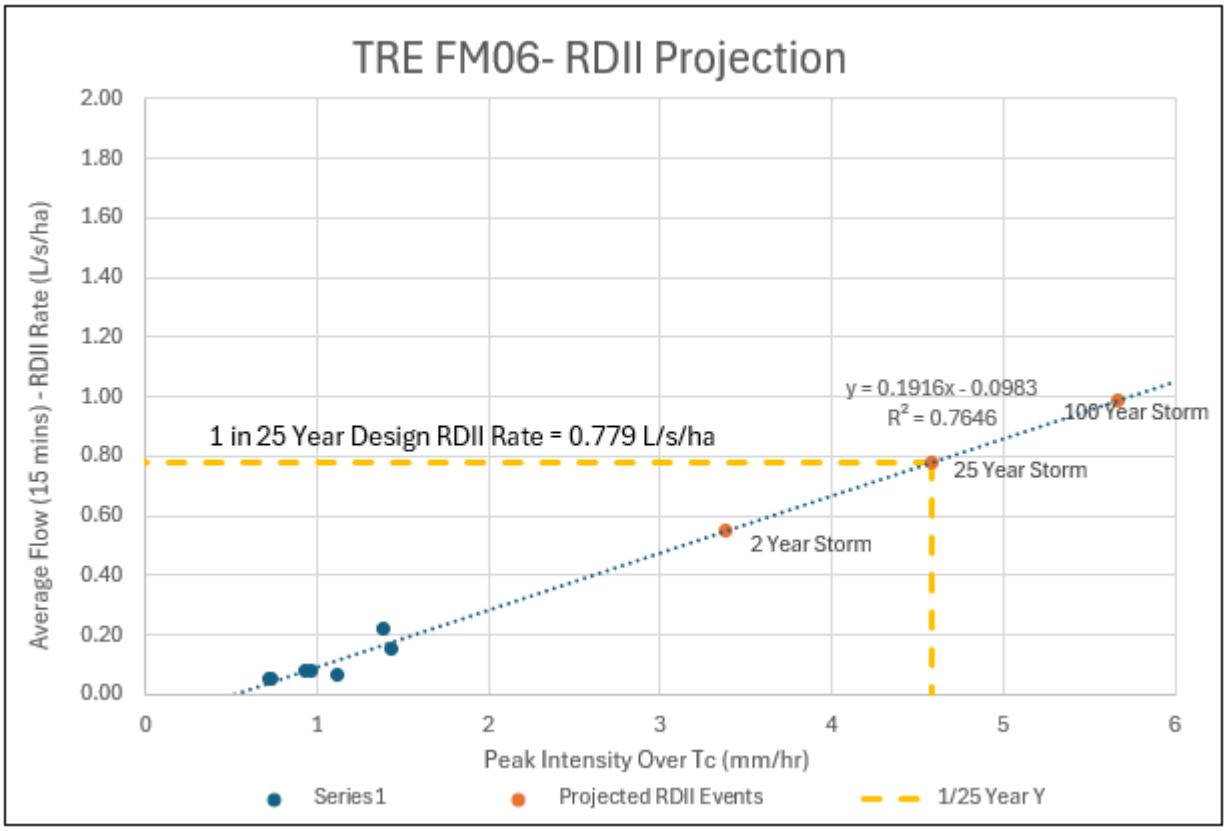


Figure 3-6: FM06 RDII Projection

Table 3-17: FM06 Projected RDII rate per storm size

Projected Events	Peak Intensity Over Tc (mins) Tc = 1335 min	Projected RDII Flow
Return Frequency	mm/hr	Peak Rate (L/s/ha)
5 Year Storm	3.4	0.55
25 Year Storm	4.6	0.78
100 Year Storm	5.7	0.99

Civica Infrastructure Inc. • 330 Rodinea Road, Unit 3, Vaughan, Ontario, Canada, L6A 4P5 • 905-417-9792 | www.civi.ca | info@civi.ca

3.3.7 FM07 WWF Analysis

A total of seven (7) rain events greater than or equal to 15 mm of rain were captured by the FM07 flow monitor. The wet-weather flow responses for the FM07 catchment area are summarized below in **Table 3-18**. The maximum peak RDII rate observed was 0.11 L/s/ha during the March 09th,2024 event. This would classify as **Low I&I Severity** and is less than the 0.26 L/s/ha allowance. As shown in **Figure 3-8** the 25 year projected I/&I rate is 0.301 which is considered **Low - Medium I&I Severity** and is greater than the allowance.

Table 3-18: FM07 WWF Analysis

Event	Total Precipitation (mm)	Duration (hours)	Peak Intensity Over Tc (mm/hr)	Peak I&I Flow (L/s)	Peak I&I Rate (L/s/ha)	Volumetric Coefficient (%)
Oct 06, 2023	19.50	29.83	1.10	0.86	0.03	0.15 %
Dec 09, 2023	20.50	22.50	1.60	1.87	0.07	0.53 %
Dec 17, 2023	32.75	31.83	2.10	1.79	0.07	1.37 %
Jan 09, 2024	20.00	14.92	1.50	2.06	0.08	0.57 %
Jan 13, 2024	15.25	16.92	1.20	1.96	0.08	1.41 %
Mar 09, 2024	33.50	29.83	1.90	2.67	0.11	1.33 %
Apr 03, 2024	27.75	50.50	1.80	2.64	0.10	0.93 %
Average	**24.18**	**28.05**	**1.60**	**1.98**	**0.08**	**0.90 %**
Maximum	**33.50**	**50.50**	**2.10**	**2.67**	**0.11**	**1.41 %**

Civica Infrastructure Inc. • 330 Rodinea Road, Unit 3, Vaughan, Ontario, Canada, L6A 4P5 • 905-417-9792 | www.civi.ca | info@civi.ca

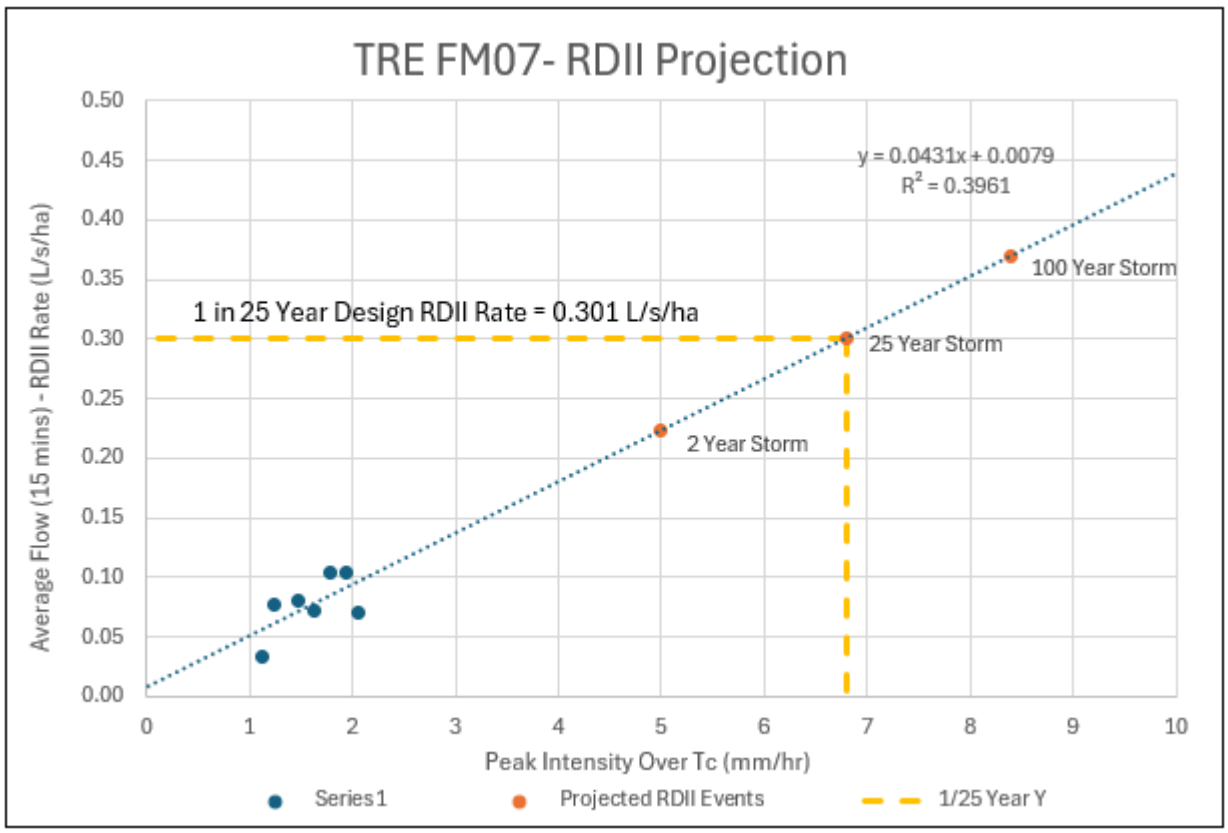


Figure 3-7: FM07 RDII Projection

Table 3-19: FM07 Projected RDII rate per storm size

Projected Events	Peak Intensity Over Tc (mins) Tc = 720 min	Projected RDII Flow
Return Frequency	mm/hr	Peak Rate (L/s/ha)
5 Year Storm	5.0	0.22
25 Year Storm	6.8	0.31
100 Year Storm	8.4	0.37

Civica Infrastructure Inc. • 330 Rodinea Road, Unit 3, Vaughan, Ontario, Canada, L6A 4P5 • 905-417-9792 | www.civi.ca | info@civi.ca

3.3.8 FM08 WWF Analysis

A total of eight (8) rain events greater than or equal to 15 mm of rain were captured by the FM08 flow monitor. The wet-weather flow responses for the FM08 catchment area are summarized below in **Table 3-20**. The maximum peak RDII rate observed was 0.12 L/s/ha during the December 17th,2023 event. This would classify as **Low I&I Severity** and is less than the 0.26 L/s/ha allowance. As shown in **Figure 3-9** the 25 year projected I/&I rate is 0.308 which is considered **Low - Medium I&I Severity** and is greater than the allowance.

Table 3-20: FM08 WWF Analysis

Event	Total Precipitation (mm)	Duration (hours)	Peak Intensity Over Tc (mm/hr)	Peak I&I Flow (L/s)	Peak I&I Rate (L/s/ha)	Volumetric Coefficient (%)
Dec 09, 2023	20.50	22.50	0.90	14.88	0.09	0.92 %
Dec 17, 2023	32.25	31.83	1.30	19.00	0.12	2.21 %
Jan 09, 2024	20.00	14.92	0.90	9.98	0.06	0.87 %
Jan 13, 2024	15.25	16.92	0.60	7.15	0.05	0.22 %
Mar 09, 2024	33.50	29.83	1.40	17.52	0.11	1.11 %
Apr 03, 2024	27.75	50.50	1.00	15.15	0.10	1.14 %
Apr 11, 2024	23.00	53.67	0.80	13.91	0.09	2.21 %
May 05, 2024	15.00	19.67	0.60	0.00	0.00	0.00 %
Average	**23.41**	**29.98**	**0.94**	**12.20**	**0.08**	**1.09 %**
Maximum	**33.50**	**53.67**	**1.40**	**19.00**	**0.12**	**2.21 %**

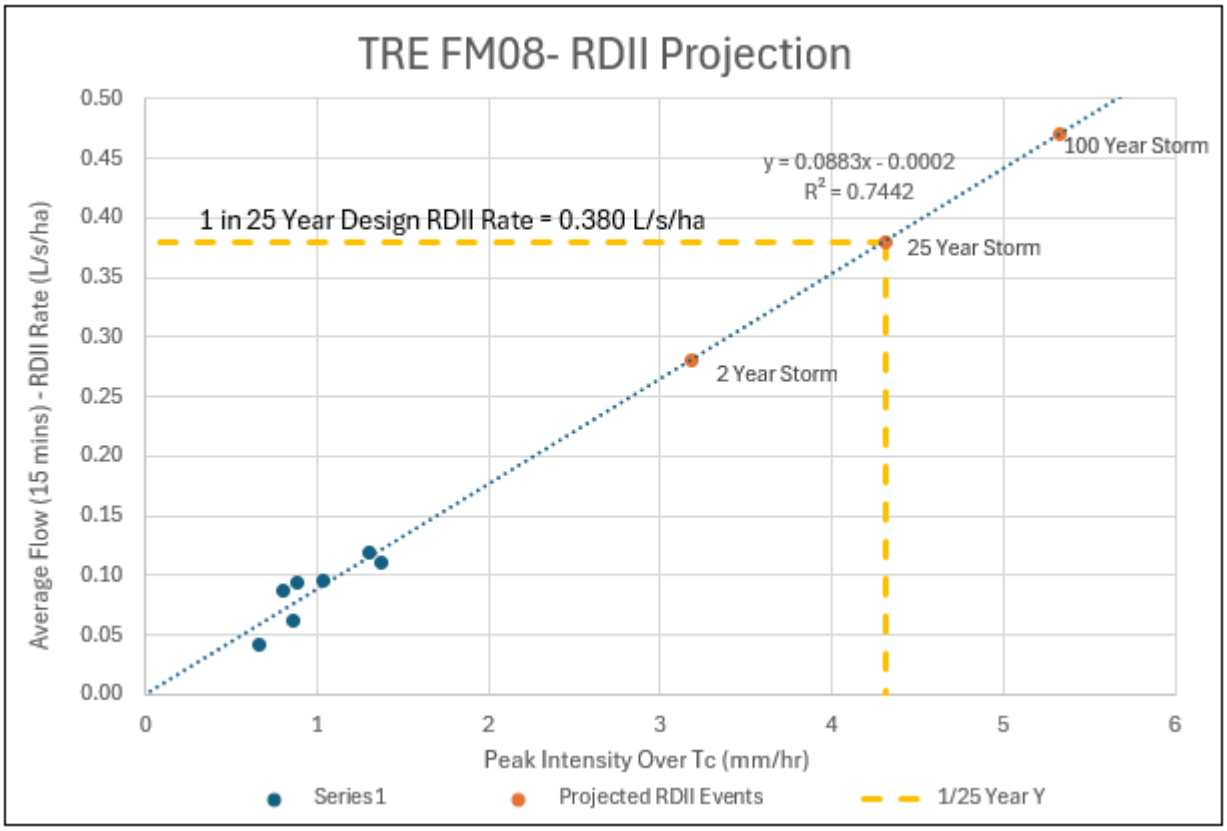


Figure 3-8: FM08 RDII Projection

Table 3-21: FM08 Projected RDII rate per storm size

Projected Events	Peak Intensity Over Tc (mins) Tc = 1410 min	Projected RDII Flow
Return Frequency	mm/hr	Peak Rate (L/s/ha)
5 Year Storm	3.2	0.280
25 Year Storm	4.3	0.380
100 Year Storm	5.3	0.471

Civica Infrastructure Inc. • 330 Rodinea Road, Unit 3, Vaughan, Ontario, Canada, L6A 4P5 • 905-417-9792 | www.civi.ca | info@civi.ca

3.3.9 Average and Projected Peak I&I for all Catchments

Analysis of the average and maximum I&I responses recorded during the flow monitoring period, as well as the projected 25-year I&I rate, were completed for each catchment for all rain events greater than 15 mm. The results are summarized below in **Table 3-22**.

Table 3-22: Average and Projected I&I Analysis for the Entire Monitoring Period

Station	Average Peak I&I Rate (L/s/ha)	Highest Recorded Peak I&I Response				25-Year Projected Peak I&I Rate (L/s/ha)	Max Cv%	Outlier events[1]
		Event	Volume (mm)	Peak Intensity over Tc (mm/hr)	Measured Peak I&I Rate (L/s/ha)			
TRE23_FM1	0.81	Dec 17, 2023	38.75	1.50	0.85	1.30	11.79%	N/A
TRE23_FM2	0.03	Dec 17, 2023	39.25	4.00	0.04	0.16	0.19%	Dec 27, 2023
TRE23_FM3	0.07	Dec 17, 2023	39.25	2.70	0.11	0.35	1.04%	N/A
TRE23_FM4 (bracket)	0.09	Dec 17, 2023	38.75	1.50	0.10	0.06	1.31%	N/A
TRE23_FM5	0.12	Mar 09, 2024	33.50	1.40	0.27	1.57	3.37%	N/A
TRE23_FM6	0.10	Mar 09, 2024	33.00	1.40	0.16	0.78	2.55%	N/A
TRE23_FM7	0.08	Mar 09, 2024	33.50	1.90	0.11	0.30	1.33%	N/A
TRE23_FM8	0.08	Mar 09, 2024	33.50	1.40	0.11	0.38	1.11%	N/A
TRE23_FM6 (bracket)	n/a	n/a	n/a	n/a	n/a	0.23	n/a	N/A

[1]Outlier events: Events which were excluded from wet-weather analysis.
[2]FM06 bracket flow analysis was performed by subtraction of upstream area 25-year projection(s) from total area 25-year projection

The detailed RDII analysis and subsequent I&I projections for each flow monitor can be found in **Appendix A-4** and **Appendix A-5**.

Civica Infrastructure Inc. • 330 Rodinea Road, Unit 3, Vaughan, Ontario, Canada, L6A 4P5 • 905-417-9792 | www.civi.ca | info@civi.ca

4.0 Conclusions

Based on the findings of this report, the following conclusions can be made:

1. Civica installed two (2) rain gauges for the purpose of wet-weather analysis. RG01 was installed at 1084 Concession St, Russell, ON and RG02 was installed at 717 Notre-Dame St, Embrun, ON. A total of nine (9) events, 15 mm or greater were captured by RG01 and a total of nine (9) events, 15 mm or greater were captured by RG02 over the duration of the flow monitoring period. The rain events included in the WWF analysis ranged from 16 mm to 43 mm. The storm with the highest precipitation captured by RG01 occurred on December 17th, 2023, and had a precipitation volume of 39.3mm over a duration of 28 hours and had a rainfall intensity of a 2-5-year storm for a 4-hr return period. The storm with the highest precipitation captured by RG02 occurred on December 17th, 2023, and had a precipitation volume of 32.8mm over a duration of 32 hours and had a rainfall intensity of a 2-year storm for a 4-hr return period.

2. The main metrics for evaluating I&I severity in each flow monitoring area are summarized in the table below and the following conclusions can be made:

   a. TRE23_FM1 and TRE23_FM5 flow monitored areas have the highest Projected Peak I&I Rates are higher than the design criteria (0.26 L/s/ha) and are considered high severity. TRE23_FM6 had the next highest Projected I/I rate, however, bracket flow analysis shows that this is primarily due to the I/I flowing from the upstream station (FM5). Projected I/I rates for FM3, FM7, and FM8 are considered moderate. Projected I/I rates for FM2, FM4 bracket, and FM6 bracket low.
   b. Measured groundwater infiltration is considered low in all areas.

Station	% of GWI in Average DWF	25-Year Projected Peak I&I Rate (L/s/ha)
TRE23_FM1	7%	1.30
TRE23_FM2	16%	0.16
TRE23_FM3	0%	0.35
TRE23_FM4 (bracket)	5%	0.06
TRE23_FM5	31%	1.57
TRE23_FM6	27%	0.78
TRE23_FM6 (bracket)	22%	0.23
TRE23_FM7	22%	0.30
TRE23_FM8	22%	0.38

3. The characteristics of the dry weather flows are summarized in the table below:

Civica Infrastructure Inc. • 330 Rodinea Road, Unit 3, Vaughan, Ontario, Canada, L6A 4P5 • 905-417-9792 | www.civi.ca | info@civi.ca

Station	Average Dry Weather Flow (L/s)	Average Daily Max Dry Weather Flow (L/s)	Average Daily Min Dry Weather Flow (L/s)
TRE23_FM1	5.41	15.40	0.42
TRE23_FM2	0.83	2.21	0.16
TRE23_FM3	2.58	5.72	0.01
TRE23_FM4 (Bracket)	1.52	3.87	0.10
TRE23_FM5	0.82	2.48	0.30
TRE23_FM6	6.06	11.30	1.94
TRE23_FM7	1.66	3.76	0.42
TRE23_FM8	11.89	21.92	3.01

5.0 Recommendations

1. Further specialized flow monitoring analysis is recommended. Within the Township of Russell and Embrun, the responses to rainfall and high peak I&I rates are an indication of various inflow sources such as cross-connected downspouts, surface drains, catch basins, mainline infiltration gushers, cross-connected foundation drains etc. Inflow sources can be identified through various types of testing. Smoke and dye testing can be used to identify more direct source types such as downspouts, surface drains and catch basins which tend to be fast responding with short recession time. Wet weather maintenance hole and CCTV inspections can be used to identify mainline infiltration gushers which tend to be slow responding with long recession times. Using Civica's innovative approach, flow monitoring data from each monitor can be analyzed individually to statistically quantify the fast, medium and slow response to rainfall. This information can be very useful in targeting which type of sources exist in each catchment area and which investigations may yield the best results. Once flow monitoring catchments areas are prioritized for investigations it is recommended to perform another layer of priority based on characteristics such as home and sewer age, pipe material and sewer elevation, with priority on worse conditions such as concrete pipes and older neighborhoods.

2. Subsequent Investigations such as wet weather CCTV, wet weather maintenance hole inspections and smoke and dye testing will be recommended based on specialized analysis. Preliminary results indicate that TRE23_FM1 and TRE23_FM5 are highest priority for investigation.

Civica Infrastructure Inc. • 330 Rodinea Road, Unit 3, Vaughan, Ontario, Canada, L6A 4P5 • 905-417-9792 | www.civi.ca | info@civi.ca

6.0 Appendix

Appendix A-1 – Data Charts

Appendix A-2 – Aggregate Data

Appendix A-3 – IDF Analysis

Appendix A-4 – Dry-Weather Flow Analysis

Appendix A-5 – Wet-Weather Flow Analysis


Engineering
for people