

Submission Instructions

Save the completed form and upload it as an attachment to Transfer Payment Ontario by the deadline. The technical schedule is intended to gather more detailed information and provide assessment scores on the criticality of the proposed project.

In order to be considered eligible for funding, applicants must complete the schedule in full.

For information on the eligibility requirements and desired outcomes of the Drinking Water category, please refer to the Program Guidelines.

1.1 Key Issue Description

Please indicate which of the following benefits are anticipated for the community as a result of the proposed project. Where a benefit is selected, **provide a description of the issue to be addressed and how the project addresses the issue to achieve the selected benefit.**

Mandatory.

Benefit	Details
Improves and/or makes drinking water assets more reliable?	Modern PVC pipe will provide more reliable and extended service life with less potable water main break risk. The reduction in water main breakages will reduce the potential for contamination or low pressure events. It will reduce water losses through leakage, provide more uniform chlorine residual and make the main less prone to freezing from inadequate burial depth. The new main will improve the ability to isolate sections through properly positioned valves that maximize WTP ability to supply the distribution and Water Tower on the North Side of the Village. There are only two intersections in the entire Village (County Rd 2/ Shanly Rd. and County Rd. 2/Dishaw St.) where water is conveyed back and forth from the south side (WTP location) and the north side (Water Tower Location). If an asset failure occurs between, or at one of these two specified locations along County Rd 2, the system is reduced to only one feed connecting north and south. Losing both feeds would necessitate isolation of the north from the south parts of the Village. This requires the north side strictly to be fed from the Water Tower and the south side to convert to direct pump pressure from the WTP. This situation leads to the entire water system becoming susceptible to inconsistent pressure and additionally, reduced fire protection on the north side of the village. The project will include a third supply transmission point of water between the north and south at County Rd 2/ Walker Street, with appropriate valving to reduce the number of potential service interruptions to residents and the ability to always have two supply points between the north and south sides of Cardinal in service at one time.

Select all that apply.

Benefit	Details
<input checked="" type="checkbox"/> Addresses an urgent public health and/or safety issue(s)?	Removing the cast iron pipe and replacing it with more modern PVC will help to maintain a more consistent chlorine residual by eliminating the potential for pipe tuberculation. Currently the South Walker St. main is a dead end. The extension of the South Walker St. main will loop South Walker St. from Canal St. to the new County Rd. 2 main. It will provide a third avenue to transmit water to

Benefit	Details
	or from the north end of the village .
<input checked="" type="checkbox"/> Reduces the probability of system breakages, failures and cross contamination in system, and/or service interruptions?	<p>Replacement of the asset will reduce the high level of risk of both failure and consequence to a low level scale based on the risk assessment criteria set forth in the AMP.</p> <p>The current placement of the water mains in relation to the sanitary mains in this section does not meet Ontario standard. Horizontal separation between water and sewer pipes should be greater than 2.5 meters. Removing the cast iron pipe and replacing it with more modern PVC will reduce the risk of galvanic corrosion. Replacing the water main and providing adequate separation between the sanitary and water main will decrease potential for any cross contamination and health related problems during water break repairs or situations should system water pressure drop below 20psi.</p>
<input checked="" type="checkbox"/> Achieves service levels or key performance indicators established by the applicant in their asset management plan (if municipality or Local Services Board) or capital plan (if First Nation community)?	<p>The majority of the components of this project have extended past their useful life, from both an age and conditioned based perspective and are deemed critical. These assets were installed in 1953. Based on age alone, the probability of failure is high for all sections and are rated as 5 on the 1-5 scale with 5 indicating likely to occur.</p> <p>Increasing the main size to 200mm (8in) water main to the west will increase community safety through the provision of improved flow for fire protection and maintain a more consistent hydraulic pressure.</p>
<input checked="" type="checkbox"/> Reduces lifecycle costs?	<p>Replacement of the asset will reduce lifecycle costs. Modern PVC pipe will provide more reliable and extended service life with less potable water main breaks. The current system consists of 200mm cast iron from Shanly Rd. to the eastern extent and 150mm cast iron from Shanly Rd. to the western extent of the project. These sections of the distribution system have incurred several breaks over the past years which increased operating costs to the system. The elimination of water breaks will reduce operating costs and allow for user fee revenue to be used to fund capital replacements in the future on other sections of the system, further reducing lifecycle costs to the entire system.</p>

1.2 What are the benefits of your Water Project?

Choose at least one benefit (maximum of 4)

- ☒ Minimize incidence of system breakages, failures and contamination
- ☒ Reduced risk of cross contamination in system
- ☐ Improved system redundancy
- ☐ Decrease in breakage or other failures
- ☐ Improved maintenance efficiency
- ☒ Improved system efficiency/reliability through reduction in leaks or unaccounted water
- ☐ Improved system pressures
- ☐ Reduced risk in environmental contamination
- ☒ Improved fire protection
- ☐ Reduced risk of incidence of supplying inadequate treated water to meet Ontario Drinking Water Standards (ODWS)
- ☐ Compliance with legal requirements, such as public health advisory, orders, or drinking water licensing requirements

☐ Other

Please describe:

1.3 Criteria for Assessment

1. Does the quality of the treated water leaving the water treatment plant meet the requirements of Tables 1, 2, and 3 of the Ontario Drinking Water Quality Standards (ODWQS) or future standards the Ministry of Environment Conservation and Parks could implement? (Please check one box)

☒ Yes ☐ No (laboratory test results are required to be submitted)

If no, complete the following table. Provide documentation in the form of laboratory testing results and discussions of the cause of these standards non-compliance.

Parameter Name	Maximum Acceptable Concentration as per ODWS (MAC) or Interim Maximum Acceptable Concentration as per ODWS (IMAC)	Measured Value (units)	Percent above ODWS	Number of Years of Samples	Number of Samples per Year	Number of Instances of Exceeding Criteria per Year

2. Do any of the following apply (currently or in the past): a public health advisory related to the potability of the drinking water (issued by the Ministry of Health); a Provincial Order related to the potability of the drinking water; regulatory relief related to the infrastructure-related regulatory requirement of a drinking water standard (issued by MECP or the federal government)?

☐ Yes ☒ No

If Yes, attach a copy of current or previous advisories/orders and complete questions A to C below. For Indigenous communities, this would include advisories/information provided by an environmental health officer employed by the Government of Canada.

A. Is the public health advisory, Provincial Order, or regulatory relief related to:

- ☐ Microbiological contamination ► ☐ At the plant ☐ In the distribution system
☐ Chemical contamination ► ☐ At the plant ☐ In the distribution system

Provide a brief discussion on the cause of the contamination or issue.

B. How long has the public health advisory or Provincial Order been in place?

C. Has corrective action been requested by MECP or the federal government?

☐ Yes ☐ No

If yes, provide a brief description of any corrective action taken.

3. During the past three years has the distribution system experienced water pressures below 275 KPa (40 psi) under normal conditions? (Note: Fire flow conditions are not considered normal use.)

☐ Yes ☒ No If yes, complete the following table. ▼

Pressure Range	Number of Days Per Year			Number of Dwellings Affected			Frequency of Occurrences		
	Year 1	Year 2	Year 3	Year 1	Year 2	Year 3	Year 1	Year 2	Year 3
275-225 Kpa									
225-175 Kpa									
< 175 Kpa									

4. Is the system currently experiencing or likely to experience structural failure (including watermain breaks)?

☒ Yes ☐ No

If yes, explain and provide supporting documentation (e.g., inspection/assessment report or break records) to indicate that the structure must be replaced.

The majority of the components in this project have extended past their useful life from both an age and conditioned based perspective. Pipe assets are deemed as critical in the AMP. Based on age alone, the probability of failure is high for all sections and are rated as 5 on the 1-5 scale with 5 indicating likely to occur.

- See attached file of County Road 2 water main break history.

5. Does the system fail to meet any MECP policy, operational or design requirements (e.g., environmental detrimental effects, inadequate treated water storage, equipment failure, backflow/cross connection control, internal corrosion, emergency power etc.) not already covered by other questions in this section, thereby posing a threat to public health and/or safety, or the environment?

☐ Yes ☒ No

If yes, provide details and supporting documents.

6. **System efficiency:** Please provide the Infrastructure Leakage Index value for the system in each of the last three years in the following table, or an equivalent metric that can be used to evaluate the volume of water put into the distribution system versus the volume delivered to customers. If using the latter, confirm methodology and source of information, providing supporting documentation (engineering reports, etc.) as applicable.

Infrastructure Leakage Index Value

Year 1	Year 2	Year 3

OR

Volume into system vs. Volume to end users

Year 1	Year 2	Year 3
117517	43577	33708

Please provide any explanatory notes, as appropriate.

Total system water produced(Water Treatment Plant), subtract total system billed(metered) = Water loss.

Year 1 - (2018) - (233407 m3 - 115890 m3)

Year 2 - (2019) - (193004 m3 - 149427 m3)

Year 3 - (2020) - (156810 m3 - 123102 m3)

Losses include leaking distribution, water main breaks, system flushing and fire demand incidents.

7. **System Users:** If your proposed project involves water treatment facilities, pumping stations, and reservoirs, please provide the number of people served by the asset(s) including any users that do not reside within your municipality/FN/LSB's geographic boundaries. For example, a household of four would mean four people for the population served count.

If your proposed project involves water distribution or collection assets (i.e. transmission and local pipes, etc), please provide the number of people served by the service network to which the asset belongs. For example, a household of four would mean four people for the population served count.

Within the scope of the project, from a local pipe perspective, there are 27 service connection and 1 apartment complex of 16 units. Assuming an average of three persons per dwelling: 129 residents.

The County Rd. 2 main, being centrally located, also serves as a transmission trunk for the entire Village of Cardinal. During the time the Water Treatment Plant, (WTP), is running, it directs water from the WTP to fill the tower, service residents to the north of County Rd 2 and the County Rd. 2 corridor. When the tower is full and the WTP shuts down, It serves as a transmission line to service both the Highway 2 corridor and all residents south of County Rd. 2.

Based on Stats Canada estimated average of 3 persons per household, the total estimated serviced on the entire system is 2187

8. **System Revenues and Rate Structure:** Of the total costs required to maintain existing assets in the system (i.e., operations, maintenance, interest on loans, amortization of existing capital assets, capital upgrades **but** excluding system expansion) approximately what percent is covered by revenues collected from the existing ratepayer base?

100% of the total costs of operating maintenance costs and capital upgrades are covered by user fee revenues collected by ratepayer base.

A. Please confirm the current rate structure e.g., increasing block rate, decreasing block rate, flat fee, constant unit charge, other, or a combination of rates, as applicable for residential, commercial, industrial and large industrial users. Please provide additional details on rate structure, as appropriate including factors distinguishing industrial from large industrial ratepayers.

(i) Residential

As per By-Law 2019-08

Part A - Monthly Fixed service charge = \$24.94

Part B - Single bloc Consumption Rate by Metered Usage:

Less than 20 m3 / month = \$2.00 /m3 of metered usage per period

Greater than 20 m3 / month = \$3.00 /m3 of metered usage per period

Capital Levy \$2.00/month

(ii) Commercial

Part A - Monthly Fixed service charge:

5/8" to 3/4" service size = \$24.94

1" service size = \$69.02

2" or greater service line = \$214.47

Part B - Single bloc Consumption Rate by Metered Usage:

Less than 20 m3 / month = \$2.00 /m3 of metered usage per period

Greater than 20 m3 / month = \$3.00 /m3 of metered usage per period

Capital Levy \$2.00/month

(iii) Industrial

Part A - Monthly Fixed service charge:

5/8" to 3/4" service size = \$24.94

1" service size = \$69.02

2" or greater service line = \$214.47

Part B - Single bloc Consumption Rate by Metered Usage:

Less than 20 m3 / month = \$2.00 /m3 of metered usage per period

Greater than 20 m3 / month = \$3.00 /m3 of metered usage per period

Capital Levy \$2.00/month

(iv) Large Industrial

Part A - Monthly Fixed service charge:

5/8" to 3/4" service size = \$24.94

1" service size = \$69.02
2" or greater service line = \$214.47

Part B - Single bloc Consumption Rate by Metered Usage:
Less than 20 m³ / month = \$2.00 /m³ of metered usage per period
Greater than 20 m³ / month = \$3.00 /m³ of metered usage per period
Capital Levy \$2.00/month

B. What is the average annual cost of water services for residential households that are connected to the system?
(12.26 m³/month x \$2.00/m³ + \$24.96(base rate)) x 12 (months/year) + \$24.00(Capital Levy)
= \$617.52/yr

C. What is the annual amount of water (cubic meters) used by the average residential household?
From RSL for 2020 - ave.12.26 m³/month x 12 = 147.12 m³/yr

D. For residential households, please confirm the cost for using:

(i) 25 cubic meters of water
= \$24.94(fixed)
< 20 m³ consumption = \$40.00
> 20 m³ consumption = \$15.00
Capital Levy \$2.00/month
Total = \$81.95 in one month

(ii) 100 cubic meters of water
Fixed charge = \$24.94
< 20 m³ consumption = \$40.00
> 20 m³ consumption = \$ 240
Capital Levy \$2.00/month
Total = \$ 306.94 in one month

(iii) 250 cubic meters of water
Fixed charge = \$24.94
< 20 m³ consumption = \$40.00
> 20 m³ consumption = \$ 690
Capital Levy \$2.00/month
Total = \$ 756.94 in one month

E. If different rate structures were provided for residential, commercial, industrial and large industrial users in 8 (A), please confirm the following:

(i) Cost for using 10,000 cubic meters of water

a. Commercial	\$30,136.47
b. Industrial	\$30,136.47
c. Large Industrial	\$30,136.47

(ii) Cost for using 100,000 cubic meters of water

a. Commercial	\$100236.47
b. Industrial	\$100236.47
c. Large Industrial	\$100236.47

(iii) Cost for using 500,000 cubic meters of water

a. Commercial	1500196.40
b. Industrial	1500196.40
c. Large Industrial	1500196.40

Please provide any explanatory notes, as appropriate.

Cost is based on a 2" or greater service and consumption period is in one month (\$214.47 Base + \$2.00 Levy + consumption).

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9. **Supporting Documentation:** Supporting documentation is only required when indicated above (e.g., laboratory testing results, public health advisories, engineering assessments, inspection reports, break counts, design reports, compliance letters/reviews, and photographs). Upload these documents to Transfer Payment Ontario along with your complete application package.

A complete ICIP application package includes the following:

- Application form
- Map in KML format
- Aboriginal Consultation/Environmental Assessment Smart Form
- For First Nation applicants, a Band Council Resolution
- Technical Schedule and the following supporting documentation if:
 - o Lab results if answer is "No" to Q 1.3 (Quality of water does not meet Ontario Drinking Water Quality Standards or future standards)
 - o Advisory order (municipalities) or information from Indigenous Services Canada (First Nations) if answer is "Yes" to Q2 (Existing public health advisory)
 - o Supporting documents if answer is "Yes" to Q4 (If system is experiencing structural failure)
 - o Supporting documents if answer is "Yes" to Q5 (failure to meet MECP requirements)

