TOWN OF MATTAWA
ASSET MANAGEMENT PLAN
PHASE 2 CORE ASSETS

PREPARED BY: **Jp2g CONSULTANTS INC.**
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PROJECT NO. 20-5036A

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EXECUTIVE SUMMARY

The Town of Mattawa initiated its Asset Management Planning Process in December 2013 with the production of an Asset Management Plan by Pahapill & Associates Chartered Accountants in accordance with the Ontario Ministry of Infrastructure "Building Together – Guide for Municipal Asset Management Plans".

A Strategic Asset Management Policy Document was prepared by Jp2g Consultants Inc. Engineers · Planners · Project Managers and posted on line May 8, 2019 in accordance with Ontario Regulation 588/17.

To date the Town of Mattawa has undertaken the following Asset Management activities:

- Completed Strategic Asset Management Policy Document
- Initiated an Official Asset Registry
- Implemented GIS mapping for roads, street lights, water system and sewage system
- Established organizational structure for Asset Management Planning
- Initiated reporting protocols for all Municipal Departments (eg: Status of Infrastructure Reports)
- Advanced infrastructure needs assessment activities
- Provided budget to support Asset Management Planning Process

This document is Phase 2 of the Town of Mattawa Asset Management Planning process which; when endorsed by Council, will update and replace the original 2013 Asset Management Plan with respect to Core Assets and will comply with O. Reg. 588/17.

Core Assets include:

Roads (including street lights)
Bridges
Culverts
Storm Water Management System
Water Supply and Distribution System
Sanitary Sewer Collection and Treatment System

This Phase 2 Core Asset Management Report has been organized as follows:

Section 1: Background;
Section 2: State of Infrastructure/Condition of Core Assets;
Section 3: Existing and Desired Levels of Service;
Section 4: Core Asset Management Strategy;
Section 5: General Financial Strategy; and
Section 6: Summary of Recommendations

The information incorporated within the above noted sections will:

- Provide a summary of core assets
- Describe the condition of core assets
- Identify average age of core assets
- Estimate the replacement costs of core assets
- Describe the Town of Mattawa approach to assessing condition of core assets
- Describe current levels of service and desired level of service
- Establish performance measures
- Identify activities needed to maintain levels of service in each category of core assets for 10 years
- Provide recommended time periods of improvements (eg: Now, 1 to 5 Years, 6 to 10 Years and 10 Years +)
- Provide preliminary cost estimates for replacing or retrofitting core assets
- Support Financial Plan and life cycle costing to maintain level of service for 10 years
- Support Financial Plan 20 Year Outlook capital funding forecast

The deadlines revised by the Province under O. Reg. 588/17 as amended due to Covid 19 to complete the Phase 1 Strategic Asset Management Policy, Phase 2 Core Assets; as well as Phase 3 Non-Core Assets and Phase 4 Financial Strategy, are summarized in Figure 1.

FIGURE 1
SCHEDULE TO IMPLEMENT ASSET MANAGEMENT PLANNING

ITEM		PROVINCIAL DEADLINE
1.	Province to pass implementing regulations for Asset Management	Fall 2017
2.	Municipality to have Strategic Asset Management Policy in place	July 1, 2019
3.	Phase 2 Asset Management Plan Core Assets (Roads, Bridges, Sewage, Water, Storm Water Management)	July 1, 2022
4.	Phase 3 Asset Management Plan Other Assets (Buildings, Equipment, Parks, Solid Waste, Landfill, Snow Disposal)	July 1, 2024
5.	Phase 4 Detailed Financial Strategy	July 1, 2025

Section 1.0 Background provides an overview of the Core Asset Management Plan process defining Core Assets and describing the important elements of O. Reg. 588/17 made under the Infrastructure for Jobs and Prosperity Act RSO 2015. Section 1.0 also describes the important inter-relationship of the prescribed components of the Asset Management Planning Process and other Municipal documents and sets out various parameters required in the Town of Mattawa Asset Management Planning Process including a summary of the Town of Mattawa financial position, approach to establishing the existing condition and value of core assets, life cycle management, desired level of service, risk analysis and preliminary costing.

Section 2.0 State of Infrastructure provides a narrative on the condition of each core asset including identifying recommended improvements, time frame for improvements and preliminary “magnitude of cost” estimates. These condition reports will be updated and integrated into the Town of Mattawa Asset Management Planning Process through regular filing of State of Infrastructure Reports (SOIR) by Municipal Department Heads.

Section 3.0 Existing and Desired Level of Service outlines the methodology used to determine both existing and desired level of service for the Town of Mattawa based on Technical and Regulatory Requirements and Constituent User expectations. This section will also identify GAPS between existing and desired Level of Service and methods for closing the GAPS and measuring performance.

Section 4.0 Core Asset Management Strategy documents the strategy for implementing and monitoring the Town of Mattawa Asset Management Plan in order to achieve the outcomes required by O. Reg. 588/17 and contemplated in the Town of Mattawa Strategic Asset Management Policy Document May 8, 2019.

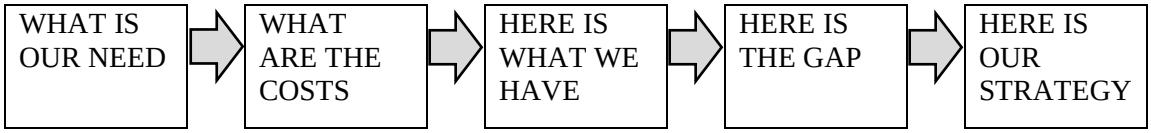
The goal of the Town of Mattawa Council is "**to promote and deliver sustainable service levels which satisfy the needs of ratepayers while maintaining a fiscally responsible level of budgetary use and debt structure**".

Source: Town of Mattawa Asset Management Plan by Pahaphill & Associates
December 2013
Page 4 Introduction

Section 5.0 Financial Plan provides background information on the historical and current value of Core Assets, municipal tax, revenues, user fees, government transfers, gas tax and other income. This section also identifies capital projects and potential sources of additional revenue; all of which will form components of a Phase 3 Detailed Financial Plan as per Figure 2 Flow Diagram. Section 5.0 will also introduce methods of reducing capital requirements through on-going options analysis by Municipal Department Heads and timely investment in maintenance and repairs.

A detailed Financial Strategy will be provided in Phase 4 of the Provincial Schedule (eg: July 1, 2025) but this Phase 2 Core Asset Management Plan and the previously submitted Town of Mattawa Strategic Policy Statement provide a general framework for developing a Financial Strategy.

FIGURE 2
TOWN OF MATTAWA
ASSET MANAGEMENT PLAN
COMPONENTS OF A FINANCIAL STRATEGY



Section 6.0 Recommendations and Priorities provides a summary of recommendations and a list of priorities for all Core Assets for the Now, 1 to 5 Year, 6 to 10 Year and 10 Years + periods based on Asset Condition, Desired Level of Service and Risk of Failure.

A summary of Town of Mattawa core asset priorities based on work conducted for this report is provided in Figure 3 hereto.

This Phase 2 Core Asset Management Plan is a "tool" to be used by Town Council for capital and financial decision making. It is a holistic approach that will be integrated with various existing reports and initiatives such as the Town's annual budget, Official Plan, strategic planning reports and infrastructure studies to ensure this Asset Management Plan can be updated on an on-going basis to reflect any changes in Town priorities.

Once endorsed by Council Resolution this report dated July 1, 2022 replaces the original Town of Mattawa Asset Management Plan December 2013 by Pahapill & Associates Chartered Accountants. It will comply with O. Reg. 588/17 Section 5 in terms of filing a Municipal Asset Management Plan for Phase 2 Core Municipal Assets by July 1, 2022.

The data utilized in this analysis will be enhanced and supplemented on an on-going basis as part of a Town of Mattawa annual Asset Management Plan Update program.

IMPLEMENTATION OF MANY OF THE RECOMMENDED IMPROVEMENTS CONTAINED HEREIN WILL REQUIRE SUBSTANTIAL FUNDING SUPPORT FROM PROVINCIAL AND FEDERAL INFRASTRUCTURE PROGRAMS.

Work on Phase 3 Non-Core Assets and Phase 4 Financial Strategy will proceed concurrently in FY 2023 and FY 2024.

This Town of Mattawa Asset Management Plan Phase 2 - Core Assets will be an important tool for Council to ensure infrastructure dollars are spent with maximum effect and cost benefit in order to:

- Protect Public Health and Safety
- Identify and Achieve Appropriate Levels of Service
- Extend Life Cycle of Existing Municipal Infrastructure Assets

This Phase 2 Town of Mattawa Core Asset Management Plan will prioritize investments in Core Assets and will identify measurable results for the following objectives:

- Document the current state of local infrastructure including a plain language narrative; as well as provide back-up technical information.
- Establish and communicate realistic levels of service objectives/requirements based on technical standards and ratepayer/user expectations.
- Provide plain language narratives on Municipal Asset Management Strategy for Core Assets and Other Assets and describe how and why the strategy integrates with other municipal plans or policies.
- Develop a Financial Strategy to address the gap between current Town of Mattawa infrastructure needs c/w life cycle cost and the Municipality's ability to pay.
- Manage risk.
- Monitor/Follow-up/Update.

Priorities for Town of Mattawa Core Assets are summarized in Figure 3 hereto.

FIGURE 3
TOWN OF MATTAWA
ASSET MANAGEMENT - CORE ASSETS
PRIORITIES

ROADS

1. Mattawan Street Base and Surface from Pine Street to Hurdman Street and resurfacing from Hurdman Street to Park Street
2. Dorion Road Hill Reconstruction
3. Dorion Road/Bélanger Road Reconstruction
4. Brook Street Reconstruction/New Construction from Hwy. 17 to Dorion Road (including existing CPR Crossing and culvert replacement)
5. Brook Street Reconstruction from Hwy. 17 to Brook Street Pumping Station
6. Ottawa Street Reconstruction
7. Champlain Street Reconstruction
8. Division Street Reconstruction
9. Donald Street Reconstruction
10. Main Street Resurfacing
11. Pine Street Reconstruction from Mattawan Street to McConnell Street (Hwy 17) c/w sidewalk
12. Bangs Street Reconstruction from Pine Street to Main Street c/w sidewalk
13. Bissett Street Base & Surface from 1st Street to 12th Street

BRIDGES

1. Bi-Annual Structural Inspection as per MTO Guidelines
2. Mauril Bélanger Bridge
   Option 1 Rehabilitation or
   Option 2 Replacement
3. Demolish CPR Trestle Hwy. 17 (MTO Jurisdiction)
4. Refurbish Donald Street Overpass

DRAINAGE

1. Construct Brook Street Light Industrial Park Storm Water Management System
2. Mattawan Street Storm Culvert Improvements
3. McKenzie Street/6th Street Intersection Drainage Improvements
4. Bissett Street/12th Street Culvert Improvement
5. CPR Box Culvert Timmins Street Retrofit

WATER

1. Construct New Reservoir at Light Industrial Park 300,000 to 500,000 IGal
2. Water Treatment Plant (WTP) Retrofits (eg: Ultra-Violet & SCADA systems)
3. Replace 250 mm (10”) dia. Feeder Line to Existing In-Ground Reservoir or determine functional option
4. Repair existing in-ground Reservoir
5. Replace 380 mm (15”) dia. Watermain crossing Mattawa River
6. Increase water supply with New Supply Well #3 at Water Treatment Plant
7. Extend Pine Street 250 mm (10”) dia. from Fire Hall to Hwy. 17
8. Replace or parallel existing 150 mm (6”) dia. watermain on Pine Street from Brook Street to Champlain Street with 250 mm (10”) dia.
9. Replace existing Brook Street 100 mm (4”) dia. from Hwy. 17 to Pine Street with 250 mm (10”) dia.
10. Replace existing 100 mm (4”) dia. on Ottawa Street/Champlain Street/Division Street and Donald Street
11. Replace or parallel existing 150 mm (6”) dia. on Hurdman Street from Hwy. 17 McConnell Street to Mike Rodden Arena with 250 mm (10”) dia. and extend new 250 mm (10”) dia. construction from Mike Rodden Arena to Brook Street Extension
12. Replace existing 100 mm (4”) dia. with 150 mm (6”) dia. Hurdman Street from Mattawan Street to Hwy. 17 McConnell Street
13. Connect new 150 mm (6”) dia. on Rankin Street from 4th Street to 6th Street to connect to existing “feeder line”
14. Replace Existing 150 mm (6”) dia. on Mattawan Street from Pine Street to Hurdman Street with 200 mm (8”) dia.

SANITARY

1. Spot improvements Mattawan Street Sanitary Sewer from Pine Street to Park Street
2. Sewage Treatment Plant (STP) Retrofits
3. Sewage Lagoon Upgrades Ultra-Violet System
4. Sewage Pumping Station Retrofits Brook Street, McKenzie Street and Pine Gorman Pumping Station
5. Replace sanitary sewer on Brook Street between Hwy. 17 Valois and Brook Street Pumping Station

FIGURE 4
TOWN OF MATTAWA
ASSET MANAGEMENT PLAN – PHASE 2 CORE ASSETS
SUMMARY OF CORE ASSET NEEDS

ROADS			
Now Needs	1. Mattawan Street Base & Surface from Pine Street to Hurdman Street and Resurfacing Hurdman Street to Park Street	$563,500	MDRAP Funded
	2. Dorion Road Hill Reconstruction from Hwy 17 Valois to Bell Mobility Communication Tower entrance	$4,784,000	ICIP Funded
1 to 5 Year Needs	3. Update Road Needs Study	$100,000	
	4. Dorion Road Reconstruction from Bell Communication Tower entrance to Brook Street Extension	$1,353,870	
	5. Brook Street Extension (including CPR Crossing and Culvert Replacement)	$2,368,450	
	6. Brook Street Reconstruction from Hwy 17 Valois southerly to Pine Street	$417,516	
	7. Brook Street Reconstruction from Hwy 17 Valois northerly to Brook Street Pumping Station	$75,375	MDRAP Funded
	8. Ottawa Street Reconstruction	$1,305,000	
	9. Champlain Street Reconstruction	$224,025	
	10. Division Street Reconstruction	$474,150	
	11. Donald Street from Hwy 17 John Street to Jodouin Road	$804,750	
	12. Resurface Main Street Connecting Link	$865,000	Connecting Link
	13. Bissett Street Base & Surface from 1st Street to 3rd Street	$223,575	
6 to 10 Year Needs	14. Dorion Road from Brook Street Extension to south Town limits at Bélanger Road	$1,739,650	
	15. Pine Street Reconstruction from Mattawan Street to Hwy 17 McConnell	$1,050,300	
	16. Bangs Street Reconstruction from Pine Street to Main Street	$437,625	
	17. Bissett Street Base and Surface from 3rd Street to 12th Street	$873,975	
	18. Donald Street/Town Line Reconstruction from Jodouin Road at Donald Street Intersection easterly 200 m	$435,000	Cost to be shared Papineau Cameron
BRIDGE			
Now Needs	Initial Background Work Steps 1 to 6 including Detailed Structural Investigation	$1,734,220	
1 to 5 Year Needs	Rehabilitation Steps 7 to 10	$3,630,800	
	OR		
6 to 10 Year Needs	Replacement New Bridge	$20,000,000	
STORM WATER			
Now Needs	1. Brook Street Light Industrial Park Storm Water Management System	$750,000	
	2. Mattawan Street Outlet Culvert Replacement	$157,500	MDRAP Funded
1 to 5 Year Needs	3. Physical Review all Storm Sewers and Outlets	$25,000	
	4. McKenzie Street/6th Street Intersection Drainage Improvements	$TBD	
	5. Bissett Street/12th Street Culvert Improvement	$32,814	MDRAP Funded
	6. CPR Box Culvert Timmins Street Retrofit	$25,000	MDRAP Funded
	7. Veterans Memorial Park Teleye Investigation	$7,500	
6 to 10 Year Needs	**NIL**		

FIGURE 4 (CONT'D)

WATER SUPPLY & DISTRIBUTION SYSTEM			
Now Needs	1. Water Storage Requirement Study	$50,000	
	2. Construct New Reservoir at Light Industrial Park	$3,000,000	
	3. Monitor Surface water Discharge on Reservoir Access Road	$NIL	
	4. Replace 250 mm (10") dia. Feeder Line 4th Street from WTP to Rankin Street and 4th Street from Rankin Street to Reservoir	$1,499,936	
	5. Replace 380 mm (15") dia. Watermain crossing Mattawa River	$1,636,790	
	6. Water Treatment Plant (WTP) Retrofit SCADA and Ultra-Violet System	$365,000	
1 to 5 Year Needs	7. In-Ground Reservoir Repairs Access Ladder and Valves	$100,000	
	8. Increase Pump Capacity WTP	$250,000	
	9. Replace 100 mm (4") dia. with 150 mm (6") dia. on		
	Ottawa Street	$525,000	
	Champlain Street	$90,125	
	Division Street	$190,750	
	Donald Street	$323,750	
	10. Water Supply & Distribution System Infrastructure Study	$100,000	
	11. Engineering Assessment Production Well #1 and #2	$25,000	
	12. Hydrogeologic Assessment Groundwater Aquifer	$75,000	
	13. Increase Water Supply with New Well #3 at Water Treatment Plant	$250,000	
	14. Extend Pine Street 250 mm (10") dia. from Fire Hall to Hwy 17 McConnell	$103,100	
	15. Replace or Parallel existing 150 mm (6") dia. Watermain on Pine Street from Brook Street to Champlain Street with 250 mm (10") dia.	$1,183,588 $136,092	
	16. Replace Existing Brook Street 100 mm (4") dia. with 250 mm (10") dia. from Hwy. 17 Valois to Pine Street		
6 to 10 Year Needs	17. Replace existing 100 mm (4") dia. on Hurdman Street between Mattawan Street and Hwy. 17 with 150 mm (6") dia.	$262,500	
	18. Replace or Parallel existing 150 mm (6") dia. on Hurdman Street from Hwy. 17 to Mike Rodden Arena with 250 mm (10") dia.	$206,200	
	19. Construct new 250 mm (10") dia. from Mike Rodden Arena to Brook Street extension	$463,950	
	20. Connect Rankin St. from 4th Street to 6th Street with 150 mm (6") dia. watermain	$218,750	
	21. Extend 150 mm (6") dia. on Town Line/Donald Street 200 m ±	$175,000	
	22. Replace all remaining 100 mm (4") dia. with 150 mm (6") dia. as funds become available	$3,052,000	
10 Years +	23. Consider methods of reducing operational pressure in water distribution system	$NIL	
	24. Replace 150 mm (6") dia. Watermain Mattawan Street between Pine Street and Hurdman Street with 200 mm (8") dia.	$300,000	
	25. Construct Industrial Park 200 mm (8") dia. P Loop (plus Allowance for Rock)	$500,000	
	26. New Surface Water Treatment Plant	$15,000,000	

FIGURE 4 (CONT'D)

SEWAGE COLLECTION & TREATMENT			
Now Needs	Sewage Treatment Plant (STP) Retrofits	TBD	
	Sewage Lagoon Upgrades Ultra-Violet System	TBD	
	1. Spot Improvements Mattawan Street Sanitary Sewer from Pine Street to Park Street	$251,750	MDRAP Funded
	2. Engineering Analysis of Blower Building Components and Ultra-Violet Treatment System	$25,000	
	3. Implement Retrofit/Upgrades to Blower Building at Lagoon	$50,000	OCWA
	4. New Ultra-Violet System	TBD	
	Allowance for Mobile Generator		
	Allowance for Flow Recorder 7 Pumping Stations		
1 to 5 Year Needs	5. Update Sanitary Sewer Collection and Treatment System Infrastructure Study	$100,000	
	6. Replace 200 mm (8") dia. on Brook Street between Hwy 17 and Brook Street Pumping Station	$34,500	MDRAP Funded
	7. Implement Operational Upgrades to Brook Street Pumping Station	$120,000	
	8. Implement Operational Upgrades to McKenzie Street Pumping Station	$165,000	
	9. Implement Flood Protection at Pine/Gorman Street Pumping Station	$50,000	Allowance
	10. Address sewage back-up (Donald Street, Lily Street, James Street, 5th Street)	$375,000	
	11. Spot Improvements Water Street	$8,000	MDRAP Funded
6 to 10 Year Needs	**NIL**		
	SUB-TOTAL NEEDS NOW + 1 TO 10 YEARS	**$45,242,137**	
	ICIP/MDRAP/MTO CONNECTING LINK FUNDED PROJECTS	**$6,847,439**	
	TOTAL NEEDS	**$52,089,576**	

Note 1: All capital cost estimates are subject to revision based on subsequent Engineering Analysis and Design
Note 2: Bridge Needs includes Initial Background Work $1,734,220. A subsequent discussion on Option 1 Rehabilitation ($3,630,800) or Option 2 New Bridge ($20,000,000) will be dependent on the results of Initial Background Work
Note 2: Hwy. 17 Trestle demolition is under the jurisdiction of MTO
Note 3: ICIP means Investing in Canada Infrastructure Program
Note 4: MDRAP means Municipal Disaster Recovery Assistance Program
Note 5: CWWF means Clean Water and Wastewater Fund

GLOSSARY OF TERMS

Asset	Infrastructure directly owned by a municipality that provides a service or value to the municipality, a Core Asset or Other Asset as defined in O. Reg. 588/17.
Asset Management Process	Coordinated activities (administration, financial, engineering and planning) carried out to protect, maintain and enhance Town assets in a coordinated, cost effective and sustainable manner in order to meet and react to a complex and evolving regulatory framework.
Asset Management Plan	Document approved by Council providing a "road map" outlining activities, resources and time frame for achieving the Town's strategic objectives.
Asset Condition Assessment	The process of establishing and monitoring the physical condition of an asset and can include programs such as Municipal Data Works for roads, WaterCAD Hydraulic Simulation for water and CCTV camera investigation for sanitary sewers. Asset Condition will be kept updated through Infrastructure Studies.
Bridge Condition Index Value (BCI)	A Bridge Condition Index Value is between 0 and 100 where 0 indicates the bridge is in very poor condition and 100 indicates that the bridge is in excellent condition as defined in Ontario Structure Inspection Manual. The BCI can be used to estimate current bridge value (depreciated) as follows. Curent Bridge Value = Replacement Cost x BCI/100.
Capital Threshold	Value of an infrastructure asset at or above which a municipality will capitalize the value and below which it will be "expensed".
Core Assets	Core Assets include: Roads (including storm sewers) Bridges Culverts Water Supply and Distribution Sanitary Sewage Collection and Treatment Storm Water Management
Level of Service	Outcomes the Town intends to deliver to comply with Provincial regulations, engineering standards and user expectations.
Life Cycle	Stages involved in acquisition, operation, decommissioning and disposal of an asset.
Non-Core Assets	Non-Core Assets include: Municipal Buildings Social Housing Equipment Parks Solid Waste Disposal Facility Snow Disposal Facility
Ontario Structure Inspection Manual (OSIM)	Ontario Technical Manual outlining guidelines for field inspection of bridges.

Public Engagement	Involving the user constituency in discussion and dissemination of data, expectations and basis of decisions through public meetings, media releases and interactive workshops.	
Public Sector Accounting Board (PSAB 3150)	Protocol for reporting historical cost valuation to Government as part of their Financial Report Card process.	
Risk	Extreme Risk	Risk well beyond acceptable levels
	High Risk	Risk beyond acceptable levels
	Moderate Risk	Risk at acceptable levels, monitoring required to ensure risk does not become high
	Low Risk	Risk at or below acceptable levels
Risk Management	Includes establishment of a Risk Management Policy and Risk Management Framework. The Risk Management Framework will provide a monitoring protocols prioritizing risks and outlining criteria for consequences of failure.	
Road Needs Methods and Inventory Manual	Ontario Technical Manual issued by Ministry of Transportation Ontario for assessment of Municipal Roads.	
State of Infrastructure Report (SOIR)	Municipal Director reports provided to AMS Project Manager or Council on an [annual] basis presenting information on inventory condition, costs, condition risks and performance. These SOI Reports will be supported from time to time by formal Infrastructure Studies and/or Engineering Analysis Reports.	
Strategic Asset Management Policy Document	Town of Mattawa Strategic Asset Management Policy Document completed May 9, 2019 by Jp2g Consultants Inc. and filed on Town of Mattawa website in accordance with Provincial Schedule sets out the Municipality's overall framework and guidelines for approaching Asset Management Planning.	
Structural Adequacy	Field review rating system established in the MTO Inventory Manual for Municipal Roads 1991 measuring adequacy of road surface to accommodate traffic demand. Lack of structural adequacy is manifested by alligatoring, transverse and longitudinal cracking or surface distortion. Measured on a 20 point scale, a rating of 7 or less is considered a Now deficiency, a rating of 8 to 11 indicates potential improvements will be required in the 1 to 5 Year period and 12 to 14 indicates improvements may be required in the 6 to 10 year period.	
Sustainability	Meeting current needs without compromising future needs, initiatives or sustainability. Includes consideration of quality of life, protection of the environment, risk and economic development.	
Surface Condition Rating	Field Review rating system based on visual assessment established in the MTO Road Needs Methods and Inventory Manual 1987 to assess the rideability of municipal roads measured on a 10 point scale. A rating of less than 5 indicates improvement is required.	

ASSET MANAGEMENT PLAN
PHASE 2 – CORE ASSETS

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Appendix 2 Town of Mattawa Asset Management Registry
Appendix 3 Ontario Regulation 588/17
Appendix 4 Town of Mattawa Asset Management Plan by Pahaphill & Associates Chartered Accountants December 2013

BACKGROUND REPORTS – CORE ASSETS

Roads

1. Road Management Plan for Small Lower Tier Municipalities, Methods & Inventory Manual May 1987
2. Town of Mattawa Road Needs Study by D. M. Wills & Associates March 2010
3. Town of Mattawa Street Light Study by Jp2g Consultants Inc. April 2019
4. Town of Mattawa Geotechnical Review 2019 Flood Impacts by Golder Associates August 30, 2019

Bridge

5. Mauril Bélanger Bridge Condition Report 2019 by Jp2g Consultants Inc. November 19, 2019
6. Mauril Bélanger Bridge West Abutment Erosion Analysis by Dillon Consulting November 22, 2019
7. Mauril Bélanger Bridge Inspection Findings and Initial Recommendations Working Draft by Dillon Consulting December 23, 2019
8. Galcon Dive Survey October 30, 2019
9. Mauril Bélanger Bridge Geotechnical Survey by Golder Associates January 2020
10. MTO Hwy. 533/Mauril Bélanger Bridge Connecting Link Applications November 2019 and 2021

Storm Water

11. Town of Mattawa Flood Plain Management Study by Proctor & Redfern Limited February 1982
12. May 2019 Flood Inundation Mapping by Mattawa North Bay Conservation Authority
13. Town of Mattawa Municipal Infrastructure Damage Report Post May 2019 Flood Event by Jp2g Consultants Inc. August 12, 2019

Water Supply and Distribution System

14. Water Supply Study for the Town of Mattawa by Proctor & Redfern Limited May 11, 1994
15. Mattawa Light Industrial Park Preliminary Hydraulic Analysis by Jp2g Consultants Inc. November 2018
16. Mattawa Reservoir Report by Landmark May 2010
17. Mattawa Reservoir Structural Review by Jp2g Consultants Inc. October 2018
18. Information Report to Council Reservoir Inspection November 12, 2018
19. Ontario Clean Water & Waste Water Funding (CWWF) Application MATT-001 and MATT-002 2018
20. Town of Mattawa Source Water Protection Plan July 2015
21. MOECC Inspection Report Mattawa Drinking Water System
22. Ontario Clean Water Agency Annual Summary Report for the Mattawa Drinking Water System 2021

Sanitary Sewage Collection and Treatment System

23. Sewage Works Upgrading Study for the Town of Mattawa by Marshall Macklin Monaghan January 1989
24. Sewage Works Upgrading for the Town of Mattawa by Marshall Macklin Monaghan September 1993
25. MOECC Mattawa Lagoon Inspection Report 2016
26. Mattawa Light Industrial Park Sanitary Sewer Downstream Impact Analysis by Jp2g Consultants Inc. November 6, 2018
27. CCTV Inspection Reports by X-Site Enterprises 2017, 2018 and 2019
28. OCWA Annual Report Mattawa Waste Water Treatment and Collection System 2021
29. Xylem Water Solutions Report on Pumping Stations 2019

Other References

Town of Mattawa Official Plan September 1991

Ontario Ministry of Infrastructure Building Together – Guide for Municipal Asset Management Plans 2012

Municipal Finance Officers Association Asset Management Framework 2018

Town of Mattawa Municipal Disaster Recovery Flood Damage Report by Jp2g Consultants Inc. August 2019

Flood Plain Management Study Mattawa North Bay Conservation Authority 2019

Hanscomb's Yardsticks for Costing Manual 2020

TOWN OF MATTAWA
ASSET MANAGEMENT PLAN

PHASE 2 – CORE ASSETS

SECTION 1.0 BACKGROUND

1.1 CORE ASSETS

"Core Assets" as defined under O. Reg. 588/17 made under the Infrastructure for Jobs and Prosperity Act RSO 2015 include:

ROADS	including roadside drainage, sidewalks and street lights
BRIDGES	Mauril Bélanger Bridge
STORM WATER	including storm sewer pipes, manholes, culverts, catchbasins, outlet ditches, storm water management systems and flood protection
WATER SUPPLY AND DISTRIBUTION	including source water, WTP process, transmission and distribution pipes, fire hydrants and valves
SEWAGE COLLECTION AND TREATMENT	including STP process, lagoon, ultra-violet treatment, forcemains, pumping stations, collection system and manholes

The reliable and cost effective operation of these Core Assets is fundamental to the quality of life and economic sustainability of the Town of Mattawa.

1.2 INTEGRATED DOCUMENTS

The Asset Management Planning Process is a holistic approach drawing expertise from all Municipal Departments to develop a comprehensive, fact-based tool for use by Council in their decision making.

Asset Management Plans are intended to work in conjunction with the three (3) phases prescribed in O. Reg. 588/17 and other municipal documents and planning processes to

1. Objectively identify critical infrastructure needs
2. Avoid/minimize "surprises" due to unforeseen infrastructure related events
3. Support long term planning

WHEN COMPLETED COMPREHENSIVELY AND UPDATED REGULARLY, THE TOWN OF MATTAWA ASSET MANAGEMENT PLAN WILL PROVIDE A SOUND FRAMEWORK FOR USE BY COUNCIL AND FUNDING AGENCIES TO MAKE DECISIONS THAT WILL PROVIDE MAXIMUM COST BENEFIT FOR INFRASTRUCTURE EXPENDITURES.

A copy of the Town of Mattawa Strategic Asset Management Policy Document May 2019 is provided in Appendix 1 hereto.

1.2.1 Municipal Planning Documents

The information generated in a comprehensive, up-to-date Town of Mattawa Asset Management Plan will support other municipal planning documents such as

Official Plan
Comprehensive Zoning By-law
Economic Development Plans and Initiatives (eg: Industrial Park, OVR Rail Hub, Voyageur Multi-trail System, Voyageur Cycle Route)
Residential Institutional Development Initiatives (eg: Growing Mattawa)
Light Industrial Park Development
Main Street Revitalization
Marina Master Plan
Engineering Design of Core Asset Infrastructure Improvements

The Core Assets Needs identified within this Asset Management Plan will also be directly relevant on an on-going basis to

Official Plan and/or Zoning Amendments
Environmental Assessments
Development Agreements
Development Charges/Imposts

Core Asset Needs have been ascribed to the following time periods based on condition of the asset, risk of failure and consequences of failure

Now
1 to 5 Years
6 to 10 Years
10 Years +

1.2.2 Asset Registry

The most direct linkage to other municipal documents will be the Town of Mattawa Asset Registry, which was initiated in 2008 and underwent a major revision in 2013 as part of the original Asset Management Study.

A comprehensive record of municipal infrastructure needs incorporated in this Asset Management Plan will provide a sound basis for legitimately requiring future developers to participate in costs for addressing downstream impacts of their proposed undertaking.

A copy of the most recent Town of Mattawa Asset Registry is attached as Appendix 2 hereto.

1.2.3 Infrastructure Studies

The following infrastructure studies have provided the foundation of the current Town of Mattawa Asset Management Planning process

Road Needs Study
Water Supply and Distribution System Infrastructure Study
Sanitary Sewage Collection and Treatment System Infrastructure Study
Water Treatment MOECC Reports
Ontario Clean Water Agency Annual Reports

These studies will be updated as appropriate to provide a reliable data base for the Town of Mattawa Asset Management Planning process.

1.2.4 Public Works Projects

Information from a variety of municipal studies and situation analysis reports for specific public works projects will also be integrated into the Asset Management Planning process on an on-going basis in terms of establishing need, identifying work items and providing estimated costs of improvements.

1.2.5 Geographic Information System (GIS) Mapping

The Town of Mattawa currently has a GIS contractor for the storage of data and mapping of core assets such as

Water Supply and Distribution
Sanitary Sewage Collection and Treatment
Roads and Storm Sewers
Street Lighting

It is essential that the GIS mapping and base data be fully integrated into the Asset Management Planning process. GIS mapping has been provided herein to confirm inventory section numbers which will be updated on an on-going basis as new data becomes available.

1.2.6 Provincial Plans and Programs

The Town of Mattawa Asset Management Plan Update and the recommendations therein will also comply with Provincial Policy and Programs such as

Ontario Provincial Policy Statement 2015
Ministry of Environment Guidelines
- Water
- Sanitary
- Solid Waste
- Noise
- Air Quality

Accessibility Act
Building Code
Clean Water and Wastewater Fund (CWWF) Program
Infrastructure Top-up Program
Broadband Upgrading
Investing in Canada Infrastructure Program (ICIP)
Other Provincial Funding Programs and Initiatives as identified from time to time

1.2.7 Field Reviews/Infrastructure Updates

Specific field reviews will be undertaken "as appropriate" on an on-going basis by the Asset Management Project Manager in conjunction with Municipal Department Heads and/or Consultants to review and confirm infrastructure needs, provide a recommended approach and time period for improvements in Infrastructure Study Updates. The purpose of these site specific reviews will be to ensure all alternatives are considered, not just focused on capital cost replacements.

The quality of the information will depend on the fulsome participation of Department Heads and the Asset Management Working Group.

An effective, user friendly data storage and retrieval system for Town of Mattawa infrastructure condition data will be essential.

In this regard the Town of Mattawa will consider subscribing to the Ontario Good Roads Association Municipal Data Works program (MDW) and joining the Ontario Water Works Association (OWWA); as well as Asset Management Ontario Association (AMONTario).

The Town of Mattawa will continue to monitor Infrastructure Ontario's website postings and participate in their workshops for Asset Management on a "go forward" basis.

1.3 TOWN OF MATTAWA POPULATION AND FINANCIAL POSITION

The population of the Town of Mattawa 2019 was approximately 2,000 people and has been stable at that level for over a decade. Population is expected to remain at approximately 2,000 for the next 10 years.

Recent engineering analysis on Town of Mattawa sanitary sewer and water distribution systems projects suggests a 20 year design population of 2,500.

The Town of Mattawa underlying financial economic position is summarized in Figure 5A below.

FIGURE 5A
TOWN OF MATTAWA
FINANCIAL SUMMARY (2021)

Population FY 2021	Approximately 2,000
Population Growth	Stable
Historical Cost Core Assets	$35,000,000 ±
Current Value Core Assets	$20,846,916
Property Assessment • Residential • Commercial • Industrial	 62.87% units 7.86% units 0.25% units
Median Household Income	$45,696
Capital Threshold	$
Debenture Level	$682,892
Revenue ➢ Taxation Base ➢ User Fees ➢ OMPF (?) ➢ Gas Tax ➢ Other Income ➢ Sustained Revenue	 $2,278,000 $840,000 $1,315,000 $122,000 $200,000 $5,000,000
Net Capital Expense	$4,000,000
Funds Available for Capital Expenditure	$250,000

A GENERAL APPROACH TO ADDRESS FUNDING SHORTFALLS IS PROVIDED IN SECTION 5.0. A DETAILED FINANCIAL STRATEGY WILL BE DEVELOPED IN PHASE 4 OF THE ASSET MANAGEMENT PLANNING BY JULY 1, 2025 AS PER O. REG. 588/17 AMENDED.

1.4 CONDITION OF CORE ASSETS

The current Condition of Core Assets is described in detail for each Asset in Section 2.0 of this report and is based on previously completed Infrastructure Needs Studies, incident reports and staff interviews.

The condition of Mattawa Core Infrastructure Assets will be kept updated through regular filing of State of Infrastructure Reports (SOIR) by Municipal Department Heads.

This data will be supplemented by Engineering Options Analysis and Infrastructure Studies which will be provided as part of regular updates as funding is made available.

Condition Reports for each asset are summarized in Figure 5B hereto and further described in Section 2.0 including the following information:

- Description of the Asset
- Approximate Date of installation
- Existing Condition (Good, Fair, Poor)
- Life Expectancy of Asset Category
- Estimated Remaining Life
- Risk of Failure (Extreme, High, Moderate, Low)
- Consequences of Failure
- Type of Improvement Required (Repair, Rehabilitate, Replace)
- Timing of Improvement, eg: Now, 1 – 5 Years, 6 – 10 Years, 10 Years +
- Estimated Cost of Improvement

The Town of Mattawa has historically determined the condition of its core assets through the use of the following:

- Road Needs Study
- Bridge Condition Assessment
- Street Lighting Study
- WaterCAD Computer Simulation
- Water System Leak Detection Surveys and Fire Hydrant Inspection
- Engineering Analysis and Reports on Sanitary Sewer and Water Systems
- MOE Compliance Reports Sewage Plant and Water Treatment Plant
- CCTV Camera Inspections of Sanitary Sewer System

The current condition data used for this Phase 2 Core Asset Report is based on previous engineering reports as noted above and as outlined in the List of Background Reports identified in the Table of Contents and interviews with Municipal staff. It is imperative that these Infrastructure Studies are updated.

A State of Infrastructure Reporting system (SOIR) will be put in place for all municipal departments; which will record incidents and data (including costs) related to core assets on an on-going basis for reference by the Asset Management Project Manager.

FIGURE 5B
CORE ASSETS GENERAL CONDITION AND VALUE

ASSET	DESCRIPTION	AGE RANGE	CONDITION				RISK OF FAILURE				HISTORICAL VALUE	CURRENT VALUE	REMARKS
			Poor	Fair	Average	Good	Extreme	High	Moderate	Low			
Roads	Road Section Arterial					N/A					$3,017,750	$1,410,609	
	Collector					X				X			
	Local					X							
	Sidewalk				X				X				
	Street Lighting					X				X			
	Ditches/Culverts				X				X				
Bridge	Mauril Bélanger Bridge	Built 1949 Refurbished 1985, 2019		X				X			$3,872,129	$1,004,089	
Storm Water Management	Storm Sewers			X					X				
	Manholes/Catch Basins/ Ditch Inlets			X					X				
	Outlets			X					X				
	Retention Ponds		X					X					
Water Supply and Distribution	Source Water			X					X				
	WTP	1949		X					X		$4,658,622	$7,495,597	
	Trunk Transmission	1992, 2010, 2015		X				X					
	Distribution System	1948 - current			X				X				
	Reservoir	1948		X					X				
	Feeder Line	1949	X				X						
	Fire Hydrants				X					X			
	Valves				X					X			
Sanitary Sewer Collection and Treatment	STP	1949		X					X		$4,777,730	$3,212,400	
	Lagoon	1949, 1992		X					X				
	Pumping Stations	1964 – 1992		X					X				
	Forcemains	1962 – 1978				X				X			
	Collection System	1949, 1967, 1976, 1985				X				X			
	Manholes				X				X				
									TOTAL VALUE		$16,326,231	$13,122,695	

TBD

Note: Additional details on condition of specific asset components are included in subsequent sections of this report.

1.5 LIFE CYCLE AND TIME OF IMPROVEMENTS

The Town of Mattawa Strategic Policy Document contemplates a 10 year horizon for identifying infrastructure needs within recommended time periods for improvements as follows

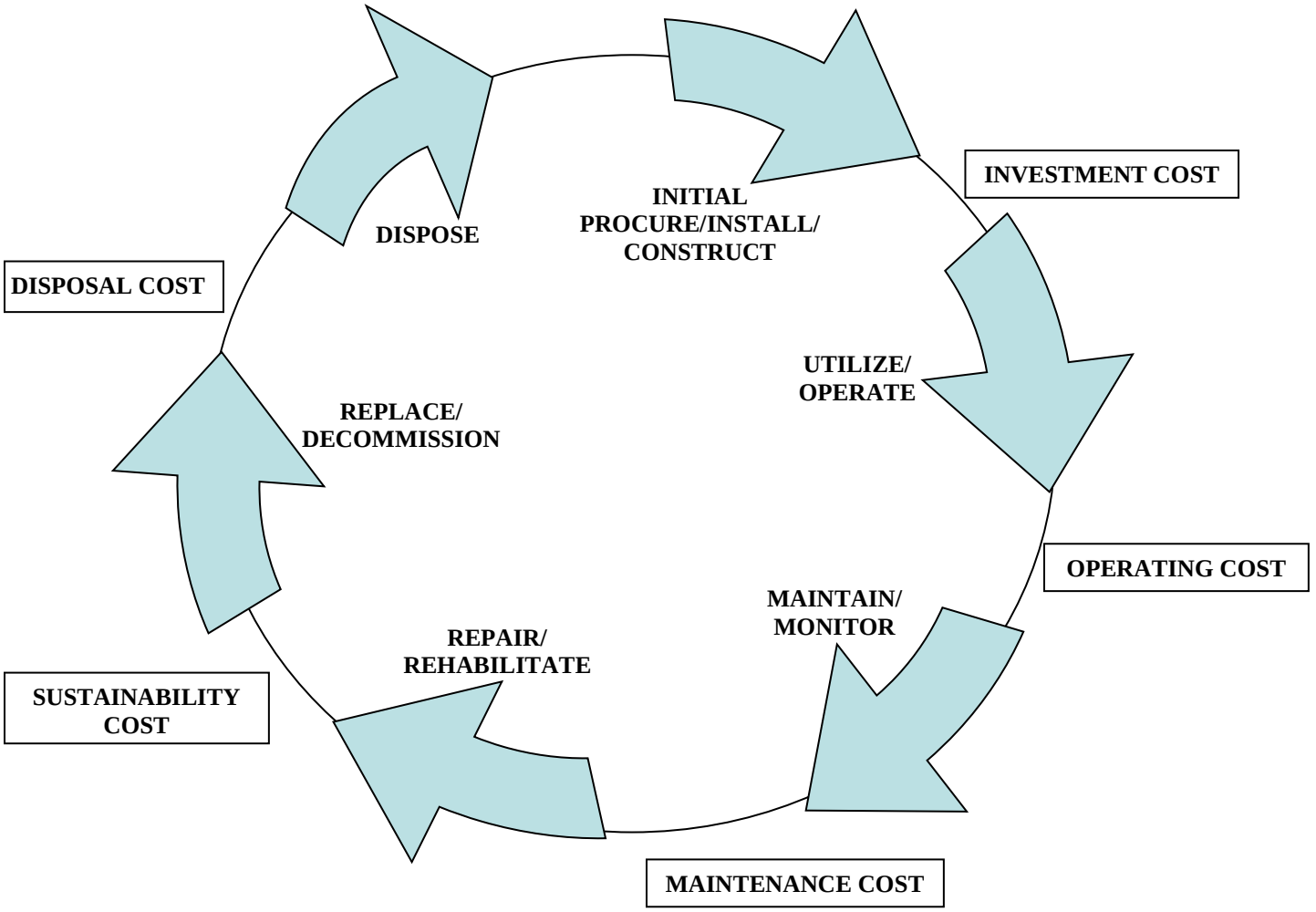
Now Needs
1 – 5 Year Needs
6 – 10 Year Needs

The type of improvement identified within the 10 year time frame will range from timely investment in minor repairs to retrofits or, when and if necessary, replacement or new construction of the Core Asset.

Forecasts of potential costs for infrastructure needs beyond the 10 year period are considered long term and are provided herein for general information purposes only.

The life cycle of any infrastructure asset is described graphically in Figure 6.

FIGURE 6
LIFE CYCLE OF ASSETS



1.6 EXISTING AND DESIRED LEVEL OF SERVICE

Level of Service (LOS) describes the outcomes the Town intends to deliver to its constituents.

A plain language narrative of the current levels of service for each category of infrastructure asset is provided in Section 3.0 hereto. This discussion incorporates levels of service on two levels

- the technical level of service required by government regulation or engineering guidelines
- the community/user expectations level of service

Establishing (and communicating) a realistic level of service for various infrastructure assets is a fundamental step in the Asset Management Planning Process and one that requires Council input and concurrence before specific recommendations are formalized.

Ratepayers should be engaged in discussion that introduces the concept and benefits of an Asset Management Plan and solicits constituency input on ratepayer objectives for various infrastructure components.

1.7 RISK ASSESSMENT

The State of Infrastructure Reports (SOIR) will include a risk assessment that addresses probability of failure and consequences of failure for each core.

A General Risk Matrix is provided in Figure 7 and Consequences of Failure chart is provided in Figure 8.

FIGURE 7
GENERAL RISK MATRIX BASED ON ASSET CONDITION

Condition Description	Probability of Failure
Good	Unlikely
Average	Possible (but not likely)
Fair	Possible
Poor	Probable

- **EXTREME RISK** Beyond acceptable levels, risk to public safety, public health or the environment. System failure is imminent.
- **HIGH RISK** Beyond acceptable levels, requires repair, rehabilitation or replacement in the immediate term
- **MODERATE RISK** At acceptable tolerable levels but requires on-going monitoring and maintenance
- **LOW RISK** Acceptable

Risk levels can be reduced or mitigated through effective Asset Management of Core Infrastructure including providing activities to maintain acceptable level of service of core assets for a minimum 10 year period.

FIGURE 8
MATTAWA ASSET MANAGEMENT PLAN CORE ASSETS
CONSEQUENCE OF ASSET FAILURE MATRIX

Consequence of Failure	Cost	Social	Environmental	Service Delivery
Insignificant	Negligible or Insignificant Cost	No Injury	No Impact	No Interruptions
Minimum	Small/Minor Cost – within Budget Allocations	Minor Damage	Short-term/Minor Impact – Fixable	Minor Interruptions
Moderate	Considerable Cost – Requires Revisions to Budget	Moderate Damage or Injury	Medium-term Impact – Fixable	Moderate Interruptions
Major	Substantial Cost – Multi-Year Budget Impacts	Impact Public Health Major Damage or Injury	Long-term Impact – Fixable	Significant Interruptions
Catastrophic	Significant Cost – Difficult to Recover	Impact Public Health Serious Injury Death,	Long-term Impact – Permanent	Major Interruptions

1.8 BASIS OF COST ESTIMATES

Preliminary Core Infrastructure Improvements Cost Estimates provided herein have been based on one or more of the following

1. Benchmark costs
2. Precedent examples
3. Order of magnitude “place holder” estimates
4. Preliminary engineering estimate (Class D)
5. Detailed engineering estimate (Class C)

Costing information has been supplemented by using Hanscomb’s Yardsticks for Costing Cost Data for Canadian Construction Industry Manual 2020.

NOTE: CONSTRUCTION COST ESTIMATES ARE CURRENTLY EXTREMELY DIFFICULT TO PROJECT BECAUSE OF THE IMPACT OF THE COVID 19 PANDEMIC ON SUPPLY OF MATERIALS AND LABOUR REGULATIONS RELATED TO CONSTRUCTION PROCESSES.

ALL COST ESTIMATES PROVIDED HEREIN ARE PRELIMINARY AND WILL BE SUBJECT TO REVISION BASED ON PRELIMINARY ENGINEERING DESIGN AND OTHER INFORMATION THAT WILL BECOME AVAILABLE FROM TIME TO TIME.

FIGURE 9
BENCHMARK CONSTRUCTION COSTS – CORE ASSETS
2022 FOB MATTAWA, ONTARIO

CONSTRUCTION (Asphalt $160.00/t)				
COMPLETE RECONSTRUCTION	**COST/m**	**ENGINEERING/m (15%)**	**CONTINGENCIES/m (10%)**	**TOTAL COST/m**
ULU60 Res. Local Residential	$1,740	$261	$174	$2,175
UCU60 Res. Collector Residential	$1,840	$276	$184	$2,300
ULU60 Com. Local Commercial/Industrial	$2,210	$332	$221	$2,763
UCU60 Com. Collector Commercial/Industrial	$2,530	$380	$253	$3,163
RESURFACE (1 1/2" lift)	$250	$38	$25	$313
SHAVE & PAVE	$400	$60	$40	$500
BASE & SURFACE	$650	$98	$65	$813
CONCRETE SIDEWALK (1.5 M WIDE)	$270	$41	$27	$338
SPOT IMPROVEMENT	Costed on a Project Specific Basis			
SANITARY SEWER				
SIZE	**COST/m**	**ENGINEERING/m (15%)**	**CONTINGENCIES/m (10%)**	**TOTAL COST/m**
200 mm diameter	$600	$90	$60	$750
250 mm diameter	$750	$113	$75	$938
300 mm diameter	$950	$143	$95	$1,188
WATERMAIN				
SIZE	**COST/m**	**ENGINEERING/m (15%)**	**CONTINGENCIES/m (10%)**	**TOTAL COST/m**
150 mm diameter	$700	$105	$70	$875
200 mm diameter	$800	$120	$80	$1,000
250 mm diameter	$825	$124	$83	$1,031
300 mm diameter	$850	$128	$85	$1,063
350 mm diameter	$875	$131	$88	$1,094
MISCELLANEOUS ITEMS	**COST/m**	**ENGINEERING/m (15%)**	**CONTINGENCIES/m (10%)**	**TOTAL COST/m**
Including Pre-Condition Survey, Bonding, Insurance, Traffic Control, Environmental Protection, etc.	$200	$30	$20	$250
CULVERTS				
SIZE	**COST/m**	**ENGINEERING/m (15%)**	**CONTINGENCIES/m (10%)**	**TOTAL COST/m**
500 mm diameter	$750	$113	$75	$938
600 mm diameter	$1,200	$180	$120	$1,500
900 mm diameter	$1,800	$270	$180	$2,250
1500 mm diameter	$2,500	$375	$250	$3,125

1.9 OPTIONS ANALYSIS

All potential capital works for Core Assets requiring improvement will undergo an options analysis as to whether desired Level of Service can be achieved by ….

Repair
or
Rehabilitation

…. prior to **Replacement**

This approach is fully described in Section 4.0 Core Asset Management Plan Strategy and Section 5.0 Financial Strategy.

1.10 MAY 2019 FLOOD EVENT

It should be noted that in May 2019 there was a major flood event in Mattawa requiring the Mayor to declare a State of Emergency that lasted 29 days. The flooding resulted in inundation and damage to various Core Assets as detailed throughout this Asset Management Plan.

A Town of Mattawa application for funding assistance was approved under the Municipal Disaster Relief Program (MDRAP) for certain limited infrastructure refurbishment works as described in the Municipal Infrastructure Damage Report 2019 and as detailed herein.

THE MDRAP ONLY FUNDED RESTORATION TO "PRE-FLOOD CONDITION" AND DID NOT ADDRESS COSTS OF ACHIEVING REQUIRED LEVEL OF SERVICE IMPROVEMENTS OR ENHANCEMENT OF CORE ASSET LIFE EXPECTANCY.

SECTION 2.0 CONDITION OF CORE ASSETS

2.1 MUNICIPAL ROADS

2.1.1 Background

Municipal roads are considered a "core asset". For the purposes of the Town of Mattawa Phase 2 Core Asset Management Plan, Jp2g Consultants Inc. Engineers · Planners · Project Managers have undertaken the following work:

a. A detailed review of Road Needs Study Report prepared for the Town of Mattawa by D. M. Wills Associates Limited, Consulting Engineers March 2010. The purpose of the original Road Needs Study was to identify a five (5) year construction program with associated projected costs.

A copy of the D. M. Wills Associates Road Needs Study March 2010 is available electronically as part of the background documents folder filed in conjunction with this Town of Mattawa Asset Management Plan - Phase 2 Core Assets.

A GIS road inventory section map including D. M. Wills Associates inventory numbers is attached hereto Map A.

b. A road condition overview was conducted by Jp2g Consultants Inc. in July and August 2017 to update road condition related to

- Surface type
- Surface width
- Structural adequacy
- Capacity to handle traffic (eg: Level of Service)

c. A field review of existing road drainage and surface water drainage system was conducted by Jp2g Consultants Inc. in July and August 2017 to

- Determine nature, extent and efficacy of the existing Town of Mattawa municipal storm sewer system
- Determine condition of existing road culverts
- Determine adequacy of surface water drainage system
- Provide a preliminary site review of storm outlets under Municipal jurisdiction

Map A
Town of Mattawa Road System Inventory Sections

2.1.2 Level of Service – Roads

The Town of Mattawa Asset Management Plan considers two (2) methods in establishing required levels of service for roads

Technical Level of Service
Customer/User Level of Service

The purpose of establishing a required level of service at the initial stages of the Asset Management Planning process is to provide framework for objectively identifying Road Needs.

For municipal road infrastructure the **Technical Level of Service** has been established based on technical guidelines, engineering standards and Ontario Ministry of Transportation (MTO) design requirements, eg:

1. Ontario Ministry of Transportation Road Management Plan for Small Lower Tier Municipalities, Methods & Inventory Manual 1987
2. Transportation Association of Canada Geometric Design Guide for Canadian Road January 2017
3. MTO Geometric Design Standards for Ontario Hwy.s Manual 1994
4. Ontario Traffic Manual Books 1 to 12 March 2001
5. Ontario Provincial Standard Specifications, Volume 1 to 7
6. Minimum Maintenance Standard O. Reg. 239/2

The **Technical Level of Service** requirements address design requirements for various types and classifications of municipal roads in terms of surface width, vertical and horizontal alignment, subbase construction standards and traffic safety.

Road types include urban, semi-urban and rural.

Urban Road includes curb, gutter and storm sewer in a built-up environment
Semi-Urban Road utilizes open ditch drainage, some storm sewer in a built-up environment
Rural Road utilizes open ditch drainage in a rural, low density environment

Road classifications include arterial, collector and local roads.

Arterial Road main function is to move traffic.
Collector Road combined function is to move traffic and provide access to property and businesses
Local Road main function is to provide access to private property and businesses

The **Customer/User Level of Service** for various types and classifications of municipal roads is based on public input and addresses user concerns and perceived needs; such as adequacy of winter maintenance, rideability, surface condition, drainage/flooding issues, pedestrian safety, intersection sight lines, street lighting and traffic flow.

A detailed discussion of existing and desired level of service for the Municipal Road System is provided in Section 3.0 Existing and Desired Level of Service.

AS PREVIOUSLY NOTED, THE CHALLENGE FACING TOWN COUNCIL WILL BE TO EITHER ATTEMPT TO ACCOMMODATE BOTH LEVELS OF SERVICE IN A COST EFFECTIVE MANNER OR TO CLEARLY ARTICULATE WHICH LEVEL OF SERVICE HAS BEEN SELECTED AND WHY.

2.1.3 Road System Condition

According to the D. M. Wills Road Needs Study the existing Town of Mattawa Road System consists of approximately 19.5 km of municipally maintained road:

Rural	2.35 km
Semi-Urban	15.87 km
Urban	1.29 km

The majority of the road system (19.0 km) is paved and considered to be generally in good condition.

For the purposes of this Phase 2 Core Assets analysis the following municipal roads are considered to be "collector roads" wherein their main function is firstly to move traffic; and secondly to provide access to private properties and businesses.

Arterial Roads

There are currently no arterial roads under municipal jurisdiction, but Hwy. 17 through Mattawa, being John Street in the west, McConnell Street centrally and Valois Drive in the east; as well as the Hwy. 533 Connecting Link on 1st Street and Main Street connecting to the Highway 17 "roundabout" provide an arterial road function for the Town of Mattawa road system.

West Side Collector Roads

Bissett Street from 1st Street to 12th Street
Brydges Street from 1st Street to 12th Street
12th Street from Bissett Street to Brydges Street

East Side Collector Roads

Mattawan Street/Sid Turcotte Road from Gorman Street to Hwy. 17 John Street
Pine Street from Mattawan Street to Bangs Street
Bangs Street from Pine Street to Main Street

It is to be noted that Gorman Street between Pine Street and Main Street is narrow (6 m) and "one way", thereby creating a restriction for the Town of Mattawa Collector Road System. Traffic is routed on Pine Street to Bangs Street; which reconnects to Main Street. In future it is anticipated that Pine Street will serve a collector road function between Mattawan Street and Hwy. 17 McConnell Street.

Future east side collector roads will also include Brook Street from Hwy. 17 Valois to Dorion Road and Dorion Road from Hwy. 17 to south Town limits at Bélanger Road.

Local Roads

The remaining roads under municipal jurisdiction are "local roads" wherein their function is primarily to provide access to private property and businesses.

The Town of Mattawa Road System classifications are provided on Map B.

Status of 2010 Road Needs Study Recommendations

The 2010 Road Needs Study indicated that approximately 78% of the Town of Mattawa Road System would require some degree of rehabilitation in the Now plus 1 to 5 Year period.

Of the 19.5 km of road inventoried in 2010, 2.48 km were found to be critically deficient in the Now period.

THESE FINDINGS NEED TO BE REVISITED IN AN UPDATED ROAD NEEDS STUDY.

Map B
Town of Mattawa Road System Classification

Figure 10 summarizes original road needs and recommendations in a Now + 1 to 5 Year improvement program as identified in the original D. M. Wills 2010 Road Needs Study for the Town of Mattawa; as well as current (2022) status.

The Town of Mattawa Road Needs Study requires significant update at the earliest opportunity in the 1 to 5 Year period including confirmation of road sections, traffic counts, structural adequacy review, surface condition review and drainage outlet inspections.

Estimated costs for road needs improvements currently identified as a result of this Phase 2 Core Assets analysis have been updated and summarized in Figure 11 hereto.

ALL COST ESTIMATES ARE SUBJECT TO REVISION BASED ON FURTHER ENGINEERING ANALYSIS AND PRELIMINARY DESIGN.

2.1.4 Street Light System

The results of a Town of Mattawa Street Lighting Study conducted by Jp2g Consultants Inc. in 2019 in accordance with Illuminating Engineering Society Standard IES RP 14-28 indicates four (4) areas have inadequate lighting levels as summarized on Figure 12, being

- Mattawan Street from Turcotte Park Road to Main Street
- James Street from Louis Street to Turcotte Park Road
- Hwy. 17 East (Valois Drive) from roundabout to east limit Town of Mattawa
- Hwy. 17 West (McConnell Street/John Street) from roundabout to west limit Town of Mattawa

Hwy. 17 street light inadequacies are under the jurisdiction of MTO.

FIGURE 10
ORIGINAL ROAD NEEDS STUDY RECOMMENDATIONS
AND CURRENT STATUS 2022

Original D. M. Wills Associates Road Needs Study Recommendations March 2010		**Current (2022) Status**
Year 1 2010	Brydges Street from 1st Street to 3rd Street Section 221994 and 350401 (approximately 190 meters) identified as a Year 1 2010 Need in the D. W. Wills Associates report has been reconstructed.	Completed
Year 2 & 3 2011 & 12	Mattawan Street from Hurdman Street to Pine Street (approximately 300 meters) originally proposed for Base and Surface reconstruction in Year 2 2011 has not been reconstructed and based on our 2017 review for this Phase 2 Core Assets Study and given 2019 flood damage is considered a Now need.	Not completed Now Need Partial funding available under Municipal Disaster Recovery Assistance Program (MDRAP)
Year 2 & 3 2011 & 12	Dorion Road from Hwy. 17 southerly to Section 487038 (250 meters) and Dorion Road Hill Year 2 2011 has undergone some limited work in 2013 in terms of rock blasting for drainage improvements; but based on a 2017 review conducted for this Phase 2 Core Assets Study, Reconstruction of Dorion Road Hill is considered a Now need in terms of surface condition, vertical alignment, surface width, drainage and intersection safety. Dorion Road is currently the main access to the Town of Mattawa Industrial Park and requires significant grade and surface width improvements to better accommodate heavy trucks.	Now Need Reconstruction of Dorion Road Hill approx. 440 meters is currently underway (2022). Funding for Dorion Road Hill Reconstruction provided under Industry Canada Infrastructure Program (ICIP)
	That portion of Dorion Road from the top of the Dorion Road Hill to Bélanger Road and Belanger Road southerly to Town Boundary was not addressed in the original D. M. Wills study and reconstruction is required.	1 – 5 Year Need from Bell Mobility Communication Tower Entrance to Brook Street Extension 6 – 10 Year Need from Brook Street Extension to South Town Limits at Bélanger Road

Original D. M. Wills Associates Road Needs Study Recommendations March 2010		**Current (2022) Status**
Year 4 2013	The Wills report recommended reconstruction of Ottawa Street from Hwy. 17 (Brook Street) to Champlain Street in 2014. Ottawa Street has been reviewed by Jp2g Consultants in 2017 and surface condition appears to be a 1 to 5 Year Need. It is anticipated, subject to final engineering design, that Ottawa Street will have to be reconstructed in conjunction with replacement of a critically deficient 100 mm (4") dia. watermain in the near future. This undertaking should also extend road reconstruction to include Ottawa Street from Champlain Street to McConnell Street and Champlain Street from Ottawa Street to Hwy. 17, a total length of approximately 600 meters + 103 meters.	Not completed 1 to 5 Year Need in conjunction with watermain replacement
Year 5 2015	The Wills report recommended Base and Surface of Bissett Street from 1st Street to 3rd Street in 2015 a distance of approximately 275 meters. This work was not completed, however, based on our 2017 site review, surface condition and structural adequacy appears to still be a 1 to 5 Year Need for Base and Surface improvements.	Not completed 1 to 5 Year Need Base and Surface

FIGURE 11
ADDITIONAL ROAD NEEDS IDENTIFIED AS PER PHASE 2 CORE ASSET MANAGEMENT STUDY UPDATE

1.		**Mattawan Street from Pine Street to Hurdman Street (300 meters)** Section 369439 and 53628 experienced serious damage during the May 2019 flood event, exhibiting sink holes, dropped manhole structures and damaged culverts. The road surface and culverts were in poor condition as per Wills report; but were further damaged during removal of the flood prevention berm post-May 2019 flood event. Road work should include flood protection where possible. See also sanitary sewer spot improvement replacement costs.	Now Need
		Class D Cost Estimate for Base and Surface Reconstruction to Collector Residential Standard Pine Street to Hurdman Street and Resurfacing from Hurdman Street to Park Street Spot improvements to minor subsidences Construction Cost as per MDRAP budget	$563,500 funded under Municipal Disaster Recovery Assistance Program (MDRAP)

2.		**Dorion Road Hill from Hwy. 17 southerly** to new curve realignment (440 meters) Section 487038. Complete reconstruction including grade reduction, rock excavation, rock and soil storage and Hwy. 17 intersection improvements to accommodate local industrial standard.	Now Need
		Class C Cost Estimate Complete Reconstruction Local Industrial Standard (440 meters) including curve realignment and Hwy.17 intersection improvements and "slip-around" Engineers Opinion of Probable Cost Class C (ICIP) 60% Federal 33.33% Provincial 6.67% Municipal	$4,784,000 funded under Investing in Canada Infrastructure Program

3.	Update Road Needs Study	1 – 5 Year Need $100,000

4.		Dorion Road from realigned curve at Bell Mobility entrance at top of hill to Brook Street Extension (490 meters) Section 487037. Complete reconstruction to Local Industrial Standard to resolve surface condition, surface width, structural adequacy and drainage issues.	1 – 5 Year Need
		Cost Estimate Local Industrial Standard 490 m @ $2,763/m Benchmark Cost	$1,353,870

5.		Brook Street Extension from Pine Street to Dorion Road including level crossing at CPR tracks North Bay Subdivision Mile 71.46 Section 238230 and new 1500 mm (5 ft.) dia. culvert	1 to 5 Year Need
		Cost Estimate New Construction Collector Commercial/Industrial Standard 650 m @ $3,163/m = $2,055,950 Cost Estimate Railway Level Crossing = $250,000 (Order of Magnitude Place Holder) Cost Estimate 1500 mm (5 ft.) dia. Culvert 20 meters @ $3,125/m Benchmark Cost = $62,500	$2,368,450
6.		Existing Brook Street from Hwy. 17 Valois to Pine Street (approximately 132 meters) Section 183112. Complete reconstruction to Collector Industrial Standard to resolve surface width and structural adequacy. The north end of Brook Street (Section 183112) also requires replacement of a 4" dia. watermain constructed circa 1950 in order to enhance fire flow protection. See Section 2.4 Water Supply and Distribution. Preliminary site review indicates complete restoration of the road will be required and the need for Hwy. 17 intersection improvements is to be determined.	1 to 5 Year Need
		Cost Estimate Collector Industrial Standard 132 meters @ $3,163/m Benchmark Cost	$417,516
7.		Brook Street from Hwy. 17 Valois to Brook Street Pumping Station (50 meters) Pt. Section 364296 experienced significant and sustained flooding during the May 2019 flood event resulting in deterioration of the road condition between Hwy. 17 and the Brook Street Pumping Station. This section of road is recommended for complete reconstruction to Local Residential Standard.	1 to 5 Year Need
		Cost Estimate Complete Reconstruction Local Residential Standard as per MDRAP Budget	$75,375 funded under Municipal Disaster Recovery Assistance Program (MDRAP)

8.		Ottawa Street from Brook Street to McConnell Street at Hwy. 17 (600 meters). Pt. Section 364296 and Section 439773 and Section 439774. Note: A 4" dia. watermain on Ottawa Street constructed circa 1950 is critically deficient and needs to be replaced as soon as possible (see Section 2.4 Water Supply and Distribution). The extent of required road restoration works will be determined in final engineering design of the watermain replacement project and will include flood protection where possible.	1 to 5 Year Need
		Cost Estimate Complete Reconstruction Local Residential Standard 600 meters @ $2,175/m Benchmark Cost	$1,305,000 See also Watermain Replacement Cost

9.	Photo	Champlain Street from Ottawa Street to Hwy. 17 (103 meters)	1 to 5 Year Need
		Cost Estimate for Complete Reconstruction Local Residential Standard 103 meters @ $2,175/m Benchmark Cost	$224,025 See also Watermain Replacement Cost

10.		Division Street from Hurdman Street to Park Street (218 meters) Section 19307. Complete reconstruction to Local Residential Standard to resolve surface condition. A 4" dia. watermain constructed circa 1964 needs to be replaced for public health and safety reasons (chlorine residual). See Section 2.4 Water Supply and Distribution System. Preliminary site review indicates complete restoration of the road will be required.	1 to 5 Year Need
		Cost Estimate Local Residential Standard 218 meters @ $2,175/m Benchmark Cost	$474,150 see also Watermain Replacement cost

11.		Donald Street from Hwy. 17 to Jodouin Road (370 meters) Section 388434. Complete reconstruction to Local Residential Standard to resolve surface condition, structural adequacy and drainage. A 100 mm (4") dia. watermain constructed circa 1960's requires early replacement. See Section 2.4 Water Supply and Distribution.	1 to 5 Year Need
		Cost Estimate Local Residential Standard 370 meters @ $2,175/m Benchmark Cost	$804,750 See also Watermain Replacement Cost

12.		Main Street/Hwy. 533 Resurfacing	1 to 5 Year Need
		Funding to be provided under Connecting Link	$865,000

13.		Bissett Street from 1st Street to 3rd Street (275 meters) Base and Surface Section 305375 and 58480.	1 to 5 Year Need
		Cost Estimate Complete Reconstruction Local Residential 275 meters @ $813/m Benchmark Cost	$223,575

14.		Dorion Road from Brook Street Extension to south Town Limits and Bélanger Road (approximately 550 meters). Complete reconstruction to Collector Commercial Standard to resolve surface width, structural adequacy and drainage issues; as well as improve vertical and horizontal alignment on Bélanger Road.	6 to 10 Year Need
		Cost Estimate Collector Commercial Standard 550 m @ $3,163/m Benchmark Cost	$1,739,650

15.	Photo	Pine Street from Mattawan Street to McConnell Street (Hwy. 17) (300 meters) Complete Reconstruction Collector Commercial c/w concrete sidewalks	6 to 10 Year Need
		Cost Estimate Complete Reconstruction 300 meters @ $3,163/m Benchmark Cost Concrete Sidewalk 300 meters @ $338/m Benchmark Cost	$1,050,300

16.	Photo	Bangs Street from Pine Street to Main Street (125 meters) Complete Reconstruction Collector Commercial c/w concrete sidewalks	6 to 10 Year Need
		Cost Estimate Collector Commercial Complete Reconstruction 125 meters @ $3,163/m Benchmark Cost Concrete Sidewalk 125 meters @ $338/m Benchmark Cost	$437,625

17.		Bissett Street from 3rd Street to 12th Street Base and Surface (1,075 meters +) Sections 58479, 140931, 140930, 318516, 24019, 19965, 438154, 416327, 469416, 163601	6 to 10 Year Need
		Cost Estimate Base and Surface 1,075 meters @ $813/m Benchmark Cost	$873,975

18.		Donald Street from Jodouin Road (Town Line Boundary) easterly (200 meters) Section 254437 [This is a shared jurisdiction with the Township of Papineau Cameron.] Complete reconstruction to Local Residential Standard to resolve surface width and drainage issue.	6 to 10 Year Need
		Cost Estimate Local Residential 200 meters @ $2,175/m Benchmark Cost	$435,000

FIGURE 12
TOWN OF MATTAWA STREET LIGHT SYSTEM

STUDY OF ROADWAY LIGHT DESIGN TO IES RP-14-08							
TOWN OF MATTAWA							
Section	IES Avg fc level required	Actual Avg fc level	IES max Uniformity ratio required (Avg / min)	Actual calculated avg min fc level	calculated Uniformity Avg fc level / min fc level ratio	Pass/Fail fc footcandle	Pass/Fail uniformity
1 HWY 17 East	0.744	0.635	3.0	0.099	7.90	✗	✗
2 HWY 17 Middle	0.744	0.825	3.0	0.224	4.526	✓	✗
3 HWY 17 West	0.744	0.678	3.0	0.123	6.753	✗	✗
4 Roundabout	1.004	2.743	3.0	3.152	1.149	✓	✓
5 Main St	0.669	3.873	3.0	3.886	1.343	✓	✓
6 Mattawan St	0.502	0.380	3.5	0.103	4.526	✗	✗
7 James St	0.502	0.447	3.5	0.168	3.364	✗	✓
8 Pine St	0.502	0.552	6.0	0.274	2.639	✓	✓
9 Park St	1.004	2.743	3.0	3.152	1.149	✓	✓
10 the bridge	0.502	0.722	3.5	0.317	2.911	✓	✓
11 Bissett St	0.502	0.836	3.5	0.335	3.171	✓	✓
12 Brydges St	0.669	1.385	3.0	1.112	1.689	✓	✓
13 Hurdman St	0.502	0.679	6.0	0.439	2.104	✓	✓
14 7th St	0.502	0.679	6.0	0.439	2.104	✓	✓
15 Turcotte St	0.502	1.099	6.0	0.440	3.171	✓	✓
All other local Streets are classified similar to Section 14 : 7th St	0.502	0.679	6.0	0.439	2.104	✓	✓

NOW NEEDS

RECOMMENDATION #1

BASE & SURFACE MATTAWAN STREET FROM PINE STREET TO HURDMAN STREET AND RESURFACE FROM HURDMAN STREET TO PARK STREET (APPROXIMATELY 300 METERS) INCLUDING DRAINAGE OUTLET IMPROVEMENTS, FLOOD PROTECTION AS WELL AS SANITARY SEWER SPOT IMPROVEMENTS.

RECOMMENDATION #2

RECONSTRUCT DORION ROAD HILL INCLUDING REALIGNMENT OF DEFICIENT CURVE AT TOP OF HILL (440 METERS) AND HWY. 17 INTERSECTION IMPROVEMENTS.

1 TO 5 YEAR NEEDS

RECOMMENDATION #3

COMPLETE A ROAD NEEDS STUDY UPDATE INCLUDING TRAFFIC COUNTS, UPDATED STRUCTURAL ADEQUACY (SA) AND SURFACE CONDITION (SC) REVIEWS, DRAINAGE OUTLET INSPECTION. UPDATE TO INCLUDE CONFIRMATION OF ROAD SECTION LENGTHS AND UPDATED BENCHMARK CONSTRUCTION COSTS.

RECOMMENDATION #4

RECONSTRUCT DORION ROAD FROM TOP OF DORION ROAD HILL AT BELL MOBILITY TOWER ENTRANCE TO BROOK STREET EXTENSION (490 METERS).

RECOMMENDATION #5

RECONSTRUCT BROOK STREET EXTENSION FROM PINE STREET TO DORION ROAD INCLUDING REPLACEMENT OF 1500 MM (5 FT) DIA. CULVERT AND PROVISION OF LEVEL CROSSING AT CPR TRACK NORTH BAY SUBDIVISION MILE 71.46 (APPROXIMATELY 650 METERS).

RECOMMENDATION #6

RECONSTRUCT BROOK STREET FROM HWY. 17 SOUTHERLY TO PINE STREET C/W INTERSECTION IMPROVEMENTS (APPROXIMATELY 132 METERS).

RECOMMENDATION #7

RECONSTRUCT BROOK STREET FROM HWY. 17 NORTHERLY TO BROOK STREET SEWAGE PUMPING STATION (APPROXIMATELY 50 METERS).

RECOMMENDATION #8

RECONSTRUCT OTTAWA STREET FROM BROOK STREET TO McCONNELL STREET (APPROXIMATELY 600 METERS) INCLUDING WATERMAIN IMPROVEMENTS AND FLOOD PROTECTION.

RECOMMENDATION #9

RECONSTRUCT CHAMPLAIN STREET FROM OTTAWA STREET TO HWY. 17 VALOIS (APPROXIMATELY 103 METERS) INCLUDING WATERMAIN IMPROVEMENTS

RECOMMENDATION #10
RECONSTRUCT DIVISION STREET FROM HURDMAN STREET TO PARK STREET (APPROXIMATELY 218 METERS) INCLUDING WATERMAIN IMPROVEMENTS.

RECOMMENDATION #11
RECONSTRUCT DONALD STREET FROM HWY. 17 JOHN STREET TO JODOUIN ROAD INCLUDING WATERMAIN IMPROVEMENTS (APPROXIMATELY 370 METERS).

RECOMMENDATION #12

RESURFACE MAIN STREET HIGHWAY 533 CONNECTING LINK

RECOMMENDATION #13

BASE AND SURFACE BISSETT STREET FROM 1st STREET TO 3rd STREET (APPROXIMATELY 275 METERS)

6 TO 10 YEAR NEEDS

RECOMMENDATION #14

RECONSTRUCT DORION ROAD FROM BROOK STREET EXTENSION SOUTHERLY TO TOWN LIMITS AT BÉLANGER ROAD INCLUDING REALIGNMENT OF DEFICIENT CURVE ON BÉLANGER ROAD THROUGH PROPOSED LIGHT INDUSTRIAL PARK LOT 6 (APPROXIMATELY 550 METERS).

RECOMMENDATION #15

RECONSTRUCT PINE STREET FROM MATTAWAN STREET TO McCONNELL STREET (APPROXIMATELY 300 METERS) COMPLETE WITH CONCRETE SIDEWALK.

RECOMMENDATION #16

RECONSTRUCT BANGS STREET FROM PINE STREET TO MAIN STREET (125 METERS) COMPLETE WITH CONCRETE SIDEWALK.

RECOMMENDATION #17

BASE AND SURFACE BISSETT STREET FROM 3rd STREET TO 12th STREET (APPROXIMATELY 1,075 METERS)

RECOMMENDATION #18

DONALD STREET/TOWN LINE RECONSTRUCTION FROM JODOUIN ROAD AT DONALD STREET INTERSECTION EASTERLY 200 M

2.1.5 Summary of Flood Impacts May 2019 – Municipal Roads

In May 2019 eleven (11) municipal roads were inundated during a major flood event in the Town of Mattawa as per Figure 13.

FIGURE 13
MAY 2019 FLOOD EVENT
INUNDATED MUNICIPAL ROADS

East Side Mattawa River	**Length**
Main St from Mauril Bélanger Bridge to Bangs St	152 m
Timmins St from Bangs St to Water St	150 m
Water St from Main St to Timmins St	198 m
Gorman St from Main St to Pine St	125 m
Mattawan St from Pine St to Turcotte Park Rd	1,067 m
Louis St from north end of Louis St Pumping Station north of James St	150 m
Ottawa St from Brook St to Champlain St	250 m
Brook St from Hwy 17 to Ottawa St	100 m
West Side Mattawa River	
Bissett St from Eleventh St to Twelfth St	100 m
Bissett St from Third St to Fifth St	228 m
McKenzie St from Fifth St to Eighth St	365 m
TOTAL	**2,885 m**

In addition, the Town experienced multiple “sink holes” on and immediately adjacent to municipal roads during the flood event.

At the request of Jp2g Consultants Inc., Golder Associates reviewed and reported on risks and mitigation measures on locations which experienced “sink holes” or subsidence during the May 2019 flood event as per Figure 14.

See Map C Town of Mattawa May 2019 Inundated Roads, sink holes and culvert damage.

FIGURE 14
SINK HOLES ARISING FROM
MAY 2019 FLOOD EVENT

Gorman St from Main St to Pine St	6 sink holes
Mattawan St from Hurdman Street to Pine St to Turcotte Park Rd (All crossover culverts on Mattawan Street have been compromised)	20 sink holes
Brook St	5 sink holes
Main St at Post Office on Route #533 bad depression in pavement North side of Hwy at Water St intersection	Subsidence
Water St	4 sink holes
Timmins St (including redirection of surface water)	1 sink hole
McKenzie St at 6th St	5 sink holes
Bissett St at Twelfth St intersection (including 600 mm dia. culvert replacement)	3 sink holes
Bissett St between 4th St and 5th St	4 sink holes

These matters will be partially addressed through the Municipal Disaster Recovery Assistance Program; but more work will need to be done to address risk management, extension of life cycle and required level of service as detailed herein.

Existing sink holes have been mitigated through spot improvements as part of Town of Mattawa road maintenance.

The municipal roads adjacent to the Mattawa River and the Ottawa River will be monitored on an on-going basis for new sink hole occurrences.

RECOMMENDATION #19

MONITOR AND REPAIR SINK HOLES AS PART OF TOWN OF MATTAWA MAINTENANCE PROTOCOLS

MAP C
TOWN OF MATTAWA
INUNDATED ROADS/SINK HOLES/CULVERT DAMAGE
MAY 2019 FLOOD

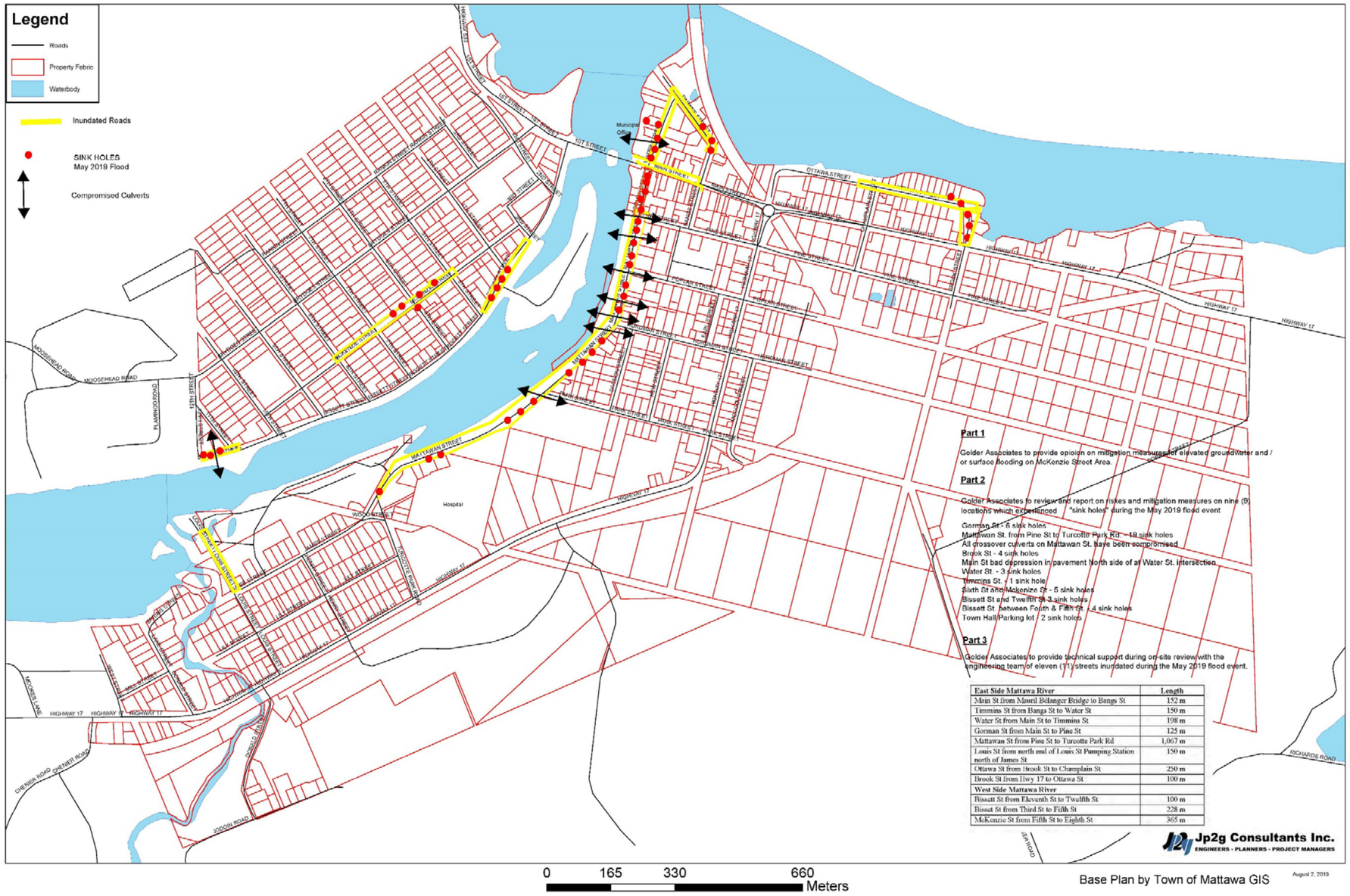


FIGURE 15
ROAD NEEDS RESULTING FROM MAY 2019 FLOOD EVENT

	MDRAP BUDGET	
Gorman Street from Main Street to Pine Street 125 meters	$241,812	Completed 2020
Mattawan St from Pine Street to Hurdman Street 300 meters ±	$563,500	Now
Brook Street from Hwy. 17 to Brook Street Pumping Station 50 meters	$75,375	1 to 5 Years

The May 2019 flood event created deficiencies in the road system infrastructure requiring mitigation.

See Photo 1 Mattawan Street under flood condition, Photo 2 Mattawan Street post flood, Photo 3 Gorman Street closure and Photo 4 Brook Street during flood condition.

PHOTO 1
MATTAWAN STREET DURING MAY 2019 FLOOD

PHOTO 2
MATTAWAN STREET POST MAY 2019 FLOOD

PHOTO 3
GORMAN STREET CLOSURE DUE TO MAY 2019 FLOOD

Gorman Street from Main Street to Pine Street (125 meters) was completely compromised by May 2019 Flood resulting in six (6) sink holes caused by migration of granular materials during the flood and as flood water receded. The road was reconstructed by Town forces in Fall of 2020 and has been reopened to vehicular traffic as a one way street.

Sink holes will continue to be monitored as part of road maintenance protocol.

PHOTO 4
BROOK STREET DURING MAY 2019 FLOOD

Spot Improvements

There are six (6) locations where spot improvements are required to repair sink holes or subsidence apparently caused by migration of subbase granular material during the May 2019 flood.

As per Golder Associates input the recommended spot improvements to repair sink holes and/or subsidence consists of removal of existing pavement, restoration and compaction of granular materials as required to ensure no voids remain and repaving.

The following spot improvements are required due to sink hole subsidence caused by the May 2019 flood event.

FIGURE 16
SPOT IMPROVEMENTS ARISING FROM THE MAY 2019 FLOOD EVENT

		MDRAP Budget
1	Intersection of Main Street/Route 533 Connecting Link and Water Street (10 meters x 10 meters) Estimated Contract Cost Geotechnical Survey Engineering Design and Contract Administration	 $15,000 $3,500 $2,500
	Total	**$21,000**
2.	Various locations along Mattawan Street south of Park Street Estimated Contract Cost Geotechnical Engineering Design and Contract Administration	 $40,000 $3,500 $2,500
	Total	**$46,000**
3.	Water Street in front of Municipal Office repair 1 sink hole	$1,750
4.	Water Street/Municipal Office Parking Lot repair 2 sink holes	$2,700
5.	Water Street repair 1 sink hole	$1,750
	Total	**$6,200**
6.	Bissett Street at 12th Street Intersection – repair 4 sink holes	$10,314
	Total	**$10,314**

Culvert Replacement

Figure 17 summarizes culverts that were damaged in the May 2019 flood event and subsequently require replacement or retrofit.

FIGURE 17
CULVERT REPLACEMENT NEEDS
ARISING FROM THE MAY 2019 FLOOD EVENT

		Cost Estimate
1.	Mattawan Street Culvert Improvements	**$157,500** MDRAP Funded
2.	Bissett Street at 12th Street Culvert Improvements	**$32,814** MDRAP Funded
3.	6th Street/McKenzie Street Outlet	TBD
4.	Veterans Memorial Park Outlet	TBD

2.1.6 Risks – Road System

There are currently (2022) no extreme or high risks associated with the Town of Mattawa Road System.

The major risk for the Town of Mattawa Road System is the future overflow of the Mattawa and Ottawa Rivers and subsequent flooding of Mattawan Street, Gorman Street, Water Street, Timmins Street and Ottawa Street due to climate change and Ontario Power Generation operation of its hydro electric dams and reservoirs on the Ottawa and Mattawa River watersheds.

Another major risk is the flooding of McKenzie Street/6th Street intersection during spring melt and storm events and this issue is currently being addressed.

A moderate risk is the current difficulty residents and commercial interests in the area south of the Town of Mattawa particularly in the vicinity of Bélanger Road and the proposed Hwy. 417 alignment, have in accessing the central business district and consideration will be given to improving the Bélanger Road/Dorion Road and Jodouin Road/Donald Street connections to the downtown core of the Town of Mattawa from points south.

2.1.7 Summary Road Needs and Recommendations

Table 1 summarizes Town of Mattawa Road Needs in the Now + 1 – 5 Year period, recommended improvements and associated cost estimates based on work conducted for this Town of Mattawa Asset Management Plan Phase 2 - Core Assets.

Costs for Town of Mattawa Now + 1 to 5 year needs originally identified in the D. M. Wills Associates 2010 report have been updated with respect to current construction costs including engineering costs (15%), contingency (10%) and HST (13%) as shown on Table 1 hereto. Map D shows updated recommended improvements for the Town of Mattawa.

Table 1 summarizes Road Needs by Priority and Recommended Time Period of Improvement.

Street light improvements generally require only replacement of fixtures to increase watts and may require a few additional poles to improve uniformity of lighting.

Map D
Town of Mattawa Road Needs and Recommended Improvements

TABLE 1
TOWN OF MATTAWA ROAD NEEDS & RECOMMENDED TIME PERIOD OF IMPROVEMENTS

RECOMMENDED ROAD IMPROVEMENTS		ROAD INVENTORY SECTION	IMPROVEMENTS	RATIONALE	RISK EXTREME HIGH MODERATE LOW	COST ESTIMATE (INC. ENGINEERING AND CONTINGENCY)	PHASING
1.	Base and Surface **Mattawan Street** from Pine Street to Hurdman Street (300 m) and resurfacing Hurdman Street to Park Street as per MDRAP	369439 53268 184269 184268	Capital Works Base and Surface Pine Street to Hurdman as per MDRAP Budget	Surface Condition Structural Adequacy	High	$563,500 MDRAP Funded	Now
2.	Reconstruct **Dorion Road Hill**, to reduce grade including realignment of deficient curve at top of hill and Hwy. 17 intersection improvements	487038	Capital Works Complete reconstruction including grade reduction, curve realignment, rock excavation, drainage improvements to Local Industrial standard for secondary access to Mattawa Light Industrial Park as per ICIP Budget	Public Safety Grade Improvement Curve Improvement Economic Development	High	$4,784,000 ICIP Funded	Now
3.	**Road Needs Study Update** including traffic counts, updated Structural Adequacy and Surface Condition reviews, drainage outlet inspection and updated Benchmark Costs		Study			$100,000	Year 1
4.	Construct **Dorion Road** from Bell Mobility Communication Tower from top of hill to Brook Street Extension (490 m)	Part 487037	Capital Works Complete reconstruction to Local Industrial standard	Public Safety Extend life of infrastructure Economic Development	High	$1,353,870	Year 1
5.	Construct **Brook Street** Extension from Pine Street to Dorion Road including CPR Crossing and replacement of 1500 mm dia. culvert (650 m)	New	Capital Works Proposed CPR Xing requires improvements to grade and sight line to Collector Industrial standard for primary access to Mattawa Light Industrial Park and adjacent residential/institutional area. Includes replacement of 1500 mm dia. CSP culvert.	Public Safety Drainage Improvements Improvements to CPR Crossing Economic Development	High	$2,368,450	Year 2
6.	Reconstruct **Brook Street** from Hwy. 17 southerly to Pine Street c/w Intersection Improvements (132 m + intersection)	Part 183112	Capital Works Road reconstruction required in conjunction with replacement of 100 mm (4”) dia. watermain with 250 mm (10”) dia. watermain Collector Industrial Standard	Public Safety	Moderate	$417,516	Year 2

TABLE 1 (CONT'D)

RECOMMENDED ROAD IMPROVEMENTS		ROAD INVENTORY SECTION	IMPROVEMENTS	RATIONALE	RISK EXTREME HIGH MODERATE LOW	COST ESTIMATE (INC. ENGINEERING AND CONTINGENCY)	PHASING
7.	Reconstruct **Brook Street** from Hwy. 17 northerly to Brook Street Sewage Pumping Station (50 m)	Part 183112	Capital Works Local Residential Standard as per MDRAP budget	Surface Condition	Moderate	$75,375 MDRAP Funded	Year 2
8.	Reconstruct **Ottawa Street** from Brook Street to McConnell Street (600 m) including watermain improvements and flood protection	364296 439774	Capital Works Road restoration required in conjunction with immediate need to replace critically deficient 100 mm (4") dia. watermain Local Residential Standard	Public Health and Safety	Moderate	$1,305,000	Year 2
9.	Reconstruct **Champlain Street** from Ottawa Street to Hwy. 17 (103 m)	446933	Capital Works Road restoration required in conjunction with immediate need to replace critically deficient 100 mm (4") dia. watermain Local Residential Standard	Public Health and Safety	Moderate	$224,025	Year 2
10.	Reconstruct **Division Street** from Hurdman Street to Park Street (218 m)	19307	Capital Works Road restoration required in conjunction with immediate need to replace critically deficient 100 mm (4") dia. watermain	Public Health and Safety Surface Condition	Moderate	$474,150	Year 3
11.	Reconstruct **Donald Street** from Hwy. 17 to Jodouin Road (370 m)	388434	Capital Works Road restoration required in conjunction with immediate need to replace deficient 100 mm (4") dia. watermain. Local Residential Standard	Public Health and Safety Surface Condition Structural Adequacy Drainage	Moderate	$804,750	Year 3
12.	Resurface **Main Street**			MTO Connecting Link		$865,000	Year 4
13.	Base and Surface **Bissett Street** from 1st Street to 3rd Street (275 m)	305335 58480	Capital Works	Surface Condition	Low	$223,575	Year 5
14.	Reconstruct **Dorion Road/Bélanger Road** from Brook Street extension southerly to Town Limits realignment of deficient curve and horizontal alignment on Bélanger Road (550 m)	487036	Capital Works Collector Industrial Standard	Surface condition Drainage improvement Possible future connection to Hwy. 417 Interchange	Moderate	$1,739,650	Year 6

TABLE 1 (CONT'D)

RECOMMENDED ROAD IMPROVEMENTS		ROAD INVENTORY SECTION	IMPROVEMENTS	RATIONALE	RISK EXTREME HIGH MODERATE LOW	COST ESTIMATE (INC. ENGINEERING AND CONTINGENCY)	PHASING
15.	Reconstruct **Pine Street** from Mattawan Street to McConnell Street Hwy. 17 c/w Sidewalk (300 m)	249367 79417	Capital Works Collector Commercial Standard plus sidewalk one side	Surface Condition Public Safety	Moderate	$1,050,300	Year 7
16.	Reconstruct **Bangs Street** from Pine Street to Main Street c/w sidewalk (125 m)	321470	Capital Works Collector Commercial Standard plus sidewalk one side	Surface Condition Public Safety	Moderate	$437,625	Year 7
17.	Base and Surface **Bissett Street** from 3rd Street to 12th Street (1,075 m @ $813)	58479 140931 140930 318516 24019 199965 438154 416327 469416 163601	Capital Works	Surface Condition	Low	$873,975	Year 8
18.	Reconstruct **Donald Street**/ Townline from Jodouin Boundary Road easterly (200 m @ $2,175)	254437	Capital Works Local Residential Standard	Surface Condition	Moderate	$435,000 (cost shared with Papineau Cameron Township)	Year 8
19.	Repair and Monitor **Sink Holes**		Monitoring	Maintain Level of Service	Low	TBD	On-going
20.	Implement **Spot Improvements**		Spot Improvements	Maintain Level of Service	Low	TBD	On-going
21.	Street Light Improvements	241150 241151 184268 184269 53268 369439 229613 181665 6845 116196	Maintenance	Maintain Level of Service	Low	TBD	On-going

2.2 BRIDGES AND STRUCTURES

2.2.1 Background

There is one bridge within Town of Mattawa jurisdiction, being Mauril Bélanger Bridge on Hwy. 533/Main Street MTO Connecting Link. There are also two (2) structures in the Town of Mattawa which are of interest and concern; but not owned by the Municipality, being the CPR Trestle over Hwy. 17 at the eastern approach to the Town and the CPR Trestle over Donald Street in the southwest section of the Town. The location of the Mauril Bélanger Bridge, CPR Trestle and Donald Street Trestle are shown on Map B.

2.2.2 Mauril Bélanger Bridge

The Mauril Bélanger Bridge is part of the Hwy. 533 Connecting Link and the only crossing of the Mattawa River providing a connection between the east sector and west sector of the Town of Mattawa.

Jp2g Consultants Inc. was retained by the Town of Mattawa to perform a Bridge Condition Study of the Mauril Bélanger Bridge in August 2019. The primary focus of the study was to review the condition of the structure and provide recommendations to rehabilitate the bridge to a "suitable condition". The Bridge Condition Study is provided as an accompanying report to this Asset Management Study.

For the purposes of this Phase 2 Core Assets Report a "suitable condition" would be to provide for public safety and flow of traffic and to meet current technical standards and guidelines and to extend the life of the structure.

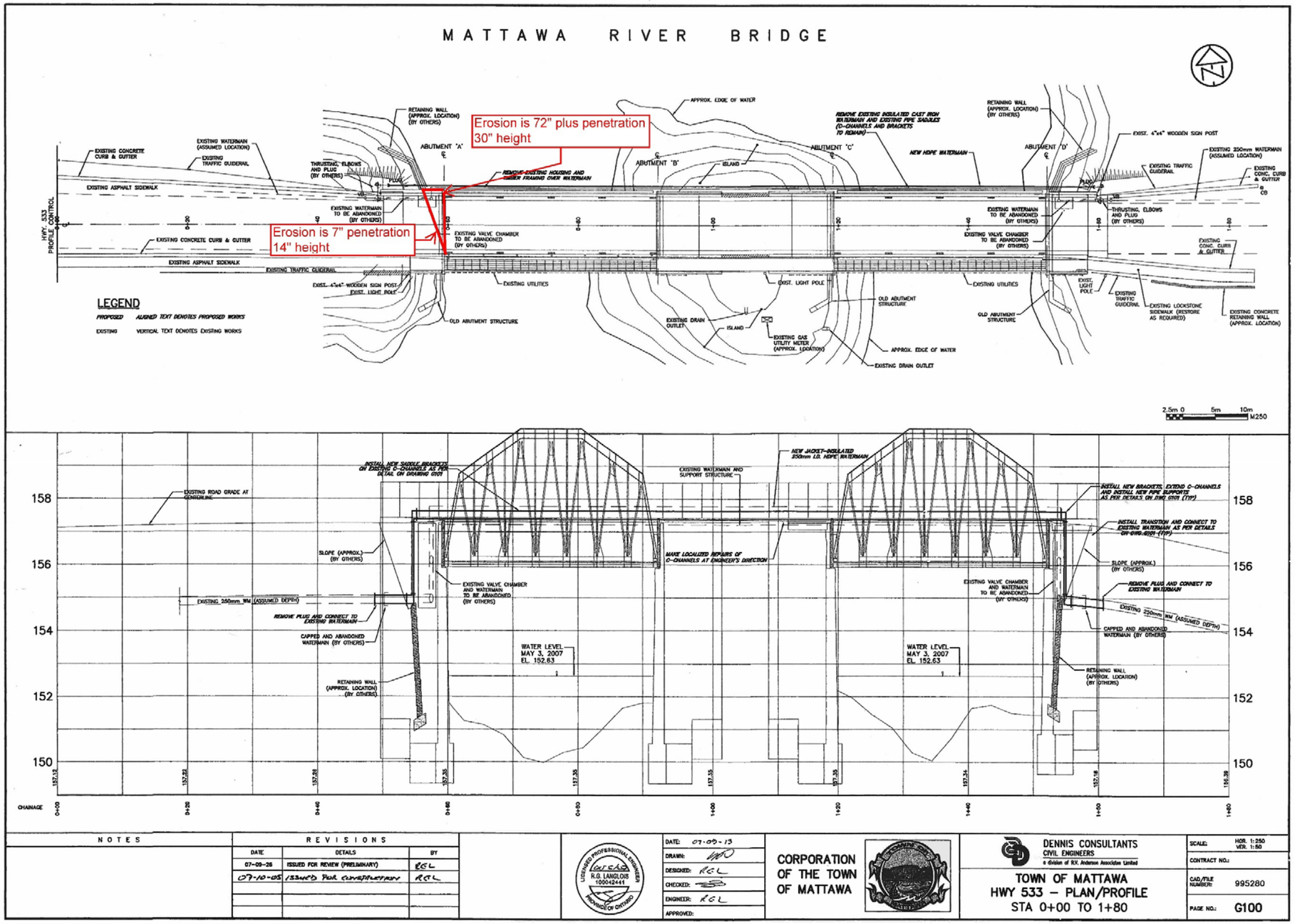
The west abutment of the Mauril Bélanger Bridge was significantly undermined by the May 2019 flood event which required closure of one lane of traffic and load restrictions creating serious "level of service" issues.

Photo 5 shows the Mauril Bélanger Bridge South Elevation.

PHOTO 5
MAURIL BÉLANGER BRIDGE

Figure 18 hereto provides a plan profile of the Mauril Bélanger Bridge including impact location of May 2019 flood event damage.

FIGURE 18
MAURIL BÉLANGER BRIDGE PLAN PROFILE



The Jp2g Consultants Team performed visual condition inspections on September 4 and 5, 2019. A Commercial Dive Survey was subsequently conducted on the west abutment of the Mauril Bélanger Bridge on October 15, 2019, as it was under water at September site review. This Core Asset Management Report summarizes our findings, discusses alternatives and presents options for extending the operational life of this fundamentally important infrastructure.

Level of Service

A detailed discussion of existing and desirable Level of Service requirements is provided in Section 3.0, however, for reasons described herein, due to damage caused by the May 2019 flood event, the north lane of the Mauril Bélanger Bridge was closed and single lane traffic was controlled on the south lane by temporary traffic lights.

The allowed weight of vehicles was restricted; which precluded use by transport trucks, logging trucks and heavy equipment.

The bridge underwent emergency and interim repairs in 2019 and 2020 and was opened to both lanes of unrestricted traffic in late 2020.

Full closure of both lanes of traffic during 2020 interim repair would have required a 90 km detour to cross from the east side of Town to the west side.

Reduction to one lane of traffic or closure is not an acceptable level of service and given the existing bridge condition as detailed below, a long term solution to rehabilitation or replacement of the Mauril Bélanger Bridge must be addressed.

IT IS ESSENTIAL THAT ANY ALTERNATIVE APPROACH MAINTAINS A VEHICULAR AND PEDESTRIAN LINK BETWEEN THE EAST AND WEST SECTORS OF THE TOWN OF MATTAWA.

Mauril Bélanger Bridge Condition

The current (2022) Bridge Condition Index (BCI) Value is estimated at 65 out of 100, which is considered Poor to Fair condition. The BCI will be reviewed and updated in subsequent detailed engineering investigation.

The Mauril Bélanger Bridge was originally constructed in 1949 crossing the Mattawa River immediately south of the junction of the Ottawa River, connecting the east and west sides of the Town of Mattawa. It is located at the western limit of the Town of Mattawa/Hwy. 533/Hwy. 17 Connecting Link.

The bridge was originally constructed as two independent structures (Structure#1 east structure and Structure #2 west structure) both connected by a small island which has recently been developed as Mauril Bélanger Memorial Park. The structures were rehabilitated in 1985 and 2007. Each structure consists of a painted steel truss superstructure, supporting a concrete deck and resting on concrete abutments. The width of the bridge accommodates two traffic lanes, one in each direction, within a 50 km/hr speed limit. A 1.5 meter open grate sidewalk is located on the south side of the bridge. The Mauril Bélanger Bridge provides the only vehicular and pedestrian access between the east and west part of town. The bridge also supports a trunk watermain and a natural gas pipeline; as well as hydro and telephone lines.

Rehabilitation work in 2007 consisted of replacement of the asphalt wearing surface, spot repair on the concrete deck, removal of the expansion joints, replacement of guiderails/curbs/deck drains and sidewalks, installation of galvanized open grate sidewalk, guardrails and painting of the structural steel components.

CONSIDERING THE IMPORTANCE OF THE BRIDGE TO THE COMMUNITY AND LOCAL AREA COMMERCE, THE MAURIL BÉLANGER (MATTAWA RIVER) BRIDGE MUST BE DEEMED A CRITICAL CROSSING AND MUST REMAIN IN SERVICE DURING ANY FUTURE REHABILITATION OR REPLACEMENT WORK.

Emergency repairs conducted in 2019/20 consisted of grouting the void under the west abutment caused by the 2019 flood event and interim repairs consisting of installing a “tie back” system were completed in 2020.

Observations from the Jp2g Consultants Inc. Bridge Condition Study (2019) can be summarized as follows:

Abutments and Wing Walls

As part of the Town of Mattawa due diligence post May 2019 flood event conducted under the Municipal Disaster Recovery Assistance Program a commercial diving team has discovered severe scouring under the NW footing west abutment of the westerly structure.

The Galcon Marine Dive Survey identified erosion under the west abutment of the Mauril Bélanger (Mattawa River) Bridge starting 1/3 of the distance from the south face of the west abutment at 200 mm (7”) penetration and 400 mm (14”) height with the void increasing to over 3 m (6’) penetration and 0.8 m (30”) height at the north face of the west abutment. The diver also identified exposed rebar and loose stone in the undermined cavity under the footing.

The scouring appears to have been caused or exacerbated by the May 2019 flood event on the Mattawa River. Immediate emergency repairs have been implemented to prevent further scouring and potential serious structural damage to the bridge.

The remaining abutments on both structures are in reasonable condition however, they are exhibiting some moderate erosion on the face due to water flow. We recommend repair of the remaining abutments in the 6 to 10 year period.

The bearing seats on both structures are in good condition. Bearing seats (top of all abutments) need cleaning.

Sidewalk

The sidewalk located on the south side of both structures consists of a galvanized steel grating. Minor corrosion is occurring on top of grating due to foot traffic wear. Openings in grating are large enough to pose a tripping issue for pedestrian traffic. We recommend a light weight “pedestrian friendly” mat be installed over current sidewalk grating in the Now period.

Guardrails

The existing guardrails on the Mauril Bélanger Bridge do not meet current codes in terms of height or grid opening size and they are moderately corroded.

The outer guards do not currently conform to the OBC 2012 due to the openings in the side panels. The railing system should be replaced with a system that conforms to the OBC 2012 as a Now need.

Structural Evaluation

In general, the structural steel for the Mauril Bélanger (Mattawa River) Bridge appears to be in fair condition (as at 2019), however, moderate corrosion was found on the exposed structural members on both the East and West structures. Structural steel components beneath the decks were found to be in generally fair condition. The causation of the corrosion is a combination of sand salt during winter and a 2007 coating that needs replacement. There are also a few steel repairs and bolt replacements required. All exposed steel should be sandblasted and recoated in the 1 to 5 Year period for preventative maintenance purposes and to extend the life cycle of the asset.

Bridge Deck (East and West)

The asphalt wear surface is in poor to good condition. It has some moderate raveling. Milling and asphalt replacement is recommended in the 6 to 10 Year period.

Options Rehabilitation or Replacement

There are two options under consideration as described herein

Option 1	Rehabilitation of Existing Bridge in stages
Option 2	Replacement of Existing Bridge

Figure 19 outlines the various steps which could be considered in Option 1 Phased Rehabilitation approach.

Replacement with a new structure will be considered if the rehabilitation approach proves to be impractical or not cost effective in terms of life cycle costs.

A Summary of Needs and time period of improvements for the Mauril Bélanger Bridge is included in Table 2, Section 2.2.6 of this report.

Option 2 Replacement of Existing Structure would require engaging “quick replacement” or “side slip” construction methods to replace the bridge in the same location with a minimum of down time.

Certain components are considered immediate needs that are required for either option as follows

Detailed Structural Review
Options Analysis and Preliminary Cost Estimates
Scoped Environmental Assessment
Replacement of Guardrails
Replacement of Sidewalk

FIGURE 19
MAURIL BÉLANGER BRIDGE
POTENTIAL STEPS TO PHASED REHABILITATION OPTION 1

Now Needs	
Step 1	Replace south side sidewalk Replace south side railing Enhance protection of existing 125 mm (5") dia. gas main.
Step 2	Conduct a detailed structural investigation including destructive testing and laboratory analysis to determine the integrity of existing bridge components (eg: concrete, structural steel, pavement). Step 2 should also include obtaining any geotechnical information not collected during the emergency repair or interim solution phases of the recent bridge work. A hydrographic analysis to determine Mattawa River flow characteristics and flood protection/erosion control requirements may also be required.
Step 3	Conduct engineering options analysis, rehabilitation versus replacement including preliminary Class D costing and cost benefit analysis
Step 4	Conduct a scoped Environmental Assessment for the proposed undertaking and obtain Agency approvals based on preliminary design concept and construction methodology.
Step 5	Replace north side railing. Enhance protection of existing 10" dia. watermain.
Step 6	Repaint Bridge Superstructure
1 to 5 Years	
Step 7	Commission Detailed Engineering Design and finalize Phased Construction Program including Engineer's Opinion of Probable Cost Class C.
Step 8	Refurbish bridge substructure (including reinforcement if necessary)
Step 9	Implement improvements to all four (4) existing abutments including parging of concrete and structural reinforcement where required; as well as enhanced erosion control and flood/ice mitigation measures.
Step 10	Refurbish deck, repave approach from 1st Street to Water Street. (This final stage may require very short term closure of the bridge.)

2.2.3 CPR/Hwy. 17 Trestle

The CPR trestle overcrossing Hwy. 17 at the east approach to the Town of Mattawa is not owned by or under the jurisdiction of the Municipality, however, given its deteriorating condition and awkward alignment, its demolition and removal are of serious concern to the Town of Mattawa. See Photo 6.

The Town and the Township of Papineau Cameron are currently working together to have CPR and MTO resolve this important matter.

PHOTO 6
HWY. 17 CPR TRESTLE

2.2.4 CPR/Donald Street Overpass

The CPR Trestle at Donald Street creates vertical clearance issues for buses and trucks at Donald Street and sight line difficulties at the intersection of Hwy. 17/John Street.

PHOTO 7
CPR/DONALD STREET OVERPASS

2.2.5 Risks

Risks - Mauril Bélanger Bridge

There are three (3) high risks related to the Mauril Bélanger Bridge which must be addressed in any rehabilitation or replacement initiatives

Risk 1 Further damage to one or more of the existing bridge abutments due to future flood events or ice damage

Risk 2 Closure of vehicular traffic crossing the Mauril Bélanger Bridge during construction of a new bridge at the same location or shutdown during rehabilitation of existing structure would bisect the Town of Mattawa requiring a 90 km detour to cross the Mattawa River resulting in major disruption to the Central Business District on the east side of the river and Institutional uses on the west side of the river.

Risk 3 Construction of a new bridge at an alternate location would redirect traffic including heavy trucks through residential areas and away from the existing Central Business District.

Risks - CPR Trestle/Hwy. 17

High risks include

Risk 1 Debris falling from the structure onto Hwy. 17 could cause traffic accidents

Risk 2 Accidents or traffic disruption at the undercrossing would require extensive detours over Township rural roads not designed for heavy traffic.

Risks – CPR/Donald Street Overpass

Moderate risks include

Risk 1 The existing structure is deteriorating and in need of repair.

Risk 2 The vertical clearance is an impediment to larger vehicles.

Risk 3 Sight lines at the Donald Street Hwy. 17 intersection are problematic.

2.2.6 Summary of Bridge Needs and Recommendations

Table 2 summarizes Town of Mattawa needs, recommended improvements and associated cost estimates to the extent currently possible for the Mauril Bélanger Bridge, the CPR Hwy. 17 Trestle and the CPR/Donald Street Overpass.

TABLE 2
TOWN OF MATTAWA BRIDGE AND STRUCTURE NEEDS & RECOMMENDED TIME PERIOD OF IMPROVEMENTS

	RECOMMENDED IMPROVEMENTS	RATIONALE	RISK EXTREME HIGH MODERATE LOW	COST ESTIMATE (INC. ENGINEERING AND CONTINGENCY)	PHASING
INITIAL BACKGROUND WORK					
1.	Replace sidewalk and south side railing	Public Safety	High	$129,360 Sidewalk $247,930 Railing	Now
2.	Conduct a detailed structural investigation including destructive testing and laboratory analysis to determine the integrity of existing bridge components (eg: concrete, structural steel, pavement). This investigation should also include obtaining any geotechnical information not collected during the "emergency repair" or "interim solution" phases of the 2020/2021 bridge work. A hydrographic analysis may also be required to determine Mattawa River flow characteristics and flood protection/erosion control requirements.	Existing Condition Review and Base Data	N/A	$84,000 + Technical Background Studies as necessary	Now
3.	Step 3 will include an Options Analysis (rehabilitation versus replacement) including preliminary costing (Class D) and Cost Benefit Analysis	Options Analysis	N/A	$25,000	Now
4.	Conduct a scoped Environmental Assessment for the proposed undertaking and obtain Agency approvals based on preliminary design concept and construction methodology.	Identify Preferred Alternative	N/A	$250,000	Now
5.	Replace north side railing. Enhance protection of existing 10" dia. watermain.	Public Safety		$247,930	Year 2
6.	Repaint Bridge Superstructure.	Extend operational life of asset (20 – 25 years)		$750,000 Paint Order of Magnitude Estimate	Year 2
			INITIAL BACKGROUND WORK	**$1,734,220**	

TABLE 2 (CONT'D)

RECOMMENDED IMPROVEMENTS		RATIONALE	RISK EXTREME HIGH MODERATE LOW	COST ESTIMATE (INC. ENGINEERING AND CONTINGENCY)	PHASING
OPTION 1 REHABILITATE IN PHASES					
7.	Commission Detailed Engineering Design including Class D Engineer's Opinion of Probable Cost	Detailed Engineering Design and Construction Methodology	N/A	$1,500,000	Year 3
8.	Refurbish bridge under structure (including reinforcement if necessary)	Extend operational life of asset (20 years ±)		$785,000	Year 4
9.	Implement improvements to all four (4) existing abutments including parging of concrete and structural reinforcement where required (eg: west abutment) as well as enhanced erosion control and flood/ice mitigation measures.	Extend operational life of asset (20 years ±)	Moderate	$1,000,000 Order of Magnitude Estimate	Year 6
10.	Refurbish deck, repave approach from 1st Street to Water Street. (This final sage may require very short term closure of the bridge.)	Extend operational life of asset (20 years ±)		$345,800	Year 6
OPTION 1 REHABILITATE IN PHASES				**$3,630,800**	
+ INITIAL BACKGROUND WORK				**$1,734,220**	
				$5,365,020	

TABLE 2 (CONT'D)

RECOMMENDED IMPROVEMENTS		RATIONALE	RISK EXTREME HIGH MODERATE LOW	COST ESTIMATE (INC. ENGINEERING AND CONTINGENCY)	PHASING
OPTION 2 BRIDGE REPLACEMENT					
1.	Replace Structure	Operational life of new bridge asset (75 years ±)	High	Order of Magnitude Estimate	6 – 10 Years
OPTION 2 BRIDGE REPLACEMENT INCLUDING INITIAL BACKGROUND WORK				**$20,000,000**	

CPR/HWY 17 TRESTLE

RECOMMENDED IMPROVEMENTS		RATIONALE	RISK EXTREME HIGH MODERATE LOW	COST ESTIMATE (INC. ENGINEERING AND CONTINGENCY)	PHASING
1.	Demolition and Removal of CPR/Hwy 17 Trestle	Public Safety	High	by MTO Forces	Now

CPR/DONALD STREET OVERPASS

1.	Demolition and removal of CPR/Donald Street Trestle	Public Safety	Moderate	TBD	6 – 10 Years

2.3 STORM WATER DRAINAGE

2.3.1 Background

Storm sewers and drainage outlets for municipal roads including storm water management ponds are considered "core assets". The storm water drainage system for the Town of Mattawa includes

- Storm sewers c/w catchbasins and manholes
- Outlet ditches and culverts
- Natural watercourses

This Town of Mattawa Phase 2 Core Assets Study has identified municipal storm sewers and overland drainage outlets as summarized on Figure 20 and shown on Map E Town of Mattawa Storm Water Drainage System (Air Photo).

2.3.2 Level of Service Storm Sewer Drainage Outlets

The level of service for the Town of Mattawa Storm Sewer and Drainage Outlet System will address

Technical Level of Service
Customer/User Level of Service

The **Technical Level of Service** will be established using Technical Guidelines, Engineering Standards and Ontario Ministry of Natural Resources regulations as follows:

1. Storm Water Management Planning and Design Manual March 2003
2. MTO Drainage Management Manual Parts 1 to 4 1997
3. Ministry of Natural Resources OBM Contour Mapping 1:2000
4. MNR 1:100 Year Flood Plain Policy
5. Mattawa North Bay Conservation Authority Flood Plain Mapping

The technical level of service requirements will also address standards for drainage infrastructure capacity based on various design year storm events for scenarios ranging from tolerable limits for roadway flooding to protection of watercourses to mitigating nature and extent of property damage to preventing risks to public health and safety.

Customer/User Level of Service focuses on frequency of flooding impacts on roads and private property, eg: 1:5 year storm events, ponding at intersection and visual quality of discharge and erosion control at outlets. A Level of Service Matrix for addressing and monitoring Town of Mattawa Storm Water Infrastructure Assets is provided in Section 3.0.

2.3.3 Storm Water Drainage System Components/Condition

The components of the Town of Mattawa Storm Sewer System are summarized in Figure 20 and shown on Map E hereto.

FIGURE 20
TOWN OF MATTAWA
STORM WATER DRAINAGE SYSTEM

Municipal Storm Sewer		**Culverts**	**Natural Watercourses**	**Existing Outlets**
1.	Mattawan Street	Mattawan Street Culverts (9)	Bissett Creek Boom Creek	A. Hwy 17 Trestle B. Hwy 17 between Valois Restaurant and Brook St
2.	Sid Turcotte Park Outlet	Turcotte Park Outlet (1)	Mattawa River Ottawa River	C. CPR Undercrossings from Light Industrial Park (3) D. Brook St/CPR Crossing Box Culvert
3.	Bissett Street	Bissett Street Outlet Culverts (8) and Storm Water Forcemain (1)		E. Brook St/Legion Outlet F. Timmins St/CPR Box Culvert G. Timmins St Park H. Water St Veterans Memorial Park
4.	Existing CPR Culverts Undercrossing at Light Industrial Park 3 CSPs and 1 box culvert			I. Mattawan St/Pine St (2) J. Mattawan St between Pine St and Poplar St (2) K. Mattawan St/Poplar St (2) L. Mattawan St between Poplar St and Hurdman St
5.	Existing 1500 mm (5’) culvert undercrossing Brook Street			M. Mattawan St/Hurdman St (2) N. Mattawan St between Hurdman St and Pine St (2) O. Matawan St/Park St (2) P. Sid Turcotte Park Outlet Q. Donald St/Boom Creek Outlet R. Rankin St Outlet S. Marina Outlet T. Mauril Bélanger Bridge Outlet (2) U. Bissett St/2nd St (2) V. Bissett St/3rd St (2) W. Bissett St/4th St X. Bissett St/6th St plus storm water forcemain from McKenzie St Y. Bissett St/8th St (2) Z. Bissett St/12th St

Based on the field review and analysis carried out for this Asset Management Plan Phase 2 - Core Assets we can offer the following synopsis of Town of Mattawa storm sewer and drainage outlet condition.

Mattawan Street culverts at the extension of Pine Street and Poplar Street outletting to the Mattawa River require replacement in conjunction with Mattawan Street road reconstruction works recommended in Section 2.1 of this report. The Mattawan Street/Hurdman Street outlets to the Mattawa River were replaced by Town forces in 2020.

The outlet culvert crossing Bissett Street at 4th Street to the Mattawa River was replaced by Town forces in 2017.

The existing outlet culvert on Bissett Street at 12th Street requires improvements as per MDRAP.

The Veteran's Memorial Park outlet was completely inundated during the May 2019 Flood and requires Teleye investigation to determine condition prior to replacement.

There is a serious drainage issue resulting in the frequent spring flooding on McKenzie Street at 6th Street intersection; which needs to be addressed on a priority basis as the flooding situation compromises traffic flow, impedes access to private property and effects the safe operation of the McKenzie Street Sewage Pumping Station.

Significant work will also be required on the Brook Street/Industrial Park surface water drainage outlet which will include storm water retention ponds, replacement of CPR culverts and Hwy. 17 box culvert, watercourse improvements and erosion control in order to address existing surface water run-off and accommodate new developments on Town owned property between the CPR tracks and Dorion Road and adjacent to the Mattawa Light Industrial Park.

Based on Jp2g Consultants Inc. site reviews carried out for this study all other outlets shown on Map E appear to be functioning satisfactorily but they should be assessed in a storm water outlet review in conjunction with a Road Needs Study Update.

RECOMMENDATION #20

CONDUCT A PHYSICAL REVIEW OF ALL STORM WATER OUTLETS IN CONJUNCTION WITH ROAD NEEDS STUDY UPDATE.

Map E
Town of Mattawa Existing Storm Water Drainage System

2.3.4 May 2019 Flood Impacts on Culverts

The Town of Mattawa storm sewer drainage system survived the May 2019 flood event surprisingly well. All systems were inundated at their lower reaches but only the following systems experienced directly related flood damage.

1. Nine (9) Mattawan Street cross culverts outletting to the Mattawa River sustained a range of damage from serious erosion, uplifting and realignment at Mattawan Street/Hurdman Street outlet (Fraggle Rock Beach) Photo 8 to more moderate damage to the culverts and erosion of cover material at Mattawan Street/Pine Street outlet Photo 9.

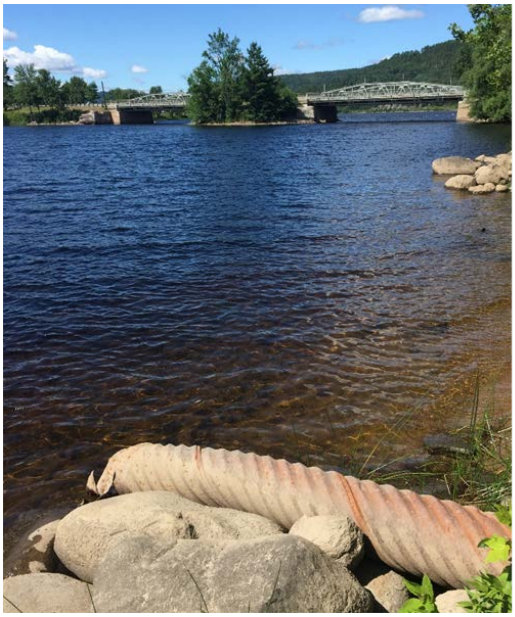
   All nine (9) culverts on Mattawan Street between Pine Street and Hurdman Street are in poor to fair condition and will require eventual replacement as funds are available.

2. Bissett Street at 12th Street 600 mm (24”) dia. culvert

3. Backflow from Ottawa River at CPR box culvert at Timmins Street

PHOTO 8
MATTAWAN STREET CULVERT AT HURDMAN STREET
POST MAY 2019 FLOOD

PHOTO 9
MATTAWAN STREET CULVERT AT PINE STREET
POST MAY 2019 FLOOD



The CPR Box Culvert at Timmins Street allowed backflow from the Ottawa River to inundate the lower portion of Timmins Street during the May 2019 flood event and this issue will need to be addressed. See Photo 10.

PHOTO 10
CPR BOX CULVERT AT TIMMINS STREET

2.3.5 Risks Storm Drainage System

The risks associated with the Town of Mattawa Storm Sewer System are summarized below.

A. STORM SEWER SYSTEM/CULVERTS

There are currently thirteen (13) CSP culverts crossing Mattawan Street between Pine Street and Sid Turcotte Road which are in poor condition and should be replaced in conjunction with any road work as funds become available.	**HIGH RISK** Corrective action required
There are three (3) CSP culverts and a box culvert undercrossing the CPR rail bed and draining the Town of Mattawa Light Industrial Park which require replacement.	**HIGH RISK** Corrective action required
The storm sewer CSP draining Water Street across Veterans Memorial Park is reported to be in poor condition and should be monitored by Teleye prior to considering replacement.	**LOW RISK** Corrective action suggested

B. OUTLETS

The Brook Street outlet drains a substantial portion of the Town of Mattawa east of the Mattawa River. It is unknown if the ditches which altered the natural watercourse between Pine Street and the Ottawa River are incorporated within Municipal easements and this matter must be resolved. In addition, the concrete box culvert under Hwy.17 Valois is in very poor condition and subject to further engineering analysis may lack capacity to accommodate future surface water run-off from the Light Industrial Park and Environs as well as the CPR Rail Yard and Mike Rodden Arena. There is a fundamental requirement for storm water retention to be provided in the upper reaches of the Brook Street outlet catchment area.	**HIGH RISK** Corrective action required.
The CPR box culvert draining Timmins Street created a backflow issue during the May 2019 flood event and should be blocked or have ground elevation reconfigured to reduce backflow in future flood events.	**MODERATE RISK** Corrective action suggested

C. FLOODING

The McKenzie Street 6th Street intersection experiences flooding on a regular basis during spring melt and major storm events which is problematic to adjacent residences and the McKenzie Street Pumping Station. An engineering analysis is currently underway.	**HIGH RISK** Corrective action required.

2.3.6 Summary of Storm Drainage System Needs and Recommendations

Preliminary cost estimates for Town of Mattawa drainage needs are summarized in Table 3.

TABLE 3
TOWN OF MATTAWA STORM SEWER SYSTEM DRAINAGE NEEDS & RECOMMENDED TIME PERIOD OF IMPROVEMENTS

	RECOMMENDED IMPROVEMENTS	RATIONALE	RISK EXTREME HIGH MODERATE LOW	COST ESTIMATE (INC. ENGINEERING AND CONTINGENCY)	PHASING
1.	Light Industrial Park/Brook Street Outlet Improvements • Watercourse Improvements Ditching • Storm Water Retention Ponds (2) • Erosion Control • Box Culvert Replacement/Hwy. 17	Public Health and Safety (flooding) Environmental Protection Economic Development	High	$100,000 $600,000 Order of Magnitude Estimate $50,000 Hwy. 17 Culvert Replacement is MTO Jurisdiction	Now
2.	Mattawan Street Culvert Replacements • Outlets to Mattawa River in conjunction with Mattawan Street road works	Extending life of infrastructure	High	$157,500 MDRAP Funded	Now
3.	Detailed physical review of all storm sewers and outlets should be conducted in conjunction with future Road Needs Study Update		N/A	$25,000	Year 1
4.	Identify McKenzie Street solution to resolve ponding at 6th Street intersection	Public Health and Safety Improve Level of Service Extending life of infrastructure	High	TBD	Year 1
5.	Replace existing culvert 12th Street/Bissett Street	Erosion Control	Moderate	$32,814 MDRAP Funded	Year 1
6.	CPR Box Culvert/Timmins Street modify surface drainage to mitigate backflow from the Ottawa River during flood events	Flood protection	Moderate	$25,000 MDRAP Funded	Year 2
7.	Veterans Memorial Park Teleye Investigation Need for replacement or repair to be determined based on results	Extending life of infrastructure	Low	$7,500	Year 2

2.4 WATER SUPPLY AND DISTRIBUTION SYSTEM

2.4.1 Background

The Town of Mattawa Drinking Water System (DWS No. 21001905) is owned by the Town of Mattawa and consists of a Class II Distribution and Supply System Licence #195-101. The groundwater Permit to Take Water for two (2) supply wells is 4668-97QK3R. The Ontario Clean Water Agency (OCWA) is the overall responsible operator.

The Town of Mattawa Phase 2 Core Asset Management Plan provided herein includes a detailed review of previously completed Engineering Reports as summarized below. These reports have been electronically filed with this Asset Management Plan as **"**background information**"**

1. Town of Mattawa Water Supply Study by Proctor & Redfern 1994
2. Reports on WTP Supply Pumps
3. Mattawa Reservoir Inspection Report by Landmark Municipal Services 2010
4. Town of Mattawa Source Water Protection Plan 2015
5. Town of Mattawa Light Industrial Park Preliminary Water System Analysis by Jp2g Consultants Inc. 2018
6. Mattawa Reservoir Structural Review by Jp2g Consultants Inc. 2018
7. Ontario Clean Water Agency Annual Report Mattawa Drinking Water System 2021

Approximately 1,050 homes and businesses in the Town of Mattawa are serviced by municipal water.

There are 117 fire hydrants.

There was one (1) watermain break and three (3) service connection repairs in 2021.

Total water consumption in 2021 was 504,528 m^3.

Rated capacity of existing water treatment plant 400 Bissett Street as per Municipal Drinking Water Licence 195-101 is 6,540 m^3/day.
Average daily flow for 2021 was 1,382 m^3/day 21.1% of rated capacity
Maximum daily flow for 2021 was 2,057 m^3/day 31.5% of rated capacity

2.4.2 Level of Service – Water Supply and Distribution System

The Level of Service established for the Town of Mattawa Water Supply and Distribution System utilizes two (2) methods of assessment

Technical Level of Service
Consumer/User Level of Service

The **Technical Level of Service** was established using Technical Guidelines, Engineering Standards and Ministry of Environment and Climate Change documents as follows:

1. Ontario Drinking Water Standards, Objectives and Guidelines Ministry of Environment, Conservation and Parks
2. Municipal Works Design Manual by Municipal Engineers Association
3. Ministry of Environment Design Guidelines for Water and Sewer Works
4. Ontario Regulation 169/03 Ontario Drinking Water Standards
5. Ontario Regulation 170/03 Drinking Water Systems

The Technical Level of Service requirements address matters such as water system supply and storage requirements for domestic water supply and fire protection, per capita consumption rates, pipe size, configuration design, fire hydrant and valve locations; as well as recommended system pressures

Technical guidelines also provide requirements for maintaining and monitoring water quality.

Customer/User Levels of Service are based on public input and focus on system reliability, frequency of watermain or water service connection breaks, boil water advisories and quality/aesthetics of water delivered to individual residences and businesses.

A detailed discussion on existing and desired Level of Service for Water System Core Assets is provided in Section 3.

2.4.3 Water System Components/Condition

The current population for the Town of Mattawa is approximately 2,150 people and the projected 20 year design population is 2,500 people. Average day water consumption in 2015 was 149 Igal/person/day. Ministry of Environment Design Guideline is 450 liters (100 Igal/person/day). Nominal water pressure throughout the Town of Mattawa water distribution system is approximately 100 psi, which is considered high.

The Town of Mattawa Drinking Water System is categorized as a "Large Municipal Residential Drinking Water System".

In accordance with the Municipal Drinking Water Licence, the Town of Mattawa Drinking Water System is limited to a maximum of 6,540 m^3/day.

Based on a review of the reports noted above and the required level of service analysis conducted for this Phase 2 Core Asset Management Plan we would offer the following synopsis of Town of Mattawa water system components including existing condition, deficiencies and risks.

The Town of Mattawa Water Supply and Distribution System was substantially constructed between 1952 and 1962 and currently consists of the following components

1. Groundwater supply water treatment plant c/w two (2) production wells
2. 800 m^3 (174,836 Igal) in-ground water storage reservoir constructed in 1949/50 with "useable capacity" of approximately 700 m^3 (153,978 Igal)
3. 250 mm (10") dia. feeder line connection between Water Treatment Plant and Reservoir
4. 300 mm (12") dia. and 15" dia. watermain crossing Mattawa River at Mattawa Conservation Area Island connecting Bissett Street and Hurdman Street
5. 250 mm (10") dia. watermain crossing suspended from Mauril Bélanger Bridge (Main Street) crossing the Mattawa River
6. Water distribution system piping ranging in size from 100 mm (4") dia. to 380 mm (15") dia. There are currently approximately 20,000 meters of various sized cast iron, ductile iron and polyvinyl chloride piping
7. There are approximately 1,050 service connections and 117 hydrants in the system

GIS mapping showing the Town of Mattawa Water Supply and Distribution System is provided on Map F.

Map G provides the existing configuration and pipe sizes of the Town of Mattawa Water Supply and Distribution System including main transmission grid, distribution system, reservoir and Water Treatment Plan locations.

Pipe sizes for purposes of this Phase 2 Core Asset Management Plan have been based on Town of Mattawa "corporate memory", construction field notes and "as constructed" drawings provided by the Town of Mattawa Public Works and Environmental Department.

RECOMMENDATION #21

WATER DISTRIBUTION SYSTEM LAYOUT, PIPE SIZES AND UP TO DATE OPERATIONAL CAPACITY OF WTP AND RESERVOIR SHOULD BE CONFIRMED IN AN UPDATED "WATER SYSTEM INFRASTRUCTURE STUDY" AS FUNDING BECOMES AVAILABLE.

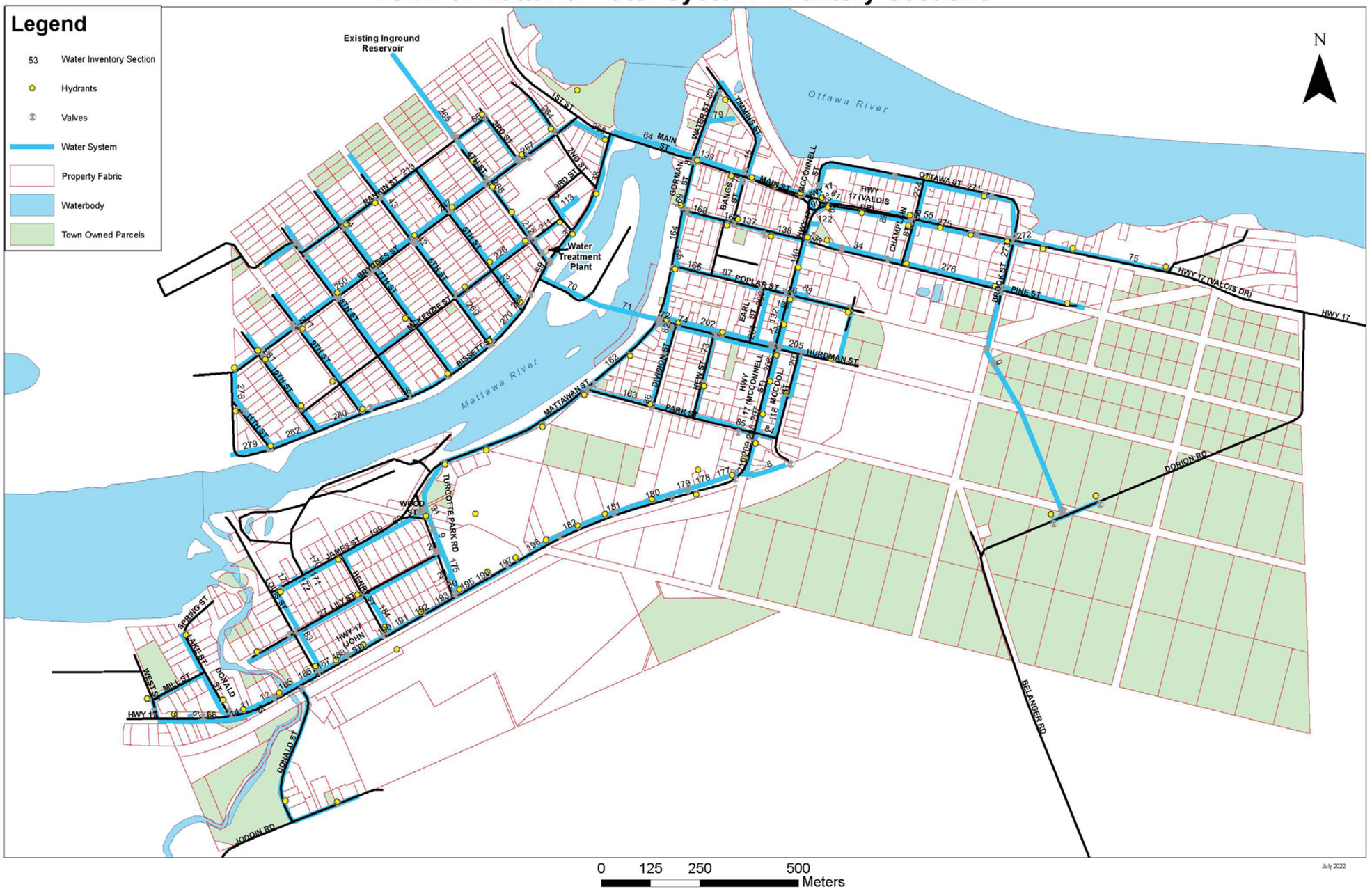
2.4.4 WaterCAD Hydraulic Analysis

Jp2g Consultants Inc. conducted a WaterCAD computer simulation to provide a preliminary hydraulic analysis of the Town of Mattawa Water Supply and Distribution System under various scenarios in terms of fire flow and system pressure. This analysis informed recommendations for water system improvements as per this Phase 2 Core Assets Management Study.

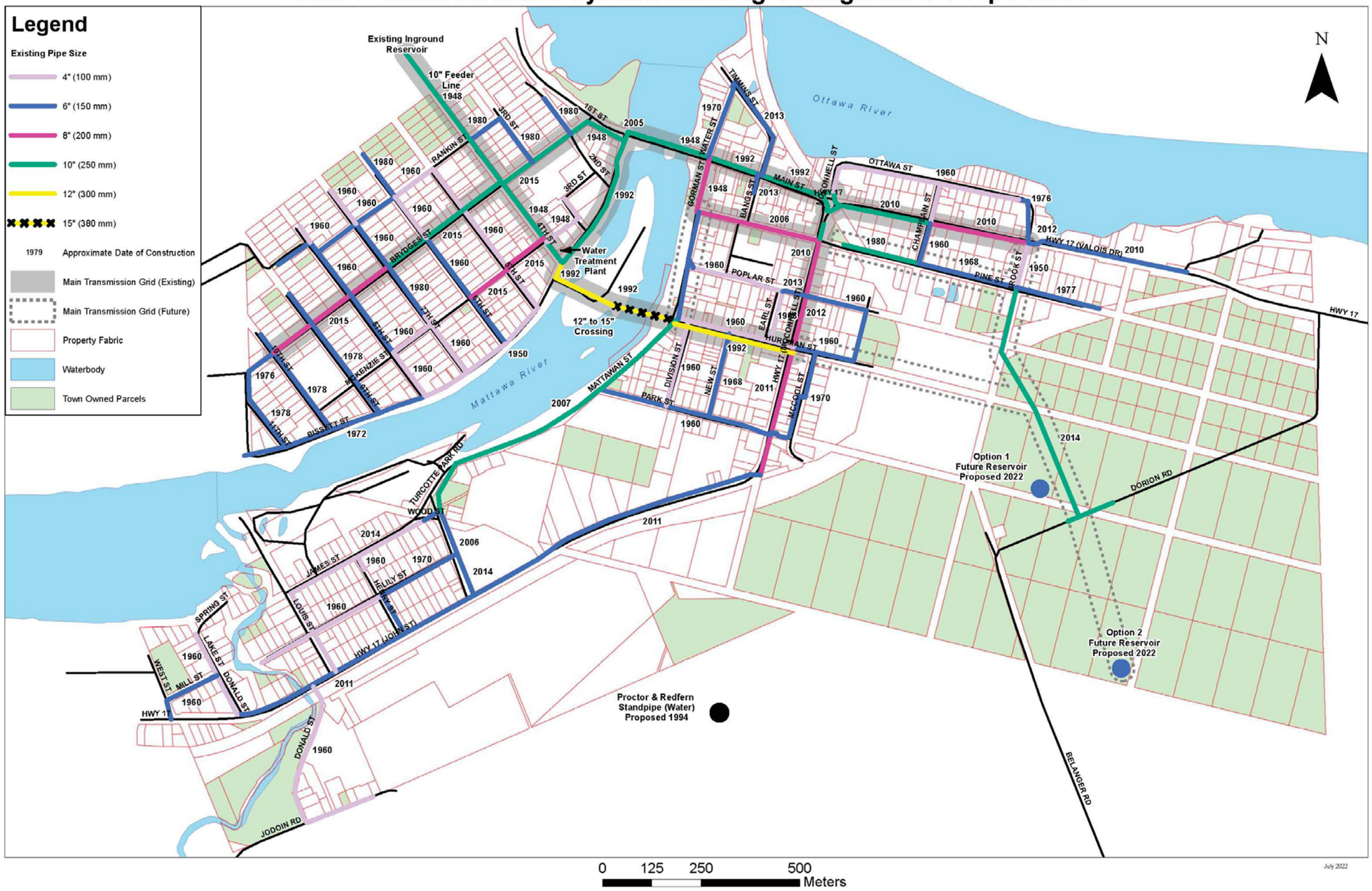
Map H hereto provides the schematic used in the WaterCAD model. Key elevations used in the computer simulation were

- Water Treatment Plant 157 GSC
- Existing in ground Reservoir
  - Top of Water 232 GSC
  - Bottom slab 223.5 GSC
- Proposed Reservoir Industrial Park 283 GSC
- Brook Street/Pine Street Intersection 159 GSC
- Dorion Road 206 GSC

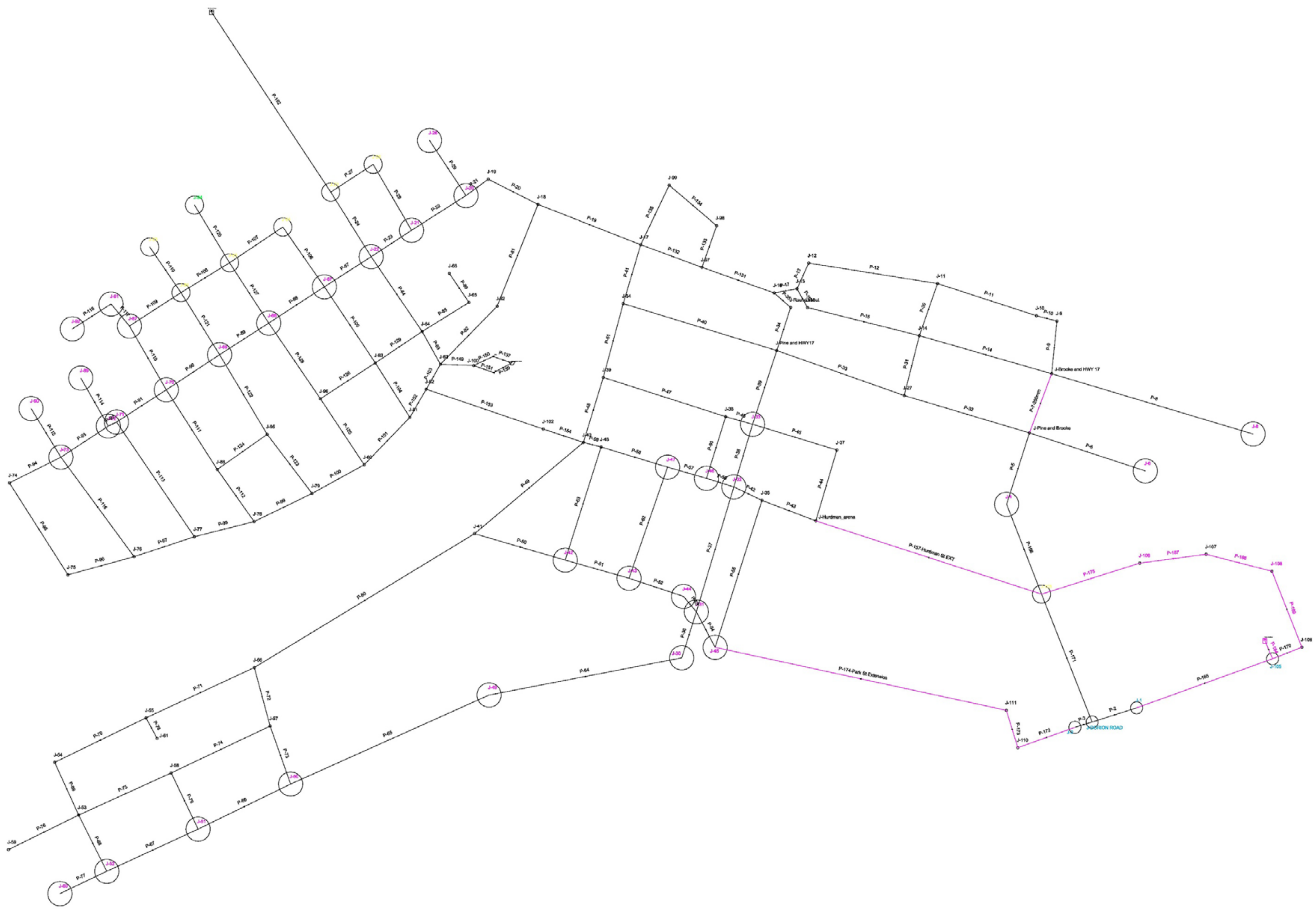
Map F
Town of Mattawa Water System Inventory Sections



Map G
Town of Mattawa Water System Existing Configuration / Pipe Sizes



Map H
Town of Mattawa WaterCAD Computer Simulation



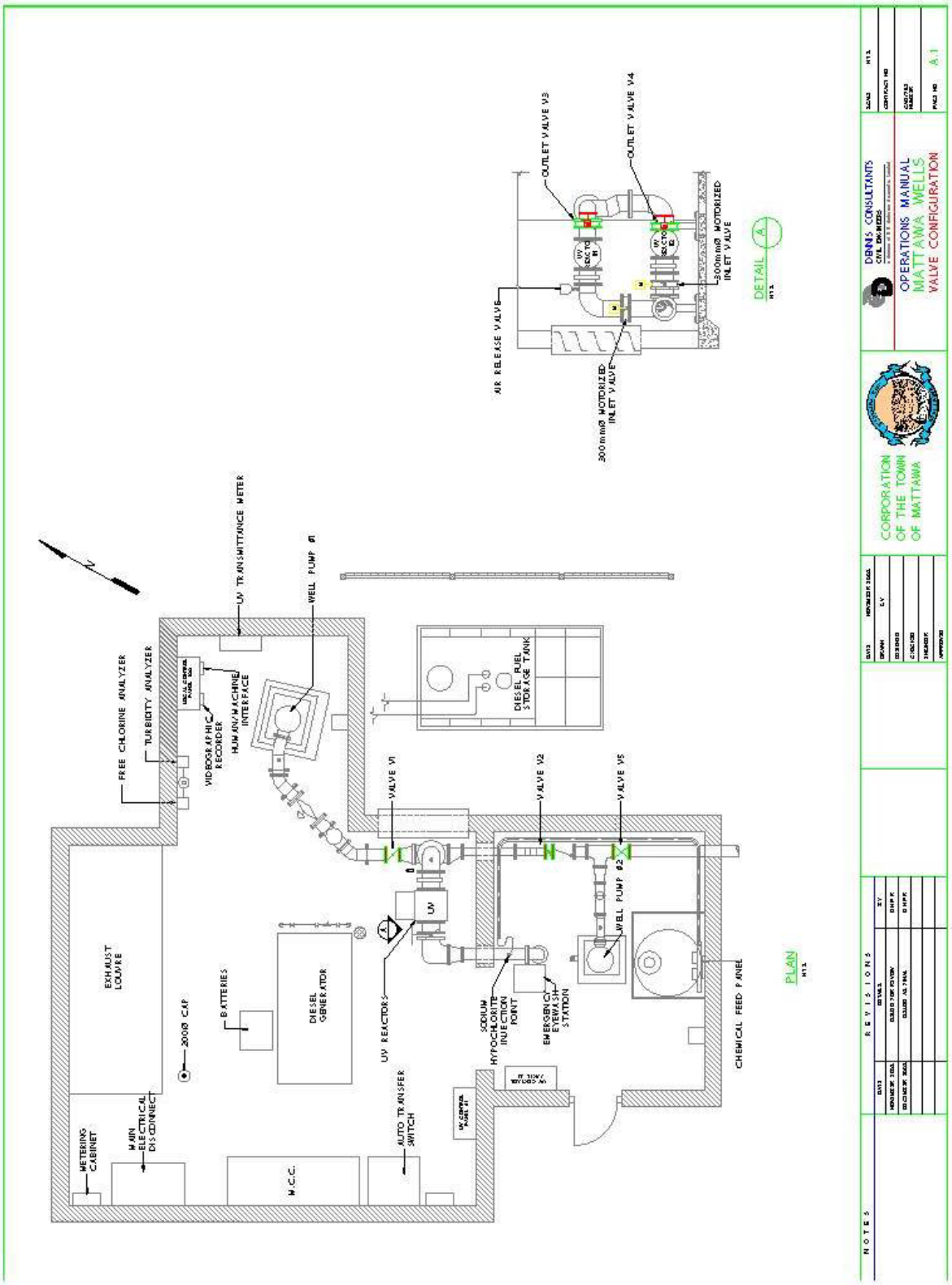
Water Treatment Plant/Production Wells Water Treatment Plant/Production Wells

The Town of Mattawa is supplied with potable water from two (2) groundwater supply wells located within a Pump House/Water Treatment Plant which is located on the west shore of the Mattawa River at the intersection of Bissett Street and 4th Street as shown on Map G and Photo 11 hereto. The schematic layout of the Water Treatment Plant is provided in Figure 21.

PHOTO 11
TOWN OF MATTAWA WATER TREATMENT PLANT

This facility houses two well pumps, an ultra-violet disinfection system, a sodium hydrochloride disinfection system, all control, monitoring and alarm systems as well as a stand-by diesel generator.

FIGURE 21
TOWN OF MATTAWA WATER TREATMENT PLANT LAYOUT



Raw Water Supply

A report on the existing water supply/production wells completed by Golder Associates May 1994 in support of Proctor & Redfern Water Supply Study indicated a concern with the age of both water supply wells and reported declining well capacity.

The system's Permit to Take Water #1546-9GHPLM allows the municipality to withdraw a maximum volume of 4,582.08 m^3 from Well No. 1 and 1,964.16 m^3 from Well No. 2 each day with a maximum of 6,456.24 m^3/d combined. A review of the raw water flow data indicates that the system never exceeded this allowable limit having a maximum volume of 2,057 m^3 in June 2021. The Permit also allows a maximum flow rate of 3,183 L/minute for Well No. 1 and 1,364 L/minute for Well No. 2.

Well #1 was originally installed 1958 – "Day" Well and replaced in 2011.

600 mm dia. (26" dia.) 18.9 meters (61.75 ft) deep pumping 44 liters per second (583 Igal per minute). Source: Groundwater Supply Evaluation by Golder Associates March 1994, Page 8.

The pump for Well #1 was replaced in 2011 and operated at the duty well from 6:00 AM to 12:00 AM.

Well #1 is now equipped with a vertical turbine pump capable of delivering 53.0 L/s at 105.8 meters of total dynamic head.

Source: OCWA Annual Report 2020

Well #2 installed 1949 – "Night" Well operates as the duty well from 12:00 AM to 6:00 AM for energy conservation purposes.

560 mm dia. (22" dia.) 19.2 meters (63 ft) deep pumping 22.7 liters per second (300 Igal per minute). Source: Groundwater Supply Evaluation by Golder Associates March 1994.

Source: OCWA Annual Report 2020

The supply pumps operate in tandem to provide Town of Mattawa domestic water supply and fire protection with Pump #1 Day Pump operating from approximately 6:00 AM to 12:00 AM and Pump #2 Night Pump operating from 12:00 AM to 6:00 AM. There is a short transition period when both pumps are running to avoid shutdown of the WTP ultra-violet system. The switch-over of duty wells is automatically done via a timer within the plant programable logic controller (PLC).

RECOMMENDATION #22

CONDUCT UPDATED ENGINEERING ASSESSMENT OF PRODUCTION WELL #1 (DAY WELL) AND WELL #2 (NIGHT WELL) INCLUDING ESTABLISHING PUMP CONDITION, PUMP RATES, PUMPING LEVEL AND WELL PERFORMANCE DATA.

Proctor & Redfern in their 1994 report recommended that the total maximum day production capability of the Town of Mattawa Water Treatment Plant be increased by 45 liters per second (600 Igal per minute) in order to meet MOE Guidelines of 113 liters per second (1,500 IGal per minute) to meet domestic fire flow demands. Source: Groundwater Supply Evaluation by Golder Associates March 1994, Page 23. (The reported pumping rates circa 1994 of Well #1 was 44 liters/second (583 Igal per minute) and Well #2 was 22.7 liters/second (300 Igal per minute), Total 883 Igal per minute.

Water Treatment

Primary disinfection equipment includes two ultra-violet disinfection systems, each designed to deliver the required ultra-violet dosage at the rated capacity of the facility. Chlorination equipment includes a 200 L sodium hypochlorite (NaOCI) storage tank and dual chemical feed pumps that inject liquid chlorine into the system. Output from Well No. 1 and No. 2 is governed by system demand (water level in the reservoir). As the water level in the reservoir drops to the low water level (LWL), the selected duty well pump automatically starts.

The well pumps, ultra-violet disinfection system, sodium hypochlorite injection system and analyzers are all supervised locally via the PLC. All alarms are instantly transmitted from the PLC to the alarm panel, which dials a security company and pages the Operator-on-call. Refer to the Treatment System Process Flow Chart for more facility detail.

In 2012 a supervisory control and data acquisition (SCADA) system was installed to allow for continuous monitoring and recording. It includes alarming, enhanced operator control of the waterworks and increased security features.

RECOMMENDATION #23

CONDUCT A HYDROGEOLOGICAL ASSESSMENT OF THE GROUNDWATER AQUIFER IN THE VICINITY OF THE EXISTING WATER TREATMENT PLANT TO DETERMINE

- **CAPACITY OF EXISTING AQUIFER CURRENTLY USED BY WELL #1 AND WELL #2**
- **POTENTIAL INTERFERENCE BY SURFACE WATER FROM MATTAWA RIVER (GUDI)**
- **POTENTIAL LOCATION FOR FUTURE SUPPLY WELL #3 (ON A DIFFERENT AQUIFER IF POSSIBLE)**

Pump #1 and Pump #2 are located only 5 meters (15 ft) apart, giving cause for concern that if one pump location becomes contaminated for whatever reason there is a high probability that the immediately adjacent second pump location will be impacted. If a third groundwater well is identified as the preferred alternative for providing supplementary water supply, consideration should be given to mitigating risk by increasing separation distance and/or using a separate aquifer.

RECOMMENDATION #24

INSTALL NEW GROUNDWATER SUPPLY WELL #3

RECOMMENDATION #25

INCREASE PUMP CAPACITY (CURRENTLY APPROXIMATELY 883 IGAL PER MINUTE) AT WATER TREATMENT PLANT TO ACHIEVE 1,500 IGAL PER MINUTE PUMPING RATE CAPABILITY AS PER PROCTOR & REDFERN REPORT MAY 1994. ANY POTENTIAL INCREASE IN SUPPLY WILL REQUIRE A HYDROGEOLOGICAL ASSESSMENT OF BOTH THE EXISTING AND POTENTIAL GROUNDWATER AQUIFERS.

ANY INCREASE IN PUMP CAPACITY/CAPABILITY WILL ALSO REQUIRE MODIFICATIONS TO THE WATER TREATMENT PLANT PROCESS EQUIPMENT AND REQUISITE MINISTRY OF ENVIRONMENT CERTIFICATE OF APPROVAL.

The existing Town of Mattawa water plant has an on-line analyzer that reads "distribution" free chlorine residuals that alarm out and interlocks the plant if it falls below 0.25 mg/L F-C12. Ultra Violet (ultra-violet) radiation is the primary disinfection, and 12% sodium hypo is used for mandatory secondary disinfection purposes. Once the raw water passes through the ultra-violet reactors, it is injected with sodium hypo just before the required fifty (50) inches of straight pipe in front of the Magnetic Flow Meter.

Potable water supplied by Pump #1 (Day) and Pump #2 (Night) and treated in the Water Treatment Plant is pumped through a single 250 mm (10") dia. cast iron feeder pipe into an in-ground reservoir and the Town of Mattawa distribution system subsequent to chlorination at an injection point located after the supply wells and 1.5 m (4 ft) before the distribution flow meter out of the water treatment plant. The same 250 mm (10") dia. cast iron feeder pipe feeds the distribution system by gravity when the pumps are turned off.

Approximately 8 meters (22 ft) up towards the reservoir the line tee's back into the plant for ultra-violet cooling water, generator cooling water, sample taps and analyzer readings. There is an issue/risk in that when a leak occurs near the hypo injection point it can take upwards of 20-35 minutes before the analyzer picks up the drop in free chlorine residual. Due to the location of the flow meter, tapping into the chlorine analyzer closer to the injection point is not an option.

The Town of Mattawa groundwater supply is treated with ultraviolet and chlorine. The advanced age of the existing ultraviolet system is problematic for obtaining replacement parts.

In addition, the flanges and bolts at the Water Treatment Plant were replaced during a disinfection upgrade circa 2003 and are not stainless steel. They have rusted badly and need to be refurbished.

RECOMMENDATION #26

THE EXISTING ULTRA-VIOLET SYSTEM AT THE WATER TREATMENT PLANT NEEDS TO BE REPLACED IN ITS ENTIRETY.

The current monitoring system is outmoded and needs to be replaced by a comprehensive SCADA system that continually monitors and records water usage at the Water Treatment Plant and Reservoir as well as provides warning for any failure throughout the system.

RECOMMENDATION #27

PROVIDE NEW COMPREHENSIVE SCADA SYSTEM AND PROGRAMABLE LOGIC CONTROLLER (PLC) SYSTEM AT THE WATER TREATMENT PLANT.

RECOMMENDATION #28

SUBJECT TO COMPLETING THE RECOMMENDED RETROFITS NOTED HEREIN AND WITH ON-GOING MAINTENANCE EFFORT IT IS ANTICIPATED THAT A NEW SURFACE WATER SUPPLY TREATMENT PLANT COULD BE DEFERRED FOR THE TOWN OF MATTAWA UNTIL THE 10 YEAR + TIME PERIOD.

NOTE: THE ISSUE OF WATER TREATMENT PLANT CONDITION REQUIRES MONITORING.

Figure 22 summarizes Proctor & Redfern's original (1994) recommendations and current status of improvements to Town of Mattawa Water Treatment Plant.

FIGURE 22
TOWN OF MATTAWA
WATER TREATMENT PLANT ORIGINAL RECOMMENDED IMPROVEMENTS
AS PER PROCTOR & REDFERN RECOMMENDATIONS 1994
AND CURRENT STATUS 2022

ORIGINAL 1994 RECOMMENDATION	STATUS 2022
1 Construct two (2) new wells within 100 m ± of the existing well house	Pump #1 replaced circa 2013 Pump #2 replaced circa 2019
2 Replace existing 636 Igal per minute Pump #2 with a new 400 Igal per minute pump	
3 Install a chlorination system	Completed but chlorine injection point relocated as per Ontario Clean Water and Wastewater Funding (CWWF) Application October 2016.

Water Reservoir

An existing in-ground concrete reservoir is located on Provincial Crown land immediately adjacent to the west limit of the Town of Mattawa and approximately 700 meters west of the WTP as per Map E and is shown on Photo 12. The schematic layout of the reservoir is shown on Figure 23 hereto. The reservoir was constructed circa 1949 and has a volume of approximately 795 m^3 (175,000 Igal) and a reported operational capacity of approximately 700 m^3 (153,978 Igal).

The reservoir is filled and drained to the distribution system by a single 10" dia. ductile iron feeder pipe installed in 1949 that runs from the Water Treatment Plant on Bissett Street approximately 700 meters northwesterly along 4th Street extending westerly up a hill to the reservoir. The feeder pipe fills the reservoir and subsequently supplies the distribution system. See Figures 24A and 24B.

When the groundwater supply pumps are not running, the reservoir feeds the Town of Mattawa distribution system by gravity. The feeder line joints are reportedly lead lined and the condition of existing valves and depth of cover is suspect.

The existing Town of Mattawa reservoir has undergone some upgrades in 2017/18 under the auspices of the Province of Ontario Clean Water and Wastewater Fund (CWWF) including:

Construction of an Access Road
Provision of Emergency Power
Valve Replacement
Structural Inspection

PHOTO 12
TOWN OF MATTAWA WATER RESERVOIR

FIGURE 23
TOWN OF MATTAWA WATER RESERVOIR LAYOUT

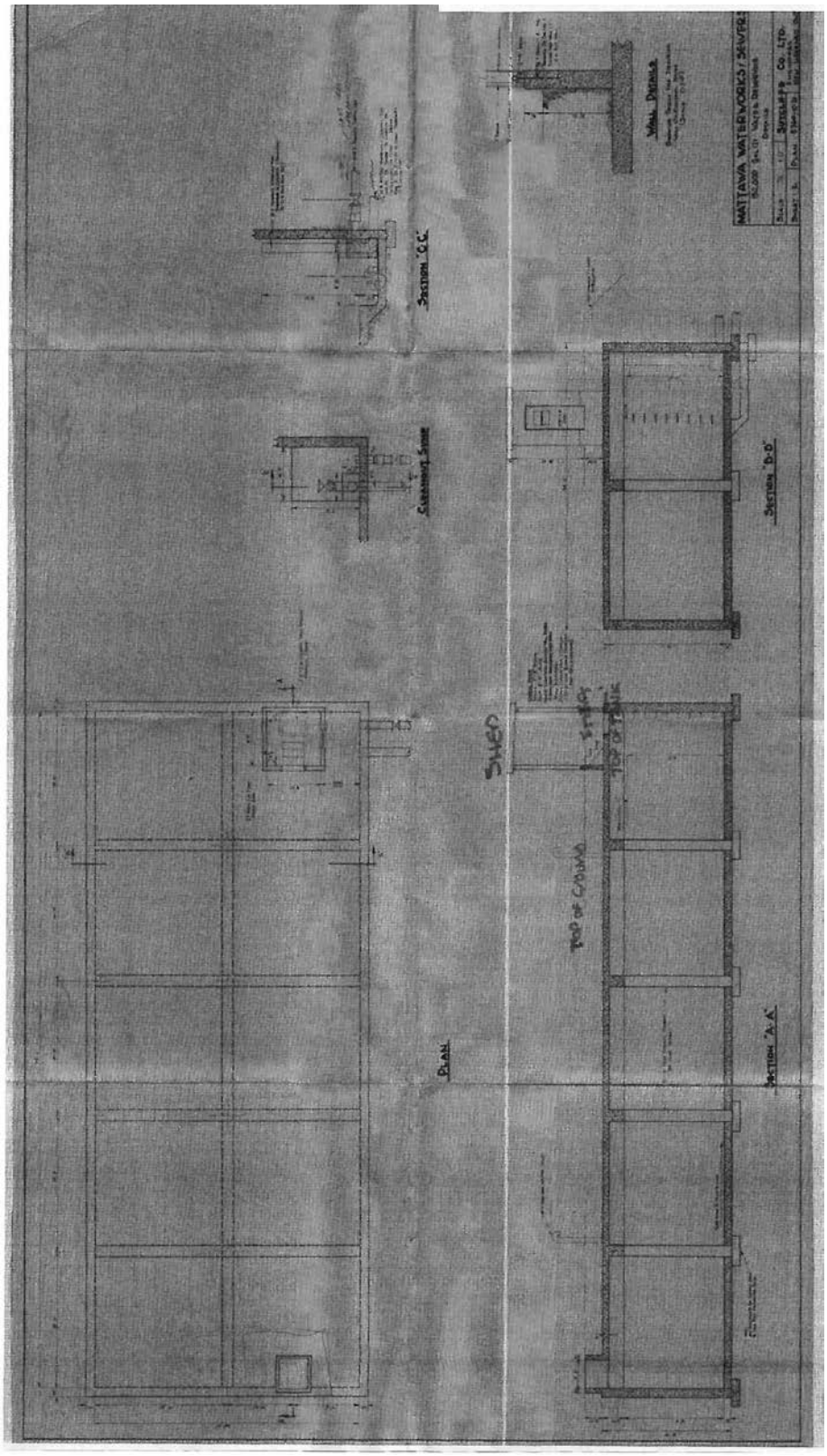


FIGURE 24A
10" RESERVOIR FEEDER LINE LOCATION PLAN

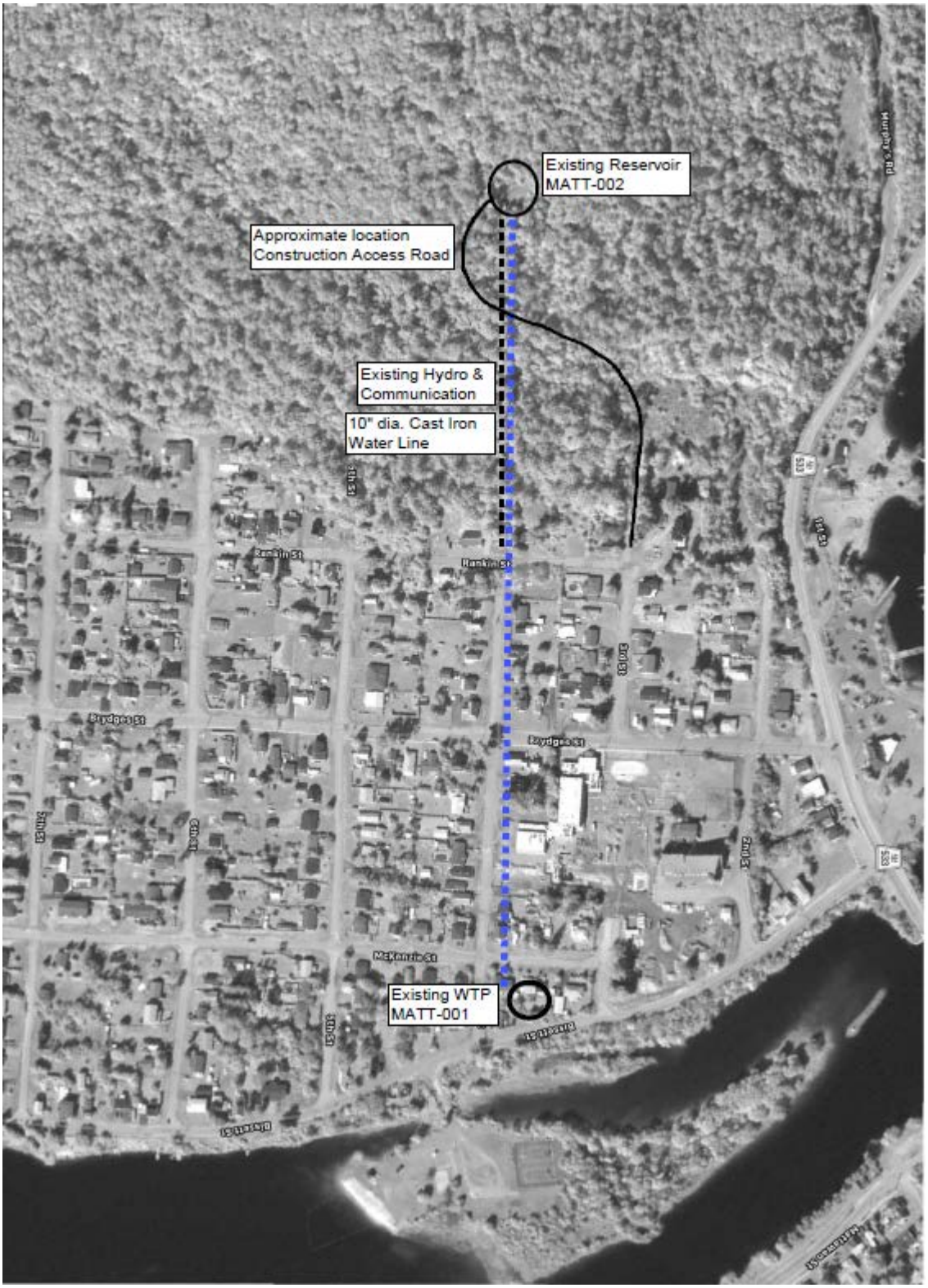
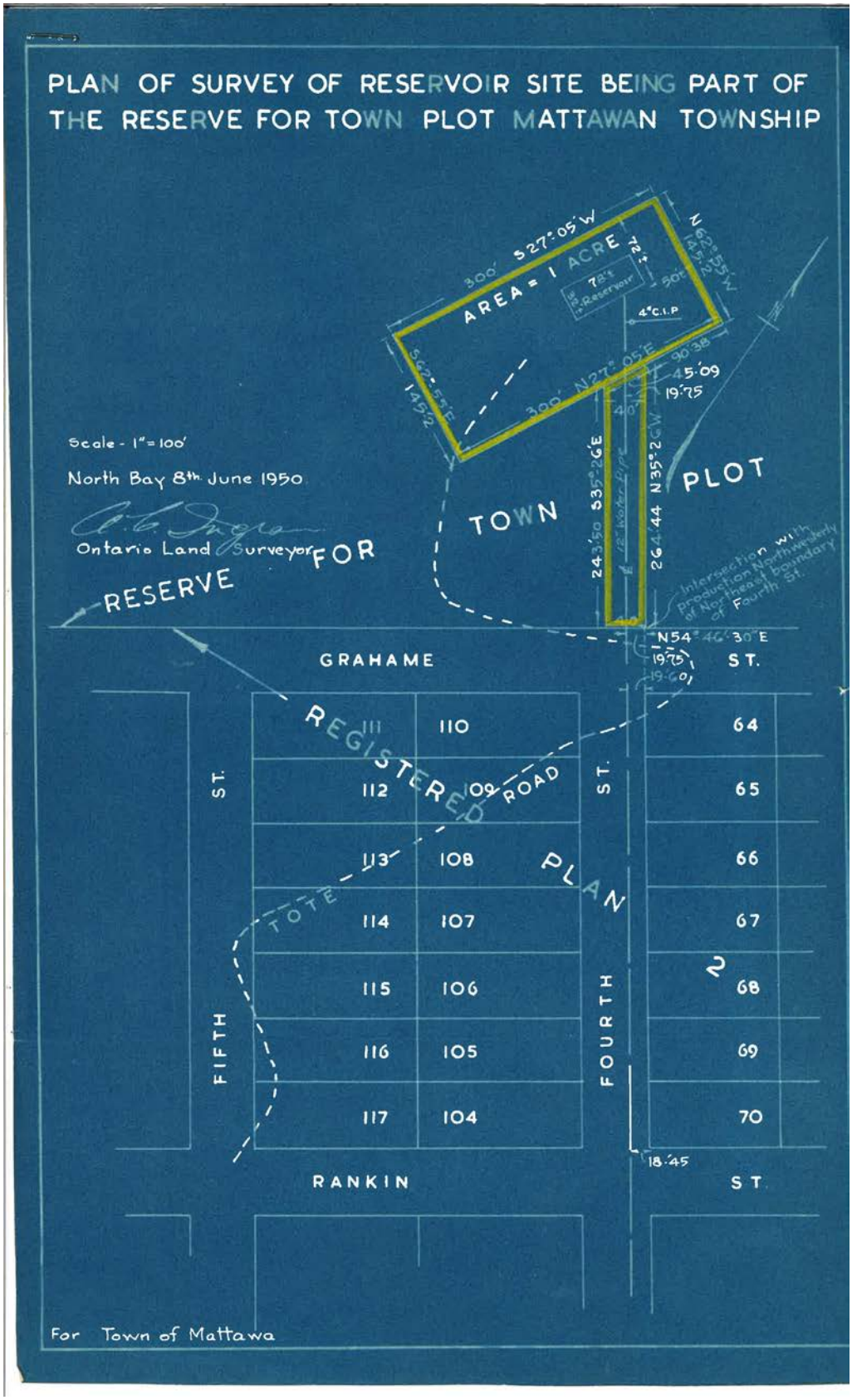


FIGURE 24B
OLS SURVEY RESERVOIR SITE



Jp2g Consultants Inc. are concerned with the risks associated with the existing feeder line to the reservoir given the age of the 250 mm (10") dia. cast iron feeder pipe (installed circa 1949) and reported shallow depth of installation (eg: 1.5 m) (4 ft), particularly since recent field reviews have discovered unexplained surface water running along the construction access road immediately downstream of the feeder pipe.

THE CONDITION OF THE 250 MM (10") DIA. FEEDER LINE IS AN EXTREME RISK AND REPLACEMENT OPTIONS OR ALTERNATIVE TO THE CONTINUED USE OF FEEDER LINE NEEDS TO BE CONSIDERED ON A PRIORITY BASIS.

RECOMMENDATION #29

MONITOR SURFACE WATER DISCHARGE ALONG EXISTING CONSTRUCTION ACCESS ROAD FOR QUANTITY AND TEST FOR PRESENCE OF CHLORINE.

RECOMMENDATION #30

UNDERTAKE CLEARING AND CONSTRUCTION OF A NEW ACCESS ROAD ADJACENT TO EXISTING FEEDER LINE FROM RANKIN STREET TO RESERVOIR.

RECOMMENDATION #31

REPLACE EXISTING 250 MM (10") DIA. CAST IRON FEEDER PIPE WITH TWIN 250 MM (10") DIA. PVC TO PROVIDE INDEPENDENT SUPPLY AND DISTRIBUTION FUNCTIONS FOR THE RESERVOIR; AS WELL AS TO REDUCE RISK BY PROVIDING REDUNDANCY. THE FEASIBILITY, DESIGN AND COST/BENEFIT OF PROVIDING A "DUAL" FEEDER LINE WILL NEED TO BE DETERMINED IN SUBSEQUENT ENGINEERING ANALYSIS.

THE ENGINEERING ANALYSIS SHOULD ALSO REVIEW THE OPTION OF PROVIDING AN ALTERNATIVE TO THE EXISTING RESERVOIR AND FEEDER LINE FUNCTION (EG: INCREASE PUMP CAPABILITY AT WATER TREATMENT PLANT AND/OR NEW STORAGE RESERVOIR.)

Additional Water Storage Requirements

The Town of Mattawa requires an increased water flow and storage for both domestic supply and fire fighting requirements. "Domestic flow volumes have been marginally under capacity at approximately 68 liters per second (900 Imperial gallons per minute) on peak day consumption normally associated with summer lawn watering. The rated capacity defined as the rated flow with the largest groundwater supply excluded would be approximately 23 liters per second (300 Imperial gallons per minute). Therefore, to meet peak daily demand, an additional capacity more or less equal to the largest groundwater well supply or approximately 45 liters per second (600 Imperial gallons per minute) would be required.

In terms of fire protection, the Fire Underwriters Association previously defined a target fire flow of 165 liters per second (2,200 Imperial gallons per minute) for 2.2 hours (132 minutes). Based on the present full flow capacity of approximately 68 liters per second (900 Imperial gallons per minute), average domestic consumption of approximately 34 liters per second (450 Imperial gallons per minute) and a reservoir capacity of 680,000 liters (150,000 Imperial gallons), an additional flow of approximately 45 liters per second (600 Imperial gallons per minute), more or less identical to the required domestic flow increase would be required. This figure requires

further evaluation in conjunction with proposed upgrading of the distribution system (ie: proposed river crossing of distribution system) to ensure adequate hydraulic transmitting capacity.

In any case, the required upgrading of the domestic water flows to include an additional 45 liters per second (600 Imperial gallons per minute) appears to be a practical target flow to handle both present and future water supply requirements."

Source: Report on Groundwater Evaluation by
Golder Associates March 1994
Pages 12 and 13

The MOE Guideline for the design of water storage facilities recommends that storage requirements be based on

FIRE STORAGE
+
EQUALIZATION STORAGE
(25% OF MAXIMUM DAY DEMAND)
+
EMERGENCY STORAGE

Figure 25 and Figure 26 summarize Town of Mattawa water storage requirements as per Ministry of Environment and Climate Change guidelines.

FIGURE 25
WATER STORAGE REQUIREMENTS PER
ONTARIO DRINKING WATER GUIDELINES (ODWGL)

Total Water Storage Requirement (TWS) = A + B + C

Existing Reservoir Functional Storage Capacity = 681 m^3/150,000 Igal

A = Fire Storage
B = 25% of Max. Day Demand
C = 25% of A + B

A = Table 8-1 ODWGL for population 3,000 = 100 l/s for 2 hr
A = 100 l/s x 2 hr x 3,600 s/hr = 792,000 l = 792 m^3 = 174,215.6 Igal

B = Max. Day Demand
B = max day x peaking factor (Table 8-2 ODWGL, pop. 2001 – 3000) x 0.25
B = 8 l/s x 2.25 x 24 hr x 3,600 s/hr x 0.25 = 388,800 l = 388.8 m^3 = 85,524.04 Igal

C = 25% of A + B
C = 0.25 (792 + 388.8) = 295.2 m^3 = 64,934.92 Igal

TWS = A + B + C
TWS = 792 m^3 + 388.8 m^3 + 295.2 m^3 = 1,476 m^3 = 324,674.6 Igal

Existing Storage (ES) = 681 m^3

A new storage tank of approximately 300,000 to 500,000 Igal will be required subject to preliminary engineering design and options analysis.

FIGURE 26
TOWN OF MATTAWA WATER SUPPLY AND DISTRIBUTION
CURRENT AND FUTURE STORAGE REQUIREMENTS

		Current Conditions	Future Design Conditions
Service Population		2,000	2,500
Estimated Average Day Demand per Capita	L/day	634	600*
Average Day Demand	m^3/day	1,286	1,500
Maximum Day Factor		2.25	2.25
Maximum Day	m^3/day	2,894	3,375
Peak Hour Factor (per MOE Guidelines)		3.75	3,38
Peak Hour Demand	m^3/day	4,823	5,070
Fire Flow Requirements (per MOE)	L/sec	95	100
System Pressure Requirements Maximum Day			
Minimum during peak hour	kPa	275	275
Minimum during fire flow conditions	kPa	140	140
A. Required Fire Storage	m^3	684	720
B. Equalization Storage	m^3	724	844
C. Emergency Storage	m^3	352	391
Existing Storage	m^3	681	681
Total Storage Required	m^3	1,760	1,955

*** NOTE: These numbers are subject to adjustment as additional information becomes available as to the nature and extent of ICI and Residential development.**

NOTE: This Core Asset Management Plan uses 500,000 Igal as the nominal size of a new storage reservoir subject to preliminary engineering design and options analysis.

RECOMMENDATION #32

THE PROCTOR & REDFERN 1994 REPORT ON TOWN OF MATTAWA WATER SUPPLY SYSTEM ADVISED THAT, BASED ON THE MOE GUIDELINES, THE STORAGE REQUIREMENT FOR MATTAWA WAS 2,500 M^3 (500,000 IGAL). CURRENT OPERATIONAL STORAGE IS APPROXIMATELY 154,000 IGAL.

ADDITIONAL RESERVOIR CAPACITY IS ESSENTIAL BUT SUGGESTS THE SIZE OF THE ADDITIONAL STORAGE REQUIREMENT SHOULD BE REVISITED/ UPDATED IN VIEW OF THE DIFFERENCE BETWEEN PROCTOR & REDFERN'S 20 YEAR DESIGN POPULATION 2014 PROJECTION (3,500 PEOPLE) AND ACTUAL 2022 POPULATION (APPROXIMATELY 2,000 PEOPLE).

IT IS RECOMMENDED THAT A NEW RESERVOIR SHOULD BE CONSTRUCTED ON THE EAST SIDE OF THE MATTAWA RIVER (CAPACITY AND LOCATION TO BE DETERMINED BASED ON A DESIGN POPULATION OF 2,500) TO BE POTENTIALLY BUT NOT NECESSARILY OPERATED IN CONJUNCTION WITH A REHABILITATED EXISTING 681 m^3 (150,000 IGAL) RESERVOIR ON THE WEST SIDE OF THE MATTAWA RIVER.

CONSIDERATION SHOULD BE GIVEN ON A PRIORITY BASIS TO LOCATING A NEW RESERVOIR WITHIN THE TOWN OF MATTAWA LIGHT INDUSTRIAL PARK ON DORION ROAD AND THAT THE SUGGESTED SIZE OF ANY NEW RESERVOIR BE REASSESSED BASED ON AN UPDATED DESIGN POPULATION AND PRELIMINARY ENGINEERING DESIGN.

SEE OPTION 1 AND 2 MAP G FOR POTENTIAL LOCATION OF NEW RESERVOIR.

Current issues with the existing Town of Mattawa reservoir include:

Single 250 mm (10") dia. feeder line
Functional Storage Capacity/Size
Condition of various aged components (eg: roof slab, valves, access ladders and exposed rebar)
Poor Vehicular Access

The existing in ground reservoir is in need of additional repair/retrofit; but some work has recently been funded under the Ontario Clean Water and Waste Water (CWWF) Infrastructure Funding as follows …..

Install back-up power
Provide data communication system
Miscellaneous valve and piping improvements
Construct access road
Conduct Structural Condition Analysis

There is some concern with regard to condition of roof membrane which was installed in 1949 and this component should be monitored for potential leakage and included in the retrofit program. Replacement of roof membrane will add significantly to retrofit costs that currently include access ladder replacement and valve replacement.

Figure 27 summarizes the original Proctor & Redfern (1994) recommendations for the Town of Mattawa water storage improvements and the current status.

FIGURE 27
WATER STORAGE IMPROVEMENTS AS PER
PROCTOR & REDFERN RECOMMENDATIONS 1994
AND CURRENT STATUS 2022

ORIGINAL 1994 RECOMMENDATION		**STATUS 2022**
1	Construct a new 550,000 Igal standpipe on the buffer lands near the Mattawa Landfill Site on the east side of the Mattawa River	Not constructed. Size and location to be determined. Substantial funding support will be required.
2	Carry out a condition inspection of the existing in-ground reservoir	Completed as per CWWF program.
3	Investigate options for a permanent vehicular access to the existing in-ground reservoir	Completed as per CWWF program.
4	Depending on the outcome of structural condition review above, rehabilitate the existing in-ground reservoir	Pending

Proctor & Redfern in their 1994 Water Supply Study recommended that a new 550,000 Igal reservoir be constructed in a new location in combination with rehabilitation of the existing reservoir. The location suggested was on the east side of the Mattawa River in the geographic Township of Papineau Cameron adjacent to the existing Town of Mattawa Landfill Site as shown on Map G.

Based on the preliminary hydraulic analysis carried out by Jp2g Consultants Inc. any new reservoir should be sized to

a. Function in conjunction with and provide back-up to the existing in-ground reservoir
b. Satisfy fire protection requirements for the Town of Mattawa
c. Allow for future expansion when the existing circa 1949 reservoir reaches the end of its extended life cycle
d. Reduce nominal water pressure (and associated energy and maintenance costs) in the water distribution system

Options to be considered for a new reservoir configuration will include elevated tower, ground storage tank and in-ground reservoir. Any options for a new reservoir will require integrated improvements to the Town of Mattawa water supply, treatment, transmission and distribution systems as noted herein.

Subject to confirmation of preferred location, configuration (eg: stand pipe, ground storage tank, in-ground reservoir) and size/capacity of a new reservoir in a detailed Engineering Options Analysis/Study, it is Jp2g Consultants preliminary opinion that a new 300,000 to 500,000 Igal reservoir in the proposed Light Industrial Park would provide significant efficiencies to the entire Town of Mattawa Water Supply and Distribution System regarding domestic water supply under maximum day demand conditions; as well as increased fire protection capability to meet acceptable standards for the proposed Light Industrial Park and environs. A new storage reservoir facility would also mitigate the implications of any failure of the existing 250 mm (10”) dia. feeder line or the existing 380 mm (15”) dia. Mattawa River watermain crossing.

Water Distribution System

The 1994 Proctor & Redfern Water Supply Study made various recommendations for strengthening the Town of Mattawa water transmission (trunk) mains and local distribution system. Many of the recommendations have been implemented over the past 24 years; but there is still work to be done as funds become available.

Figure 28 summarizes original (1994) recommendations for strengthening and current (2022) status for upgrading the water transmission (trunk) system.

FIGURE 28
WATER TRANSMISSION (TRUNK) SYSTEM IMPROVEMENTS AS PER PROCTOR & REDFERN RECOMMENDATIONS 1994 AND CURRENT STATUS 2022

The following trunk watermains were recommended in Proctor & Redfern's 1994 study and remain valid.

	ORIGINAL 1994 RECOMMENDATION	**CURRENT STATUS (2022)**
1	300 mm watermain on Bissett from the pump house to Main Street (Node 1 to 7)	250 mm (10") dia. constructed 1993/94
2	300 mm watermain on Bissett from the pump house to 5th Street (Node 1 to 2)	300 mm (12") dia. constructed from WTP Bissett Street pump house to Mattawa Conservation Area Island
3	300 mm watermain across the Mattawa River (Node 2 to 3)	300 mm (12") and 380 mm (15") dia. was installed along the bottom of the Mattawa River from Mattawa Conservation Area Island across Mattawa River Node 1 connecting to Hurdman Street 1992/93
4	250 mm watermain on Park Street from Mattawan Street to Hwy. 17 (Node 3 to 4)	150 mm (6") dia. was constructed on Park Street from Mattawan Street to Hwy. 17 Node 3 to 4
5	250 mm watermain on Park and Brook Street [Park Street to Brook Street to Hwy. 17] (Note 4 to 6) See Note 2.	150 mm (6") dia. was constructed on McCool, Hurdman and Poplar Street but Node 4 to 6 looping Park Street and Brook Street to Hwy. 17 west has not been completed. A 300 mm (12") dia. was constructed on Hurdman Street between Mattawan Street and Hwy. 17 McConnell Street as part of the main trunk system.

Note 1: Pipe sizes and Date of Construction shown on Map G to be confirmed in updated Water Supply and Distribution System Infrastructure Study.

Note 2: The Park Street transmission main loop was recommended by Proctor & Redfern in order to provide a 250 mm (10") dia. trunk main grid for the east side of the Mattawa River. Jp2g Consultants recommends extension of Hurdman Street watermain from Mike Rodden Arena to Brook Street Extension versus Park Street Loop as a more cost effective alternative for completing the main transmission grid.

Note 3: The 380 mm (15") dia. watermain crossing along the bottom of the Mattawa River was dislodged during the May 2019 flood event and replacement to current MOECC standards (eg: buried with headwalls) is required on a priority basis.

The implementation of the Town of Mattawa Water System Main Transmission Grid improvements recommended in Proctor & Redfern's 1994 Water Report has been substantially completed. The only section of transmission grid remaining to be constructed is the completion of Park Street/Brook Street (Node 4 to 6) from Hwy. 17 McConnell Street to Hwy. 17 Valois Drive but as noted above Jp2g Consultants Inc. recommends, as a more cost effective alternative, the replacement or paralleling of the existing 150 mm (6") dia. watermain on Hurdman Street from Hwy. 17 to the Mike Rodden Arena with 250 mm (10") dia. and the extension a new 250 mm (10") dia. watermain from the Arena crossing CPR tracks and connecting to the existing 250 mm (10") dia. at Brook Street Extension all as shown on Map I.

RECOMMENDATION #33

THE EXISTING 380 MM (15") DIA. WATERMAIN INSTALLED CIRCA 1992 CROSSING ALONG THE BOTTOM OF THE MATTAWA RIVER BETWEEN MATTAWA CONSERVATION AREA ISLAND AND MATTAWAN STREET AT HURDMAN STREET (85 METERS) PLUS LAND APPROACHES TO BISSETT STREET/4th STREET (175 METERS) AND HURDMAN STREET (25 METERS) SHOULD BE REPLACED ON A PRIORITY BASIS WITH BURIED WATER TRANSMISSION MAIN IN ACCORDANCE WITH MOECC AND MNRF GUIDELINES

RECOMMENDATION #34

EXTEND THE 250 MM (10") DIA. WATERMAIN ON PINE STREET FROM THE CPR TRACKS WESTERLY TO AN EXISTING 250 MM (10") DIA. ON HWY. 17/ McCONNELL STREET.

RECOMMENDATION #35

REPLACE OR PARALLEL THE EXISTING 150 MM (6") DIA. WATERMAIN ON PINE STREET FROM CHAMPLAIN STREET TO BROOK STREET WITH A 250 MM (10)" DIA. WATERMAIN.

RECOMMENDATION #36

REPLACE THE EXISTING 100 MM (4") DIA. WATERMAIN ON BROOK STREET FROM PINE STREET TO HWY. 17/ VALOIS DRIVE WITH A NEW 250 MM (10") DIA. WATERMAIN.

RECOMMENDATION #37

REPLACE OR PARALLEL EXISTING 150 MM (6") DIA. WATERMAIN ON HURDMAN STREET FROM HWY. 17/McCONNELL STREET TO MIKE RODDEN ARENA WITH 250 MM (10") DIA. AND EXTENDING 250 MM (10") DIA. WATERMAIN FROM MIKE RODDEN ARENA TO BROOK STREET. THIS WORK WILL CONNECT THE 380 MM (15") DIA. MATTAWA RIVER CROSSING TO THE EXISTING 250 MM (10") DIA. WATERMAIN ON BROOK STREET EXTENSION AND COMPLETE THE MAIN TRANSMISSION GRID FOR THE EAST SIDE OF THE MATTAWA RIVER AND SERVE THE PROPOSED WATER STORAGE RESERVOIR IN THE MATTAWA LIGHT INDUSTRIAL PARK.

There is a significant amount of 100 mm (4") dia. watermain integrated into the existing Town of Mattawa water distribution system as summarized on Figure 29 and previously shown on Map G hereto. These undersized mains appear to be operating adequately with three (3) exceptions as noted below; but at 100 mm (4") dia. they are not in accordance with MOE Standards and should be replaced when possible in conjunction with any future road works.

Three (3) exceptions where existing 100 mm (4") dia. watermain are currently experiencing existing Level of Service problems related to water quality (chlorine residual) and should be replaced as soon as funding is available as follows

1. Ottawa Street from Brook Street Pumping Station to Hwy. 17 via McConnell Street 600 meters
2. Division Street from Park Street to Hurdman Street 218 meters
3. Donald Street from Hwy. 17 to Jodouin Road 370 meters

FIGURE 29
TOWN OF MATTAWA
100 MM (4") DIA. WATERMAIN LOCATIONS

EAST SIDE

Street	From	To	Length
Lake Street	Hwy. 17	North	150 m
Louis Street	Hwy. 17	James Street	228 m
Lily Street	Boom Creek	Henry Street	335 m
James Street	Louis Street	Sid Turcotte Drive	425 m
Division Street	Park Street	Hurdman Street	218 m
Earl Street	Hurdman Street	Poplar Street	137 m
Hurdman Street	Hwy. 17	Mattawan Street	300 m
Poplar Street	Mattawan Street	Earl Street	243 m
Brook Street	Pine Street	Hwy. 17	137 m
Ottawa Street	Brook Street	McConnell Street	300 m
Ottawa Street	Champlain Street	Hwy. 17 via McConnell Street	300 m
Champlain Street	Hwy. 17	Ottawa Street	100 m
Donald Street	Hwy. 17	Jodouin Road	370 m
		Sub-Total	**3,243 m**

WEST SIDE

Street	From	To	Length
Bissett Street	8th Street	5th Street	335 m
McKenzie Street	8th Street	7th Street	122 m
8th Street	McKenzie Street	Bissett Street	150 m
7th Street	McKenzie Street	Bissett Street	150 m
7th Street	West End	Rankin Street	90 m
6th Street	Rankin Street	Brydges Street	122 m
5th Street	Rankin Street	Bissett Street	442 m
McKenzie Street	4th Street	3rd Street	122 m
		Sub-Total	**1,533 m**

RECOMMENDATION #38

REPLACE 100MM (4") DIA. WATERMAIN ON OTTAWA STREET, CHAMPLAIN STREET, DIVISION STREET AND DONALD STREET WITH 150 MM (6") DIA. INCLUDING NEW SERVICE CONNECTIONS AND ROAD RESTORATION.

RECOMMENDATION #39

CONSIDERATION SHOULD BE GIVEN TO REPLACING ALL REMAINING 100 MM (4") DIA. WATERMAIN IN THE TOWN OF MATTAWA WITH 150 MM (6") DIA. WATERMAIN AS FUNDS BECOME AVAILABLE.

Figure 30 summarizes the current status of local distribution system improvements recommended by Proctor & Redfern in their 1994 Watermain Needs Study.

FIGURE 30
LOCAL DISTRIBUTION PROPOSED WATERMAIN IMPROVEMENTS FOR NEW 150 MM (6") DIA. AS PER PROCTOR & REDFERN RECOMMENDATIONS 1994 AND CURRENT STATUS 2022

The following local distribution watermains were recommended to be incorporated into the Town of Mattawa Water Distribution System in the original 1994 Proctor & Redfern study

ORIGINAL RECOMMENDATION	CURRENT STATUS (2022)
1. New 150 mm watermain on Rankin between 4th and 5th Streets	Not done.
2. 150 mm watermain on Rankin Street between 9th and 10th Streets	Not done. (Heavy Rock Excavation)
3. 150 mm watermain on Turcotte Park Drive (from Lily Street) to James Street	150 mm (6") dia. constructed 2006
4. 150 mm watermain on New Street from Park Street to Hurdman Street	150 mm (6") dia. constructed 1994
5. 150 mm watermain on Poplar from Earl to Golden Age Club	150 mm (6") dia. constructed 2012
6. 150 mm watermain on Pine Street at CPR crossing	150 mm (6") dia. constructed 1991
7. 150 mm watermain on Ottawa Street at Pembroke Street Hwy. 17	Not done. Existing 100 mm (4") dia. will be replaced as funding becomes available.
8. Install cathodic protection	Not done.

Note 1: Pipe sizes and date of construction should be confirmed in updated Water Supply and Distribution System Infrastructure Study in association with Town of Mattawa Asset Management Plan process.

RECOMMENDATION #40

COMPLETE THE TOWN OF MATTAWA LOCAL DISTRIBUTION SYSTEM GRID BY CONNECTING 150 MM DIA. (6") WATERMAIN ON RANKIN STREET FROM 4TH STREET TO 6TH STREET.

The static water pressure throughout the Town of Mattawa water distribution system based on September 2016 water pressure tests is approximately 100 psi; which is very high and results in increased energy costs and maintenance effort for Town forces; as well as reduced operational life expectancy of infrastructure and equipment.

RECOMMENDATION #41

CONSIDER METHODS OF REDUCING OPERATIONAL PRESSURES IN WATER DISTRIBUTION SYSTEM FROM 100 PSI TO APPROXIMATELY 80 – 85 PSI.

RECOMMENDATION #42

REPLACE 150 MM (6") DIA. WATERMAIN ON MATTAWAN STREET FROM PINE STREET TO HURDMAN STREET WITH 200 MM (8") DIA.

RECOMMENDATION #43

CONSTRUCT 200 MM (8") DIA. P-LOOP FROM LIGHT INDUSTRIAL PARK THROUGH PROPOSED RESIDENTIAL DEVELOPMENT TO RECONNECT BROOK STREET EXTENSION AT HURDMAN STREET UNOPENED ROAD ALLOWANCE.

2.4.5 May 2019 Flood Impacts

The 2019 Flood Impacts were generally subsidence and migration of subbase granular materials. These circumstances are isolated and will be addressed as part of road reconstruction.

2.4.6 Summary of Risks Town of Mattawa Water Supply and Distribution System

The following risks associated with the Town of Mattawa Water Supply and Distribution System as identified in this Asset Management Plan Update.

A. Water Supply System/Water Treatment Plant

The present Town of Mattawa water supply system consists of two (2) groundwater supply wells located in the Town of Mattawa Water Plant within 5 meters (15 ft) of each other. Both wells are approximately 60 feet deep. If an environmental spill or other event occurred, knocking out or contaminating both wells, the Town of Mattawa would be without potable water within a few hours if the Reservoir happened to be full at the time of the event. A back-up supply source is required, eg: new storage reservoir east side Mattawa River.	**HIGH RISK** Corrective Action Required

The present Town of Mattawa water supply system cannot meet current fire flow requirements based on a combination of both WTP pumping capacity and reservoir storage. Fire Underwriters Survey has previously indicated a concern with Town of Mattawa fire fighting capacity (1986). In terms of fire protection the Fire Underwriters Association has defined a target fire flow of 165 liters per second (2,200 Igal per minute) for 2.2 hours. Significant additional supply well pump capacity and storage is therefore required.	**HIGH RISK** Corrective Action Required
Existing well production capability for fire flow is less than 50% of MOE Guidelines.	**HIGH RISK** Corrective Action Required
Potential cross connections between groundwater supply wells (particularly as pump capability is increased) and Mattawa River surface water.	**HIGH RISK** Correction Action Required
Significant upgrades are required at the Water Treatment Plant as per original Proctor & Redfern Recommendations, CWWF Application 2016, OCWA Annual Report 2021 and current 2021 MOECC Inspection. The recommended upgrades as per Recommendations herein are required to protect public health and extend the operational life of the existing water treatment plant into the 10 year + time period.	**HIGH RISK** Corrective Action Required
High per capita consumption rates (Town of Mattawa experiences 136 to 150 Igal per person per day versus the 100 Igal per person per day MOECC standard).	**MODERATE RISK** Corrective Action Recommended
B. Existing Reservoir	
The existing in-ground water reservoir is substantially smaller than MOECC Guidelines and a new water storage facility is required on a priority basis.	**HIGH RISK** Corrective Action Required
The 250 mm (10”) dia. feeder pipe constructed in 1949 connecting the Water Treatment Plant, the Reservoir and the Distribution System is a key infrastructure component and, given its lack of “back-up”, age and reported lack of cover the feeder line represents a high risk.	**HIGH RISK** Corrective Action Required
Telecommunication between the water reservoir and the WTP instrumentation was unreliable.	**HIGH RISK** Corrective Action Completed 2017
Given the age of the reservoir there is a risk of the roof membrane failing and leaking into the water storage area. This is very problematic to check until failure actually occurs; but the situation should be monitored.	**HIGH RISK** Monitoring required
Lack of good vehicular access to the existing reservoir continues to be a moderate risk.	**MODERATE RISK** Corrective Action was initiated 2017
Existing reservoir retrofits required to valving and access ladder rungs	**MODERATE RISK** Corrective Action Recommended

C. WATER DISTRIBUTION SYSTEM

An FUS Survey of Fire Defenses Report carried out in 1986 had seven (7) recommendations for the overall Town of Mattawa Water System

1. Increase the basic water supply facility in conjunction with storage to meet a fire demand of 110,000 liters per minute (220 Igal per minute) for a duration of 2.2 hours (to be confirmed)
2. Install standby power for at least one well
3. Reinforce the distribution (trunk watermain) system
4. Increase hydrant coverage
5. Introduce hydrant maintenance system including documentation
6. Introduce valve maintenance system including documentation
7. Install alarms at pump house and reservoir

The Town of Mattawa has addressed Items 2, 5, 6 and 7. Items 1, 3 and 4 remain to be addressed.

The 380 mm (15”) dia. watermain currently crossing the Mattawa River on the river bottom between Mattawa Island Conservation Area and Mattawan Street at Hurdman Street was dislodged during the May 2019 flood event.	**HIGH RISK** Corrective Action Required

PHOTO 13
375 MM (15”) DIA. WATERMAIN CROSSING MATTAWA RIVER

Anchors were restored in the winter of 2019/20 but there is a concern that the situation will continue to present issues during future flood events.

This watermain should be properly installed below the river bed substantially as per original Totten Sims Hubicki January 1996 engineering design and in accordance with current engineering practice and MOECC and Mattawa North Bay Conservation Area requirements.

The trunk watermain grid on east side of Mattawa River is incomplete and should be connected along Pine Street and Hurdman Street to Brook Street as described on Map G hereto.	**HIGH RISK** Corrective Action Required

The local distribution grid on east side and west side of Mattawa River is incomplete.	**MODERATE RISK** Corrective Action Recommended
High distribution system pressures. Town of Mattawa 100 psi versus typical 80 to 85 psi.	**MODERATE RISK** Corrective Action Recommended
Existing system includes undersized 100 mm (4") dia. watermain.	**MODERATE RISK** Corrective Action Recommended

2.4.7 Summary of Water Supply and Distribution System Needs and Recommendations

This Phase 2 Core Assets Asset Management Plan provides a preliminary assessment of the Town of Mattawa Water Supply and Distribution System asset and will require update.

A WaterCAD computer simulation was conducted in 2017 to identify deficiencies and potential solutions to Town of Mattawa Water Supply and Distribution System focusing on the proposed Light Industrial Park on Dorion Road.

Based on Jp2g Consultants analysis to date, Water Supply and Distribution System Needs, Recommended Improvements, Estimated Costs and Timing can be summarized as follows:

1. The existing Town of Mattawa Water Reservoir 175,000 Igal (150,000 Igal operational capacity) is seriously undersized in terms of providing storage and fire fighting capability for the Town of Mattawa and a new Reservoir of approximately 300,000 to 500,000 Igal is required.

2. A new storage reservoir in the Mattawa Light Industrial Park is a top priority Now Need.

3. The existing 250 mm (10") dia. feeder line on 4th Street from the WTP to the existing in-ground reservoir must be replaced or a functional alternative identified as soon as possible on a high priority basis.

4. Water Treatment Plant retrofit requirements include replacement of ultra-violet system and SCADA system and maintenance of rusting flanges and bolts.

5. The Town of Mattawa WTP pumping capacity must be increased from approximately 800 Igal per minute to approximately 1,500 Igal per minute.

6. The most cost effective upgrade options for providing the eastern sector of the Town of Mattawa (including the proposed Light Industrial Park) with improved level of service in terms of domestic water supply, production water and fire flow are

   Step 1 Connect existing 250 mm (10") dia. watermain on Pine Street from the Fire Hall/CPR tracks to Hwy. 17.
   Step 2 Replace or parallel existing 150 mm (6") dia. watermain on Pine Street between Brook Street and Champlain Street with 250 mm (10") dia.
   Step 3 Install 250 mm (10") dia. watermain on Brook Street between Pine Street and Hwy. 17 Valois.

Step 4 Replace or parallel existing 150 mm (6”) dia. on Hurdman Street from Hwy. 17 McConnell to Mike Rodden Arena with 250 mm (10”) dia.
Step 5 Construct new 250 mm (10”) dia. on Hurdman Street from Arena undercrossing CPR rail yard to Brook Street extension

7. The 380 mm (15”) dia. Mattawa River water crossing should be replaced Now.

8. The water transmission grid east of the Mattawa River should be completed as soon as possible.

9. All future development projects in the Town of Mattawa need to be individually assessed in terms of their requirements and impacts on water system and improvement schedule as part of any Site Plan Review and/or Development Charges process.

See Map I for recommended improvements to the Town of Mattawa Water Supply and Distribution System.

Cost Estimates for identified solutions recommended to address the above noted issues are provided herein where possible based on

1. Benchmark costs
2. Precedent examples
3. Order of Magnitude Placeholder Estimates
4. Preliminary Engineering Estimates (Class D)
5. Detailed Engineering Estimates (Class C)

ALL RECOMMENDATIONS AND COST ESTIMATES ARE SUBJECT TO TOWN OF MATTAWA FURTHER DETAILED ENGINEERING ANALYSIS.

Table 4 provides a summary of recommendations, time period, costs of improvements and recommended timing for water system related improvements including the provision of domestic water supply, industrial production water and fire protection. Action items and Cost Estimates are provided where the nature and extent of the proposed works can be determined.
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Map I
Town of Mattawa Water System Recommended Improvements

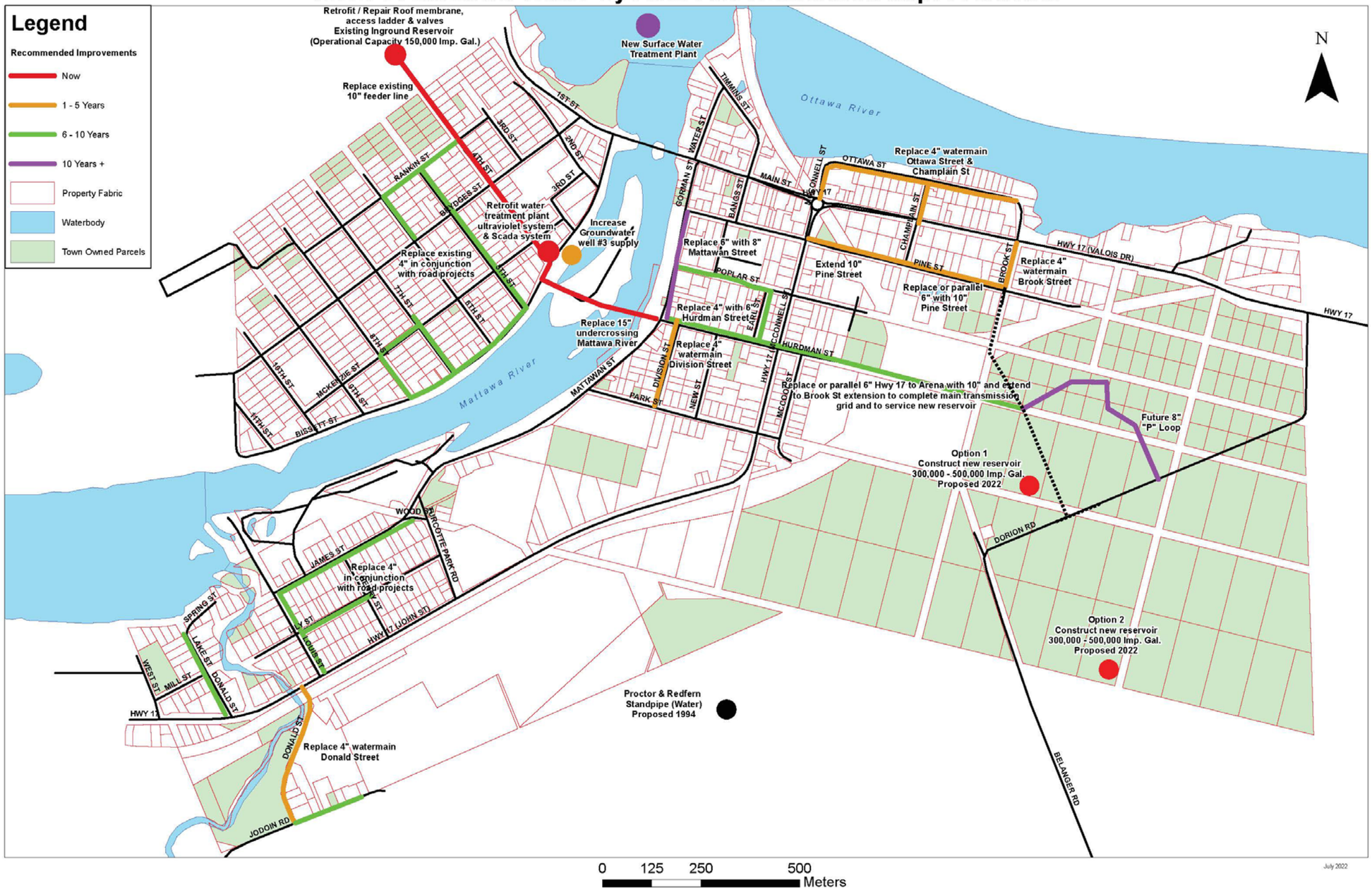


TABLE 4
TOWN OF MATTAWA WATER SUPPLY AND DISTRIBUTION SYSTEM NEEDS & RECOMMENDED TIME PERIOD OF IMPROVEMENTS

RECOMMENDED IMPROVEMENTS		IMPROVEMENTS	RATIONALE	RISK EXTREME HIGH MODERATE LOW	COST ESTIMATE (INC. ENGINEERING AND CONTINGENCY)	PHASING
1.	Proctor & Redfern 1994 Report on Town of Mattawa Water Supply System advised that, based on MOE Guidelines, the storage requirement for Mattawa was 2,500 m^3 (550,000 Igal). Additional reservoir capacity is essential but the size of the additional storage requirement should be revisited/updated in an Engineering Options Analysis in view of the difference between Proctor & Redfern's 20 year design population projection (3,500 people) and actual 2022 experience (2,000 people).	Study	Health and Safety Increase Fire Flow Compliance with MOECC Guidelines Address Fire Underwriters requirements	N/A	$50,000	Now
2.	A new reservoir should be constructed on the east side of the Mattawa River (capacity and location be determined) to be potentially but not necessarily operated in conjunction with a rehabilitated existing 150,000 Igal operational capacity reservoir on the west side of the Mattawa River. However, Jp2g Consultants Inc. further recommends that consideration be given to locating a new reservoir within the Town of Mattawa Light Industrial Park on Dorion Road see Option 1 and Option 2 and that the suggested size of any new reservoir, eg: 500,000 Igal be reassessed based on an updated design population (2,500 people).	Capital Works	Public Safety (Water Supply and Fire Flow) Increase Operational Capacity Compliance with current MOECC guidelines	High	$3,000,000 subject to Engineering Options Analysis and Preliminary Design	Now

TABLE 4 (CONT'D)

RECOMMENDED IMPROVEMENTS		IMPROVEMENTS	RATIONALE	RISK EXTREME HIGH MODERATE LOW	COST ESTIMATE (INC. ENGINEERING AND CONTINGENCY)	PHASING
3.	Monitor surface water discharge on reservoir access road for quantity and test for presence of chlorine.	Monitoring		N/A	$NIL TOWN FORCES	Now
4.	Replace existing 250 mm (10") dia. cast iron feeder pipe with twin 250 mm (10") dia. PVC to provide independent supply and distribution functions to the existing in-ground reservoir as well as to reduce risk by providing redundancy • 450 m on 4th Street from WTP to Rankin Street • 228 m on 4th Street from Rankin Street to Reservoir The feasibility and cost/benefit of providing a "dual feeder line" will need to be determined in engineering options analysis. Note: The engineering analysis should also include the option of potentially increasing the capacity of the pumps at the Water Treatment Plant to replace the existing reservoir function. OR Construction of a new storage reservoir in the Light Industrial Park	Capital Works • Engineering Options Analysis • Clearing for Access and new waterline 228 m x 20 m = 0.5 ha $75,000 • Construction Access Road 228 m • Engineering Design and Approvals • Installation of 250 mm (10") dia. feeder Reservoir to Rankin St. 456 m @ $1,031/m • 4th Street from Rankin St. to WTP 450 m @ $1,031/m • Allowance for Rock • Restoration/ Reconstruction 4th Street from Water Treatment Plant to Rankin Street 450 m @ $313/m	Health and Safety Maintain Operations	High	$25,000 $75,000 $75,000 $150,000 $470,136 $463,950 $100,000 $140,850 **$1,499,936** Subject to Engineering Options Analysis and Preliminary Design	Now

TABLE 4 (CONT'D)

RECOMMENDED IMPROVEMENTS		IMPROVEMENTS	RATIONALE	RISK EXTREME HIGH MODERATE LOW	COST ESTIMATE (INC. ENGINEERING AND CONTINGENCY)	PHASING
5.	The existing 380 mm (15") dia. watermain was installed circa 1992 crossing along the bottom of the Mattawa River between the Mattawa Conservation Area Island and Mattawan Street at Hurdman Street 85 m (278') in water plus land based approaches to connect to Bissett Street/4th Street 175 m (574') and Hurdman Street 25 m (82'). The new installation should replace or parallel the existing watermain with buried 380 mm (15") transmission main complete with headwalls and erosion protection in accordance with MOECC and MNRF requirements.	Capital Works • Engineering Options Analysis • Engineering Design and Approvals • Installation of new 380 mm (15") dia. watermain in water 85 m @ $1,094/m + Allowance for Coffer Damming or Directional Boring • Installation and connection of new 380 mm (15") dia. watermain on land 200 m @ $1,094/m • Headwalls and Erosion Control	Public Safety Protect Infrastructure Maintain Operations Environmental Protection Compliance with current guidelines	High	$25,000 $150,000 $92,990 $1,000,000 Allowance only $218,800 $150,000 Allowance only **$1,636,790** Subject to Engineering Options Analysis and Preliminary Design	Now
6.	The existing ultra-violet system at the Water Treatment Plant needs to be replaced in its entirety. Also install new SCADA System and Programable Logic Controller (PLC) System	Retrofit	Health and Safety	High	$365,000 as per OCWA Budget	Now
7.	Complete repairs to existing in-ground reservoir, eg: valves, access ladder	Retrofit	Health and Safety Extend Life Cycle	High	$100,000 + Potential Roof Membrane Replacement TBD	Year 1

TABLE 4 (CONT'D)

RECOMMENDED IMPROVEMENTS		IMPROVEMENTS	RATIONALE	RISK HIGH MODERATE LOW	COST ESTIMATE (INC. ENGINEERING, CONTINGENCY)	PHASING
8.	Increase pump capacity (currently approximately 883 Igal per minute) at Water Treatment Plant to achieve 1,500 Igal per minute pumping rate capability as per Proctor & Redfern report May 1994. Note: Any increase in pump capacity/capability will require modifications to the Water Treatment Plant process equipment and requisite Ministry of Environment Certificate of Approval.	Study/ Engineering Analysis Retrofit	Health and Safety Increase Operational Capacity	High	 $250,000	Year 1
9.	Replace 100 mm (4") dia. watermains on Ottawa Street, Champlain Street, Division Street and Donald Street with 150 mm (6") dia. including new service connections and road trench restoration.	Capital Works • Ottawa St. 600 m • Champlain St. 103 m • Division St. 218 m • Donald St. 370 m Total 1,291 m Benchmark Cost 150 mm (6") dia. @ $875 per meter	Health and Safety (Water Quality) Increase Operational Capacity Compliance with current guidelines	High	$525,000 $90,125 $190,750 $323,750 $1,129,625 Trench Restoration only. See also Recommended Road Improvements Table 1	Year 1 + 2

TABLE 4 (CONT'D)

RECOMMENDED IMPROVEMENTS		IMPROVEMENTS	RATIONALE	RISK EXTREME HIGH MODERATE LOW	COST ESTIMATE (INC. ENGINEERING AND CONTINGENCY)	PHASING
10.	Water Distribution System pipe sizes and up to date operational capacity of WTP and Reservoir should be confirmed in a "Water System Infrastructure Study Update" associated with the Town of Mattawa Asset Management Planning process.	Study		N/A	$100,000	Year 2
11.	Conduct updated engineering assessment of Production Well #1 (Day Well) and Well #2 (Night Well) including establishing pump condition, pump rates, pumping level and well performance data.	Study		N/A	$25,000	Year 2
12.	Conduct a hydrogeological assessment of the groundwater aquifer in the vicinity of the existing Water Treatment Plant to determine: • Capacity of existing aquifer currently used by Well #1 and Well #2 • Potential interference by surface water from Mattawa River • Future location for future Supply Well #3 on a different aquifer if possible	Study	Health and Safety Environmental Protection Increase Operational Capacity	N/A	$75,000	Year 2
	Note: If a suitable groundwater supply is not identified, the need and time period recommended for a new surface water treatment plant will be advanced					

TABLE 4 (CONT'D)

RECOMMENDED IMPROVEMENTS		IMPROVEMENTS	RATIONALE	RISK EXTREME HIGH MODERATE LOW	COST ESTIMATE (INC. ENGINEERING AND CONTINGENCY)	PHASING
13.	Install new groundwater Supply Well #3	Capital Works	Health and Safety Increase Operational Capacity	High	$250,000	Year 3
14.	Connect the existing 250 mm (10") dia. watermain on Pine Street from the Fire Hall westerly to connect to an existing 250 mm (10") dia. on Hwy. 17 a distance of approximately 100 m (328')	Capital Works	Public Safety Increase Fire Flow	Moderate	$103,100 Trench Restoration only	Year 3
15.	Replace or parallel existing 150 mm (6") dia. watermain on Pine Street from Brook Street to CPR tracks with 250 mm (10") dia. a distance of approximately 350 m (1,148')	Capital Works	Public Safety Increase Fire Flow	Moderate	$1,183,588 Trench Restoration only Allowance should be made for pre-construction survey and water tank replacement	Year 3
16.	Replace the existing 100 mm (4") dia. watermain on Brook Street from Pine Street to Hwy. 17/Valois Drive with a new 250 mm (10") dia. on watermain a distance of 132 m (433').	Capital Works	Public Safety Increase Fire Flow	Moderate	$136,092 Trench Restoration only. See recommended road improvements Table 1 Allowance should be made for pre-construction survey, service connections and water tank replacement	Year 4

TABLE 4 (CONT'D)

RECOMMENDED IMPROVEMENTS		IMPROVEMENTS	RATIONALE	RISK EXTREME HIGH MODERATE LOW	COST ESTIMATE (INC. ENGINEERING AND CONTINGENCY)	PHASING
17.	Replace 100 mm (4") dia. on Hurdman from Mattawan Street to Hwy. 17 McConnell with 150 mm (6") dia. 300 m @ $875 = $262,500	Capital Works	Increase Operational Capacity Increase Level of Service Provide connection to new reservoir	Moderate	$262,500	Year 6
18.	Replace or parallel 150 mm (6") dia. on Hurdman from Hwy. 17 to Mike Rodden Arena with 250 mm (10") dia. 200 m @ $1,031 = $206,200	Capital Works		Moderate	$206,200 Allowance should be made for Pre-Construction Survey water tank replacement	Year 7
19.	Construct new 250 mm (10") dia. from the Mike Rodden Arena to Brook Street Extension 450 m @ $1,031 = $463,950	Capital Works		Moderate	$463,950 Allowance should be made for CPR Railyard under-crossing and Rock Excavation	Year 8
20.	Connect Rankin Street from 4th Street to 6th Street with new 150 mm (6") dia. 250 m @ $875/m = $218,750		Provide connection to 250 mm (10") Reservoir Feeder Line	Moderate	$218,750	Year 9
21.	Construct 150 mm (6") dia. watermain on Town Line/ Donald Street 200 m @ $875/m = $175,000		Health and Safety Compliance with Current guidelines		$175,000	Year 10
22.	Consideration should be given to replacing all remaining 100 mm (4") dia. watermain with 150 mm (6") dia. watermain as funds become available.	Capital Works See Figure 29 East Side 1,955 m West Side 1,533 m included Table 4 Item 9	Increase Operational Capacity Compliance with current design guidelines	Low	Trench Restoration only $3,052,000 to replace 3,488 m @ $875/m excluding Ottawa Street, Champlain Street, Division Street, Donald Street	On-going

TABLE 4 (CONT'D)

RECOMMENDED IMPROVEMENTS		IMPROVEMENTS	RATIONALE	RISK EXTREME HIGH MODERATE LOW	COST ESTIMATE (INC. ENGINEERING AND CONTINGENCY)	PHASING
23.	Consider methods of reducing operational pressures in water distribution system to approximately 80 – 85 psi.	Monitoring	Energy Savings	Low	$ NIL	On-going
24.	Replace existing 150 mm (6") dia. on Mattawan Street from Pine Street to Hurdman Street with 200 mm (8") dia. watermain to enhance transmission grid 300 m @ $1,000	Capital Works	Support Main Transmission Grid	Moderate	$300,000 Trench Restoration only	10 Years
25.	Construct 150 mm (8") dia. P Loop from Light Industrial Park Lot 3/4 through proposed residential development to reconnect to Brook Street Extension at Hurdman Street unopened road allowance, a distance of approximately 500 m $ $1,000/m. A detailed engineering analysis including geotechnical study will be required to determine extent of rock.	Capital Works	System improved by resolving "dead end" issue on Dorion Road	Low	$500,000 plus Allowance for Rock	10 Years +
26.	Subject to implementation of a retrofit program of the existing Water Treatment Plant to extend operational life cycle and identification of suitable groundwater aquifer for Supply Well #3 it is anticipated that a new Surface Water Supply Treatment Plant could be deferred to 10 Year + period.	Capital Works		Low	$15,000,000	10 Years +

2.5 SANITARY SEWAGE COLLECTION AND TREATMENT SYSTEM

The Town of Mattawa owns the Mattawa Lagoon Sewage Treatment Plant and the Mattawa Wastewater Collection System. OCWA operates the Mattawa Lagoon Sewage Treatment Plant, while the Town of Mattawa maintains the Mattawa Wastewater Collection System. The Lagoon is a Class 1 Wastewater Treatment Plant, and sanitary system is a Class 1 Wastewater Collection System. The Lagoon operates under the Ministry of the Environment, Conservation and Parks Certificate of Approval number 3-1115-91-926. The works number on file is 110000436.

2.5.1 Background

The Town of Mattawa Phase 2 Core Asset Management Plan provided herein includes a detailed review of previously completed Engineering Reports and summarized below. These reports have been electronically filed with this Asset Management Plan as background information.

1. Town of Mattawa Sewage Works Upgrading Study by Marshall Macklin Monaghan Limited 1989
2. Ministry of Environment Certificate of Approval – Sewage June 1992
3. Operations Brief for Sewage Works Upgrading Bissett Street/4th Street Pumping Station Gorman and Pine Pumping Station Aerated Sewage Lagoons by Marshall Macklin Monaghan Limited 1993
4. Town of Mattawa Sanitary Sewer CCTV Inspections Ray & Son 2015 and X-Site Enterprises 2016/2017
5. Town of Mattawa Light Industrial Park Sanitary Sewer Downstream Impact Analysis by Jp2g Consultants Inc. 2017
6. Ontario Clean Water Agency Annual Report Wastewater Treatment and Collection System 2021

2.5.2 Level of Service – Sanitary Sewer System

The level of service for the Town of Mattawa sanitary sewer system utilizes two (2) methods of assessment

Technical Level of Service
Consumer/User Level of Service

The **Technical Level of Service** has been established using technical guidelines, engineering standards and Ministry of Environment and Climate Change Regulations as follows

1. Municipal Works Design Manual by Municipal Engineers Association
2. Ministry of Environment Guidelines for Water and Sewer Works
3. Sewage Works Operation Manuals

The technical level of service requirements address matters such as pipe size and pump station capacity, quality of effluent and sanitary sewer collection system configuration.

Customer/User Level of Service tends to focus on private service connection blockage, sewage back-up and odour.

There were two (2) reports of pumping station overflows at the 4th Street/Bissett Street Pumping Station.

Total sewage flow in 2021 was 295,056 m^3 or an average of 808.4 m^3/day.

A detailed discussion on existing and desired Level of Service for sanitary sewer system assets is provided in Section 3.

2.5.3 Sanitary Sewer System Components/Condition

The Town of Mattawa Sanitary Sewer System was initiated in 1949/50 with expansion programs in 1967/68, 1976/77 and 1985. The original sewage lagoons as well as the Pine Street/Gorman Street pumping station were upgraded in 1993/94.

The Town of Mattawa Sewage Collection and Treatment System currently consists of the following components:

1. Approximately 15,000 meters (49,200 ft) of gravity sewer 150 mm (6") dia. to 300 mm (12") dia.
2. Approximately 4,400 meters (14,432 ft) of forcemain
3. Seven (7) pumping stations
4. Aerated sewage lagoon (two cells) and Blower Building

GIS mapping showing inventory section numbers for the Town of Mattawa Sanitary Sewer system is provided as Map J.

See Map K for the layout of the Town of Mattawa Sanitary Sewer System including configuration, pipe sizes, pumping stations, forcemains and sewage treatment plant locations.

Updated pipe size, direction of flow, approximate year of construction for the purposes of this Phase 2 Core Asset Management Plan have been based on Town of Mattawa "corporate memory", construction field notes and "as constructed" drawings provided by the Town of Mattawa Public Works and Environmental Departments.

There has been no comprehensive study of the sanitary sewer system for over 25 years and an Update should be completed in support of the on-going Core Asset Management Planning Update process.

RECOMMENDATION #44

A SANITARY SEWER INFRASTRUCTURE STUDY C/W INFILTRATION MONITORING AND UPDATED PUMPING STATION ASSESSMENTS AND LAGOON REVIEW SHOULD BE COMPLETED AS FUNDING BECOMES AVAILABLE.

Map J
Town of Mattawa Sanitary Sewer Inventory Sections

Map K
Sanitary Sewer System Configuration / Pipe Sizes

Sewage Treatment Control Building and Aerated Sewage Lagoon

The sewage lagoon was upgraded in 1992/93 to a two cell aerated lagoon c/w control building system controls and ultra-violet treatment as shown in Figure 31. The Town of Mattawa sewage treatment facility currently consists of a control building servicing a primary lagoon Cell #1 and a secondary lagoon Cell #2 with aeration in the primary lagoon and an ultra-violet treatment located at the outlet of the secondary lagoon before its continuous release discharge into the Mattawa River. An ultra-violet system was installed in 1992 and replacement parts are reportedly getting very hard to procure.

Replacement of ultra-violet system to MOEE standards is currently under discussion.

PHOTO 14
TOWN OF MATTAWA
SEWAGE TREATMENT PLANT
(BLOWER BUILDING)

PHOTO 15
TOWN OF MATTAWA
LAGOON

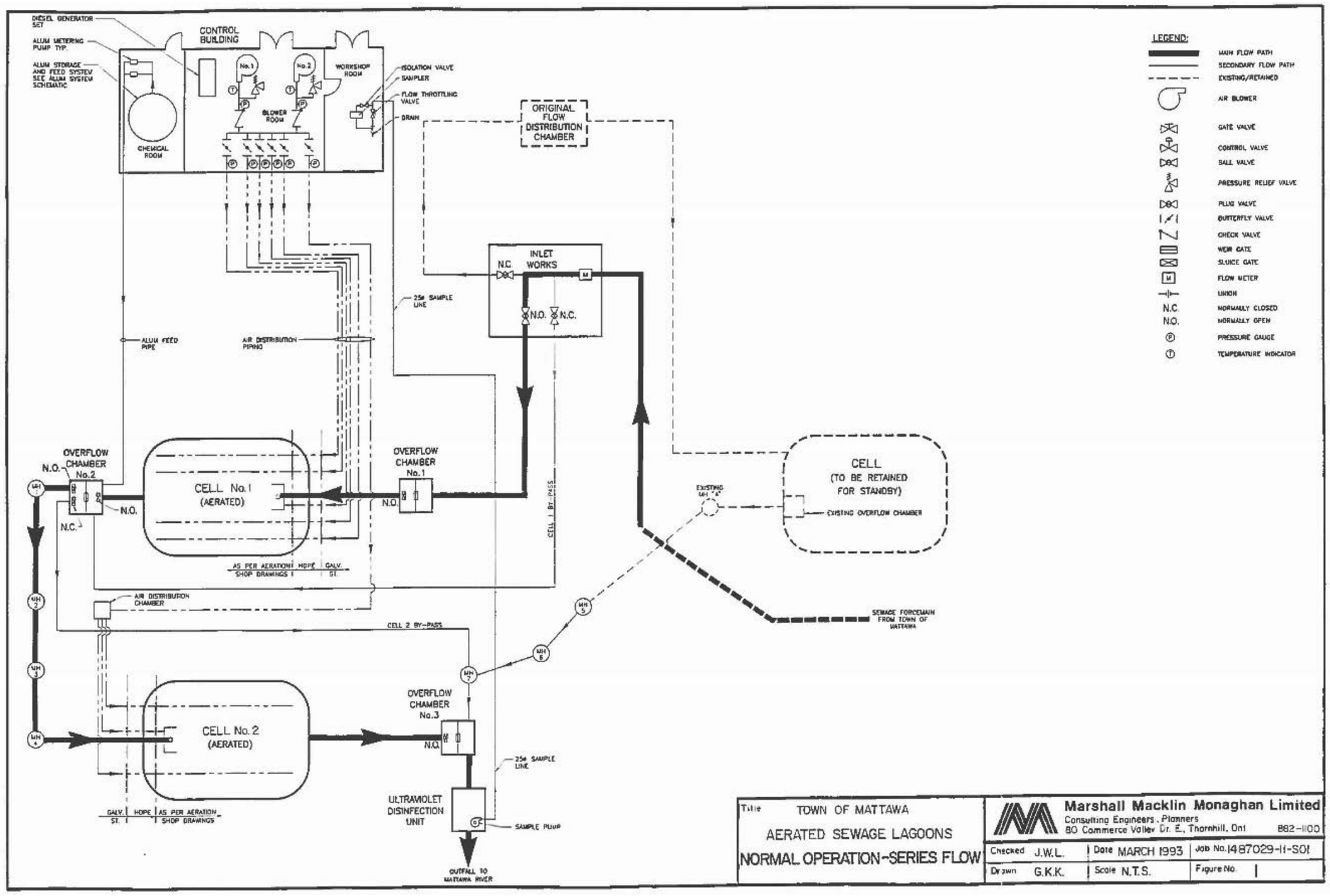
The lagoon accepts sanitary discharge from a network of sewer mains and pumping stations within the physical boundary of the Town of Mattawa only. All influent entering the lagoon passes through a magnetic flow meter, after which the flow can be diverted to either the spare maintenance/emergency cell (clay lined) or the primary or secondary lagoon cell depending on requirements.

Both the primary and secondary lagoon cells are plastic lines and aerated, with 80% of the supplied air being discharged into the primary cell. Alum is injected into the control box for phosphorous removal, where flow from cell #1 is sent over to cell #2. This location provides good mixing and is ideally suited for the system.

Effluent is continually discharged from the final control box at the end of cell #2, where it passes through a chamber of Ultra-Violet lights before finally discharging into the Mattawa River.

Rated capacity:	=	Avg. 1,564 m^3/day with a peak flow of 5,702 m^3/day
Connected Population	=	Approximately 2,150 people
2021 Avg. Daily Flow	=	808.4 m^3/day
Total Flow for 2021	=	295,056 m^3

FIGURE 31
TOWN OF MATTAWA AERATED SEWAGE LAGOON



Based on a site review August 2, 2017 by Jp2g Consultants Inc. and the Process and Compliance Officer for the Town of Mattawa it would appear the sewage lagoon facility has substantial available capacity and is operating satisfactorily for purposes intended. However, the control building and certain other equipment associated with the lagoon are beginning to exceed their operational life cycle.

A preliminary summary of immediately required improvements to extend the control building operational life cycle are provided below.

Replacement of circa 1992 ultra-violet system
Engage Flow Recorder to provide totalized read outs

Failure of these components is considered a major health and safety as well as environmental risk.

There may be additional mechanical upgrades required for the Town of Mattawa Sewage Treatment Facility due to the age of equipment and difficulty in obtaining replacement parts that will be identified in any update.

FIGURE 32
ORIGINAL SANITARY SEWER RECOMMENDATIONS FOR IMPROVEMENT 1989 AND CURRENT STATUS 2022

Original Recommendation 1989	Current Status 2022
1. Convert sewage lagoon cells to aerated lagoon	Completed
2. Major upgrade Pine Street/Gorman Street Pumping Station	Completed
3. Major upgrade Bissett Street/4th Street Pumping Station	Completed
4. Establish a Central Alarm Monitoring System	**TBD**

RECOMMENDATION #45

CONDUCT A DETAILED ENGINEERING ANALYSIS OF THE EXISTING BLOWER BUILDING COMPONENTS AND ULTRA-VIOLET TREATMENT SYSTEM AT THE TOWN OF MATTAWA SEWAGE LAGOON TO CONFIRM NEEDS AND REQUIRED UPGRADES TO EXTEND LIFE OF THE ASSET

Gravity Sewer

The Town of Mattawa Gravity Sewer System as shown on Maps J and K hereto is generally comprised of 200 mm (8") dia. transite pipe originally installed in the 1960's, 70's and 80's as noted above.

More recent installations have utilized 200 mm (8") dia. and 250 mm (10") dia. PVC.

Sewage back up or capacity issues have been experienced in the following areas

1. Donald Street at Hwy. 17
2. Lily Street at Sid Turcotte Drive
3. James Street
4. Mattawan Street
5. 5th Street at McKenzie Street

The entire Town of Mattawa Sanitary Sewer system has been CCTV'd and flushed. Manhole repairs continued 2018 to 2021 with several problematic manhole structures repaired and/or refurbished.

The Town of Mattawa gravity sanitary sewer systems appear to be in generally satisfactory condition.

The Town of Mattawa Sewage Collection System consists of seven (7) pumping stations as follows:

A.	Louis Street Pumping Station Constructed: 1978 Design Capacity: 220 IGPM No. of Pumps: 2 Pump HP: 9.4 Emergency Overflow: Boom Creek	
B.	Brook Street Pumping Station Constructed: 1976 Design Capacity: 300 IGPM No. of Pumps: 2 Pump HP: 5 Emergency Overflow: Ottawa River	
C.	Pine Street/Gorman Street Pumping Station Constructed: 1964 Refurbished: 1993 Design Capacity: 600 IGPM No. of Pumps: 2 Pump HP: 5 Emergency Overflow: Mattawa River Diesel Generator Building provides generator pump control panel, electrical switches and alarm circuits	
D.	1st Street/Bissett Street Pumping Station Constructed: 1978 Design Capacity: 160 IGPM No. of Pumps: 2 Pump HP: 9.4 Emergency Overflow: Mattawa River	
E.	4th Street/Bissett Street Pumping Station Constructed: 1968 Refurbished: 1992 Design Capacity: 750 IGPM No. of Pumps: 2 Pump HP: 30 Emergency Overflow: Mattawa River Stand-by Power Equipment provided at Water Treatment Plant	

F.	McKenzie Street Pumping Station Constructed: 1978 Design Capacity: 210 IGPM No. of Pumps: 2 Pump HP: 3.9 Emergency Overflow: None	
G.	11th Street Pumping Station Constructed: 1985 Design Capacity: 90 IGPM No. of Pumps: 2 Pump HP: 2.5 Emergency Overflow: Mattawa River	

Based on the engineering review and interviews with Town of Mattawa Environmental Division and more currently Ontario Clean Water Agency (OCWA) carried out for this Core Assets Management Plan, the pumping stations are generally in satisfactory operating condition; however, the following specific operational improvements are required.

A. **Brook Street Pumping Station** is over 40 years old and requires

- Various internal component retrofits
- Alarm system upgrades
- Junction box replacement
- Back-up generator c/w noise mitigation
- Improve reliability of the existing 3 phase power supply

RECOMMENDATION #46

IMPLEMENT OPERATIONAL UPGRADES TO BROOK STREET PUMPING STATION

- **PROVIDE BACK UP GENERATOR**
- **REPLACE JUNCTION BOX**
- **UPGRADE ALARM SYSTEM**
- **IMPROVE RELIABILITY OF POWER SUPPLY**

B. **Pine Street/Gorman Street Pumping Station** was refurbished in 1993 and is in good operational condition. This station accepts all sewage flows from the east side of the Mattawa River.

RECOMMENDATION #47

PROVIDE FLOOD PROTECTION AND OPERATIONAL UPGRADES AT PINE/GORMAN STREET PUMPING STATION AND BROOK STREET PUMPING STATION

C. **Bissett Street/4th Street Pumping Station** (aka Blake Street) was refurbished in 1993 and is in satisfactory operational condition. This station accepts flows from the entire Town of Mattawa.

D. **McKenzie Street Pumping Station**

The McKenzie Street Pumping Station was examined by Jp2g Consultants Inc. in 2018 which indicated an electrical upgrade (eg: Genset including controller upgrade) is required.

RECOMMENDATION #48

IMPLEMENT OPERATIONAL UPGRADES TO McKENZIE STREET PUMPING STATION

- **REPAIR VENT LOUVRES**
- **REPLACE ELECTRICAL COMPONENTS (INCLUDING PUMP CONTROL PANEL)**
- **PROVIDE BACK UP POWER/GENERATOR COMPLETE WITH NOISE MITIGATION**
- **PROVIDE 100 GALLON DIESEL FUEL TANK**
- **PROVIDE FLOOD PROTECTION FROM SURFACE WATER AT INTERSECTION**

RECOMMENDATION #49

UPDATE PUMP CONTROL PANELS AT ALL SEVEN (7) PUMPING STATIONS

RECOMMENDATION #50

PROVIDE FLOOD PROTECTION AT PINE/GORMAN STREET PUMPING STATION AND BROOK STREET PUMPING STATION

Forcemains

The Town of Mattawa sewage collection system includes cast iron, transite and ductile iron forcemains ranging in size from 100 mm (4") dia. to 250 mm (10") dia. listed as follows and as shown on Maps J and K.

TOWN OF MATTAWA FORCEMAINS

1. Brook Street PS to MH on Pine Street between CPR tracks and Hwy 17
2. Louis Street PS to Lily Street
3. Pine/Gorman Street PS to Bissett/4th Street PS
4. 1st Street PS from Bissett to 3rd Street
5. Bissett/4th Street PS to Sewage Lagoon
6. McKenzie Street PS to 5th Street
7. 11th Street PS to 9th Street

There is no practical, cost effective way of confirming the condition of forcemains; but incident reports from Public Works will be part of any monitoring program.

A 250 mm (10") diameter cast iron (or Transite) forcemain passing under the Mattawa River connects the Pine Street Gorman Street Pumping Station to the Bissett Street/4th Street Pumping Station and should be the subject of a dive survey inspection as part of any updated Sanitary Sewer System Infrastructure Study.

2.5.4 Summary of Flood Impacts May 2019 – Sanitary Sewer Collection System

X-Site Enterprises was commissioned to conduct a CCTV investigation of all sanitary sewer underlying roads inundated in the May 2019 flood and their reports are provided hereto electronically in Accompanying Background Reports.

It is important to note that X-Site was previously commissioned in 2016, 2017 and 2018 to conduct CCTV investigations on a large percentage of the Town of Mattawa sanitary sewer system as part of the Town's due diligence related to Operations and Maintenance and Asset Management Planning.

The post May 2019 Flood CCTV survey conducted for this Infrastructure Damage Report indicated potential collapse or malalignment (eg: sumps) > 15% possibly due to migrating granular material during or subsequent to the May 2019 Flood at the following locations

1. The 200 mm dia. sanitary sewer on Water Street was constructed in 1962. The CCTV inspection carried out for this Report identified pipe has cracked and shifted due to absence of granular bedding approximately 16 meters north of Main Street.

   This would put the compromised sanitary sewer at the inlet of the existing culvert that drains across Veterans Memorial Park; which experienced backflow from the Mattawa River during the May 2019 flood and where a spot improvement has been recommended to restore the road subbase and asphalt surface.

   This spot improvement should include replacement of approximately 10 meters of 200 mm dia. sanitary sewer adjacent to and immediately north of the existing culvert.

2. The 300 mm dia. sanitary sewer on Mattawan Street between Pine Street and Poplar Street was constructed circa 1962 and between Poplar Street and Hurdman Street circa 2008.

   All of the Mattawan Street Sanitary Sewer was subject to flooding in the May 2019 flood event. The CCTV investigation conducted for this study identified sand and gravel deposits in the pipe along the entire length as well as five (5) vertical malalignments (eg: sumps) in the section between Pine Street and Park Street (150 meters) ranging from 15% to 60% between MH 6223 at Poplar Street intersection to 60% at Hurdman Street intersection.

3. The 300 mm (12") dia. sanitary sewer on the south end of Mattawan Street, Hurdman Street to Turcotte Park Drive is relatively new (eg: constructed circa 2008) but the CCTV inspection has identified some vertical malalignment (eg: sumps > 15%) at Hurdman Street/Mattawan Street intersection and on Mattawan Street immediately south of Park Street. These sumps range from 15% at Poplar Street to 50% south of Park Street to 60% at Hurdman Street intersection

It is recommended that the Mattawan Street at Hurdman Street sanitary sewer issue MH 2013 to MH 6230 (60% sump) should also be addressed as a spot improvement in the road reconstruction of Mattawan Street between Pine Street and Hurdman Street.

The Mattawan Street sanitary sewer malalignment south of Park Street MH 6249 to 6203 (50% sump) should be addressed as part of the previously recommended roadway spot improvement on Mattawan Street south of Park Street.

4. The 200 mm (8") dia. gravity sanitary sewer on Brook Street was constructed circa 1974.

   Approximately 50 m of Brook Street from Hwy. 17 Valois at the Brook Street pumping station was subject to flooding in the May 2019 flood event.

   The CCTV inspection indicated the camera was underwater for the 50 m section between Hwy. 17 Valois and the Brook Street Pumping Station with 40% sump possibly caused by movement of bedding under the pipe.

   This 50 m section of sanitary sewer pipe should be replaced in conjunction with the Brook Street road reconstruction project between Hwy. 17 Valois and the Brook Street pumping station.

RECOMMENDATION #51

SPOT IMPROVEMENTS WATER STREET 300 MM (12") DIA. SANITARY SEWER (16 METERS NORTH OF MAIN STREET) TO REPLACE CRACKED SANITARY SEWER

RECOMMENDATION #52

CONDUCT SPOT IMPROVEMENTS MATTAWAN STREET 300 MM (12") DIA. SANITARY SEWER FROM PINE STREET TO HURDMAN STREET AS PART OF THE MATTAWAN STREET RECONSTRUCTION PROJECT

RECOMMENDATION #53

CONDUCT SPOT IMPROVEMENTS SANITARY SEWER MATTAWAN STREET 300 MM (12") DIA. HURDMAN STREET TO SOUTH OF PARK STREET AS PART OF THE MATTAWAN STREET RECONSTRUCTION PROJECT

RECOMMENDATION #54

REPLACE BROOK STREET 200 MM (8") DIA. SANITARY SEWER FROM HWY. 17 VALOIS TO BROOK STREET PUMPING STATION 50 METERS AS PART OF BROOK STREET RECONSTRUCTION PROJECT

The following Town of Mattawa pumping stations were "stressed" due to 2019 flood waters but they continued to be operational during the flood event due to the flood prevention efforts of the Town of Mattawa Public Works staff

- Brook Street Pumping Station
- Pine Gorman Pumping Station
- Bissett Street/4th Street Pumping Station
- 11th Street Pumping Station
- Louis Street Pumping Station

See Photo 16 Brook Street Pumping Station during May 2019 Flood.

PHOTO 16
BROOK STREET PUMPING STATION DURING MAY 2019 FLOOD

All the above noted pumping stations were examined by Xylem Water Solutions in 2019 who identified cost of minor repairs totalling $25,316 to inspect and perform minor repairs. This work consisted of removing pumps, cleaning, checking oil, wear parts, impeller and wear rings. Their scope of work also included a visual inspection of piping, valves and other hardware such as guide rails.

The Town of Mattawa Public Works Staff conduct vacuuming, flushing where necessary, manual removal of rags and other debris at all seven (7) pumping stations on an annual basis.

2.5.5 Summary of Risks Town of Mattawa Sewage Collection and Treatment System

The following identifies and ranks risks associated with the Town of Mattawa Sanitary Sewer Collection and Treatment System.

A. SEWAGE TREATMENT PLANT/AERATED SEWAGE LAGOON

The sewage lagoon facility is functioning for purposes intended, however, it is approaching 30 years of age (constructed in 1993). Certain components have reached the end of their life cycle and replacement parts are getting very difficult to procure.

The flow recorder needs to be fully engaged.	**HIGH RISK**
The ultra-violet system needs to be replaced and is currently under discussion.	Corrective Action required.

These upgrades are required to extend the operational life and efficiency of infrastructure and to mitigate risk of adverse public health and environmental impacts due to component failure and subsequent sewage overflow.

B. SANITARY SEWER COLLECTION GRAVITY SYSTEM

The Town of Mattawa Sanitary Sewer Collection System is generally in satisfactory condition with risks as noted below.

There are six (6) areas of the Town of Mattawa that experience sewage back up due to inadequate pipe size, lack of grade or pipe condition or a combination thereof as follows:

1.	Mattawan Street between Pine Street and Poplar Street (150 meters)	**HIGH RISK**
2.	Donald Street at Hwy. 17 Valois	
3.	Lily Street at Sid Turcotte Drive	Corrective Action required.
4.	James Street	
5.	Mattawan Street	
6.	5th Street at McKenzie Street	

There are three (3) locations where the Town of Mattawa Teleye investigation program has identified pipe in poor condition, misaligned or collapsed.

1.	Mattawan Street various locations (sumps) between Pine Street and the Long Term Care Facility	**MODERATE RISK**
2.*	Hwy. 17 Valois east and west of Champlain Street	Corrective Action recommended
3.	Brook Street north of Hwy. 17 Valois to Brook Street Pumping Station	

* *Note: Highway 17 is not under Town of Mattawa jurisdiction*

C. PUMPING STATIONS

The Brook Street Pumping Station is only utilizing approximately 25% of its design capacity; however, it is over 40 years old (constructed circa 1976) and various components have reached the end of their life cycle and require immediate replacement as noted herein. The major risk with the Brook Street Pumping Station is there is no emergency back-up power and when the hydro fails there is a direct discharge of sewage into the Ottawa River immediately upstream of a publicly used beach.

This presents a public health and safety as well as an environmental protection issue.

Brook Street Pumping Station requires **HIGH RISK**

- Internal component retrofit
- Alarm system upgrades
- Junction box replacement
- Back-up power/generator
- Flood Protection

Corrective Action required.

The McKenzie Street Pumping Station was constructed in 1978 and it is nearing the end of its operational life. The Sewage Pump Control Panel has been bastardized several times in order to continue operations. The Town experiences continuous issues with the panel with start capacitors blowing violently, arc flash situations and breakers tripping when both pumps are in operation. The three phase 5 HP pumps have been downgraded to 3.5 HP to allow operation on single phase power.

McKenzie Street/6th Street Pumping Station requires **HIGH RISK**

- Fuel Tank to TSSA Code
- Back-up Power/generator
- Electrical upgrades to restore 3 phase power function
- Louvre Repair
- Flood Protection

Corrective Action required.

Pine Street/Gorman Street Pumping Station was upgraded in 1993 but requires flood protection **MODERATE RISK**

Corrective Action recommended.

D. FORCEMAINS No Information Available

10" dia. cast iron forcemain undercrossing Mattawa River connecting Pine Street/Gorman Street Pumping Station to Bissett Street/4th Street Pumping Station was constructed circa 1962 and should be reviewed by dive survey.	**MODERATE RISK** Monitoring (by dive survey) during Sanitary Sewer Infrastructure Study Update required

2.5.6 Summary of Sanitary Sewer System Needs/Recommendations

This Asset Management Study Update is a preliminary assessment only of the Town of Mattawa Sanitary Sewage Collection and Treatment System Core Asset and will require on-going update and confirmation of pipe sizes and pipe type; as well as pipe condition and grades in a Sanitary Sewer System Infrastructure Study Update.

Based on analysis carried out for this Core Asset Management Study, sanitary sewer system needs can be summarized as follows:

1. The Brook Street Pumping Station requires operational modification. Replacement or major upgrades can be deferred until capacity is more fully utilized. Monitoring sewage flows on a regular basis is essential.
2. The McKenzie Street Pumping Station requires upgrades as noted herein.
3. Pine/Gorman Street Pumping Station should be considered for flood protection.
4. Town of Mattawa areas currently experiencing sewage back up should be addressed.
5. The condition of the Town of Mattawa gravity sanitary sewer system has been monitored through an annual CCTV inspection program. To date pipe condition issues have been identified in the following sanitary sections
    1. Mattawan Street between new Long Term Care Facility and Hurdman Street
    2. Mattawan Street between Pine Street and Park Street
    3. Pine Street/Hwy. 17 McConnell intersection (west limit)
    4. Valois Drive (Hwy 17) east and west of Champlain Street
6. Poor pipe condition locations (eg: sumps) as noted in CCTV inspections should be monitored and spot improved if required when road works are implemented.

It is essential that pipe sizes, invert elevations and pipe condition be accurately established and kept updated in order to provide a sound basis for prioritizing improvements to sanitary sewer infrastructure.

Preliminary Cost Estimates for recommended solutions to address the above noted sanitary sewer issues are provided herein.

All recommendations and cost estimates are subject to further engineering analysis.

Map L shows recommended improvements to the Town of Mattawa Sanitary Sewer System.

Table 5 provides a summary of recommendations for the Town of Mattawa Sanitary Sewer System, costs of improvements and required timing as discussed throughout this report.

Map L
Town of Mattawa Sanitary Sewer System Recommended Improvements

TABLE 5
TOWN OF MATTAWA SANITARY SEWER COLLECTION AND TREATMENT SYSTEM
NEEDS & RECOMMENDED TIME PERIOD OF IMPROVEMENTS

RECOMMENDED IMPROVEMENTS		IMPROVEMENTS	RATIONALE	RISK EXTREME HIGH MODERATE LOW	COST ESTIMATE (INC. ENGINEERING AND CONTINGENCY)	PHASING
1.	Spot improvements Mattawan Street 300 mm dia. sanitary sewer from Pine Street to 200 m ± south of Park Street as part of the Mattawan Street Reconstruction Project.	Capital Works	Coordinate with Road Reconstruction Project	High	$251,750 MDRAP Funded	Now
2.	Conduct a detailed engineering analysis of the existing blower building components and ultra-violet treatment system at the Town of Mattawa sewage lagoon to confirm and implement required upgrades to extend life of asset	Study	Extend Operational Life Cycle Environmental Protection	High	$25,000	Now
3.	Implement Retrofit/Upgrades to Sewage Treatment Plant (Blower Building) at Lagoon	Capital Works	Extend Operational Life Cycle Environmental Protection	High	$50,000 OCWA	Now
4.	New Ultra-Violet System	Capital Works		High	TBD	Now
5.	Conduct a Sanitary Sewer Infrastructure Study c/w infiltration monitoring and updated pumping station and lagoon review and monitoring of forcemain undercrossing Mattawa River should be completed as funding becomes available.	Study		N/A	$100,000	Year 1
6.	Replace Brook Street 200 mm (8”) dia. sanitary sewer from Hwy. 17 to Brook Street Pumping Station (as part of Brook Street Reconstruction Project).	Capital Works	Maintain Operational Capacity`	Moderate	$34,500 MDRAP Funded See also Recommended Road Improvements Table 1	Year 1

TABLE 5 (CONT'D)

RECOMMENDED IMPROVEMENTS		IMPROVEMENTS	RATIONALE	RISK EXTREME HIGH MODERATE LOW	CLASS D ESTIMATE (INC. ENGINEERING AND CONTINGENCY)	PHASING
7.	Implement operational upgrades and flood protection to Brook Street Pumping Station • Provide back up power/generator • Replace junction box • Upgrade alarm system • Flood Protection	Capital Works	Protect Health and Safety Protect Existing Asset	High	$120,000	Year 1
8.	Implement operational upgrades to McKenzie Street Pumping Station • Provide back-up power generator • Electrical Upgrade • Louvre repairs • Flood Protection	Capital Works	Protect Health and Safety Protect Existing Asset	High	$165,000	Year 2
9.	Implement flood protection at Pine Street/ Gorman Street Pumping Station	Capital Works	Protect Existing Asset	Moderate	$50,000 Allowance	Year 3
10.	Replacement of 200 mm (8") dia. sanitary sewers currently experiencing back-up or siltation. Total approx. 500 m ± 1. Donald Street at Hwy. 17 2. Lily Street at Sid Turcotte Drive 3. James Street 4. 5th Street at McKenzie Street	Capital Works	Maintain Level of Service Environmental Protection	High	$375,000 Trench Restoration only	Year 1 to Year 5
11.	Spot Improvements Water Street 300 mm dia. (16 m north of Main Street) to replace cracked sanitary sewer	Maintenance	Maintain Level of Service	Low	$8,000 MDRAP Funded	Maintenance

SECTION 3.0 DETERMINE EXISTING AND DESIRED LEVEL OF SERVICE

3.1 LEVEL OF SERVICE

One of the early steps in this Town of Mattawa Phase 2 Core Asset Management Plan process was to identify a desired level of service for core municipal infrastructure. In this regard it was necessary to address two "levels of service", being

- **Technical Level of Service** as established by Technical Guidelines, Engineering Standards and Government agencies having jurisdiction
- **Ratepayer/User Level of Service** which recognizes and identifies constituent expectations

The challenge for Town of Mattawa Council was to either accommodate both levels of service in a cost effective manner or to clearly articulate which level of service has been selected and why.

The level of service selected has a major impact on the extent and cost of infrastructure improvements.

Desired level of service objectives must take into account risks associated with the selected level of service.

3.2 EXISTING LEVEL OF SERVICE

Existing Town of Mattawa Levels of Service for Core Assets are summarized in a matrix provided in Tables 1-5 of O. Reg. 588/17 as per Figure 33

FIGURE 33
TOWN OF MATTAWA
EXISTING LEVELS OF SERVICE
(AS PER TABLES 1 – 5 O. REG. 588/17)

WATER ASSETS

Column 1 Service attribute	Column 2 Community levels of service (qualitative descriptions)	Column 3 Technical levels of service (technical metrics)
Scope	1. Description, which may include maps, of the user groups or areas of the municipality that are connected to the municipal water system. 2. Description, which may include maps, of the user groups or areas of the municipality that have fire flow.	1. Percentage of properties connected to the municipal water system. 2. Percentage of properties where fire flow is available.
Reliability	Description of boil water advisories and service interruptions.	1. The number of connection-days per year where a boil water advisory notice is in place compared to the total number of properties connected to the municipal water system. 2. The number of connection-days per year due to water main breaks compared to the total number of properties connected to the municipal water system.

WASTEWATER ASSETS

Column 1 Service attribute	Column 2 Community levels of service (qualitative descriptions)	Column 3 Technical levels of service (technical metrics)
Scope	Description, which may include maps, of the user groups or areas of the municipality that are connected to the municipal wastewater system.	Percentage of properties connected to the municipal wastewater system.
Reliability	1. Description of how combined sewers in the municipal wastewater system are designed with overflow structures in place which allow overflow during storm events to prevent backups into homes. 2. Description of the frequency and volume of overflows in combined sewers in the municipal wastewater system that occur in habitable areas or beaches. 3. Description of how stormwater can get into sanitary sewers in the municipal wastewater system, causing sewage to overflow into streets or backup into homes. 4. Description of how sanitary sewers in the municipal wastewater system are designed to be resilient to avoid events described in paragraph 3. 5. Description of the effluent that is discharged from sewage treatment plants in the municipal wastewater system.	1. The number of events per year where combined sewer flow in the municipal wastewater system exceeds system capacity compared to the total number of properties connected to the municipal wastewater system. 2. The number of connection-days per year due to wastewater backups compared to the total number of properties connected to the municipal wastewater system. 3. The number of effluent violations per year due to wastewater discharge compared to the total number of properties connected to the municipal wastewater system.

STORMWATER MANAGEMENT ASSETS

Column 1 Service attribute	Column 2 Community levels of service (qualitative descriptions)	Column 3 Technical levels of service (technical metrics)
Scope	Description, which may include maps, of the user groups or areas of the municipality that are protected from flooding, including the extent of the protection provided by the municipal stormwater management system.	1. Percentage of properties in municipality resilient to a 100-year storm. 2. Percentage of the municipal stormwater management system resilient to a 5-year storm.

ROADS

Column 1 Service attribute	Column 2 Community levels of service (qualitative descriptions)	Column 3 Technical levels of service (technical metrics)
Scope	Description, which may include maps, of the road network in the municipality and its level of connectivity.	Number of lane-kilometres of each of arterial roads, collector roads and local roads as a proportion of square kilometres of land area of the municipality.
Quality	Description or images that illustrate the different levels of road class pavement condition.	1. For paved roads in the municipality, the average pavement condition index value. 2. For unpaved roads in the municipality, the average surface condition (e.g. excellent, good, fair or poor).

BRIDGES AND CULVERTS

Column 1 Service attribute	Column 2 Community levels of service (qualitative descriptions)	Column 3 Technical levels of service (technical metrics)
Scope	Description of the traffic that is supported by municipal bridges (e.g., heavy transport vehicles, motor vehicles, emergency vehicles, pedestrians, cyclists).	Percentage of bridges in the municipality with loading or dimensional restrictions.
Quality	1. Description or images of the condition of bridges and how this would affect use of the bridges. 2. Description or images of the condition of culverts and how this would affect use of the culverts.	1. For bridges in the municipality, the average bridge condition index value. 2. For structural culverts in the municipality, the average bridge condition index value.

3.3 DESIRED LEVEL OF SERVICE

A summary of Town of Mattawa core assets, technical and user/constituent expectations and the resultant desired objectives for Level of Service is provided in Figure 34

FIGURE 34
TOWN OF MATTAWA
ASSET MANAGEMENT PLAN – CORE ASSETS
DESIRED LEVEL OF SERVICE

ROADS				
COMPONENT	**TECHNICAL STANDARD**	**USER/ CONSTITUENT EXPECTATIONS**	**TOWN DESIRED LEVEL OF SERVICE OBJECTIVE**	**REMARKS**
Road Surface	Meet "Minimum Maintenance Standard" as per O. Reg. 239/02 MTO Road Management Manual > 7 out of 10 surface condition (sc) rating >12 out of 20 structural adequacy (sa) rating Comply with Transportation Association of Canada Design Standards	Minimize number and size of potholes Sand removal from road surface should be expedited in Spring	Improve riding surface/potholes and crack filling Arterial and Collector roads snowplowed within 1 hour of snow event exceeding 5 cm (2") Local roads snowplowed within 4 hours of snow event exceeding 5 cm (2") Meet snow clearing targets Complete road system connectivity, eg: Brook Street Extension Eliminate NOW Road Needs	As per MTO Maintenance Manual and O. Reg. 239/02 D. M. Wills Road Needs Study
Roadside Drainage		No roadway flooding	Improve roadside drainage all streets including catchbasin and culvert clearing Construct Brook Street/Light Industrial Park storm water management system Provide new storm outlet system McKenzie Street/6th Street)	

FIGURE 34 (CONT'D)

ROADS (CONT'D)				
Sidewalks			All sidewalks snowplowed and sanded within 24 hours of snow event exceeding 5 cm (2") Meet snow clearing target	
Street Lights	As per Jp2g Consultants Street Light Study 2019	No sections of street should be perceived as dark or unsafe		
Active Transportation (Bicycling)			Provide dedicated cycle trail integrated with regional system	
Recreation Trails (eg: snowmobiles, ATVs)			Provide dedicated snowmobile trails connecting central business district with provincial Snowmobile trail system	

BRIDGE				
COMPONENT	**TECHNICAL STANDARD**	**USER/ CONSTITUENT EXPECTATIONS**	**TOWN DESIRED LEVEL OF SERVICE OBJECTIVE**	**REMARKS**
Vehicular	As per Ontario Structure Inspection Manual Jp2g Consultants Bridge Condition Report 2019 and Dillon Consulting Emergency Repairs 2020	Provide unimpeded passage for vehicles Maintain two lane traffic. No load restrictions.	Identify and implement Long Term rehabilitation or replacement program for Mauril Bélanger bridge structure Maintain two lanes of traffic as much as possible No load restrictions	As per Ontario Structure Inspection Manual Jp2g Consultants Bridge Condition Report 2019 Dillon Consulting Emergency Repairs 2020
Pedestrian	Ontario Department of Labour Directive	Provide safe passage for pedestrians Improve bridge sidewalk (eg: replace grates)	Replace bridge sidewalk surface Replace railings	

FIGURE 34 (CONT'D)

BRIDGE (CONT'D)				
COMPONENT	**TECHNICAL STANDARD**	**USER/ CONSTITUENT EXPECTATIONS**	**TOWN DESIRED LEVEL OF SERVICE OBJECTIVE**	**REMARKS**
Utilities			Protect existing 250 mm dia. (10") watermain Protect existing 125 mm (5") dia. natural gas line. Provide future utility conduit	

STORM WATER DRAINAGE				
Culverts Storm Sewers Catchbasins and Ditch Inlets Outlets		No flooding of roadways or private property during spring melt or flood event	Replace damaged Mattawan Street cross-over culverts Implement catchbasin inspection and cleaning protocols	
Storm Water Retention Ponds	As per MMAH Low Impact Development Guidelines	Control storm water discharge. Protection of water quality	Improve overland drainage through easements to "good and sufficient" outlet	
Flood Protection	Province of Ontario Flood Plain Management Town of Mattawa Flood Plain Management Report by Proctor & Redfern 1982	No flood damage to private property or residences	Eliminate flooding during spring run-off and major storm events Provide flood protection berms Raise road grades in flood prone areas where practical and cost effective	As per Jp2g Consultants MDRAP Report May 2019 Flood Event Damage Report

FIGURE 34 (CONT'D)

WATER SUPPLY				
COMPONENT	**TECHNICAL STANDARD**	**USER/ CONSTITUENT EXPECTATIONS**	**TOWN DESIRED LEVEL OF SERVICE OBJECTIVE**	**REMARKS**
Supply/Source	Ontario Drinking Water Standards	Sufficient, reliable quantity of water	Increase water supply	As per MOE Compliance Report
Water Treatment Plant	MOECC Guidelines and Compliance Reports	No colour No odour Adequate pressure	Upgrades/Retrofits Provide adequate pressure zones 45 PSI to 85 PSI	
Reservoir Feeder Line (10" dia.)			Provide replacement and redundancy ASAP based on Risk Assessment	
Transmission Grid		No service disruption No Watermain breaks Minimize response time	Replace 15" dia. under Mattawa River Complete transmission grid Brook Street and Park Street or Hurdman Street extension	
Local distribution grid		No service disruptions No watermain breaks Minimize response time	Provide redundancy back-up for transmission and distribution system based on risk assessment Replace 4" dia. pipe Minimize watermain breaks	
Hydrants Valves		No leakage		
Fire Flow/ Protection	Fire Underwriters Association	Provide adequate fire flow	Increase water supply and storage capacity to meet fire flow requirements Retrofit existing in-ground reservoir (west side of Town)	As per Proctor & Redfern Report 1994
Storage	MOECC Design Guidelines Fire Underwriters Association	Provide adequate storage No Watering restriction notice	Provide new reservoir (east side of Town)	

FIGURE 34 (CONT'D)

SANITARY SEWAGE SYSTEM				
COMPONENT	**TECHNICAL STANDARD**	**USER/ CONSTITUENT EXPECTATIONS**	**TOWN DESIRED LEVEL OF SERVICE OBJECTIVE**	**REMARKS**
Gravity Sewer System	MOECC Guidelines		Monitor sewage flows	As per Marshall Macklin Monaghan Reports 1989 and 1993
Sewage Pumping Stations			Eliminate sewage overflow occurrences at Pumping Stations	
Manholes		No sewer back-ups	Eliminate sewage back-ups into private residences and businesses	
Combined Sewers			No combined sewers	
			Infiltration into existing manholes and gravity pipes will be monitored and mitigated	
Sewage Treatment Plant	MOECC Guidelines and Compliance Reports	No odour	Upgrade/retrofit Sewage Treatment Plant/Blower Building	
Lagoon				
Ultra Violet System		Safe discharge into watercourses	Replace ultra-violet system.	

3.4 PERFORMANCE MEASURES

Core Asset "measures of performance" used for the Town of Mattawa Phase 2 Core Asset Management Plan include:

- Percentage of homes and businesses served by municipal water versus private wells
- Percentage of homes and business served by municipal sanitary sewer versus private septic systems
- Number of advisory notices issued annually
- Number of watermain breaks annually
- Number of sewage back-ups annually
- Number of sewage overflow events at sewage plant annually
- Number and location of overflow events at sewage pumping stations annually
- Number and location of street flooding events annually
- Number of written complaints received on any core asset or operation
- Energy usage
- Total per capita water consumption
- Total per capita sewage flow

SECTION 4.0 CORE ASSET MANAGEMENT PLAN STRATEGY

4.1 GENERAL APPROACH

The Guiding Principles and Action Plan for the Town of Mattawa Asset Management Planning process have been summarized in detail in the previously submitted Town of Mattawa Strategic Asset Management Policy Document by Jp2g Consultants Inc. May 2019 which has been electronically filed as background to this report.

This Asset Management Strategy for Phase 2 Core Assets discussion provides a "multi-year roadmap" (eg: 10 Years +) outlining the activities, resources and timelines required to achieve Level of Service objectives for Core Assets as per O. Reg. 588/17 and Town of Mattawa Strategic Asset Management Policy Document May 2019.

This Core Asset Management Plan Strategy includes six (6) steps to achieve objectives and a sustainable desired Level of Service for Core Assets in the Town of Mattawa

Step 1 Update and document condition of Infrastructure Assets
Step 2 Establish realistic level of service requirements/objectives and time frame for improvements
Step 3 Provide "plain English" narrative on Municipality's Asset Management Strategy and Infrastructure Improvement Priorities for Core Assets
Step 4 Establish user friendly Data Storage and Retrieval System
Step 5 Develop a Financial Strategy to address infrastructure needs and gaps
Step 6 Follow-up by obtaining feedback and updates from Asset Management Project Team, Infrastructure Study Consultants and ratepayers during regular AMS Updates

The Action Plan to achieve these objectives will be built on three pillars:

- Capital Works Strategy which will include non-infrastructure solutions such as avoidance or alternate use, decommissioning or disposition of assets, renewal or retrofit to extend useful operation life
- Maintenance Strategy to prevent or mitigate risk of failure or extend operational life of asset
- Operating Strategy to prevent or mitigate risk or increase efficiency

These strategies will be developed through close collaboration on an on-going basis with the Town of Mattawa Department Heads responsible for various infrastructure assets.

The Town of Mattawa Asset Management Strategy will incorporate

Maintaining a complete, accurate and up to date Asset Data

Standardizing Condition Assessment Protocols and State of Infrastructure Reports (SOIR)

Fully considered Level of Service Targets/Objectives

Establish Risk Assessment Consequence of Failure/Likelihood of Failure

Incorporate Life Cycle Management including maintenance and operating protocols

Financial Strategies incorporated at the outset and throughout the Asset Management Planning Process culminating in a Phase 4 Detailed Financial Strategy

The Town of Mattawa Asset Management Plan will be kept updated and implemented by the CAO and Asset Management Project Manager as per ….

- Town of Mattawa Strategic Policy Document May 8, 2019
- O. Reg. 588/17
- Ontario Guide for Municipal Asset Management Plans 2012
- Municipal Finance Officers Association of Ontario Asset Management Framework 2018
- Town of Mattawa Phase 2 Core Asset Management Plan July 1, 2022

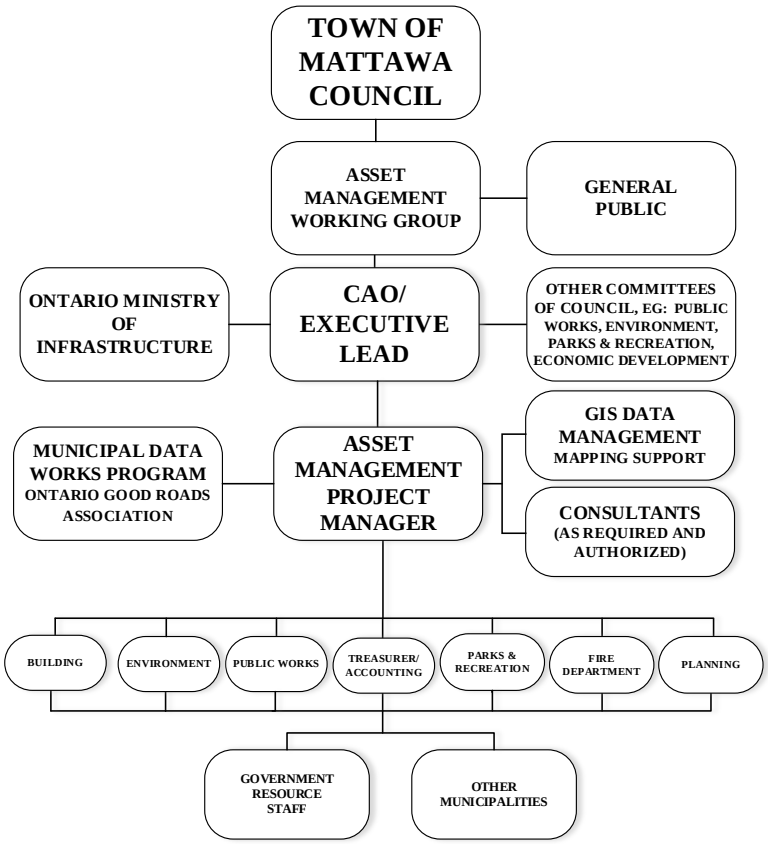
4.2 PROJECT TEAM ORGANIZATION

Asset Management Plans require information to be drawn from the entire spectrum of Municipal departments (eg: Administration, Accounting, Public Works, Engineering). Successful Asset Management Plans do not result from the sole and independent efforts of either the CAO or Project Manager or Engineer or their designates.

SUCCESSFUL ASSET MANAGEMENT PLANS REQUIRE INPUT FROM A WIDE RANGE OF EXPERTISE AND A TEAM EFFORT.

The Town of Mattawa Asset Management Project Team Organization Structure is shown on Figure 35.

FIGURE 35
TOWN OF MATTAWA
ASSET MANAGEMENT PROJECT TEAM ORGANIZATION



Chief Administrative Officer/Executive Lead

- The Town of Mattawa CAO will be Executive Lead for the Municipality with oversight responsibility to ensure the Asset Management Plan is produced and updated in a timely manner and that cooperation is advanced to the Asset Management Manager from all Department Heads.
- The CAO/Executive Lead will also work with the Asset Management Project Manager to ensure they are properly resourced to collect and archive data, establish inter-jurisdictional relationships with other Municipalities and Government agencies, monitor funding opportunities and government programs and, subject to Council's authorization, identify and commission Consultant services as required.
- The CAO/Executive Lead will provide the administrative connection between the Asset Management Manager and Council or Committees of Council.

Asset Management Working Group

- An Asset Management Working Group will be established consisting of Town of Mattawa Council Representatives, the Asset Management Project Manager and the CAO/Executive Lead.
- The Asset Management Working Group will meet on a monthly basis while the Phase 2 Core Asset Management Plan is being prepared and on a quarterly basis thereafter or at the call of the CAO/Executive Lead.

The Working Group meetings will be chaired by the CAO with the Asset Management Project Manager having carriage of providing meeting logistics, agenda, minutes and follow-up action items.

Asset Management Project Manager

It is important that a single point of contact, aka "Champion" of the Asset Management Planning Process be formally identified and empowered by Council as **Asset Management Project Manager** to:

- Solicit support and input from all Municipal Departments as to the state of their respective infrastructure portfolios vis a vis level of service requirements, existing condition, historical cost data and projected infrastructure needs. The Town of Mattawa Departments include …
  - Administration
  - Accounting
  - Public Works
  - Parks and Recreation
  - Environmental Compliance
  - Fire Department
- Identify and collect data on level of service requirements based on
  - International Standards
  - Federal Standards and Regulations
  - Provincial Standards and Regulations
  - Agencies having Jurisdiction Standards, Regulations and Guidelines
  - Technical Design Guidelines
  - Best Practices

- In cooperation with Council or appropriate Committee of Council (eg: Planning and Environment Committee), obtain public input and "buy-in" as to constituents/public perceived requirements for level of service
- Coordinate and collect user comments and complaints
- Coordinate and collect specialist Consultant reports as required and authorized by Council in support of the on-going Asset Management Planning Process

  Road Needs Study Update
  Water Supply and Distribution System Infrastructure Study/Update
  Sanitary Sewer Collection and Treatment Infrastructure Study/Update
  Bridge Condition Reviews
- Synthesize all data within a concise and user friendly AMS report and data retrieval system
- Keep the Town of Mattawa infrastructure situation report, asset registry data and AMS report updated

Municipal Department Heads

A critical component of the Asset Management Project Team will be the active participation of Town of Mattawa Municipal Department Heads.

- It is the individual Department Heads who will be the portal to data on the infrastructure needs under their respective portfolios through participation in AMS Project Meetings, Situation Reports and State of Infrastructure Reports.

It is essential to recognize that Asset Management Plans are only part of the "tool box" that Council has at its disposal when making infrastructure improvement decisions. **THE TOWN OF MATTAWA ASSET MANAGEMENT PLAN WILL PROVIDE AN OBJECTIVE, EVIDENCE BASED FOUNDATION FOR DECISION MAKING; BUT IT IS THE ELECTED OFFICIALS (EG: COUNCIL) THAT HAVE CARRIAGE AND RESPONSIBILITY FOR MAKING FINAL DECISIONS ON INFRASTRUCTURE IMPROVEMENTS.**

4.3 STEPS TO IMPLEMENTATION OF ASSET MANAGEMENT STRATEGY

Step 1 Update and Document Condition of Infrastructure Assets

As previously discussed, specifically commissioned infrastructure studies will form the on-going core of objective identification, costing and documenting (including mapping) of infrastructure needs to be incorporated in the Town of Mattawa Asset Management Plan process.

Municipal infrastructure assets will be kept updated by asset class, including type and quantity, total replacement value and average age. The inventory analysis will include the Municipality's approach to assessing asset condition using industry-accepted engineering practices and will summarize the information available on the condition of the assets.

A reporting system will be put in place for all Municipal Departments which will record incidents and data (including costs) related to both core and non-core assets on an on-going basis for reference by the Asset Management Project Manager.

Specific field reviews will be undertaken "as appropriate" by the Asset Management Project Manager in conjunction with Municipal Department Heads or Consultants to review and confirm identified needs or recommended approach to improvements. The purpose of these site specific field reviews will be to ensure all alternatives have been considered, not just capital cost replacements.

The quality of the information will require the willing and on-going participation of the Department Heads and will depend on the efficacy of the proposed Asset Management Working Group.

An effective, user friendly data storage and retrieval system for infrastructure condition data will be essential

The Town of Mattawa will consider subscribing to the Ontario Good Roads Association Municipal Data Works program (MDW) and joining the Ontario Water Works Association (OWWA) as well as the Asset Management Ontario Association (AMONTario).

The Town of Mattawa will also continue to monitor Infrastructure Ontario's website postings and participate in their workshops for Asset Management on a "go forward" basis.

Step 2 Establish a Realistic Level of Service and Timeframe for Improvement

A plain language narrative of the current levels of service for each category of infrastructure asset will be provided. This will include current levels of service according to the information defined in the two columns for Proposed Levels of Service

- the technical levels of service
- the community/user levels of service

Establishing and communicating a realistic level of service for various infrastructure assets is a fundamental step in the Asset Management Planning Process and one that requires Council input and concurrence before specific recommendations are formalized.

The timeframe for improvements provided in this report beyond the Now period are "best estimates" given current information and may be adjusted based on changing circumstances and/or engineering analysis.

Timing of improvements will be subject to available funding.

It would also be prudent to engage the public at an early date in an initiative that introduces the benefits of an Asset Management Plan and solicits constituency input on community/ user (eg: ratepayer) objectives for various infrastructure components.

Public input will be gathered through Public Information Centers, video streamed Working Group meetings and/or Council presentations, as well as posting of the Core Asset Management Plan Working Drafts and the final report on the Town of Mattawa website.

It will also be important to identify priorities critical projects needed to address the following:

Public Health and Safety Issues
Prevent Catastrophic Failure of Core Infrastructure

Step 3 Provide a Plain Language Narrative

It will be important for the Town of Mattawa Phase 2 Core Asset Management Plan to include a plain language narrative so that the constituent public and agencies having jurisdiction can readily understand

- Benefits of an Asset Management Plan
- Basis of Establishing Levels of Service for various infrastructure components
- Approach to establishing priorities
- Proposed timeframe for Recommended Improvements
- Basis of Preliminary Estimated Costs

It is important to recognize in any narrative that the Town of Mattawa is a service center for surrounding municipalities; which should be acknowledged and incorporated in any Phase 3 Financial Strategy with regard to cost sharing.

Step 4 Provide Up to Date GIS Data Storage and Retrieval

The Town of Mattawa Asset Management Plan Core Assets will include user friendly data storage and retrieval for

Roads and Storm Sewers
Mauril Bélanger Bridge
Water Supply and Distribution
Sanitary Sewage Collection and Treatment

GIS mapping and base data will be updated on an on-going basis as new data becomes available.

GIS maps will also be prepared for Street Lights and Drainage Culverts.

Step 5 Asset Registry

The Town of Mattawa Asset Registry will be updated on an on-going basis.

Step 6 Financial Strategy

A financial strategy for addressing infrastructure needs and gap in the Town's ability to pay; as well as alternate sources of revenue will be developed integrated at various levels of detail into all phases of the Town of Mattawa Asset Management Planning Process.

A Detailed Financial Strategy will be provided in Phase 4 of the Asset Management Planning Process in accordance with O. Reg. 588/17 by July 1, 2025.

The Phase 4 Detailed Financial Plan will provide updated (2025) capital cost estimates, total cost of maintenance, renewal, rehabilitation, replacement, disposal, upgrades, new construction) needed each year; as well as any significant operating costs, including energy costs, for the ten (10) years in order to maintain desired levels of service over the long term.

The approach to developing the financial estimates will be documented based on the lifecycle management activities expected. Assumptions regarding anticipated future changes in population and economic activity will also be included.

Asset Management Planning recommendations and priorities for Phase 2 Core Assets (and Phase 3 Non-Core Assets) will be integrated into Town of Mattawa Finance Committee discussions on annual budgets; as well as future Capital Planning Programs.

Step 7 Follow-up

The Town of Mattawa Council and Administration are committed to ensuring continuous improvement and best practices for Asset Management Planning. On-going monitoring will include regular review of performance measures such as results of maintenance efforts and energy use/energy efficiency and initiatives and Infrastructure Study Updates.

Step 8 Infrastructure Studies

The following infrastructure studies will provide the foundation of the on-going Town of Mattawa Asset Management Planning process for Core Assets

Road Needs Study Update
Bridge Condition Reviews and Detailed Structural Investigation
Water Supply and Distribution System Infrastructure Study Update
Sanitary Sewage Collection and Treatment System Infrastructure Study Update
Landfill Site Design and Operations Report
Water Treatment MOECC Compliance Reports
Sanitary Sewage Treatment Plant MOECC Compliance Reports
Ontario Clean Water Agency Reports

Funding for required Infrastructure Study Updates will be additional to Town of Mattawa Asset Management annual operational funding and the Asset Management Project Manager will be tasked with monitoring Federal and Provincial funding programs in this regard.

FIGURE 36
TOWN OF MATTAWA
ASSET MANAGEMENT PLAN – CORE ASSETS
PROPOSED PRIORITY/SCHEDULE FOR UPDATING INFRASTRUCTURE STUDIES

Asset Category	Components	Previous Studies	Priority	Time Period	Remarks
Bridge	Design and Implement Emergency Bridge Repairs	Mauril Bélanger Bridge Condition Report by Jp2g Consultants Inc. 2019 Galcon Marine Dive Survey October 15, 2019 ODS Marine Dive Survey December 2019 Situation Report by Dillon Consulting December 23, 2019 Mauril Bélanger Bridge Geotechnical Study by Golder Associates January 2020	High	Completed 2019	High Risk Level of Service Public Safety
	Design and Implement Interim Solution	Emergency Solution (Grouting West Abutment) completed November 2019 Interim Solution ("tie back") completed December 2020	High	Completed 2021	High Risk Unacceptable Level of Service
	Identify, Design, Implement Long Term Solution	Long Term Solution Analysis (eg: Option 1 Rehabilitation versus Option 2 Replacement)	High	Now	Engineering Options Analysis Detailed Structural Analysis Geotechnical and Hydrogeological Survey Environmental Assessment

FIGURE 36 (CONT'D)

Asset Category	Components	Previous Studies	Priority	Time Period	Remarks
Water Supply & Distribution	New Reservoir East Side Light Industrial Park Options Analysis Environmental Assessment Engineering Design and Approval	Town of Mattawa Light Industrial Park Preliminary Hydraulic Analysis by Jp2g Consultants Inc. November 6, 2018	High	Now	
	Existing Feeder Main 250 mm (10") dia.		High	Now	Engineering Options Analysis New Reservoir
	Update 1994 Water Supply Distribution Infrastructure Study		High	Year 1	
	Update System Configuration, Size and Options		High	Year 1	
	Mattawa River Crossing 380 mm (15") dia. Options Analysis		High	Year 1	Mattawa River Watermain Crossing
	WTP Retrofits (SCADA, Ultra-Violet System)		High	Year 1	
	Replacement 100 mm (4") dia. watermain Ottawa Street, Division Street, Donald Street		High	Year 2	
	Increase Water Supply Well #3 Fire Protection	Water Supply Study by Proctor & Redfern May 21, 1994	High	Year 2	Geotechnical/ Hydrogeological Study Well #3
Roads	Refine/Update Road Sections Conduct Structural Adequacy and Surface Condition Appraisal Confirm Section Lengths Conduct Traffic Counts	Road Needs Study by D. M. Wills Associates March 2010	Moderate	Year 3	Update 2010 Road Needs Study c/w Traffic Counts and Culvert Inspection

FIGURE 36 (CONT'D

Asset Category	Components	Previous Studies	Priority	Time Period	Remarks
Storm Sewers	Physical review of outlets Flood Protection Storm Water Management	Town of Mattawa Flood Plain Management Study by Proctor & Redfern February 1982 Town of Mattawa Flood Damage Report by Jp2g Consultants Inc. January 2020	Moderate	Year 3	Storm Water Management Master Plan
Sanitary Sewer System	STP Retrofits Ultra-Violet Replacement Pumping Station Retrofits	Sewage Works Upgrading Study by Marshall Macklin Monaghan September 1993 CCTV Inspection by X-Site Enterprises 2015 to 2019 Town of Mattawa Light Industrial Park Downstream Impact Analysis by Jp2g Consultants Inc. November 5, 2018 Sewage Pumping Station Inspections by Xylam	High	Year 3	
	Update 1993 Sanitary Sewage Infrastructure Study		High	Year 3	

4.4 STRATEGIC FRAMEWORK/APPROACH

The Town of Mattawa Strategic Approach to the Phase 2 Asset Management Plans for Core Assets as described in Section 4.3 hereto is summarized in Figure 37.

FIGURE 37
TOWN OF MATTAWA
ASSET MANAGEMENT PLAN – PHASE 2 CORE ASSETS
STRATEGIC APPROACH TO IMPLEMENTATION

STEP 1 ⇨	STEP 2 ⇨	STEP 3 ⇨	STEP 4 ⇨	STEP 5 ⇨	STEP 6 ⇨	STEP 7
ESTABLISH/ DOCUMENT RELEVANT POLICY GUIDELINES	**PROVIDE ACCURATE UP TO DATE DATA**	**PREPARE USER FRIENDLY DATA INPUT AND RETRIEVAL**	**ESTABLISH COMMUNICATION WITH COUNCIL, STAKEHOLDERS, GOVERNMENT REGULATORS AND FUNDING AGENCIES**	**APPLY FOR AND SECURE FUNDING**	**MONITORING**	**IMPLEMENTATION**
The Asset Management Process started with Strategic Policy Framework	Maintain Asset Registry State of Infrastructure Reports (SOIR) Infrastructure Study Updates: Water System Sanitary System Road Needs	GIS Platforms/ Overlays Priority Lists Plain English Financial and Engineering Options Analysis Establish realistic and cost effective Level of Service	Quarterly Asset Management Project Team Meetings Regular Reports to Council for Input and Directions Liaison and information sharing with other Municipalities and Associations	Establish Financial Plan providing Base Funding in Annual Budget Special Allocations for Infrastructure Updates Monitor Government Funding Programs for Infrastructure Improvement Programs	Performance Measurement Risk Assessment Follow up with Constituent complaints	Subject to Funding

SECTION 5.0 FINANCIAL STRATEGY/PLAN

5.1 GENERAL APPROACH

As noted in the original Town of Mattawa Asset Management Plan 2013 and further detailed in the Strategic Asset Management Policy Document May 2019 and this July 2022 Phase 2 Core Assets Management Plan, the Town of Mattawa's Phase 4 Financial Strategy due July 1, 2025 will include the following

1. On-going actions regarding capital asset management (including updated options analysis and infrastructure studies)
2. Asset refurbishment
3. Maintenance
4. Replacement
5. Anticipated funding requirements

The Phase 4 Town of Mattawa Detailed Financial Strategy/Plan will also consider the Town's underlying economic condition as previously detailed in Section 1, Figure 5

Property Assessment
Median Household Income
Capital Threshold
Debenture Level
Population Growth

Based on the results of this Phase 2 Core Asset Management Plan and the Phase 3 Non-Core Asset Management Plan, the Phase 4 Detailed Financial Strategy/Plan will identify funding shortfalls and potential revenue sources such as

1. Municipal Taxation
2. Municipal Debt/Debentures
3. Construction Financing Agreements
4. Gas Tax Funds
5. Provincial Grants or Subsidies
6. Federal Grants or Subsidies
7. Non-Traditional Sources (P3, Corporate Donations, Service Clubs, Bequests)
8. Disposition of Municipal Assets (Land Sale/Joint Ventures)
9. Municipal Forces (Day Labour)
10. Development Charges/Imposts
11. "Local Improvement" Charges
12. User Fees
13. Financial support from neighboring Municipalities

5.2 ANNUAL CAPITAL BUDGET AND FIVE (5) YEAR FORECASTS

Most importantly the Phase 4 Detailed Financial Strategy/Plan will be linked to the Municipality's Annual Capital Budget and Five (5) Year Forecasts. However, as previously noted in Section 4.1, it is to be clearly understood that **Council makes the final decision as to whether a specific infrastructure project is approved, budgeted and scheduled for implementation**.

The Asset Management Plan is, however, an important "tool" in Council's "tool box" for their decision-making process.

5.3 LONG TERM 10 YEAR AND 20 YEAR FORECAST

In both the Phase 2 Core Assets Plan and the Phase 4 Detailed Financial Plan specific projects are identified in a 10 Year Capital Forecast in the Now, 1 to 5 Year and 6 to 10 Year increments.

Forecast of infrastructure renewal needs beyond 10 years will be reviewed annually based on current replacement value. Although not used to set rates, the forecast will provide Council with insight into the degree of infrastructure renewal activity that needs to occur beyond the 10 year capital project plan adopted by current Councils. It will provide a perspective that can be used to identify the effect of carrying a backlog of renewal into the future.

This information will be a primary input to setting rates to fund current capital renewal along with building reserves that will address longer term renewal activities and provide a "financial safety net" for unexpected expenses.

At this time Town of Mattawa Council feels that the 10 to 20 year spending timeframe is very difficult to predict with any sort of certainty. Accordingly, for the purposes of this Core Asset Management Plan, the most reasonable assumption is that spending in the 10 to 20 year time frame will closely mirror that of the 1 to 10 year plan; however spread across different assets.

5.4 STRATEGIC FRAMEWORK/APPROACH

The Phase 4 Detailed Financial Plan will include update (2025) of capital cost estimates, life cycle costs and extraordinary operating costs.

The Town of Mattawa Asset Management Detailed Framework Plan will include an updated (2025) estimate of capital expenditures, cost of on-going maintenance as well as renewal, rehabilitation, replacement, disposal, upgrades, new construction needed each year including any significant operating costs for ten (10) years following in order to maintain levels of service.

The approach to developing the capital cost estimates will be documented and based on the lifecycle management activities expected. Assumptions regarding anticipated future changes in population and economic activity will also be included in the Phase 4 Detailed Financial Plan.

IMPLEMENTATION OF MANY OF THE CORE ASSET IMPROVEMENTS DESCRIBED HEREIN WILL REQUIRE SUBSTANTIAL SUPPORT FROM PROVINCIAL AND FEDERAL INFRASTRUCTURE PROGRAMS.

Asset Management Planning recommendations and priorities will be integrated into Town of Mattawa Finance Committee discussions on annual budgets; as well as Capital Planning Programs.

The Town of Mattawa Phase 4 Detailed Financial Plan/Strategy will include

- Updated (2025) preliminary cost estimates
- Forecasts of total cost of maintenance, renewal, rehabilitation, replacement, disposal, new construction and capacity upgrade activities and significant operating costs, including energy costs, related to life cycle activities
- Potential retrofits versus replacement; which would extend the operational life of the existing infrastructure
- Potential for cost avoidance (eg: demolition or abandonment or alternate use/conversion
- Revenue dedicated to capital financing
- Expenditures required to extend operational life of existing infrastructure

- Estimated capital reserve contributions and withdrawals; and
- Estimated debt service payments
- operational changes or investment which would increase the efficacy of the infrastructure component and/or mitigate the need for major capital work
- Potential value re: disposition of assets

The financial plan associated with the Town of Mattawa Asset Management Plan will also include an analysis of the Municipality's ability to pay and the risks associated with not undertaking the required works in a timely manner due to funding shortfalls.

The Town of Mattawa Asset Management Phase 4 Financial Plan/Strategy will document a life cycle management strategy that will outline the activities the Municipality will undertake to maintain the desired level of service and manage risk (eg: climate change impacts) with consideration to the full life cycle costs of the assets. Life cycle activities will be based on options examined by the Municipality to reduce the overall life cycle costs including energy costs through green infrastructure and non-infrastructure solutions such as demand management.

The Town of Mattawa Asset Management Phase 4 Financial Plan/Strategy will contain a summary of the life cycle activities that would be undertaken for all assets for a ten (10) year period aligned with the proposed levels of service section of the Core Asset Management Plan described in Section 3.0 of this report.

IT IS THE INTENTION OF COUNCIL THAT THIS ASSET MANAGEMENT PLAN PHASE 2 CORE ASSETS WILL PROVIDE A ROAD MAP FOR THE IMPLEMENTATION OF AN INFRASTRUCTURE MANAGEMENT ASSET PLANNING PROCESS AND A FUTURE DETAILED FINANCIAL PLAN THAT WILL "ENABLE MATTAWA TO COST EFFECTIVELY PROVIDE LEVEL OF SERVICE AT ACCEPTABLE LEVELS OF RISK, RELIABILITY AND CONFIDENCE TO THEIR CONSTITUENT PUBLIC THAT RECEIVE THESE CORE ASSET SERVICES".

SECTION 6.0 CORE ASSETS SUMMARY OF RECOMMENDATIONS

The following recommendations are provided for Council consideration

1. The Town of Mattawa Core Asset Management Plan document herein be received and endorsed by Council Resolution prior to July 1, 2022 in accordance with O. Reg. 588/17.
2. The Town of Mattawa Core Asset Management Plan be kept updated.
3. The Town of Mattawa provide a budget allocation in their annual budget for maintaining and advancing the Asset Management Planning Process.
4. Continue to develop GIS Mapping/Data Base and Asset Registry.
5. Continue bi-annual Bridge Inspection for the Mauril Bélanger Bridge
6. Conduct a Detailed Engineering Analysis including Technical Background Studies as necessary to determine the possibility of rehabilitating the Mauril Bélanger Bridge versus replacement with a new structure.
7. Commission specialized engineering studies and analysis as funds become available from annual budgets or Federal/Provincial Government funding programs to complete the following:
    a. Engineering Options Analysis, Environmental Assessment and Conceptual Design for providing New Water Storage Reservoir East Side Mattawa River
    b. Engineering Options Analysis and Detailed Design to replace 10” dia. Feeder Line to Existing In-Ground Reservoir West Side Mattawa River
    c. Detailed Design and Specifications for New Water Storage Reservoir East Side
    d. Hydrogeological Investigation for Source Water Supply Well #3 at existing Water Treatment Plant
    e. Detailed Design and Specifications for replacing the 380 mm (15”) dia. Mattawa River Water Crossing
    f. Option Analysis, Environmental Assessment and Detailed Design and Specifications for Mauril Bélanger (Mattawa River) Bridge Rehabilitation or Replacement
    g. Commission Detailed Engineering Design and Specifications including Engineers Opinion of Probable Cost for
        Dorion Road
        Mattawan Street
        Ottawa Street
        Donald Street
        Division Street
        Brook Street
    h. Commission Engineering Analysis Water Treatment Plant Upgrades and Retrofits
    i. Commission Engineering Analysis Sewage Pumping Station Upgrades and Retrofit
    j. Commission Engineering Analysis of Sewage Treatment Plant Lagoon and Pumping Station Upgrades and Retrofits
    k. Address ultra-violet replacement system requirements at Sewage Treatment Plant
    l. Update Water Supply and Distribution System Infrastructure Study 1994 by Proctor & Redfern
    m. Update Sanitary Sewer System Infrastructure Study 1989 by Marshall Macklin Monaghan
    n. Update Road Needs Study 2010 Study by D. M. Wills Associates
    o. Develop Flood Protection Measures for Mattawan Street, Ottawa Street and Timmins Street
    p. Develop Master Storm Water Management Plan

CORE ASSET PRIORITIES BASED ON EXISTING CONDITION AND RISKS ARE PROVIDED IN FIGURE 38

FIGURE 38
CORE ASSETS
PRIORITIES BASED ON EXISTING ASSET CONDITION & RISK

Priority	Asset Category	Description	Risk	Action	Time Period
1	New Reservoir East Side Mattawa River	300,000 to 500,000 Igal Reservoir required to provide storage and fire protection as well as improve hydraulics A new reservoir will also help mitigate fire protection Impact of failure in the 250 mm (10") dia. feeder main or the 250 mm (10") dia. crossing on the Mauril Bélanger Bridge or the 280 mm (15") dia. crossing of the Mattawa River	High	Construct new reservoir	Now
2	250 mm (10") dia. Feeder Main to Existing Reservoir	From Water Treatment Plant to existing in-ground reservoir	High	Replace or determine an operational option	Now
3	Mauril Bélanger Bridge Rehabilitation or Replacement	Initial Work Items, Detailed Structural Review and Preliminary Options Analysis	High	Option 1 Rehabilitation in Phases Option 2 Replacement with New Structure	Now 6 – 10 Years
4	380 mm (15") dia. Watermain crossing Mattawa River	Mattawa River crossing of Mattawa North Bay Conservation Island from Bissett Street (west shore) to Hurdman Street (east shore)	High	Replace	Now
5	Water Treatment Plant Retrofit	SCADA System Retrofit and Ultra-Violet Replacement	High	Retrofit	Now
6	Sewage Treatment Plant Retrofit	Ultra-Violet System Replacement	High	Retrofit	Now

A SUMMARY OF ALL CORE ASSET NEEDS AS AT 2022 BASED ON THIS ASSET MANAGEMENT STUDY UPDATE IS PROVIDED IN TABLE 6.

TABLE 6
CORE ASSET NEEDS, PRELIMINARY ESTIMATED COST AND RECOMMENDED TIME PERIOD OF IMPROVEMENTS

	ASSET		DESCRIPTION	CONDITION	RISK	ACTION	RECOMMENDED TIME PERIOD OF IMPROVEMENT	PRELIMINARY ESTIMATED COST
NOW NEEDS	1.	Water Storage Requirements Study	Study	N/A	N/A	Study	Now	$50,000
	2.	New Reservoir East Side Mattawa River	Approximately 300,000 to 500,000 Igal reservoir required to provide storage and fire protection as well as improved hydraulics. Preliminary budget cost to include Engineering Options Analysis, Environmental Assessment, Preliminary Design, Final Design	N/A	High	New Construction	Now	$3,000,000
	3.	Replace or identify functional option for 250 mm (10”) dia. Feeder Main to Existing Reservoir	From WTP to existing reservoir (678 m)	Poor	Extreme	Replacement (or identify options)	Now	$1,499,936
	4.	Mauril Bélanger Bridge Rehabilitation	Determine Mauril Bélanger Bridge Long Term Solution including railing and sidewalk replacement, Engineering Options Analysis, Detailed Structural Review, Hydrogeological Analysis, Environmental Assessment, Conceptual Design	Poor	High	Rehabilitation, Repair or Replacement Initial Background Work Either Option	Now	 $1,734,220
	5.	Replace 380 mm (15”) dia. Watermain crossing Mattawa River	Construct new Mattawa River crossing from Mattawa North Bay Conservation Island (eg: west shore) to Hurdman Street (east shore) 85 m	Poor	High	Replacement	Now	$1,636,790
	6.	Dorion Road Hill Reconstruction	Including reduction of existing hill grade and curve realignment and Hwy 17 intersection improvements	Poor	High	Reconstruction	Now	$4,784,000 ICIP Funded
	7.	Mattawan Street Base and Surface	Including sanitary sewer spot improvements, selected outlet culvert replacement and flood protection	Poor	High	Base and Surface	Now	$563,500 Base and Surface $157,500 Culverts $721,000 MDRAP Funded
	8.	Brook Street Light Industrial Park Storm Water Management System	Storm Water Pond Hwy. 17 Culvert (MTO jurisdiction) Outlet Improvements	Fair	High	New Construction Retrofit	Now	$750,000
	9.	Water Treatment Plant Retrofit	Retrofit SCADA System Replace Ultra-Violet System	Poor	High	Retrofit SCADA & Ultra-Violet System as per OCWA Budget Submission	Now	Replacement SCADA & Ultra-Violet System $365,000
	10.	Engineering Analysis Blower Building	Blower building retrofit	Poor	High	Study	Now	$25,000
	11.	Mattawan Street Sanitary Sewer	Spot improvements Mattawan Street Sanitary Sewer from Pine Street to south of Park Street	Poor	High	Spot Improvements	Now	$251,750 MDRAP Funded
	12.	Sewage Treatment Plant/Lagoon Retrofit	Replace Ultra-Violet System	Poor	High	Retrofit	Now	TBD
	13.	Sewage Treatment Plant/Lagoon Blower Building Retrofit	Blower building retrofit	Poor	High	Retrofit	Now	$50,000

TABLE 6 (CONT'D)

	ASSET		DESCRIPTION	CONDITION	RISK	ACTION	RECOMMENDED TIME PERIOD OF IMPROVEMENT	PRELIMINARY ESTIMATED COST	
	14.	Extend 250 mm (10") dia. Watermain on Pine Street from Hwy. 17 McConnell to Fire Hall	Improve operational efficiency and fire flow	Poor	High	New Construction	1 to 5 Years	$103,100	Hwy. 17 McConnell to Fire Hall
	15.	Replace or parallel existing 150 mm (6") dia. on Pine Street from Champlain Street to Brook Street with 250 mm (10") dia.	Improve operational efficiency and fire flow	Poor	High	New Construction	1 to 5 Years	$1,183,588	Champlain Street to Brook Street
	16.	Dorion Road Reconstruction	Bell Communication Tower to Brook Street Extension	Poor	Moderate		1 to 5 Years	$1,353,870	
	17.	Brook Street Reconstruction Hwy. 17 to Dorion Road	Including culvert replacement at CPR Crossing and replacement 100 mm (4") dia. Watermain Hwy. 17 to Pine Street	Poor	Moderate	New Construction (Brook Street Extension) Reconstruction (Existing)	1 to 5 Years 1 to 5 Years	$2,368,450 $417,516 $136,092	Pine Street to Dorion Road Hwy. 17 Valois to Pine Street Replace 100 mm (4") dia. Watermain Hwy. 17 Valois to Pine Street
	18.	Increase WTP Pump capacity	Pump #1 and Pump #2	Poor	High	Retrofit	1 to 5 Years	$25,000 $250,000	Engineering Assessment Pump #1 and Pump #2 Pump Retrofits
	19.	Increase Source Water Supply to WTP	Supplement ground water supply to WTP. Well #3 required for potable water supply and fire protection including Engineering Options Analysis, Hydrogeological Analysis, Environmental Assessment, Construction	Poor	High	Technical Studies New Construction	1 to 5 Years	$75,000 $250,000	Hydrogeological Assessment Groundwater Report New Well #3
	20.	Existing In-ground Reservoir Retrofits	Including valves and access ladder. Due to age (1949) the roof membrane may also require replacement in the 1 – 5 Year period.	Poor	Moderate	Retrofit	1 to 5 Years	$100,000	plus Potential Roof Membrane Replacement
	21.	Ottawa Street Reconstruction	Including 100 mm (4") dia. watermain replacement and flood protection	Poor	High	Reconstruction	1 to 5 Years	$1,305,000 $525,000	Road Watermain
	22.	Champlain Street Reconstruction	Including 100 mm (4") dia. watermain replacement	Poor	High	Reconstruction	1 to 5 Years	$224,025 $90,125	Road Watermain
	23.	Division Street Reconstruction	Including 100 mm (4") dia. watermain replacement	Poor	High	Reconstruction	1 to 5 Years	$474,150 $190,750	Road Watermain
	24.	Donald Street Reconstruction	Including 100 mm (4") dia. watermain replacement	Poor	High	Reconstruction	1 to 5 Years	$804,750 $323,750	Road Watermain
	25.	Resurface Main Street Connecting Link		Poor	Moderate	Resurface	1 to 5 Years	$865,000	
	26.	McKenzie Street/6th Street Intersection Outlet	New storm sewer or improved forcemain pumping along 6th Street to Mattawa River	Poor	Moderate	New Construction	1 to 5 Years	TBD	
	27.	Base and Surface Bissett Street from 1st Street to 3rd Street	As per original Road Needs Study	Fair	Moderate	Base and Surface	1 to 5 Years	$223,575	

		ASSET	DESCRIPTION	CONDITION	RISK	ACTION	RECOMMENDED TIME PERIOD OF IMPROVEMENT	PRELIMINARY ESTIMATED COST
1 TO 5 YEAR NEEDS (CONT' D)	28	Brook Street northerly from Hwy. 17 Valois to Brook Street Pumping Station	2019 Flood Damage	Fair	Moderate	Reconstruction	1 to 5 Years	$75,375 Road $34,500 Sanitary Funded by MDRAP
	29.	Update Infrastructure Studies A. Water Supply & Distribution System Infrastructure Study 1994 B. Sanitary Sewer Collection & Treatment System Infrastructure Study 1993 C. Road Needs Study Update 2010 D. Physical Review Storm Sewer Outlets		N/A Moderate Moderate Fair	Moderate Moderate Moderate Fair	Study Study Study Study	1 to 5 Years 1 to 5 Years 1 to 5 Years 1 to 5 Years	$100,000 $100,000 $100,000 $25,000
	30.	Repair Sink Holes Various Roads		Fair	Moderate	Repair	1 to 5 Years	Maintenance
	31.	Address Sewage Back-up (Donald St/ Lily St/James St/5th Street)		Poor	High		1 to 5 Years	$375,000
	32.	Brook Street Pumping Station Retrofit		Fair	Moderate	Retrofit	1 to 5 Years	$120,000
	33.	McKenzie Street Pumping Station Retrofit		Fair	Moderate	Retrofit	1 to 5 Years	$165,000
	34.	Pine Street/Gorman Street Pumping Station Retrofit		Fair	Moderate	Retrofit	1 to 5 Years	$50,000
	35.	12th Street/Bissett Street Outlet	Replace existing culvert		Low	Replacement	1 to 5 Years	$32,814 MDRAP Funded
	36.	CPR Box Culvert (Timmins Street)	Retrofit		Low	Retrofit	1 to 5 Years	$25,000 MDRAP Funded
	37.	Veterans Memorial Park Teleye Investigation	Teleye Investigation	Fair	Low	Technical Review	1 to 5 Years	$7,500
	38.	Sanitary Sewer Maintenance Pine Street/Hwy. 17 McConnell Intersection	Repair		Moderate	Repair	1 to 5 Years	TBD/MTO
	39.	Spot Improvements Water Street	Repair		Moderate	Repair	1 to 5 Years	$8,000 MDRAP Funded

TABLE 6 (CONT'D)

	ASSET		DESCRIPTION	CONDITION	RISK	ACTION	RECOMMENDED TIME PERIOD OF IMPROVEMENT	+PRELIMINARY ESTIMATED COST
6 TO 10 YEAR NEEDS	40.	Rankin Street Connect new 150 mm (6") dia. Watermain from 4th Street to 6th Street	Improve water distribution line to support reservoir feeder line operation	N/A	Moderate	New Construction	6 to 10 Years	$218,750
	41.	Dorion Road Reconstruction from Brook Street extension to South Town Limits at Bélanger Road	Including correction of horizontal alignment and deficient curve Bélanger Road	Fair	Moderate	Reconstruction	6 to 10 Years	$1,739,650
	42.	Reconstruct Pine Street from Mattawan Street to Hwy. 17 McConnell	To Collector Commercial Standard and sidewalk one side	Fair	Moderate	Reconstruction	6 to 10 Years	$1,050,300
	43.	Reconstruct Bangs Street from Pine Street to Main Street	To Collector Commercial Standard and sidewalk one side	Fair	Moderate	Reconstruction	6 to 10 Years	$437,625
	44.	Bissett Street Base and Surface from 3rd Street to 12th Street	Based on 2017 field review surface condition and structural adequacy are in 6 to 10 Year Period versus 1 to 5 Year Period	Fair	Moderate	Base and Surface	6 to 10 Years	$873,975
	45.	Reconstruction Donald Street/Town Line Road from Jodouin Road easterly 200 m	Including 100 mm (4") dia. Watermain Replacement	Poor	Moderate	Reconstruction	6 to 10 Years	$435,000 Road $175,000 Watermain
	46.	Complete Watermain Transmission Grid	Construct 250 mm (10") dia. watermain on Hurdman Street from Hwy 17 McConnell to Brook Street Extension		Moderate	Replacement and New Construction	6 to 10 Years	$206,200 Hwy. 17 to Mike Rodden Arena $463,950 Arena to Brook Street Extension + Allowance for CP Rail Yard and Rock Excavation TBD
	47.	Replace 100 mm (4") dia. on Hurdman Street between Mattawan Street and Hwy. 17 McConnell with 150 mm (6") dia.	Replace 100 mm (4") dia. watermains.		Moderate	Replacement	6 to 10 Years	$262,500
	48.	Improve Water Distribution System	Replace all remaining 100 mm (4") dia. watermains in conjunction with Road Works as funds become available		Moderate	Replacement	6 to 10 Years	$3,052,000

TABLE 6 (CONT'D)

	ASSET		DESCRIPTION	CONDITION	RISK	ACTION	RECOMMENDED TIME PERIOD OF IMPROVEMENT	PRELIMINARY ESTIMATED COST
10 YEARS +	50.	Replace 150 mm (6") dia. on Mattawan Street from Pine Street to Hurdman Street with 200 mm (8") dia.	To support Transmission Grid		Low	Reconstruction	10 Years +	$300,000
	51.	New Surface Water Treatment Plant	Replace existing groundwater supply		Low	New Construction	10 Years +	$15,000,000
	52.	Construct 200 mm (8") dia. P-Loop Dorion Road through future residential area to Brook Street at Hurdman Street ROW	To mitigate 250 mm (10") dia. "dead end watermain" on Dorion Road and service proposed residential development		Low	New Construction	10 Years +	$500,000
	53.	New Bridge	To replace existing Mauril Bélanger Bridge		Low	New Construction	10 Years +	$20,000,000

APPENDICES

APPENDIX 1

TOWN OF MATTAWA
STRATEGIC ASSET MANAGEMENT POLICY DOCUMENT

TOWN OF MATTAWA
ASSET MANAGEMENT PLAN
STRATEGIC ASSET MANAGEMENT POLICY DOCUMENT

MAY 8, 2019

PREPARED BY: **Jp2g CONSULTANTS INC.**
ENGINEERS · PLANNERS · PROJECT MANAGERS

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PREAMBLE

A COMPREHENSIVE AND UP-TO-DATE ASSET MANAGEMENT PLAN WILL PROVIDE A "BETTER UNDERSTANDING OF [MUNICIPAL] INFRASTRUCTURE NEEDS THROUGHOUT ONTARIO SO THAT THE PROVINCE, MUNICIPALITIES AND THE FEDERAL GOVERNMENT CAN WORK TOGETHER TO ADDRESS CHALLENGES POSED BY AGING INFRASTRUCTURE AND INCREASING RENEWAL PRESSURES."

Source: Ontario Ministry of Economic Development, Employment and Infrastructure
EBR Registry 013-0551
May 25, 2017

This Strategic Asset Management Policy Document will be endorsed by Resolution of Council prior to posting July 1, 2019

TOWN OF MATTAWA
STRATEGIC ASSET MANAGEMENT POLICY DOCUMENT

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FIGURES

1.0 BACKGROUND

The Asset Management Planning Process is becoming an increasingly important tool for Municipalities to use in their attempts to address the gap between Infrastructure NEEDS, their associated COST and the Municipality's ABILITY TO PAY for essential improvements to municipal infrastructure.

This **Strategic Asset Management Policy Document** recognizes and builds upon the work completed by Pahaphill & Associates, Chartered Accountants in their preparation of the original Town of Mattawa Asset Management Plan December 2013; which was prepared in accordance with the Ontario Ministry of Infrastructure "Building Together - Guide for Municipal Asset Management Plans".

This policy document sets out a framework for consistent, cost effective and sustainable Asset Management practices for the Town of Mattawa.

This Policy Document addresses **Core Assets** that provide essential public services; as well as **Other Assets** required to support municipal functions and will provide the strategic framework for a **Financial Plan** that will be required to sustain, improve or replace these assets.

Core Assets include

Roads (including storm sewers)
Bridges
Culverts
Water Supply and Distribution
Sanitary Sewage Collection and Treatment
Storm Water Management

Other Assets include

Municipal Buildings
Social Housing
Equipment
Parks
Solid Waste Disposal Facility
Snow Disposal Facility

Asset Management Plans are intended to work in conjunction with other municipal documents and processes (eg: Official Plans, Capital Budgets) to

1. Objectively identify critical infrastructure needs
2. Avoid/minimize "surprises" due to unforeseen infrastructure related events
3. Support long term planning

When completed comprehensively and updated regularly, an Asset Management Plan will provide a sound framework for use by decision makers and funding agencies to make decisions that will provide maximum cost benefit for infrastructure expenditures.

Production of this Strategic Policy Document is part of the Province's step-by-step approach to establishing, implementing and regulating an Asset Management Planning Process in Ontario.

The Infrastructure for Jobs and Prosperity Act RSO 2015 provides the authority for the Province to regulate Municipal Asset Management Plans.

The Province's schedule to implement Asset Management Planning across Ontario is summarized in Figure 1.

FIGURE 1
PROVINCIAL APPROACH AND SCHEDULE TO IMPLEMENT ASSET MANAGEMENT PLANNING ACROSS ONTARIO

ITEM		
1.	Province to pass implementing regulations for Asset Management	Fall 2017
2.	Municipality to have strategic asset management policy in place	July 1, 2019
3.	Phase 1 Asset Management Plan Core Assets (Roads, Bridges, Sewage, Water, Storm Water Management)	July 1, 2021
4.	Phase 2 Asset Management Plan Other Assets (Buildings, Equipment, Parks, Solid Waste, Landfill, Snow Disposal)	July 1, 2023
5.	Phase 3 Further details on all infrastructure assets c/w Financial Strategy (Financial strategy should be integrated throughout Items 2, 3 and 4)	July 1, 2024

Asset Management Plans are to be kept current. Annual updates can be simple progress/status reports. Major updates will be provided on a five (5) year cycle.

This Policy Document addresses Item 2 and Item 5 of the Province's step-by-step approach shown in Figure 1 and it will establish the strategic framework for the Town of Mattawa as it produces, implements and keeps updated its Asset Management Plan for Core Assets as per Item 3 and Other Assets as per Item 4.

2.0 POLICY SCOPE

This policy applies to all built and natural assets owned by the Town of Mattawa and will require assessment of ….

1. Existing Condition of Municipal infrastructure
2. Existing and future level of service requirements to ensure assets are maintained at a pre-defined level of service to address user expectations and technical requirements
3. Maintenance and operational needs
4. Compliance with Provincial requirements
5. Risk management
6. Future capital works
7. Financial planning to provide for sustainable, long term funding for expansion, rehabilitation, replacement or disposal of infrastructure
8. Establish asset management and improvement policies and procedures
9. Monitoring performance and remaining capacity of assets

3.0 GOAL AND OBJECTIVES

3.1 Goal

The goal of the Town of Mattawa Council is to "**promote and deliver sustainable service levels which satisfy the needs of ratepayers while maintaining a fiscally responsible level of budgetary use and debt structure.**"

Source: Town of Mattawa Asset Management Plan by Pahaphill & Associates
December 2013
Page 4, Introduction

The updated Town of Mattawa Asset Management Plan and its associated technical support documents will continue to be an important tool for Council to ensure infrastructure dollars are spent with maximum effect and cost benefit in order to:

- Protect Public Health and Safety
- Identify and Achieve Appropriate Levels of Service
- Extend Life Cycle of Existing Municipal Infrastructure Assets

3.2 Objectives

The Town of Mattawa Asset Management Plan Update will prioritize investments in Phase 1 Core Assets and Phase 2 Other Assets and will incorporate measurable results for the following objectives:

- Document the current state of local infrastructure including a plain language narrative; as well as provide back-up technical information.
- Establish and communicate realistic levels of service objectives/requirements based on technical standards and ratepayer/user expectations.
- Provide plain language narratives on Municipal Asset Management Strategy for Core Assets and Other Assets and describe how and why the strategy integrates with other municipal plans or policies.
- Develop a Financial Strategy to address the gap between current Town of Mattawa infrastructure needs c/w life cycle cost and the Municipality's ability to pay.
- Manage risk.
- Monitor/Follow-up/Update.

Details on the Town of Mattawa approach to achieving these objectives are provided in subsequent sections of this Strategic Policy Document.

Notwithstanding the Province's step-by-step approach and schedule outlined in Figure 1, it is the Town of Mattawa's submission that a **Financial Strategy should be developed concurrently from the earliest stages of the Asset Management Planning Process** and consequently a framework for Financial Strategy is incorporated as Section 7.0 of this Strategic Policy Document.

4.0 PROJECT TEAM ORGANIZATION

Asset Management Plans require information to be drawn from the entire spectrum of Municipal departments.

Successful Asset Management Plans will not result from the sole and independent efforts of either the Municipal CAO or Treasurer or Engineer or Planner or their designates.

ASSET MANAGEMENT PLANS REQUIRE INPUT FROM A WIDE RANGE OF EXPERTISE AND A TEAM EFFORT.

4.1 Asset Management Project Manager

It is important that a single point of contact, aka "Champion" of the Asset Management Planning Process be formally identified and empowered by Council to:

- Solicit support and input from all Municipal Departments as to the state of their respective infrastructure portfolios vis a vis level of service requirements, existing condition, historical cost data and projected infrastructure needs. The Town of Mattawa Departments include …

  Administration
  Accounting
  Public Works
  Parks and Recreation
  Environmental Compliance
  Fire Department

- Identify and collect data on level of service requirements based on

  International Standards
  Federal Standards and Regulations
  Provincial Standards and Regulations
  Agencies having Jurisdiction Standards, Regulations and Guidelines
  Technical Design Guidelines
  Best Practices

- In cooperation with Council or appropriate Committee of Council (eg: Planning and Environment Committee), obtain public input and "buy-in" as to constituents/public perceived requirements for level of service
- Coordinate and collect specialist Consultant reports as required and authorized by Council in support of the on-going Asset Management Planning Process

  Road Needs Study Update
  Water Supply and Distribution System Infrastructure Study/Update
  Sanitary Sewer Collection and Treatment Infrastructure Study/Update
  Bridge Condition Reviews
  Building Condition Assessments

- Synthesize all data within a concise and user friendly AMS report and data retrieval system
- Keep infrastructure, asset registry data and AMS report updated

It is essential for the Asset Management Project Manager to recognize that Asset Management Plans are only part of the "tool box" that Council has at its disposal when making infrastructure improvement decisions. **THE TOWN OF MATTAWA ASSET MANAGEMENT PLAN WILL PROVIDE AN OBJECTIVE, EVIDENCE BASED FOUNDATION FOR DECISION MAKING; BUT IT IS THE ELECTED OFFICIALS (EG: COUNCIL) THAT HAVE CARRIAGE AND RESPONSIBILITY FOR MAKING FINAL DECISIONS ON INFRASTRUCTURE IMPROVEMENTS.**

4.2 Chief Administrative Officer/Executive Lead

- The Town of Mattawa CAO will be Executive Lead for the Municipality with oversight responsibility to ensure the Asset Management Plan is produced and/or updated in a timely manner and that cooperation is advanced to the Asset Management Manager from all Department Heads.
- The CAO/Executive Lead will also work with the Asset Management Project Manager to ensure they are properly resourced to collect and archive data, establish inter-jurisdictional relationships with other Municipalities or Government agencies, monitor funding opportunities and government programs and, subject to Council's authorization, identify and commission Consultant services as required.
- The CAO/Executive Lead will provide the administrative connection between the Asset Management Manager and Council or Committees of Council.

4.3 Asset Management Working Group

- An Asset Management Working Group will be established consisting of all Town of Mattawa Municipal Department Heads, the Asset Management Project Manager and the CAO/Executive Lead.
- The Asset Management Working Group will meet on a monthly basis while the Asset Management Plan Update is being prepared starting in FY 2019/20 and on a quarterly basis thereafter or at the call of the CAO/Executive Lead.

The Working Group meetings will be chaired by the CAO with the Asset Management Project Manager having carriage of providing meeting logistics, agenda, minutes and follow-up action items.

4.4 Municipal Department Heads

A critical component of the Asset Management Project Team will be the active participation of Town of Mattawa Municipal Department Heads.

- It is the individual Department Heads who will be the portal to data on the infrastructure needs under their respective portfolios.

A proposed organizational chart for the Town of Mattawa Asset Management Project Team is provided in Figure 2.

A Responsibility Assignment Matrix (RAM) for each Project Team member is provided in Figure 3.

FIGURE 2
TOWN OF MATTAWA
ASSET MANAGEMENT PROJECT ORGANIZATION

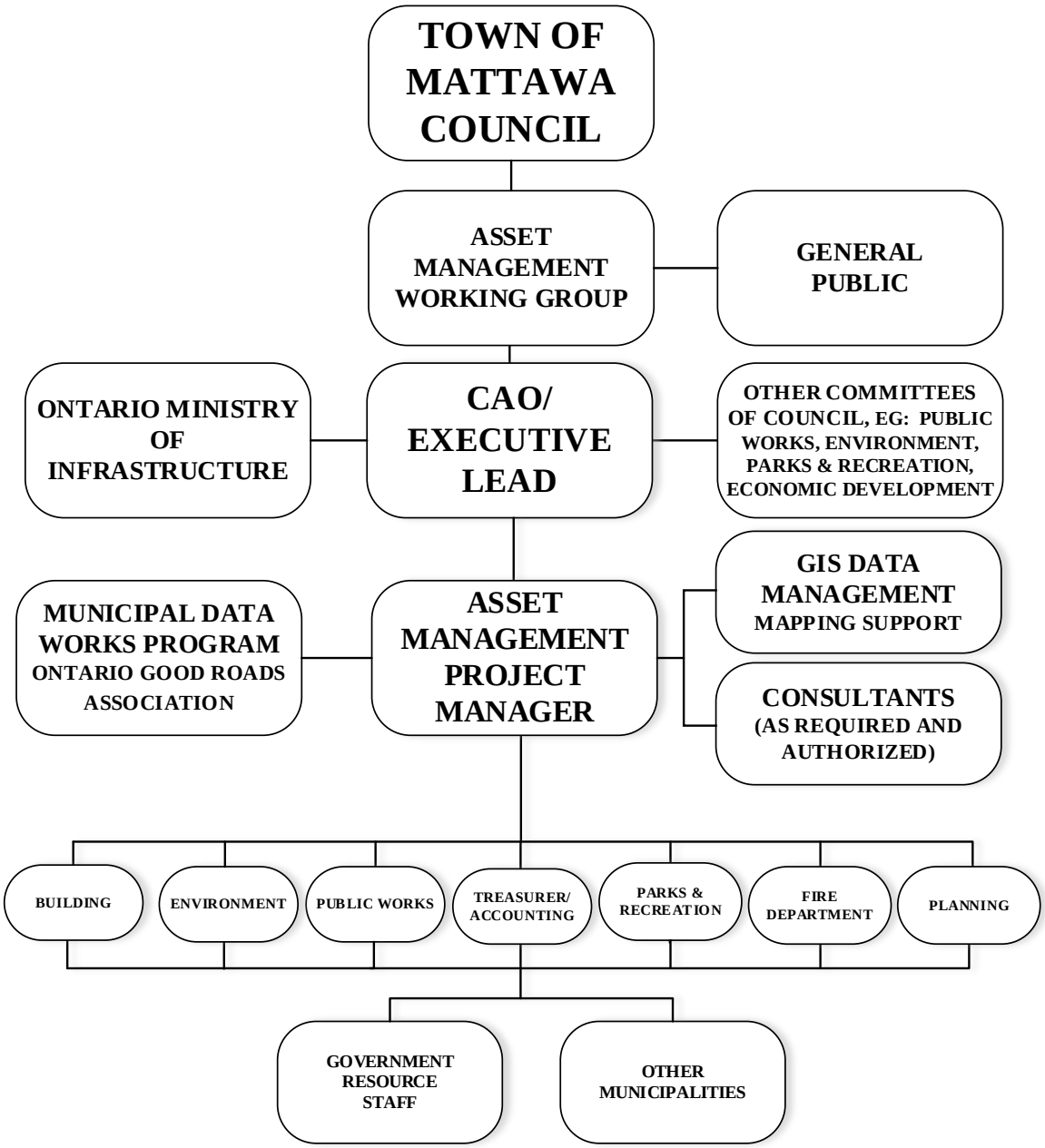


FIGURE 3
TOWN OF MATTAWA
ASSET MANAGEMENT PLAN
RESPONSIBILITY ASSIGNMENT MATRIX

COUNCIL	ASSET MANAGEMENT COMMITTEE/ WORKING GROUP	CAO/ EXECUTIVE LEAD	ASSET MANAGEMENT PROJECT MANAGER	MUNICIPAL DEPARTMENT HEADS	RESIDENTS/ STAKEHOLDERS
Final decision maker on Infrastructure Funding and Project Implementation Approve Asset Management Documents High level contact with Federal and Provincial Governments on Funding Programs and Initiatives Approve Annual Municipal Capital and Operating Budgets Approve financial strategy for implementing infrastructure improvements Authorize resources and on-going support for AMS and Updates Provide forum for public input	Review recommendations and provide CAO and Project Manager with guidance on Asset Management approach and potential infrastructure improvements Ensure compliance with Strategic Policy Document and other Municipal Policy Documents	Provide Town of Mattawa Senior Management level overview Support the Asset Management Planning Process Convene and chair Asset Management Working Group meetings Provide direction and support to Asset Management Project Manager Ensure fulsome participation by Municipal Department Heads in data collection and the AMS Planning process Ensure public input to the AMS planning process as appropriate Coordinate flow of submissions and requests to Budget and Finance Committee (and subsequently Council) Coordinate input from other Committees of Council	Advance AMS as per Strategic Policy Document Identify Gaps Obtain and collate data and background information Convene and prepare Minutes/Action Items/Follow-up for Asset Management Working Group Meetings Ensure compliance with Government Regulations Monitor funding opportunities and government requirements initiatives Prepare AMS document(s) Monitor Implementation Ensure AMS is kept updated Maintain Data Base and information retrieval system Establish and maintain Interjurisdictional relationships re: AMS process	Treasurer Administration Public Works Environmental Compliance Planning Building Department Fire Department Parks & Recreation Report to and obtain direction from the relevant Committees of Council on status, needs and costs of infrastructure improvements. Provide Asset Management Working Group/ Asset Management Project Manager with relevant data, costs and Consultant Reports	Participate in Public Information Forums Provide feedback related to expectations regarding levels of service Notify Town when service deficiencies are observed

5.0 LINKAGE TO OTHER MUNICIPAL DOCUMENTS

The Town of Mattawa Asset Management Plan (and subsequent updates) will be part of an integrated planning approach to address the gap between Infrastructure Needs/Associated Costs and Ability to Pay for infrastructure improvements.

The Town of Mattawa Asset Management Plan will promote "best practices" and link asset management planning with budgeting, operating, special studies and other municipal activities such as land use planning, environmental assessments and development initiatives.

Recommendations for improvements to core assets will include

1. Roads
2. Bridges
3. Culverts
4. Water Supply and Distribution
5. Sanitary Sewage Collection and Treatment
6. Storm Water Management

Recommendations for other assets needed to support Core Assets will include

7. Municipal Buildings
8. Equipment
9. Parks
10. Solid Waste Disposal Facility
11. Snow Disposal Sites

Recommendations and costs used in the Town of Mattawa Asset Management Plan will be based on separate Infrastructure Studies and Situation Analysis Reports where available.

5.1 Population

The population of the Town of Mattawa 2019 is approximately 2,000 people and is expected to remain relatively stable over the next 10 years. Recent engineering analysis on sanitary sewer and water distribution systems project a 20 year design population of 2,500.

5.2 Geographic Information System (GIS) Mapping

The Town of Mattawa currently has a GIS contractor for the storage of data and mapping of core assets such as

Water Supply and Distribution
Sanitary Sewage Collection and Treatment
Roads and Storm Sewers
Street Lighting

It is essential that the GIS mapping and base data be fully integrated into the Asset Management Planning process. GIS mapping and base data will be updated on an on-going basis as new data becomes available.

5.3 Asset Registry

The most direct linkage to other municipal documents will be the Town of Mattawa Asset Registry, which was initiated in 2008 and underwent a major revision in 2013 as part of the original Asset Management Study.

The Town of Mattawa Asset Registry will be updated annually.

5.4 Infrastructure Studies

The following infrastructure studies will provide the foundation of the Town of Mattawa Asset Management Planning process

Road Needs Study
Water Supply and Distribution System Infrastructure Study
Sanitary Sewage Collection and Treatment System Infrastructure Study
Building Condition Review
Landfill Site Design and Operations Report
Water Treatment MOECC Reports

These studies will be kept updated as appropriate to provide a reliable data base for forward planning.

5.5 Public Works Projects

Information from a wide variety of municipal studies and situation analysis reports for specific public works projects will also be integrated into the Asset Management Planning process in terms of establishing need, identifying work items and providing estimated cost of improvements. Examples of current (2018) Public Works initiatives include

Light Industrial Park Study
Ottawa Valley Rail Hub
Highway 17/CPR Trestle Removal
Water Treatment Plant and Reservoir Upgrade
Timmins Park Improvements Concept Plan
Mauril Bélanger Bridge Concept Plan
Mattawa Museum Upgrades
Street Light Analysis
Age Friendly Study

Future initiatives may include

Senior Housing
Social Housing
Acceptable Affordable Housing

Town of Mattawa Asset Management Plans will identify and prioritize capital projects required to address infrastructure needs.

Benchmark costs for Asset Management Planning purposes will be developed for purposes of establishing Town of Mattawa improvement costs by monitoring and extracting unit prices from tendered projects (eg: Water Treatment Plant Reservoir Upgrades, Mike Rodden Arena Retrofits, Industrial Park Water and Sewer Installation, Long Term Care Facility Sanitary Sewer Improvements).

This information will be supplemented by using Hanscomb's Cost Data for Canadian Construction Industry Manual.

5.6 Municipal Planning Documents

The information generated by a comprehensive, up-to-date Town of Mattawa Asset Management Plan will support other municipal planning documents such as

Official Plan
Comprehensive Zoning By-law
Economic Development Plans and Initiatives (eg: Industrial Park, OVR Rail Hub, Voyageur Multi-trail System, Voyageur Cycle Route)
Main Street Revitalization
Mattawa Active Living

The needs identified within the Asset Management Study will also be directly relevant on an on-going basis to

Site Specific Official Plan and/or Zoning Amendments
Environmental Assessments/Audits
Development Agreements
Development Charges/Imposts

A comprehensive record of municipal infrastructure needs incorporated in an Asset Management Plan will provide a sound basis for legitimately requiring developers to participate in costs for addressing downstream impacts of their proposed undertaking.

5.7 Annual Capital Budget and Five (5) Year Forecasts

Most importantly the planning process and implementation of the Asset Management Plan must be linked to the Municipality's Annual Capital Budget and Five (5) Year Forecasts. However, as previously noted in Section 4.1, it is to be clearly understood by all concerned that it is Council who makes the final decision as to whether a specific infrastructure project is approved, budgeted and scheduled for implementation.

The Asset Management Plan is, however, an important "tool" in Council's "tool box" for their decision-making process.

5.8 Long Term 10 Year and 20 Year Forecast

Typically, specific projects are identified in a 10 Year Capital Forecast document in 1 to 5 Year and 6 to 10 Year increments. Allocations for renewal are based on condition-based needs assessments, estimates and projected available funding.

Forecast of infrastructure renewal needs beyond 10 years are calculated annually based on current replacement value, funded and un-funded infrastructure needs, and supplemented with life-cycle estimates. These forecasts are usually done on individual infrastructure groups. Although life cycle forecasts are not used to set rates, they provide Council with insight into the degree of infrastructure renewal activity that needs to occur beyond the 10year capital project plan adopted by Council, thereby providing a perspective that is used to identify the effect of carrying a backlog of renewal into the future.

This information is a primary input to setting rates to fund current capital renewal along with building reserves that will address immediate and longer term renewal activities and provide a "financial net" for unexpected expenses.

At this time Mattawa feels that the 10 to 20 year spending timeframe is very difficult to predict with any sort of certainty; due to the size of the municipality. Accordingly, for the purposes of this plan, the most reasonable assumption is that spending in the 10 to 20 year time frame will closely mirror that of the 1 to 10 year plan; however spread across different assets.

Source: Town of Matttawa Asset Management Plan December 2013
by Pahapill & Associates Chartered Accountants, Page 12

5.9 Provincial Plans and Programs

The Town of Mattawa Asset Management Plan Update and the recommendations therein will comply with Provincial Policy and Programs such as

Provincial Policy Statement 2014
Ministry of Environment Guidelines
- Water
- Sanitary
- Solid Waste
- Noise
- Air Quality

Accessibility Act
Building Code
Clean Water and Wastewater Fund (CWWF) Program
Infrastructure Top-up Program
Broadband Upgrading
Investing in Canada Infrastructure Program

6.0 LEVELS OF SERVICE

One of the first steps in the Town of Mattawa Asset Management Plan Update process will be to identify a required level of service for various municipal infrastructure. It will be necessary to address two levels of service, being

- Technical Level of Service as established by Technical Guidelines, Engineering Standards and Government agencies having jurisdiction
- Ratepayer/User Level of Service which recognizes and identifies constituent expectations

The challenge will be to either accommodate both levels of service in a cost effective manner or to clearly articulate which level of service has been selected and why.

Level of service selected will have a major impact on the extent and cost of infrastructure improvements.

The Town of Mattawa has a commitment to its ratepayers to uphold a certain level of service in relation to municipal infrastructure which will be defined in subsequent Core Asset and Non-Core Asset Management Plans.

7.0 GUIDING PRINCIPLES

The Town of Mattawa Asset Management Plan will incorporate guiding principles in accordance with the Infrastructure for Jobs and Prosperity Act 2015, Section 3 as shown in Figure 4 hereto.

FIGURE 4
INFRASTRUCTURE FOR JOBS AND PROSPERITY ACT, 2015

INFRASTRUCTURE PLANNING PRINCIPLES

3 The Government, and every broader public sector entity, shall consider the following principles when making decisions respecting infrastructure:

1. Infrastructure planning and investment should take a long-term view, and decision-makers should take into account the needs of Ontarians by being mindful of, among other things, demographic and economic trends in Ontario.
2. Infrastructure planning and investment should take into account any applicable budgets or fiscal plans, such as fiscal plans released under the *Fiscal Transparency and Accountability Act, 2004* and budgets adopted under Part VII of the *Municipal Act, 2001* or Part VII of the *City of Toronto Act, 2006*.
3. Infrastructure priorities should be clearly identified in order to better inform investment decisions respecting infrastructure.
4. Infrastructure planning and investment should ensure the continued provision of core public services, such as health care and education.
5. Infrastructure planning and investment should promote economic competitiveness, productivity, job creation and training opportunities.
6. Infrastructure planning and investment should ensure that the health and safety of workers involved in the construction and maintenance of infrastructure assets is protected.
7. Infrastructure planning and investment should foster innovation by creating opportunities to make use of innovative technologies, services and practices, particularly where doing so would utilize technology, techniques and practices developed in Ontario.
8. Infrastructure planning and investment should be evidence based and transparent, and, subject to any restrictions or prohibitions under an Act or otherwise by law on the collection, use or disclosure of information,
    i. investment decisions respecting infrastructure should be made on the basis of information that is either publicly available or is made available to the public, and
    ii. information with implications for infrastructure planning should be shared between the Government and broader public sector entities, and should factor into investment decisions respecting infrastructure.
9. Where provincial or municipal plans or strategies have been established in Ontario, under an Act or otherwise, but do not bind or apply to the Government or the broader public sector entity, as the case may be, the Government or broader public sector entity should nevertheless be mindful of those plans and strategies and make investment decisions respecting infrastructure that support them, to the extent that they are relevant. Examples of plans and strategies to which this paragraph may apply include,
    i. policy statements issued under section 3 of the *Planning Act*, and provincial plans as defined by that Act,
    ii. municipal water sustainability plans submitted under the *Water Opportunities Act, 2010*,
    iii. the Lake Simcoe Protection Plan established under the *Lake Simcoe Protection Act, 2008*, and
    iv. transportation plans adopted under the *Metrolinx Act, 2006*.
10. Infrastructure planning and investment should promote accessibility for persons with disabilities.
11. Infrastructure planning and investment should minimize the impact of infrastructure on the environment and respect and help maintain ecological and biological diversity, and infrastructure should be designed to be resilient to the effects of climate change.
12. Infrastructure planning and investment should endeavour to make use of acceptable recycled aggregates.
13. Infrastructure planning and investment should promote community benefits, being the supplementary social and economic benefits arising from an infrastructure project that are intended to improve the well-being of a community affected by the project, such as local job creation and training opportunities (including for apprentices, within the meaning of section 9), improvement of public space within the community, and any specific benefits identified by the community.
14. Any other principles that may be prescribed for the Government or the broader public sector entity, as the case may be.

In addition to the prescribed principles as per Figure 4, the Town of Mattawa Asset Management Plan will also include the following additional principles:

15. The recommendation for infrastructure improvements and associated costs will be based on objective, evidence based information and data.
16. Data including infrastructure condition, identified needs and benchmark costs will be kept as current as possible.
17. The Asset Management Plan will be integrated with other Municipal Financial and Planning documents and studies.
18. The Asset Management Plan will include a commitment to consider the actions that may be required to address the risks and vulnerabilities that may be caused by climate change to the municipality's infrastructure assets, including to: operations requirements (eg: increased maintenance schedules); levels of service (eg: raising or lowering levels of service); and life cycle management.
19. The Asset Management Plan will also include:
    - mitigation approaches to climate change, such as greenhouse gas emissions (GHG) reduction goals and targets
    - disaster planning and any required contingency funding
    - Access to broadband
20. A process to ensure that asset management planning would be aligned with Ontario's land use planning framework, including any relevant policy statements issued under the Planning Act and municipal official plans.
21. A discussion of capitalization thresholds will determine which assets are to be included in the asset management plan and how this compares to the municipality's Tangible Capital Asset Policy [if one is in place].
22. A commitment to coordinate planning between interrelated infrastructure assets with separate ownership structures by pursuing collaboration opportunities with neighbouring municipalities.
23. Identification of who would be responsible for asset management planning, including an executive lead and how council will be involved; as shown in Figure 2 hereto.
24. A commitment to provide opportunities for municipal residents and other interested parties with the opportunity to provide input into asset management planning.
25. The Asset Management Plan will incorporate a commitment to Business Retention and Community Development.

8.0 ACTION PLAN

As per Section 3.0 herein, the Town of Mattawa Asset Management Plan Process will include five (5) steps to achieve desired objectives

Step 1 Update and document condition of Infrastructure Assets
Step 2 Establish realistic level of service requirements/objectives
Step 3 Provide narrative on Municipality's Asset Management Strategy and Infrastructure Improvement Priorities for Core Assets and Other Assets
Step 4 Develop a Financial Strategy to address infrastructure needs and gaps (if any)
Step 5 Follow-up by obtaining feedback during AMS Updates

Action Plan/Strategies to achieve these objectives will be built on three pillars, namely

- Capital Works Strategy
- Maintenance Strategy
- Operating Strategy

These strategies will be developed through close collaboration with the department heads responsible for various infrastructure assets.

8.1 Update and Document Condition of Infrastructure Assets

As previously discussed in Section 5.0 existing, and in some future cases, specifically commissioned infrastructure studies will form the core of objective identification, costing and documenting (including mapping) of any infrastructure needs to be included in the Town of Mattawa Asset Management Plan.

Municipal infrastructure assets will be summarized by asset class, including type and quantity, total replacement value and average age. The inventory analysis will also discuss the Municipality's approach to assessing asset condition using industry-accepted engineering practices and summarize the information available on the condition of the assets.

A reporting system will be put in place for all Municipal Departments which will record incidents and data (including costs) related to both core and non-core assets on an on-going basis for reference by the Asset Management Project Manager.

Specific field reviews will be undertaken "as appropriate" by the Asset Management Project Manager in conjunction with Municipal Department Heads or Consultants to review and confirm identified needs or recommended approach to improvements. The purpose of these site specific field reviews will be to ensure all alternatives have been considered, not just capital cost replacements.

The quality of the information will require the willing participation of the Department Heads and the efficacy of the proposed Asset Management Working Group.

An effective, user friendly data storage and retrieval system for infrastructure condition data will be essential

The Town of Mattawa will consider subscribing to the Ontario Good Roads Association Municipal Data Works program (MDW) and joining the Ontario Water Works Association (OWWA) as well as the Asset Management Ontario Association (AMONTario).

The Town of Mattawa will also continue to monitor Infrastructure Ontario's website postings and participate in their workshops for Asset Management on a "go forward" basis.

8.2 Establish a Realistic Level of Service

A plain language narrative of the current levels of service for each category of infrastructure asset will be provided. This will include current levels of service according to the information defined in the two columns for Proposed Levels of Service

- the technical levels of service
- the community/user levels of service

Establishing (and communicating) a realistic level of service for various infrastructure assets is a fundamental step in the Asset Management Planning Process and one that requires Council input and concurrence before specific recommendations are formalized.

It would also be prudent to engage the public at an early date in an initiative that introduces the concept and benefits of an Asset Management Plan and solicits constituency input on community/ user (eg: ratepayer) objectives for various infrastructure components.

Public input will be gathered through facilitated workshops or committee meetings and/or Council presentations.

It will also be important to identify critical projects needed to address the following:

Public Health and Safety Issues
Prevent Catastrophic Failure of Core Infrastructure

8.3 Provide a Narrative

It will be important for the Town of Mattawa Asset Management Plan Update to include a plain language narrative on

- ▷ Benefits of an Asset Management Plan
- ▷ Basis of Establishing Levels of Service for various infrastructure components
- ▷ Approach to establishing priorities

It will also be important to recognize in any narrative that the Town of Mattawa is a service center for surrounding municipalities which should be acknowledged and incorporated in any Financial Strategy.

8.4 Financial Strategy

A financial strategy for addressing infrastructure needs and gap in the Town's ability to pay; as well as alternate sources of revenue will be developed as an initial step in the Asset Management Planning Process.

The financial strategy will include identification of initial capital costs, life cycle costs and extraordinary operating costs.

The Town of Mattawa Asset Management Plan will include estimated costs to sustain current levels of service.

This analysis will include an estimate of capital expenditures (eg: total cost of maintenance, renewal, rehabilitation, replacement, disposal, upgrades, new construction) needed each year; as well as any significant operating costs, including energy costs, for the ten (10) years following the year that the current levels of service are established in order to maintain current levels of service over the long term.

The approach to developing the estimate would be documented and based on the lifecycle management activities expected. Assumptions regarding anticipated future changes in population and economic activity will also be included.

Asset Management Planning recommendations and priorities will be fully integrated into Town of Mattawa Finance Committee discussion on annual budgets as well as Capital Planning Programs.

8.5 Follow-up

The Town of Mattawa Council and Administration are committed to ensuring continuous improvement and best practices for Asset Management Planning. On-going monitoring will include regular review of performance measures such as maintenance efforts and energy use.

In this regard the Asset Management Project Manager will be tasked with responsibility of monitoring and maintaining an up to date data base and ensuring the AMS is updated on an annual basis.

The Town of Mattawa will provide an update on status of implementation annually.

This Strategic Asset Management Policy Document will also be subject to a comprehensive review every five (5) years.

9.0 FINANCIAL STRATEGY

As noted in the Town of Mattawa Asset Management Plan 2013 and detailed above, the Town of Mattawa's on-going Capital Asset Management Strategy will include the following "cost centers"

1. On-going actions regarding capital asset management
2. Planned asset refurbishment
3. Maintenance
4. Replacement
5. Anticipated funding requirements

The Town of Mattawa Strategic Policy Document recognizes and will incorporate additional components inherent in any financial plan, such as

6. Cost avoidance (eg: demolition or abandonment)
7. Expenditures required to extend operational life of existing infrastructure
8. Identification of funding shortfalls for critical needs
9. Monitoring potential non-traditional funding sources (eg: P3 or Corporate contributions)
10. Use by neighboring Municipalities
11. Updated special operational costs or risk management contingencies

It is anticipated that the Asset Management Plan (2018) will continue to identify funding shortfalls and that these shortfalls (Funding Gap) will be addressed in whole or in part through

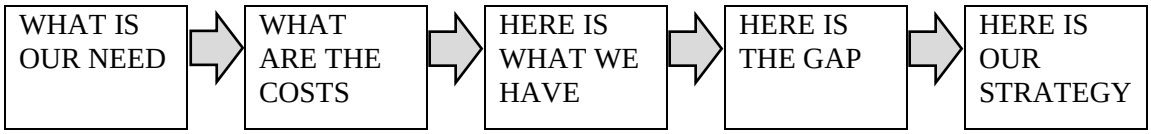
1. Municipal Taxation
2. Municipal Debt/Debentures
3. Construction Financing Agreements
4. Gas Tax Funds
5. Provincial Grants or Subsidies
6. Federal Grants or Subsidies
7. Non-Traditional Sources (P3, Corporate Donations, Service Clubs, Bequests)
8. Disposition of Municipal Assets (Land Sale/Joint Ventures)
9. Municipal Forces (Day Labour)
10. Development Charges/Imposts
11. "Local Improvement" Charges
12. User Fees
13. Financial support from neighboring Municipalities

The Town of Mattawa Financial Plan will also consider the Town's underlying economic condition including

Property Assessment
Median Household Income
Capital Threshold
Debenture Level
Population Growth

The basic components of the Financial Strategy are summarized on Figure 5.

FIGURE 5
TOWN OF MATTAWA
ASSET MANAGEMENT PLAN
COMPONENTS OF A FINANCIAL STRATEGY



The Town of Mattawa Asset Management Plan will include a financial strategy that contains the following items

- Estimated capital expenditure forecasts (eg: total cost of maintenance, renewal, rehabilitation, replacement, disposal, new construction and capacity upgrade activities) and significant operating costs, including energy costs, related to life cycle activities
- Revenue dedicated to capital financing
- Estimated capital reserve contributions and withdrawals; and
- Estimated debt service payments

The Asset Management Plan will also outline key assumptions made to develop the financial strategy and other alternative funding options that were considered (eg: increasing debt, property taxes, user fees, etc.).

The strategy will focus on

- Traditional sources of funding for improvement or replacement of municipal infrastructure through Municipal, Provincial and Federal programs

but, as detailed in Section 6, it will also include specific site review and associated analysis to identify

- potential retrofits versus replacement; which would extend the operational life of the existing infrastructure
- operational changes or investment which would increase the efficacy of the infrastructure component and/or mitigate the need for major capital work
- cost avoidance (eg: abandonment or "button up")
- disposition of assets
- alternate sources of revenue

The financial plan associated with AMP will include an analysis of the Municipality's ability to pay and the risks associated with not undertaking the required works in a timely manner due to funding shortfalls.

The Town of Mattawa Asset Management Financial Plan will document a life cycle management strategy that will outline the life cycle management activities the Municipality will undertake to maintain the proposed level of service and manage risk (eg: climate change impacts) with consideration to the full life cycle costs of the assets, including energy costs. Life cycle activities will be based on options examined by the Municipality to reduce the overall life cycle costs including through green infrastructure and non-infrastructure solutions such as demand management and consideration measures.

The Asset Management Plan will also contain a summary of the life cycle activities that would be undertaken for all assets for the ten (10) year period aligned with the proposed levels of service section of the Asset Management Plan. Assumptions regarding anticipated future changes in population and economic activity will be included.

10.0 CONCLUSION/POLICY OUTCOME

It is the intention of Council that this Strategic Policy Document will provide the Road Map for the implementation of an Infrastructure Management Asset Planning Process that will "**enable Mattawa to cost effectively provide services at acceptable levels of risk, reliability and confidence to their constituent public that receive these services**".

Source: Town of Mattawa Asset Management Plan
By Pahaphill & Associates December 2013, Page 3

APPENDIX 2

TOWN OF MATTAWA
CAPITAL ASSET CONTINUITY SCHEDULE
31-DEC-2021

The Corporation of the Town of Mattawa
Capital Asset Continuity Schedule
31-Dec-2021

Land	Ref	Class	Date	Original cost	Addition	Disposal	Total
Description							
PY Balance - $217,111.71	PY	GG	31-Dec-18	122,354.59	-	15,800.00	106,554.59
PY Balance - $217,111.71	PY	PS	31-Dec-18	7,762.82			7,762.82
PY Balance - $217,111.71	PY	TS	31-Dec-18	1,237.19			1,237.19
PY Balance - $217,111.71	PY	WD	31-Dec-18	1,929.93			1,929.93
PY Balance - $217,111.71	PY	P	31-Dec-18	4,230.00			4,230.00
PY Balance - $217,111.71	PY	RF	31-Dec-18	79,597.50			79,597.50
Algonquin Nursing Home (Old Building) PY Additions	PY	GG	31-Dec-19	14,177.94			14,177.94
Algonquin Nursing Home - Land - PY Additions	PY	GG	31-Dec-19	62,500.00			62,500.00
Algonquin Nursing Home (Old Building) PY Additions	PY	GG	31-Dec-19	177,500.00			177,500.00
PN 49103-0609 @ 200 Wood Street	PY	GG	31-Dec-20	23,094.54			23,094.54
PN 49102-0037 @ 333 Main Street	PY	GG	31-Dec-20	207,410.34			207,410.34
					-	-	-
				701,794.85	**-**	**15,800.00**	**685,994.85**

Land Improvements	Ref	Class	Date	Original cost	Addition	Disposal	Total	Rate	Ref	Accumulated Amortization					2020
Description										Beg. Acc. Amort	Adj.	Amortization	End. Acc. Amort	Net	Net
Bridge Dedication Area - PY Balance	PY	GG	31-Dec-18	12,841.82	-	-	12,841.82	5%		2,889.23		642.00	3,531.23	9,310.59	9,952.59
Side Walks - PY Balance	PY	TS	31-Dec-18	1,124,414.47	-	-	1,124,414.47	5%		776,594.55		56,221.00	832,815.55	291,598.92	347,819.92
LED Lighting - PY Balance	PY	TS	31-Dec-18	184,029.39	-	-	184,029.39	5%		42,537.91		9,201.00	51,738.91	132,290.48	141,491.48
Capital Work - PY Balance	PY	WDI	31-Dec-18	89,982.33	-	-	89,982.33	5%		28,715.76		4,499.00	33,214.76	56,767.57	61,266.57
Waterfront Facilities (Docks, etc…) - PY Balance	PY	P	31-Dec-18	810,146.09	-	-	810,146.09	5%		810,146.09		-	810,146.09	-	-
New Dock - PY Balance	PY	P	31-Dec-18	110,737.70	-		110,737.70	5%		58,137.56		5,537.00	63,674.56	47,063.14	52,600.14
Playground Equipment - PY Balance	PY	P	31-Dec-18	30,452.20	-	-	30,452.20	5%		9,897.75		1,523.00	11,420.75	19,031.45	20,554.45
Splash Pad - PY Balance	PY	RF	31-Dec-18	278,816.22	-	-	278,816.22	5%		43,000.60		13,941.00	56,941.60	221,874.62	235,815.62
Information Centre Landscaping - PY Balance	PY	RF	31-Dec-18	82,938.44	-	-	82,938.44	5%		82,938.44		-	82,938.44	-	-
Big Joe Statue - PY Balance	PY	RF	31-Dec-18	59,008.96	-	-	59,008.96	5%		10,325.67		2,950.00	13,275.67	45,733.29	48,683.29
Bridge Dedication Work-in-Progress finished in PY	PY	GG	31-Dec-19	43,904.04		-	43,904.04	5%		3,293.00		2,195.00	5,488.00	38,416.04	40,611.04
Turcotte Park Road Sidewalk	GL	TS	31-Dec-21		310,156.39	-	310,156.39	5%		-		7,754.00	7,754.00	302,402.39	-
Culvert Replacement on 7th Street	GL	TS	31-Dec-21		15,788.31		15,788.31	5%		-		395.00	395.00	15,393.31	-
Replacement of Marina Docks	GL	P	31-Dec-21		81,404.25		81,404.25	5%		-		2,035.00	2,035.00	79,369.25	-
Trucotte Park Road Sidewalk project	WIP	TS	31-Dec-21		17,592.75		17,592.75	5%		-		440.00	440.00	17,152.75	-
Trucotte Park Road Drainage	WIP	TS	31-Dec-21		10,267.14		10,267.14	5%		-		257.00	257.00	10,010.14	-
							-			-		-	-	-	-
				2,827,271.66	**435,208.84**	**-**	**3,262,480.50**			**1,868,476.56**	**-**	**107,590.00**	**1,976,066.56**	**1,286,413.94**	**958,795.10**

Buildings	Ref	Class	Date	Original cost	Addition	Disposal	Total		Ref	Accumulated Amortization					2020
Description										Beg. Acc. Amort	Adj.	Amortization	End. Acc. Amort	Net	Net
Town Hall - PY Balance	PY	GG	31-Dec-18	523,341.00	-	-	523,341.00	2%	PY	250,235.80		10,467.00	260,702.80	262,638.20	273,105.20
Fire House - PY Balance	PY	PS	31-Dec-18	76,171.59	-	-	76,171.59	3%	PY	76,171.59			76,171.59	-	-
Public Works Building - PY Balance	PY	TS	31-Dec-18	35,860.06		-	35,860.06	3%	PY	13,553.61		897.00	14,450.61	21,409.45	22,306.45
Pumphouses and Plant - PY Balance	PY	WC	31-Dec-18	596,052.31	-	-	596,052.31	2%	PY	306,848.72		11,921.00	318,769.72	277,282.59	289,203.59
Water Plant Building - PY Balance	PY	WD	31-Dec-18	34,420.39	-	-	34,420.39	3%	PY	9,687.73		861.00	10,548.73	23,871.66	24,732.66
Arena - PY Balance	PY	RF	31-Dec-18	1,524,661.65		-	1,524,661.65	2%	PY	1,029,521.90		30,493.00	1,060,014.90	464,646.75	495,139.75
Info Centre - PY Balance	PY	RF	31-Dec-18	383,350.23	-	-	383,350.23	2%	PY	215,611.13		7,667.00	223,278.13	160,072.10	167,739.10
New Screening Plan Building - PY Addition	PY	GG	31-Dec-19	17,611.09		-	17,611.09	2%	GL	528.00		352.00	880.00	16,731.09	17,083.09
Building - PY Addition	PY	RF	31-Dec-19	7,555.68		-	7,555.68	2%	GL	227.00		151.00	378.00	7,177.68	7,328.68
Emergency Lights - Museum	CY	RF	31-Dec-20	5,800.32			5,800.32	2%	GL	58.00		116.00	174.00	5,626.32	5,742.32
Town Hall - accessible door	CY	GG	31-Dec-20	11,348.28			11,348.28	2%	GL	113.00		227.00	340.00	11,008.28	11,235.28
Arena - accessible doors	CY	RF	31-Dec-20	22,610.00			22,610.00	2%	GL	226.00		452.00	678.00	21,932.00	22,384.00
Timmins Pavilion - roof	CY	RF	31-Dec-20	4,228.68			4,228.68	2%	GL	42.00		85.00	127.00	4,101.68	4,186.68
Furnace (Fire Hall)	GL	PS	31-Dec-21		4,977.50		4,977.50	2%	GL	-		50.00	50.00	4,927.50	-
Restoration of information center	WIP	RF	31-Dec-21		7,500.00		7,500.00	2%	GL	-		75.00	75.00	7,425.00	-
Restoration of information center	GL	RF	31-Dec-21		80,000.00		80,000.00	2%	GL	-		800.00	800.00	79,200.00	-
				3,243,011.28	**92,477.50**	**-**	**3,335,488.78**			**1,902,824.48**	**-**	**64,614.00**	**1,967,438.48**	**1,368,050.30**	**1,340,186.80**

Machinery, Equipment and Furniture	Ref	Class	Date	Original cost	Addition	Disposal	Total		Ref	Accumulated Amortization					2020
Description										Beg. Acc. Amort	Adj.	Amortization	End. Acc. Amort	Net	Net
PY Balance - Landfill Closure Assets	PY	ES	31-Dec-18	754,000.00	-	-	754,000.00	5%	PY	754,000.00	-	-	754,000.00	-	-
				754,000.00			754,000.00			**754,000.00**		**-**	**754,000.00**	**-**	**-**

Description - Equipment															2020
Mattawa Voyageur Days Equipment - PY Balance	PY	RF	31-Dec-18	221,744.61	-	-	221,744.61	5%	PY	169,004.51		11,087.00	180,091.51	41,653.10	52,740.10
General Gov't Generator - PY Balance	PY	GG	31-Dec-18	3,556.51	-	-	3,556.51	5%	PY	444.91		178.00	622.91	2,933.60	3,111.60
Jaws of Life - PY Balance	PY	PS	31-Dec-18	5,383.51	-	-	5,383.51	10%	PY	5,383.51		-	5,383.51	-	-
Air Compressor - PY Balance	PY	PS	31-Dec-18	12,962.20	-	-	12,962.20	10%	PY	11,662.18		1,296.00	12,958.18	4.02	1,300.02
Breathing Aparatus - PY Balance	PY	PS	31-Dec-18	39,501.68	-	-	39,501.68	10%	PY	37,526.27		1,975.41	39,501.68	-	1,975.41
Generator - PY Balance	PY	TS	31-Dec-18	4,217.27	-	-	4,217.27	5%	PY	4,217.27		-	4,217.27	-	-
Covered Trailer - PY Balance	PY	TS	31-Dec-18	4,300.00	-	-	4,300.00	5%	PY	3,117.50		215.00	3,332.50	967.50	1,182.50
Back Hoe - PY Balance	PY	TS	31-Dec-18	84,834.29	-	-	84,834.29	5%	PY	78,216.63		4,242.00	82,458.63	2,375.66	6,617.66
Champion Grader - PY Balance	PY	TS	31-Dec-18	114,320.69	-	-	114,320.69	5%	PY	114,320.69		-	114,320.69	-	-
Air Compressor - PY Balance	PY	TS	31-Dec-18	13,899.82	-	-	13,899.82	10%	PY	13,899.82		-	13,899.82	-	-
Unknown - PY Balance	PY	TS	31-Dec-18	3,866.88	-	-	3,866.88	10%	PY	2,900.79		387.00	3,287.79	579.09	966.09
Unknown - PY Balance	PY	TS	31-Dec-18	8,242.56	-	-	8,242.56	10%	PY	6,181.43		824.00	7,005.43	1,237.13	2,061.13
Unknown - PY Balance	PY	TS	31-Dec-18	6,218.26	-	-	6,218.26	10%	PY	4,664.06		622.00	5,286.06	932.20	1,554.20
Town Clock - PY Balance	PY	TS	31-Dec-18	12,216.30	-	-	12,216.30	10%	PY	4,276.45		1,222.00	5,498.45	6,717.85	7,939.85
New Elgin Street Sweeper 2019 - PY Balance	PY	TS	31-Dec-18	73,502.17	-	-	73,502.17	5%	PY	12,240.55		3,675.00	15,915.55	57,586.62	61,261.62
MT5 Trackless - PY Balance	PY	TS	31-Dec-18	99,719.76	-	-	99,719.76	5%	PY	12,464.99		4,986.00	17,450.99	82,268.77	87,254.77
Sewage Equipment - PY Balance	PY	WC	31-Dec-18	1,497,974.68	-	-	1,497,974.68	5%	PY	1,497,974.68		-	1,497,974.68	-	-
Confined Space Equipment - PY Balance	PY	WC	31-Dec-18	7,943.04	-	-	7,943.04	5%	PY	3,772.63		397.00	4,169.63	3,773.41	4,170.41
Generator - PY Balance	PY	WC	31-Dec-18	47,055.86	-	-	47,055.86	5%	PY	5,882.40	-	2,353.00	8,235.40	38,820.46	41,173.46
Flow Meter & check valve - PY Balance	PY	WC	31-Dec-18	14,517.08	-	-	14,517.08	5%	PY	1,814.93		726.00	2,540.93	11,976.15	12,702.15
Pumphouse / Plant Blake Station - PY Balance	PY	WC	31-Dec-18	76,320.05	-	-	76,320.05	5%	PY	9,540.00		3,816.00	13,356.00	62,964.05	66,780.05
Water Treatment Equipment - PY Balance	PY	WD	31-Dec-18	551,482.07	-	-	551,482.07	5%	PY	425,420.52		27,574.00	452,994.52	98,487.55	126,061.55
Pump - PY Balance	PY	WD	31-Dec-18	119,793.42	-	-	119,793.42	5%	PY	34,774.50		5,990.00	40,764.50	79,028.92	85,018.92
Stroma Water System - PY Balance	PY	WD	31-Dec-18	40,559.07	-	-	40,559.07	5%	PY	19,265.63		2,028.00	21,293.63	19,265.44	21,293.44
Digital Camera - PY Balance	PY	WD	31-Dec-18	9,021.88	-	-	9,021.88	20%	PY	9,021.88		-	9,021.88	-	-
GIS Software Water - PY Balance	PY	WD	31-Dec-18	5,687.14	-	-	5,687.14	20%	PY	3,980.14		1,137.00	5,117.14	570.00	1,707.00
Bear Wise Containers - PY Balance	PY	WDI	31-Dec-18	13,301.51	-	-	13,301.51	5%	PY	7,648.26		665.00	8,313.26	4,988.25	5,653.25
Score Board - PY Balance	PY	RF	31-Dec-18	9,399.66	-	-	9,399.66	5%	PY	8,224.70		470.00	8,694.70	704.96	1,174.96
Defibulators - PY Balance	PY	RF	31-Dec-18	8,000.00	-	-	8,000.00	10%	PY	8,000.00		-	8,000.00	-	-
Heaters - PY Balance	PY	RF	31-Dec-18	3,271.58	-	-	3,271.58	10%	PY	2,780.54		327.00	3,107.54	164.04	491.04
Voyageur Day Lights - PY Balance	PY	RF	31-Dec-18	11,409.84	-	-	11,409.84	10%	PY	6,275.43		1,141.00	7,416.43	3,993.41	5,134.41
Water Heaters - PY Balance	PY	RF	31-Dec-18	31,594.12	-	-	31,594.12	10%	PY	30,013.58		3,159.00	33,172.58	(1,578.46)	1,580.54
Dishwasher - PY Balance	PY	RF	31-Dec-18	3,997.00	-	-	3,997.00	10%	PY	999.85		400.00	1,399.85	2,597.15	2,997.15
Equipment - PY	PY	GG	31-Dec-19	2,091.09	-	-	2,091.09	10%	PY	314.00		209.00	523.00	1,568.09	1,777.09
Equipment - PY	PY	PS	31-Dec-19	9,294.41	-	-	9,294.41	10%	PY	1,394.00		929.00	2,323.00	6,971.41	7,900.41
Equipment - PY	PY	GG	31-Dec-19	1,017.05	-	-	1,017.05	10%	PY	153.00		102.00	255.00	762.05	864.05
Equipment - PY	PY	GG	31-Dec-19	5,354.99	-	-	5,354.99	10%	PY	803.00		535.00	1,338.00	4,016.99	4,551.99
Equipment - PY	PY	GG	31-Dec-19	9,294.40	-	1,000.00	8,294.40	10%	PY	1,394.00	1,000.00	829.00	1,223.00	7,071.40	7,900.40
Equipment - PY	PY	P	31-Dec-19	15,470.12	-	-	15,470.12	10%	PY	2,321.00		1,547.00	3,868.00	11,602.12	13,149.12
Equipment - PY	PY	RF	31-Dec-19	15,669.94	-	-	15,669.94	10%	PY	2,350.00		1,567.00	3,917.00	11,752.94	13,319.94
Equipment - PY	PY	TS	31-Dec-19	3,930.55	-	-	3,930.55	10%	PY	590.00		393.00	983.00	2,947.55	3,340.55
Equipment - PY	PY	TS	31-Dec-19	3,079.61	-	-	3,079.61	10%	PY	462.00		308.00	770.00	2,309.61	2,617.61
Equipment - PY	PY	TS	31-Dec-19	5,803.71	-	-	5,803.71	10%	PY	870.00		580.00	1,450.00	4,353.71	4,933.71
Equipment - PY	PY	TS	31-Dec-19	4,837.70	-	-	4,837.70	10%	PY	726.00		484.00	1,210.00	3,627.70	4,111.70
Equipment - PY	PY	TS	31-Dec-19	26,324.49	-	-	26,324.49	10%	PY	3,948.00		2,632.00	6,580.00	19,744.49	22,376.49
Equipment - PY	PY	TS	31-Dec-19	15,556.46	-	-	15,556.46	10%	PY	2,334.00		1,556.00	3,890.00	11,666.46	13,222.46
Blake Lift Station - electrical	PY	WD	31-Dec-20	45,558.90			45,558.90	10%	PY	2,278.00		4,556.00	6,834.00	38,724.90	43,280.90
Portable generator water	PY	WC	31-Dec-20	36,527.70			36,527.70	10%	PY	1,826.00		3,653.00	5,479.00	31,048.70	34,701.70
Well 2 vfd switch	PY	WC	31-Dec-20	11,962.06			11,962.06	10%	PY	598.00		1,196.00	1,794.00	10,168.06	11,364.06
bunker gear	PY	PS	31-Dec-20	39,093.73			39,093.73	10%	PY	1,955.00		3,909.00	5,864.00	33,229.73	37,138.73
fire hose	PY	PS	31-Dec-20	14,020.95			14,020.95	10%	PY	701.00		1,402.00	2,103.00	11,917.95	13,319.95
pressure washer	PY	TS	31-Dec-20	5,082.93			5,082.93	10%	PY	254.00		508.00	762.00	4,320.93	4,828.93
5 x 8 box trailer w/ ramp	PY	TS	31-Dec-20	2,442.23			2,442.23	10%	PY	122.00		244.00	366.00	2,076.23	2,320.23
fitness centre assets	PY	RF	31-Dec-20	20,000.00			20,000.00	10%	PY	1,000.00		2,000.00	3,000.00	17,000.00	19,000.00
Pergola	GL	RF	31-Dec-21		17,318.83		17,318.83	10%	GL	-		866.00	866.00	16,452.83	-
Fire helmets	GL	PS	31-Dec-21		7,346.87		7,346.87	20%	GL	-		735.00	735.00	6,611.87	-
Upgrades to Tower and Radio infrastructure	GL	PS	31-Dec-21		32,505.22		32,505.22	10%	GL	-		1,625.00	1,625.00	30,880.22	-
				3,452,227.53	**57,170.92**	**1,000.00**	**3,508,398.45**			**2,582,304.23**	**1,000.00**	**113,257.41**	**2,694,561.64**	**813,836.81**	**869,923.30**

Computer	Ref	Class	Date	Original cost	Addition	Disposal	Total		Ref	Accumulated Amortization					2020
Description										Beg. Acc. Amort	Adj.	Amortization	End. Acc. Amort	Net	Net
Postage Meter - PY Balance	PY	GG	31-Dec-18	4,042.44	-	-	4,042.44	20%	PY	4,042.44		-	4,042.44	-	-
GIS Software - PY Balance	PY	GG	31-Dec-18	103,435.00	-	-	103,435.00	20%	PY	103,435.00		-	103,435.00	-	-
Municipal Software - PY Balance	PY	GG	31-Dec-18	30,000.00	-	-	30,000.00	20%	PY	30,000.00		-	30,000.00	-	-
PLC CPU - PY Balance	PY	WD	31-Dec-18	4,951.95	-	-	4,951.95	20%	PY	2,475.20		990.00	3,465.20	1,486.75	2,476.75
Computer Hardware - PY Balance	PY	GG	31-Dec-19	1,849.88		-	1,849.88	20%	PY	555.00		370.00	925.00	924.88	1,294.88
Computer Hardware - PY Balance	PY	PS	31-Dec-19	2,071.73		-	2,071.73	20%	PY	621.00		414.00	1,035.00	1,036.73	1,450.73
Tablets	PY	GG	31-Dec-20	5,980.33			5,980.33	20%	PY	598.00		1,196.00	1,794.00	4,186.33	5,382.33
Laptops	PY	GG	31-Dec-20	2,035.18			2,035.18	20%	PY	204.00		407.00	611.00	1,424.18	1,831.18
Server	PY	GG	31-Dec-20	5,364.58			5,364.58	20%	PY	536.00		1,073.00	1,609.00	3,755.58	4,828.58
Laptops (10x)	GL	GG	31-Dec-21		8,859.03		8,859.03	20%	GL	-		886.00	886.00	7,973.03	-
							-	20%	GL			-	-	-	-
				159,731.09	**8,859.03**	**-**	**168,590.12**			**142,466.64**	**-**	**5,336.00**	**147,802.64**	**20,787.48**	**17,264.45**

Vehicle	Ref	Class	Date	Original cost	Addition	Disposal	Total		Ref	Accumulated Amortization					2020
Description										Beg. Acc. Amort	Adj.	Amortization	End. Acc. Amort	Net	Net
Rescue Van - PY Balance	PY	PS	31-Dec-18	35,000.00	-	-	35,000.00	10%	PY	35,000.00		-	35,000.00	-	-
Fire Truck - PY Balance	PY	PS	31-Dec-18	209,438.00	-	-	209,438.00	5%	PY	183,258.45		10,472.00	193,730.45	15,707.55	26,179.55
2017 Fire Truck - PY Balance	PY	PS	31-Dec-18	393,501.20	-	-	393,501.20	5%	PY	68,862.59		19,675.00	88,537.59	304,963.61	324,638.61
1993 for plow - PY Balance	PY	TS	31-Dec-18	18,400.00	-	-	18,400.00	10%	PY	18,400.00		-	18,400.00	-	-
500 cc ATV - PY Balance	PY	TS	31-Dec-18	14,899.68	-	-	14,899.68	10%	PY	14,899.68		-	14,899.68	-	-
Chevrolet Dump Truck 1987 - PY Balance	PY	TS	31-Dec-18	40,893.37	-	-	40,893.37	10%	PY	40,893.37		-	40,893.37	-	-
Unknown - PY Balance	PY	TS	31-Dec-18	16,659.82	-	-	16,659.82	10%	PY	12,494.89		1,666.00	14,160.89	2,498.93	4,164.93
Unknown - PY Balance	PY	TS	31-Dec-18	40,060.10	-	-	40,060.10	10%	PY	26,368.29		4,006.00	30,374.29	9,685.81	13,691.81
dump truck - PY Balance	PY	TS	31-Dec-18	326,993.97	-	-	326,993.97	10%	PY	147,146.50		32,699.00	179,845.50	147,148.47	179,847.47
1994 Dodge Pick-up - PY Balance	PY	RF	31-Dec-18	26,964.00	-	-	26,964.00	13%	PY	20,595.01		3,371.00	23,966.01	2,997.99	6,368.99
Zamboni - PY Balance	PY	P	31-Dec-19	84,890.00		-	84,890.00	10%	PY	12,734.00		8,489.00	21,223.00	63,667.00	72,156.00
Vehicle - PY Balance	PY	PS	31-Dec-19	958.43		-	958.43	10%	PY	144.00		96.00	240.00	718.43	814.43
Vehicle - PY Balance	PY	PS	31-Dec-19	4,822.69		-	4,822.69	10%	PY	723.00		482.00	1,205.00	3,617.69	4,099.69
Vehicle - PY Balance	PY	PS	31-Dec-19	1,633.47		-	1,633.47	10%	PY	245.00		163.00	408.00	1,225.47	1,388.47
Vehicle - PY Balance	PY	PS	31-Dec-19	1,460.15		-	1,460.15	10%	PY	219.00		146.00	365.00	1,095.15	1,241.15
Vehicle - PY Balance	PY	TS	31-Dec-19	11,215.98		-	11,215.98	10%	PY	1,683.00		1,122.00	2,805.00	8,410.98	9,532.98
Vehicle - PY Balance	PY	TS	31-Dec-19	9,903.73		-	9,903.73	10%	PY	1,485.00		990.00	2,475.00	7,428.73	8,418.73
Vehicle - PY Balance	PY	RF	31-Dec-19	9,370.00		-	9,370.00	10%	PY	1,406.00		937.00	2,343.00	7,027.00	7,964.00
2019 F150 #T03 - PY Balance	PY	TS		43,706.63			43,706.63	10%	PY	6,556.00		4,371.00	10,927.00	32,779.63	37,150.63
2019 F150 #T04 - PY Balance	PY	TS		42,979.29			42,979.29	10%	PY	6,447.00		4,298.00	10,745.00	32,234.29	36,532.29
															-
															-
				1,333,750.51	**-**	**-**	**1,333,750.51**			**599,560.78**	**-**	**92,983.00**	**692,543.78**	**641,206.73**	**734,189.73**

Roads and Bridges	Ref	T2 Class	Date	Original cost	Addition	Disposal	Total		Ref	Accumulated Amortization					2020
Description - Roads										Beg. Acc. Amort	Adj.	Amortization	End. Acc. Amort	Net	Net
High Volume Rural Base	PY	TS	31-Dec-18	223,777.91	-	-	223,777.91	1%	PY	223,777.91		-	223,777.91	-	-
First Street Base	PY	TS	31-Dec-18	277,759.84	-	-	277,759.84	1%	PY	31,478.49		3,703.00	35,181.49	242,578.35	246,281.35
First Street Surface	PY	TS	31-Dec-18	284,441.50	-	-	284,441.50	5%	PY	120,887.52		14,222.00	135,109.52	149,331.98	163,553.98
High Volume Rural Base	PY	TS	31-Dec-18	99,918.71	-	-	99,918.71	5%	PY	98,859.05		1,059.66	99,918.71	-	1,059.66
Semi Urban Residential Base	PY	TS	31-Dec-18	469,764.20	-	-	469,764.20	1%	PY	469,764.20		-	469,764.20	-	-
Semi Urban Residential Surface	PY	TS	31-Dec-18	2,098,488.28	-	-	2,098,488.28	5%	PY	1,793,009.67		104,924.00	1,897,933.67	200,554.61	305,478.61
Urban Base	PY	TS	31-Dec-18	220,355.67	-	-	220,355.67	1%	PY	99,321.14		2,938.00	102,259.14	118,096.53	121,034.53
Urban Surface	PY	TS	31-Dec-18	441,844.13	-	-	441,844.13	5%	PY	254,313.98		22,092.00	276,405.98	165,438.15	187,530.15
Low Volume Rural Base	PY	TS	31-Dec-18	6,179.23	-	-	6,179.23	1%	PY	6,179.23		-	6,179.23	-	-
Low Volume Rural Surface	PY	TS	31-Dec-18	9,409.09	-	-	9,409.09	10%	PY	9,409.09		-	9,409.09	-	-
							-								-
				4,131,938.56	-	-	4,131,938.56			3,107,000.28		148,938.66	3,255,938.94	875,999.62	1,024,938.28

Description - Bridge															
Mattawa Bridge	PY	TS	31-Dec-18	3,843,624.98	-	-	3,843,624.98	2%	PY	3,379,809.74		64,060.00	3,443,869.74	399,755.24	463,815.24
Pine Street Culvert	PY	TS	31-Dec-18	28,504.57	-	-	28,504.57	2%	PY	4,513.10		475.00	4,988.10	23,516.47	23,991.47
Eighth Street Culvert	PY	TS	31-Dec-18	6,389.27	-	-	6,389.27	2%	PY	265.24		106.00	371.24	6,018.03	6,124.03
Repairs to Mauril Belanger Bridge - CY	PY	TS	31-Dec-19	166,975.59		-	166,975.59	2%	PY	4,174.00		2,783.00	6,957.00	160,018.59	162,801.59
Bridge Project Work-in-Progress finished in CY	WIP	TS	31-Dec-21		1,961,487.24		1,961,487.24	2%	PY	-		16,346.00	16,346.00	1,945,141.24	-
							-								-
				4,045,494.41	**1,961,487.24**	**-**	**6,006,981.65**			**3,388,762.08**	**-**	**83,770.00**	**3,472,532.08**	**2,534,449.57**	**656,732.33**

Water and Sewer Sytems	Ref	T2 Class	Date	Original cost	Addition	Disposal	Total		Ref	Accumulated Amortization					2020
Description - Water										**Beg. Acc. Amort**	**Adj.**	**Amortization**	**End. Acc. Amort**	**Net**	**Net**
Trunk Watermain	PY	WD	31-Dec-18	361,686.83	-	-	361,686.83	2%	PY	147,688.52		6,028.00	153,716.52	207,970.31	213,998.31
Water Lines	PY	WD	31-Dec-18	5,254,846.45	-	-	5,254,846.45	2%	PY	1,555,455.62		87,581.00	1,643,036.62	3,611,809.83	3,699,390.83
Fire Hydrants	PY	WD	31-Dec-18	18,321.48	-	-	18,321.48	2%	PY	2,361.90		305.00	2,666.90	15,654.58	15,959.58
Fire Hydrants	PY	WD	31-Dec-18	5,416.14	-	-	5,416.14	2%	PY	857.02		90.00	947.02	4,469.12	4,559.12
Fire Hydrants	PY	WD	31-Dec-20	42,613.46			42,613.46	2%	PY	355.00		710.00	1,065.00	41,548.46	42,258.46
				-			-								-
							-								-
				5,682,884.36	-	-	5,682,884.36			1,706,718.06	-	94,714.00	1,801,432.06	3,881,452.30	3,976,166.30
Description - Sewer															
Sewage works and Lagoon	PY	WC	31-Dec-18	1,759,773.19	-	-	1,759,773.19	2%	PY	777,234.02		29,330.00	806,564.02	953,209.17	982,539.17
Sanitary Lines (14870 m)	PY	WC	31-Dec-18	2,111,379.67	-	-	2,111,379.67	2%	PY	949,715.05		35,190.00	984,905.05	1,126,474.62	1,161,664.62
Old sewage Lagoon	PY	WC	31-Dec-18	111,587.22	-	-	111,587.22	2%	PY	111,587.22		-	111,587.22	-	-
Storm Sewers 19.3 km	PY	WC	31-Dec-18	1,042,374.76	-	-	1,042,374.76	2%	PY	740,880.07		17,373.00	758,253.07	284,121.69	301,494.69
							-								-
				5,025,114.84	**-**	**-**	**5,025,114.84**			2,579,416.36	-	81,893.00	2,661,309.36	2,363,805.48	2,445,698.48

Capital Work In Progress	Ref	Class	Date	Original cost	Addition	Disposal	Total	
Description								
Industrial Park Zoning Work - PY Balance (General Gov)	PY	**WIP**	31-Dec-18	60,340.74	-	-	60,340.74	
Industrial Park - PY Balance (Sewer)	PY	**WIP**	31-Dec-18	444,764.94	-	-	444,764.94	
Industrial Park - PY Balance (Water)	PY	**WIP**	31-Dec-18	444,764.94	-	-	444,764.94	
Trucotte Park Road Sidewalk project	PY	**WIP**	31-Dec-20	17,592.75		17,592.75	-	
Trucotte Park Road Drainage	PY	**WIP**	31-Dec-20	10,267.14		10,267.14	-	
Pergola	PY	**WIP**	31-Dec-20	17,318.83		17,318.83	-	
Dorion Road Reconstruction (Industrial Park)	PY	**WIP**	31-Dec-20	67,024.40			67,024.40	
Info Centre Log Replacement	PY	**WIP**	31-Dec-20	7,500.00		7,500.00	-	
Bridge Project	PY	**WIP**	31-Dec-20	1,961,487.24		1,961,487.24	-	
Dorion Road Reconstruction (Industrial Park)	GL	**WIP**	31-Dec-21		299,877.68		299,877.68	
Mattawa Affordable Senior Housing Project	GL	**WIP**	31-Dec-21		1,350.00		1,350.00	
Mattawa Affordable Senior Housing Project	*GL*	**WIP**	31-Dec-21		3,012,979.79		3,012,979.79	
				3,031,060.98	**3,314,207.47**	**2,014,165.96**	**4,331,102.49**	

APPENDIX 3

ONTARIO REGULATION 588/17

Français

ONTARIO REGULATION 588/17

made under the

INFRASTRUCTURE FOR JOBS AND PROSPERITY ACT, 2015

Made: December 13, 2017
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ASSET MANAGEMENT PLANNING FOR MUNICIPAL INFRASTRUCTURE

CONTENTS

INTERPRETATION AND APPLICATION

Definitions

1. (1) In this Regulation,

"asset category" means a category of municipal infrastructure assets that is,

(a) an aggregate of assets described in each of clauses (a) to (e) of the definition of core municipal infrastructure asset, or

(b) composed of any other aggregate of municipal infrastructure assets that provide the same type of service; ("catégorie de biens")

"core municipal infrastructure asset" means any municipal infrastructure asset that is a,

(a) water asset that relates to the collection, production, treatment, storage, supply or distribution of water,

(b) wastewater asset that relates to the collection, transmission, treatment or disposal of wastewater, including any wastewater asset that from time to time manages stormwater,

(c) stormwater management asset that relates to the collection, transmission, treatment, retention, infiltration, control or disposal of stormwater,

(d) road, or

(e) bridge or culvert; ("bien d'infrastructure municipale essentiel")

"ecological functions" has the same meaning as in Ontario Regulation 140/02 (Oak Ridges Moraine Conservation Plan) made under the *Oak Ridges Moraine Conservation Act, 2001*; ("fonctions écologiques")

"green infrastructure asset" means an infrastructure asset consisting of natural or human-made elements that provide ecological and hydrological functions and processes and includes natural heritage features and systems, parklands,

stormwater management systems, street trees, urban forests, natural channels, permeable surfaces and green roofs; ("bien d'infrastructure verte")

"hydrological functions" has the same meaning as in Ontario Regulation 140/02; ("fonctions hydrologiques")

"joint municipal water board" means a joint board established in accordance with a transfer order made under the *Municipal Water and Sewage Transfer Act, 1997*; ("conseil mixte de gestion municipale des eaux")

"lifecycle activities" means activities undertaken with respect to a municipal infrastructure asset over its service life, including constructing, maintaining, renewing, operating and decommissioning, and all engineering and design work associated with those activities; ("activités relatives au cycle de vie")

"municipal infrastructure asset" means an infrastructure asset, including a green infrastructure asset, directly owned by a municipality or included on the consolidated financial statements of a municipality, but does not include an infrastructure asset that is managed by a joint municipal water board; ("bien d'infrastructure municipale")

"municipality" has the same meaning as in the *Municipal Act, 2001*; ("municipalité")

"operating costs" means the aggregate of costs, including energy costs, of operating a municipal infrastructure asset over its service life; ("frais d'exploitation")

"service life" means the total period during which a municipal infrastructure asset is in use or is available to be used; ("durée de vie")

"significant operating costs" means, where the operating costs with respect to all municipal infrastructure assets within an asset category are in excess of a threshold amount set by the municipality, the total amount of those operating costs. ("frais d'exploitation importants")

(2) In Tables 1 and 2,

"connection-days" means the number of properties connected to a municipal system that are affected by a service issue, multiplied by the number of days on which those properties are affected by the service issue. ("jours-branchements")

(3) In Table 4,

"arterial roads" means Class 1 and Class 2 highways as determined under the Table to section 1 of Ontario Regulation 239/02 (Minimum Maintenance Standards for Municipal Highways) made under the *Municipal Act, 2001*; ("artères")

"collector roads" means Class 3 and Class 4 highways as determined under the Table to section 1 of Ontario Regulation 239/02; ("routes collectrices")

"lane-kilometre" means a kilometre-long segment of roadway that is a single lane in width; ("kilomètre de voie")

"local roads" means Class 5 and Class 6 highways as determined under the Table to section 1 of Ontario Regulation 239/02. ("routes locales")

(4) In Table 5,

"Ontario Structure Inspection Manual" means the Ontario Structure Inspection Manual (OSIM), published by the Ministry of Transportation and dated October 2000 (revised November 2003 and April 2008) and available on a Government of Ontario website; ("manuel d'inspection des structures de l'Ontario")

"structural culvert" has the meaning set out for "culvert (structural)" in the Ontario Structure Inspection Manual. ("ponceau structurel")

Application

2. For the purposes of section 6 of the Act, every municipality is prescribed as a broader public sector entity to which that section applies.

STRATEGIC ASSET MANAGEMENT POLICIES

Strategic asset management policy

3. (1) Every municipality shall prepare a strategic asset management policy that includes the following:

1. Any of the municipality's goals, policies or plans that are supported by its asset management plan.
2. The process by which the asset management plan is to be considered in the development of the municipality's budget or of any long-term financial plans of the municipality that take into account municipal infrastructure assets.
3. The municipality's approach to continuous improvement and adoption of appropriate practices regarding asset management planning.
4. The principles to be followed by the municipality in its asset management planning, which must include the principles set out in section 3 of the Act.

5. The municipality's commitment to consider, as part of its asset management planning,
    i. the actions that may be required to address the vulnerabilities that may be caused by climate change to the municipality's infrastructure assets, in respect of such matters as,
        A. operations, such as increased maintenance schedules,
        B. levels of service, and
        C. lifecycle management,
    ii. the anticipated costs that could arise from the vulnerabilities described in subparagraph i,
    iii. adaptation opportunities that may be undertaken to manage the vulnerabilities described in subparagraph i,
    iv. mitigation approaches to climate change, such as greenhouse gas emission reduction goals and targets, and
    v. disaster planning and contingency funding.
6. A process to ensure that the municipality's asset management planning is aligned with any of the following financial plans:
    i. Financial plans related to the municipality's water assets including any financial plans prepared under the *Safe Drinking Water Act, 2002*.
    ii. Financial plans related to the municipality's wastewater assets.
7. A process to ensure that the municipality's asset management planning is aligned with Ontario's land-use planning framework, including any relevant policy statements issued under subsection 3 (1) of the *Planning Act*, any provincial plans as defined in the *Planning Act* and the municipality's official plan.
8. An explanation of the capitalization thresholds used to determine which assets are to be included in the municipality's asset management plan and how the thresholds compare to those in the municipality's tangible capital asset policy, if it has one.
9. The municipality's commitment to coordinate planning for asset management, where municipal infrastructure assets connect or are interrelated with those of its upper-tier municipality, neighbouring municipalities or jointly-owned municipal bodies.
10. The persons responsible for the municipality's asset management planning, including the executive lead.
11. An explanation of the municipal council's involvement in the municipality's asset management planning.
12. The municipality's commitment to provide opportunities for municipal residents and other interested parties to provide input into the municipality's asset management planning.

(2) For the purposes of this section,

"capitalization threshold" is the value of a municipal infrastructure asset at or above which a municipality will capitalize the value of it and below which it will expense the value of it. ("seuil de capitalisation")

Update of asset management policy

4. Every municipality shall prepare its first strategic asset management policy by July 1, 2019 and shall review and, if necessary, update it at least every five years.

ASSET MANAGEMENT PLANS

Asset management plans, current levels of service

5. (1) Every municipality shall prepare an asset management plan in respect of its core municipal infrastructure assets by July 1, 2021, and in respect of all of its other municipal infrastructure assets by July 1, 2023.

(2) A municipality's asset management plan must include the following:

1. For each asset category, the current levels of service being provided, determined in accordance with the following qualitative descriptions and technical metrics and based on data from at most the two calendar years prior to the year in which all information required under this section is included in the asset management plan:
    i. With respect to core municipal infrastructure assets, the qualitative descriptions set out in Column 2 and the technical metrics set out in Column 3 of Table 1, 2, 3, 4 or 5, as the case may be.
    ii. With respect to all other municipal infrastructure assets, the qualitative descriptions and technical metrics established by the municipality.
2. The current performance of each asset category, determined in accordance with the performance measures established by the municipality, such as those that would measure energy usage and operating efficiency, and based on data from

at most two calendar years prior to the year in which all information required under this section is included in the asset management plan.

3. For each asset category,
   i. a summary of the assets in the category,
   ii. the replacement cost of the assets in the category,
   iii. the average age of the assets in the category, determined by assessing the average age of the components of the assets,
   iv. the information available on the condition of the assets in the category, and
   v. a description of the municipality's approach to assessing the condition of the assets in the category, based on recognized and generally accepted good engineering practices where appropriate.
4. For each asset category, the lifecycle activities that would need to be undertaken to maintain the current levels of service as described in paragraph 1 for each of the 10 years following the year for which the current levels of service under paragraph 1 are determined and the costs of providing those activities based on an assessment of the following:
   i. The full lifecycle of the assets.
   ii. The options for which lifecycle activities could potentially be undertaken to maintain the current levels of service.
   iii. The risks associated with the options referred to in subparagraph ii.
   iv. The lifecycle activities referred to in subparagraph ii that can be undertaken for the lowest cost to maintain the current levels of service.
5. For municipalities with a population of less than 25,000, as reported by Statistics Canada in the most recent official census, the following:
   i. A description of assumptions regarding future changes in population or economic activity.
   ii. How the assumptions referred to in subparagraph i relate to the information required by paragraph 4.
6. For municipalities with a population of 25,000 or more, as reported by Statistics Canada in the most recent official census, the following:
   i. With respect to municipalities in the Greater Golden Horseshoe growth plan area, if the population and employment forecasts for the municipality are set out in Schedule 3 or 7 to the 2017 Growth Plan, those forecasts.
   ii. With respect to lower-tier municipalities in the Greater Golden Horseshoe growth plan area, if the population and employment forecasts for the municipality are not set out in Schedule 7 to the 2017 Growth Plan, the portion of the forecasts allocated to the lower-tier municipality in the official plan of the upper-tier municipality of which it is a part.
   iii. With respect to upper-tier municipalities or single-tier municipalities outside of the Greater Golden Horseshoe growth plan area, the population and employment forecasts for the municipality that are set out in its official plan.
   iv. With respect to lower-tier municipalities outside of the Greater Golden Horseshoe growth plan area, the population and employment forecasts for the lower-tier municipality that are set out in the official plan of the upper-tier municipality of which it is a part.
   v. If, with respect to any municipality referred to in subparagraph iii or iv, the population and employment forecasts for the municipality cannot be determined as set out in those subparagraphs, a description of assumptions regarding future changes in population or economic activity.
   vi. For each of the 10 years following the year for which the current levels of service under paragraph 1 are determined, the estimated capital expenditures and significant operating costs related to the lifecycle activities required to maintain the current levels of service in order to accommodate projected increases in demand caused by growth, including estimated capital expenditures and significant operating costs related to new construction or to upgrading of existing municipal infrastructure assets.

(3) Every asset management plan must indicate how all background information and reports upon which the information required by paragraph 3 of subsection (2) is based will be made available to the public.

(4) In this section,

"2017 Growth Plan" means the Growth Plan for the Greater Golden Horseshoe, 2017 that was approved under subsection 7 (6) of the *Places to Grow Act, 2005* on May 16, 2017 and came into effect on July 1, 2017; ("Plan de croissance de 2017")

"Greater Golden Horseshoe growth plan area" means the area designated by section 2 of Ontario Regulation 416/05 (Growth Plan Areas) made under the *Places to Grow Act, 2005*. ("zone de croissance planifiée de la région élargie du Golden Horseshoe")

Asset management plans, proposed levels of service

6. (1) Subject to subsection (2), by July 1, 2024, every asset management plan prepared under section 5 must include the following additional information:

1. For each asset category, the levels of service that the municipality proposes to provide for each of the 10 years following the year in which all information required under section 5 and this section is included in the asset management plan, determined in accordance with the following qualitative descriptions and technical metrics:
    i. With respect to core municipal infrastructure assets, the qualitative descriptions set out in Column 2 and the technical metrics set out in Column 3 of Table 1, 2, 3, 4 or 5, as the case may be.
    ii. With respect to all other municipal infrastructure assets, the qualitative descriptions and technical metrics established by the municipality.
2. An explanation of why the proposed levels of service under paragraph 1 are appropriate for the municipality, based on an assessment of the following:
    i. The options for the proposed levels of service and the risks associated with those options to the long term sustainability of the municipality.
    ii. How the proposed levels of service differ from the current levels of service set out under paragraph 1 of subsection 5 (2).
    iii. Whether the proposed levels of service are achievable.
    iv. The municipality's ability to afford the proposed levels of service.
3. The proposed performance of each asset category for each year of the 10-year period referred to in paragraph 1, determined in accordance with the performance measures established by the municipality, such as those that would measure energy usage and operating efficiency.
4. A lifecycle management and financial strategy that sets out the following information with respect to the assets in each asset category for the 10-year period referred to in paragraph 1:
    i. An identification of the lifecycle activities that would need to be undertaken to provide the proposed levels of service described in paragraph 1, based on an assessment of the following:
        A. The full lifecycle of the assets.
        B. The options for which lifecycle activities could potentially be undertaken to achieve the proposed levels of service.
        C. The risks associated with the options referred to in sub-subparagraph B.
        D. The lifecycle activities referred to in sub-subparagraph B that can be undertaken for the lowest cost to achieve the proposed levels of service.
    ii. An estimate of the annual costs for each of the 10 years of undertaking the lifecycle activities identified in subparagraph i, separated into capital expenditures and significant operating costs.
    iii. An identification of the annual funding projected to be available to undertake lifecycle activities and an explanation of the options examined by the municipality to maximize the funding projected to be available.
    iv. If, based on the funding projected to be available, the municipality identifies a funding shortfall for the lifecycle activities identified in subparagraph i,
        A. an identification of the lifecycle activities, whether set out in subparagraph i or otherwise, that the municipality will undertake, and
        B. if applicable, an explanation of how the municipality will manage the risks associated with not undertaking any of the lifecycle activities identified in subparagraph i.
5. For municipalities with a population of less than 25,000, as reported by Statistics Canada in the most recent official census, a discussion of how the assumptions regarding future changes in population and economic activity, set out in subparagraph 5 i of subsection 5 (2), informed the preparation of the lifecycle management and financial strategy referred to in paragraph 4 of this subsection.
6. For municipalities with a population of 25,000 or more, as reported by Statistics Canada in the most recent official census,

i. the estimated capital expenditures and significant operating costs to achieve the proposed levels of service as described in paragraph 1 in order to accommodate projected increases in demand caused by population and employment growth, as set out in the forecasts or assumptions referred to in paragraph 6 of subsection 5 (2), including estimated capital expenditures and significant operating costs related to new construction or to upgrading of existing municipal infrastructure assets,

ii. the funding projected to be available, by source, as a result of increased population and economic activity, and

iii. an overview of the risks associated with implementation of the asset management plan and any actions that would be proposed in response to those risks.

7. An explanation of any other key assumptions underlying the plan that have not previously been explained.

(2) With respect to an asset management plan prepared under section 5 on or before July 1, 2021, if the additional information required under this section is not included before July 1, 2023, the municipality shall, before including the additional information, update the current levels of service set out under paragraph 1 of subsection 5 (2) and the current performance measures set out under paragraph 2 of subsection 5 (2) based on data from the two most recent calendar years.

Update of asset management plans

7. (1) Every municipality shall review and update its asset management plan at least five years after the year in which the plan is completed under section 6 and at least every five years thereafter.

(2) The updated asset management plan must comply with the requirements set out under paragraphs 1, 2 and 3 and subparagraphs 5 i and 6 i, ii, iii, iv and v of subsection 5 (2), subsection 5 (3) and paragraphs 1 to 7 of subsection 6 (1).

Endorsement and approval required

8. Every asset management plan prepared under section 5 or 6, or updated under section 7, must be,

(a) endorsed by the executive lead of the municipality; and

(b) approved by a resolution passed by the municipal council.

Annual review of asset management planning progress

9. (1) Every municipal council shall conduct an annual review of its asset management progress on or before July 1 in each year, starting the year after the municipality's asset management plan is completed under section 6.

(2) The annual review must address,

(a) the municipality's progress in implementing its asset management plan;

(b) any factors impeding the municipality's ability to implement its asset management plan; and

(c) a strategy to address the factors described in clause (b).

Public availability

10. Every municipality shall post its current strategic asset management policy and asset management plan on a website that is available to the public, and shall provide a copy of the policy and plan to any person who requests it.

TABLE 1

WATER ASSETS

Column 1 Service attribute	Column 2 Community levels of service (qualitative descriptions)	Column 3 Technical levels of service (technical metrics)
Scope	1. Description, which may include maps, of the user groups or areas of the municipality that are connected to the municipal water system. 2. Description, which may include maps, of the user groups or areas of the municipality that have fire flow.	1. Percentage of properties connected to the municipal water system. 2. Percentage of properties where fire flow is available.
Reliability	Description of boil water advisories and service interruptions.	1. The number of connection-days per year where a boil water advisory notice is in place compared to the total number of properties connected to the municipal water system. 2. The number of connection-days per year due to water main breaks compared to the total number of properties connected to the municipal water system.

TABLE 2

WASTEWATER ASSETS

Column 1 Service attribute	Column 2 Community levels of service (qualitative descriptions)	Column 3 Technical levels of service (technical metrics)
Scope	Description, which may include maps, of the user groups or areas of the municipality that are connected to the municipal wastewater system.	Percentage of properties connected to the municipal wastewater system.
Reliability	1. Description of how combined sewers in the municipal wastewater system are designed with overflow structures in place which allow overflow during storm events to prevent backups into homes. 2. Description of the frequency and volume of overflows in combined sewers in the municipal wastewater system that occur in habitable areas or beaches. 3. Description of how stormwater can get into sanitary sewers in the municipal wastewater system, causing sewage to overflow into streets or backup into homes. 4. Description of how sanitary sewers in the municipal wastewater system are designed to be resilient to avoid events described in paragraph 3. 5. Description of the effluent that is discharged from sewage treatment plants in the municipal wastewater system.	1. The number of events per year where combined sewer flow in the municipal wastewater system exceeds system capacity compared to the total number of properties connected to the municipal wastewater system. 2. The number of connection-days per year due to wastewater backups compared to the total number of properties connected to the municipal wastewater system. 3. The number of effluent violations per year due to wastewater discharge compared to the total number of properties connected to the municipal wastewater system.

TABLE 3

STORMWATER MANAGEMENT ASSETS

Column 1 Service attribute	Column 2 Community levels of service (qualitative descriptions)	Column 3 Technical levels of service (technical metrics)
Scope	Description, which may include maps, of the user groups or areas of the municipality that are protected from flooding, including the extent of the protection provided by the municipal stormwater management system.	1. Percentage of properties in municipality resilient to a 100-year storm. 2. Percentage of the municipal stormwater management system resilient to a 5-year storm.

TABLE 4

ROADS

Column 1 Service attribute	Column 2 Community levels of service (qualitative descriptions)	Column 3 Technical levels of service (technical metrics)
Scope	Description, which may include maps, of the road network in the municipality and its level of connectivity.	Number of lane-kilometres of each of arterial roads, collector roads and local roads as a proportion of square kilometres of land area of the municipality.
Quality	Description or images that illustrate the different levels of road class pavement condition.	1. For paved roads in the municipality, the average pavement condition index value. 2. For unpaved roads in the municipality, the average surface condition (e.g. excellent, good, fair or poor).

TABLE 5

BRIDGES AND CULVERTS

Column 1 Service attribute	Column 2 Community levels of service (qualitative descriptions)	Column 3 Technical levels of service (technical metrics)
Scope	Description of the traffic that is supported by municipal bridges (e.g., heavy transport vehicles, motor vehicles, emergency vehicles, pedestrians, cyclists).	Percentage of bridges in the municipality with loading or dimensional restrictions.
Quality	1. Description or images of the condition of bridges and how this would affect use of the bridges. 2. Description or images of the condition of culverts and how this would affect use of the culverts.	1. For bridges in the municipality, the average bridge condition index value. 2. For structural culverts in the municipality, the average bridge condition index value.

COMMENCEMENT

Commencement

11. This Regulation comes into force on the later of January 1, 2018 and the day it is filed.

Français

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APPENDIX 4

TOWN OF MATTAWA
ASSET MANAGEMENT PLAN
DECEMBER 2013

Town of Mattawa Asset Management Plan

December 2013

Town of Mattawa Asset Management Plan

Executive Summary

This Asset Management Plan is intended to describe the infrastructure owned, operated, and maintained by the Town of Mattawa to support its core services to ratepayers. It is a compilation of documents including the asset inventory which was started in 2009 as part of the PSAB 3150 requirements, updated roads needs studies and several financial based analyses.

This document, which shall be updated on an annual basis, outlines in detail the Town's ongoing Capital Asset Management strategy including ongoing actions regarding capital asset management, planned asset refurbishment, maintenance, and or replacement requirements including analysis of budgeted funding, including anticipated funding shortfalls. The funding shortfalls (referred to as the Funding Gap) are anticipated to be satisfied through a combination of ratepayer contributions (increased taxation), debt, and continued support from Federal and Provincial grant funding opportunities as they become available over the lifecycle of the capital assets of the Town.

The details of this document provide information on the implementation of Asset Management in Mattawa, current state of the infrastructure along with current and future activities. Please note there are several supporting detailed appendices.

This document is intended to be compliant with the ministry of infrastructure's "Building Together : Guide for municipal Asset Management Plans – Part III"

This document was prepared in conjunction with Pahapill and Associates Chartered Accountants.

Strategic Overview Town of Mattawa Capital Assets

The Town of Mattawa has undertaken a detailed review and documentation of a comprehensive Capital Asset Management Strategy. Conceptually the implementation of a Comprehensive Asset Management Plan provides a number of benefits through improved accountability and a deeper understanding of the extent and affect of aging infrastructure, documentation of shortfalls in sustainable funding levels in a quantifiable and measurable way.

Through the implementation of asset management best practices, infrastructure assets that support core municipal services are monitored and maintained at levels which should enable Mattawa to provide these services at acceptable levels of risk and reliability and confidence to those that receive these services.

It is anticipated that funding will always remain as an ongoing challenge to overcome the accumulated backlog of capital renewals and maintenance deficits (Ie: current repair and replacement needs often in many cases outweigh current available funding).

This asset management plan addresses these shortfalls and identifies potential longer term solutions and techniques.

Introduction

The Province of Ontario definition of municipal core services includes water, waste-water , storm drainage, and road networks.

In the Town of Mattawa these core services provide primary transportation, flood protection, safe drinking water and sewage removal. Without these core services, the viability of the municipality from an economic, health, and environmental perspective would be at risk. The Asset Management Plan includes the infrastructure and equipment assets that support these core services: Local Roads, Bridges, water and wastewater as well as related supporting equipment infrastructure. Mattawa is a single-tier municipality and accordingly works directly with the Province of Ontario and local ratepayers in support and delivery of municipal service. Because of this, it is of great importance to note that Mattawa operates full water and wastewater service without the support of regional municipalities.

As part of this plan, Mattawa will begin to initiate a formalized Corporate Sustainability Plan which incorporates Mattawa's corporate vision to 'promote and deliver sustainable service levels which satisfy the needs of ratepayers while maintaining a fiscally responsible level of budgetary use and debt structure" and additionally to support ongoing implementation and evolution of Asset Management activities as seen fit in the achievement of the above mandate.

The Town of Mattawa has had a relatively stable population for the last 10 years. Consequently there are no major anticipated changed in future infrastructure demands beyond current levels, hence the focus of this plan is around the maintenance of current and desired service levels.

Taxation and user rates have historically fallen short of recognizing the full life-cycle cost of ownership of infrastructure assets resulting in a growing backlog of capital renewals, deferred pro-active maintenance, and increasing re-active repairs and replacements. According to the Province of Ontario The Walkerton incident, was the catalyst that identified the need for better oversight, management, and funding of municipal core infrastructure. This plan builds upon that need for the Town of Mattawa.

Detailed Asset Management Plan

Part A

This asset management plan incorporates the following roles and objectives:

• Maintain current inventory of assets

• Ongoing and updated documentation of asset condition assessments

• Documentation of strategic and detailed capital planning

• Long-term horizon (10 year to 20 year) capital funding requirement projections

• Formalization of collaboration between Finance; public works and internal engineers and external consultants (as required)

• Promotes the utilization of modern technologies to assist in business decisions related to core services delivery

Part B

Asset Inventory / Data Management:

Product: Population of official asset registry (maintained in excel based software spreadsheets; transitioning to custom software within the municipal accounting and management software database as part of this overall plan / project).

Implementation date: (substantially completed December 31, 2008; updated annually in conjunction with annual external financial audit)

Current Status: Continuously augmented/updated through up to date roads needs studies; and annual audit procedures. See Appendix A for complete listing. (Update to be complete December 2013)

Part C

Geographic Information System

Product: Via independently prepared roads needs study and CGIS collected Data.

Implementation Date: Fall 2013, with continuous updates as required.

Current Status and planned Utilization: Currently the CGIS software is mainly utilized by the

building department when assessing new permit applications and rezoning plans. Additionally it is used as an aid when assessing the replacement needs and costs for Town roads. See complaint management section for further planned utilization.

Part D

Service Requests / Complaint Management

Product: Computerized database / log to record reactive activities related to core services (ie rate payer requests and complaints specifically related to infrastructure).

Implementation Date: Throughout 2014

Current Status: Currently there are two ways in which infrastructure complaints are collected and handled. The primary method: telephonic complaints are received by Town office staff and then forwarded onto appropriate public works staff such that the complaint can be adequately addressed. The secondary method consists of a complaint worksheet kept at the Town office which ratepayers can physically come in; write down there complaint and then it is passed onto the appropriate Town staff.

Enhanced Complaint Management: As part of the overall asset management program; the Town is going to (on a test basis) explore the utilization of the CGIS software to log ratepayer complaints about specific infrastructure service issues. The software has the ability to store and maintain on an asset by asset basis; a vernacular account if issues related to the particular asset in question. Thereby during the annual review of the asset management program and plan; a detailed account of ratepayers experience with service levels can be accurately taken into account and addressed in long term spending and financing plans.

Part E

Current Condition Assessment

Product: Formalized assessment of individual assets based on expert field analysis.

Implementation Date: Fall 2013

Current Status: Completed in conjunction with Town staff and engineering department; and has been directly incorporated in the 10 year financial plan. – *See attached financial plan*

Predictive Modeling

Product: A model of expected failure of assets supported by empirical data.

Implementation date: December 2013

Current Status: An ongoing review of asset life expectancy / accounting amortization rates is being undertaken as part of this project. Rates will be adjusted as asset impairment evidence is updated.

State of Mattawa's Infrastructure

Inventory

Through intensive data collection efforts visa vie annual financial audits of asset procurement, and external engineering studies, Mattawa's asset registry is considered to be a reliable and comprehensive resource for asset information. By assignment of data collection and maintenance tasks it will enable the asset registry to be maintained on an annual timely basis. (Appendix A)

See attached 10 year capital plan for additional spending details.

Road Network
(Rounded)

Road Type	Historical Cost	Current Value (Accounting Based)	10 year Spending Requirements
Paved	3,017,750	1,410,609	1,469,562

Bridges and Major Culverts
(Rounded)

Asset Type	Historical Cost	Current Value (Accounting Based)	10 Year Spending Requirements
Bridges & Culverts	3,872,129	1,004,089	None Projected

Town Vehicles and Roads Equipment

Contains assets required for the maintenance or continued operation of municipally owned roads and road structures.

Asset Type	Historical Cost	Current Value (Accounting Based)	10 Year Spending Requirements
Vehicles	482,863	153,584	400,000
Equipment	2,507,493	727,453	140,000

Town Water and Wastewater

Contains assets required for the maintenance or continued operation of water and wastewater services.

Asset Type	Historical Cost	Current Value (Accounting Based)	10 Year Spending Requirements
Water	4,658,622	3,443,515	1,429,629
Waste Water	4,777,730	2,831,802	1,384,629

All other assets

(Includes assets not vital to transportation or water; however vital to the delivery of several key municipal services such as landfill community enjoyment centers etc.)

Historical Cost: $ 4,705,370
Current Value: $ 1,992,364
10 Year Spending: $ 780,480

Part F

Long Term Capital Budget Planning – see attached 10 year capital plan

Product: 10 year detailed forecast of operating and capital funding needs using life-cycle analysis of assets and 20 year outlook for operating and capital needs.

Implementation Date: December 2013; as an extrapolation from the latest roads needs study; and concurrent input from municipal staff.

Current Status: In conjunction with Town staff this Plan identifies current capital refurbishment and capital maintenance backlog, including short and long term funding requirements. An annual update of capital maintenance backlog and updated capital funding projections will be required to maintain the accuracy and usability of this plan.

Part F

Road Network:

The Town monitors road condition and repair; however, due to the significant age of the "water/sewer infrastructure (generally located directly beneath the road surfaces major road rehabilitation tends to be driven by the urgent needs and aging physical state of the underlying water and wastewater linear assets.

<u>Condition</u>

Roads

Mattawa has a unique situation with regards to road condition; whereby road replacement is driven in 90% of the cases by the deterioration of the underlying infrastructure; water and sewer mains / system. As a result, road spending needs are significantly impacted by the requirements to repair/replace the underlying water and sewer infrastructure.

Bridges

Mattawa has one major bridge, which is seemingly in good condition; there is no spending highlighted for the foreseeable future other then basic minor maintenance. The municipal engineering department will continue to monitor the condition of the bridge, and update conclusions and spending accordingly.

Water Lines

The public works department reviews frequency of repetitive repairs to the same components and determine whether that system needs to be replaced. The aging of water and sewer components is a significant concern and has been reflected in the short and mid- term capital expenditure requirements plan.

Public works staff routinely reviews and inspects (where practicable) facilities and if something stands out at them as being in need of maintenance, they bring it to the engineer's attention and it is subsequently addressed.

Despite the age of the water pipes, we assess our system as "in good shape", but in constant need of maintenance and careful observation to ensure we catch things that break down soon after they do.

Other Assets

In conjunction with Town staff; we have developed a 10 year spending plan based upon the condition of these assets; which include the arena, equipment and parks assets. An overall comment on the condition of these assets is considered not appropriate as they are looked at on an individual basis due to their nature.

Rehabilitation Needs

Asset	Urgent	1-5 Years	6-10 Years	Total
Roads	**563,372**	**782,100**	**124,090**	**1,469,562**
Bridges				
Equipment	**7,000**	**19,000**	**114,000**	**140,000**
Water	**429,529**	**950,100**	**50,000**	**1,429,629**
Sewer	**447,529**	**837,100**	**100,000**	**1,384,629**
Buildings	**30,000**	**275,000**	**35,000**	**340,000**
Vehicles	**153,584**	**290,000**	**40,000**	**483,584**
Other Assets	**13,000**	**312,480**	**115,000**	**440,480**

Additional Point:

Mattawa currently has an ongoing industrial park project which includes the addition of water and sewer infrastructure. The Project is continuing in to 2014 and may carry with it future additional lifecycle costs to the above table. The project is intended to improve commerce potential in the town.

Part G

Expected Service Levels

The town of Mattawa has a commitment to its ratepayers to uphold a certain level of service in relation to municipal infrastructure including the following:

- Delivery of safe and quality tasting drinking water to most residents; including the environmentally responsible and reliable removal and treatment of septic wastewater.
- Upkeep 20 km of safe and usable town roads inclusive of during winter months which have a significant draw on the overall Town budget and financial results.
- Provide the services of a volunteer fire department which is essential to the safety of the Towns ratepayers as first responders to emergency situations. It is expected that the fire department is adequately supplied and staffed to ensure the level of service meets the needs of the Town.
- Provide access to a community rink; library, court facilities, emergency management locations all of which must remain in good repair in order to appropriately and effectively serve the community.

Part H

Determination of Capital Refurbishment and Deferred Maintenance Backlog and Financing and Funding Strategies

The Canadian Infrastructure Report Card has estimated that the average household in Canada has a combined infrastructure deficit of $13,813 in water, storm water, wastewater, and road infrastructure.

Mattawa, like many other organizations has traditionally followed a pay-as-you-go financial approach in which there is hesitation to assume debt as part of an overall financial strategy. Additionally, public pressure has resulted in many years of lower then inflation increases in rates and taxes that resulted in incremental increased deficits in capital renewal and operating programs. Infrastructure, being mostly roads, with service life of more than 30 years continued to perform without obvious effects. A number of public infrastructure failures in other municipalities and resulting regulations is changing the understanding of the need to fully finance the full life-cycle cost of infrastructure from both a capital and operating perspective that will ensure continued service delivery of core services to Mattawa into the future.

The long range financial plan incorporates updated figures on asset inventory identifying an estimated backlog of $5,604,300 in core asset spending in order to keep operating programs at same levels. This translates to somewhere between a $500,000 – $2,000,000 funding gap over the next decade. This plan incorporates the use of Gas Tax Funding (as anticipated to be available) to assist in funding backlog in water and roads asset renewal and other assets as determined in this part of the Capital Asset Management Plan. However this "funding gap"represents the amount of unfunded asset replacement that must take place.

Mattawa has identified the following potential future sources of funding/financing in meeting its capital plan funding requirements, and has included it in their 10 year financial plan:

Projected Infrastructure Grants

Grant	Funding	Usage	Benefit
Infrastructure Ontario	1,267,587	Major Road and Water replacement	Ensure future water quality as infrastructure has failed.

Debt Financing

Mattawa will explore leveraging debt financing in a number of required upcoming infrastructure projects as may be appropriate; we have modeled Mattawa Utilizing debt up to a maximum of 30% of its statutory annual repayment limit in order to fund asset replacement / major repair in the next few years and compared it to a model where no debt is utilized. Conclusions will be analyzed by Town staff and council.

User Rates

User rates are represented in majority by water and wastewater charges. These are expected to increase in line with inflation; and are incorporated as much as possible in the replacement of water and wastewater assets.

Development Charges

Due to the state of the local economy in Mattawa; development charges are not considered material to the overall asset management plan.

Reserves

Mattawa utilizes reserves to fund various activities. With respect to core services, the following outlines the structure:

Capital Reserves
A shared capital / operational reserve at the corporate level currently exists. A restricted capital reserve is to be funded annually through property taxation targeting levels in the 10 year approved capital forecast. Currently the capital reserves contain: $800,169

Part I

ASSET RENEWAL FINANCIAL FORECASTING (Appendix C)

Asset renewal forecasting is presented at two levels: 10 Year detailed Capital Plan and 20 Year Outlook Capital funding Forecast.

10 Year Capital Planning Forecast

This is a public and Council endorsed plan that address short term financing needs for infrastructure through an annual official budget process. The infrastructure needs are based on systematic integrated condition assessment process in which infrastructure needs based on condition are reviewed and prioritized and matched to available funding.

Typically, specific projects are identified in the 10 Year Capital Forecast document for a period of 5 years. Allocations for renewal are identified for years 6-10 based on condition-based needs assessments, estimates, and projected available funding. Some particularly large or contentious project may be identified and listed in years 6-10.

At this time, unfunded infrastructure renewal needs are not published as part of the budget process, but are identified within Asset Management. Many of these projects have been, or in process of, preliminary design to enable the project to start-up in relatively short time should additional funding opportunities become available.

20 Year Capital Planning Forecast

Forecast of infrastructure renewal needs are calculated annually based on current replacement value, funded and un-funded infrastructure needs, and supplemented with life-cycle estimates. These forecasts are done on individual infrastructure groups. Although not used to set rates, it provides insight into the degree of infrastructure renewal activity that needs to occur beyond the 10 year capital project plan adopted by Council. It provides a perspective that is used to identify the effect of carrying a backlog of renewal into the future.

This information is a primary input to setting rates to fund current capital renewal along with building reserves that will address immediate and longer term renewal activities and provide a financial net for unexpected expenses.

At this time Mattawa feels that the 10 – 20 year spending timeframe is very difficult to predict with any sort of certainty; due to the size of the municipality. Accordingly for the purposes of this plan; the most reasonable assumption is that spending in the 10 – 20 year time frame will closely mirror that of the 1-10 year plan; however spread across different assets.