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Joint Water and Wastewater Service Delivery Review Report

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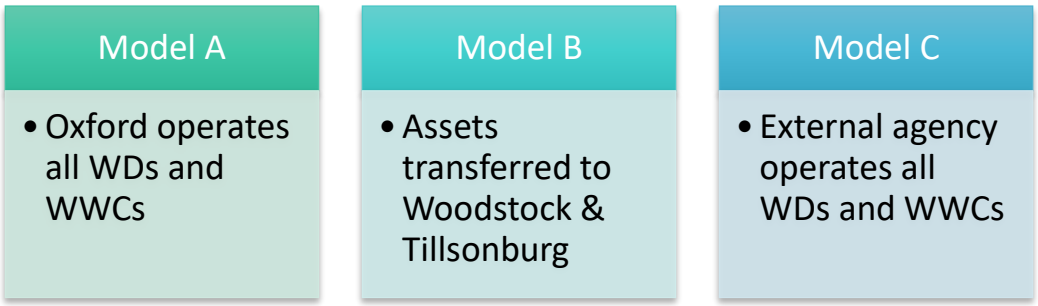
1. Executive Summary

The County of Oxford operates all of the municipal water distribution (WD) and wastewater collection (WWC) systems within the eight Area Municipalities, except for two systems where the City of Woodstock and the Town of Tillsonburg perform these services under contract to Oxford County and are engaged as Operating Authorities. The County, City of Woodstock and Town of Tillsonburg engaged GM BluePlan to conduct a joint Service Delivery Review to examine the viabilities and effectiveness of water distribution and wastewater collection service delivery models.

Current state was assessed, to fully understand a baseline and explore challenges, costs and benefits experienced with the current service delivery mode. Several alternate models were considered (shown below), and these models were explored and compared based on a variety of criteria. This process was carried out in consultation with staff from Oxford, Tillsonburg and Woodstock, and through analysis of data from 2018-2020.



Model A involves the County of Oxford assuming full Operating Authority responsibility for the WDs and WWCs in Tillsonburg and Woodstock and continuing as WD and WWC Operating Authority for all of the other Area Municipalities. Model A offers the most advantages and least number of disadvantages and risks to the County and its citizens. It is recommended that Model A be further pursued as the preferred model to deliver water distribution and wastewater collection services in Oxford County. Model A is identified as the option with the greatest ease of implementation and benefits, and the lowest overall risk related to legislative requirements, operations, and other considerations.

Model A is the only model that offered annual savings, rather than estimated increases in costs, and also is estimated to require relatively minor one-time capital costs. Beyond financial benefits, other considerations for Model A contribute to this recommendation, including consistent customer experience, service levels across the Area Municipalities. Established and proven systems and resources can be utilized, and as Owner and Operating Authority for other WDs and WWCs, Oxford is already carrying out the core responsibilities required with the transition. This allows for benefits from economies of scale and substantive annual operating savings.

Model B (transitioning ownership and operation of WD and WWC assets to Tillsonburg and Woodstock) and Model C (operation by external agency/contractor) have specific strengths and benefits which are discussed in this document. However, the increased costs, administrative challenges, and operational learning curves outweigh these benefits.

Regardless of which model is chosen, the best practices included in this report, identified as Status Quo Plus, should be explored in the next steps of implementation.

Under Model A as recommended, the service delivery expenditures reviewed that are identified as potential cost savings is $1,035,976 (or 18.25% of the total current service delivery expenditures).

2. Background

The County of Oxford (the County), City of Woodstock and Town of Tillsonburg engaged GM BluePlan to conduct a joint Service Delivery Review (the Review) that examines the viabilities and effectiveness of water distribution (WD) and wastewater collection (WWC) service delivery models.

All of the municipal water and wastewater treatment assets within the eight Area Municipalities are both owned and operated by the County. The water distribution and wastewater collection systems are also owned by the County, and the County operates all of the WDs and WWCs[1] except for those in Woodstock and Tillsonburg. The City of Woodstock and the Town of Tillsonburg perform these services under contract to the County and are engaged as Operating Authorities for the respective Woodstock and Tillsonburg WDs and WWCs; the local municipalities perform operational responsibilities on these systems under the authority of the *Safe Drinking Water Act (2002)*, similar to a contractor to the County. The most recent Operating Authority service contract agreements between the County and Woodstock/Tillsonburg were last updated in 2006 (City of Woodstock) and 2012 (Town of Tillsonburg). Though technically expired and outdated, these agreements have continued to remain in effect given neither party has terminated their respective agreement.

The purpose of this assignment was to review this current operational model in more detail, assessing the people, processes, technology, and expenditures involved in service delivery, to identify potential opportunities for improvement that would optimize the service delivery model and modernize operations. The provision of water and wastewater services is viewed in most jurisdictions as a service that is fundamentally tied to the life and future well being of the community and is seen quite differently than other utilities such as power, gas and telecommunications. Hence, special considerations of a range of criteria are included in this fulsome evaluation.

Service Areas being reviewed include WD and WWC performed by three Operating Authorities: the County, the Town of Tillsonburg (Tillsonburg), and the City of Woodstock (Woodstock). The key categories of service tasks for both water and wastewater include:

- Billing,
- Customer service,
- Engineering,
- Operation, maintenance and monitoring,
- Planning,
- Policy/legal, and

[1] WD systems: Beachville, Bright, Brownsville , Dereham, Drumbo-Princeton, Embro, Hickson, Ingersoll, Innerkip, Lakeside, Mt. Elgin, Oxford South, Plattsville , Tavistock, and Thamesford

WWC systems: Drumbo, Embro, Ingersoll, Innerkip, Mount Elgin, Norwich, Plattsville, Tavistock, Thamesford

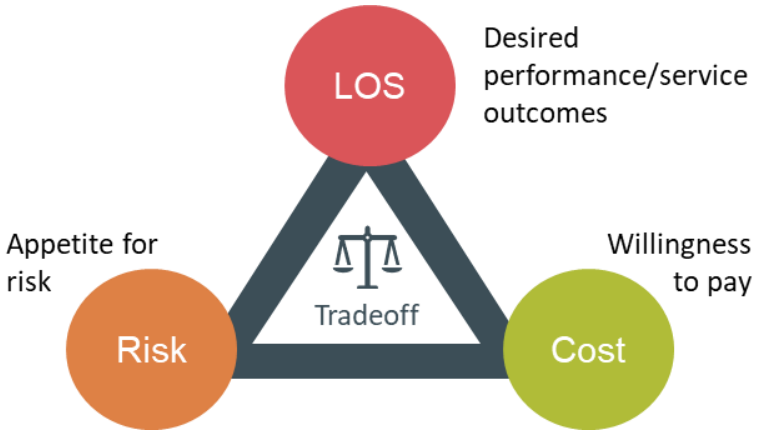
- General compliance/conformance tasks such as budgeting, drinking water Quality Management System (QMS), and backflow enforcement.

2.1 Cost, Level of Service and Risk

Ontario municipalities delivering water and wastewater services are challenged by complex legislation and fiscal constraints, increasing customers/expectations, and aging infrastructure. To address these challenges while maintaining service levels and financial targets, owners and operating authorities strive to balance three intrinsically connected elements: service levels, cost and risk.

The tension between these elements typically results in impacts and trade-offs. For example, by allowing one element to decline or conversely by enhancing another, an organization can be pushed off balance and away from the optimum center point. A municipality may elevate its levels of service beyond what the organization can afford - the cost of service provision may be reaching beyond what the community is willing to pay. When the tension between level of service and cost is not balanced, it exposes the organization to sustainability risks.

Figure 1 Balance of Risk - Level of Service - Cost



The County is seeking to establish this balance between service levels, cost and risk by defining current state, exploring alternate models for water and wastewater service delivery, and identifying efficiencies that may work towards an optimum balance.

2.2 Objective

The overall purpose of assignment is to systematically determine the most appropriate and cost effective way to provide municipal water distribution and wastewater collection services, while optimizing service levels. Optimizing service levels, cost and risk while maintaining safe, reliable and sustainable services are the common goals of all of the municipalities involved.

2.3 Methodology

To begin, a stakeholder group was established to collect data, consult on current practices and communicate model options. These stakeholders included representation from the Town of Tillsonburg, City of Woodstock and County of Oxford.

A common industry framework[2], illustrated in the diagram below, was used to view water and wastewater service provision. The framework is designed to help water and wastewater utility managers make informed decisions and practical, systematic changes to achieve excellence in utility performance in the face of everyday challenges and long-term needs of the utility and the community it serves.

The following are the core elements of the Effective Utility Management Model:

- Product Quality
- Customer Satisfaction
- Employee and Leadership Development
- Operational Optimization
- Financial Viability
- Infrastructure Strategy and Performance
- Enterprise Resiliency
- Community Sustainability
- Water Resource Sustainability
- Stakeholder Understanding and Support

Figure 2 Effective Utility Management Model

The GM BluePlan team carried out the following steps to complete this assignment:

- Consultation / Data Review & Analysis (2018-2020) / Interviews / Workshops phase;
- Current state review;
- Models definition and evaluations – introduction of status quo plus;
- Financial modelling;
- Implementation scatterplot; and
- Final recommendation.

[2] https://www.nacwa.org/docs/default-source/resources---public/eum-primer-final-1-24-17.pdf?sfvrsn=6

The model evaluations involved a fulsome review of:

- Legislation;
- Service levels;
- Governance and organizational structure;
- Planning and sustainability;
- Customer relations;
- Pros and cons;
- Risks; and
- Financials – including revenues, expenditures, reserves and capital forecasts, and cost of service comparisons.

Models

Three comparator model options were agreed upon by stakeholders for evaluation. Oxford currently operates and maintains all water and wastewater treatment service, and treatment assets and responsibilities are not included in this evaluation.

One of the local municipalities expressed an interest in also acquiring treatment assets along with distribution and collection, however the County identified some key challenges with this suggestion. Several key challenges with a decentralized treatment model exist, and continued minimization of public health risks is paramount. The County has found efficiencies and has reduced public health risk by providing heavily regulated water treatment and wastewater treatment operations through a centralized model. It was concluded that decentralizing treatment into individually owned or operated systems would be a complex process of disentanglement that would most likely not offer tangible benefits that outweigh the risks.

Model A – Oxford Operating Authority of All WD and WWC Systems

In this model, Oxford assumes Operating Authority full responsibility as the Operating Authority for the operation and management of its WD and WWC systems in Tillsonburg and Woodstock. The County continues to own all of its assets in this regard.

- Contractual agreements with the Town Tillsonburg and City of Woodstock are not renewed.
- All water & wastewater responsibilities are assumed by Oxford.
- Oxford would continue to bill customers.

Model B - Local Ownership & Operation of WD and WWC Systems

In this model, the Town and City assume ownership of respective WD and WWC assets, and full Owner and Operating Authority responsibilities for the WD and WWC services. The transferred assets are shown in Table 1.

Table 1 Model B - Assets to Transfer in Ownership and Responsibility

	Asset Type	Quantity	Units
Woodstock	**Water Distribution**		
	Local watermains and transmission main, all diameters	275	km
	Wastewater Collection		
	Gravity Sewers including trunk sewers	242.6	km
	Forcemains	3.4	km
	Sewage Pumping Station	4	#
	Grinder pumps	18	#
	Embro SPS	1	#
	Innerkip SPS	1	#
	Embro Forcemain	14774	m
	Innerkip Forcemain	7658	m
	Odour Control Facilities	2	#
Tillsonburg	**Water Distribution**		
	Local watermains and transmission main, all diameters	155	km
	Wastewater Collection		
	Gravity Sewers including trunk sewers	115.7	km
	Forcemains	2.3	km
	Sewage Pumping Stations	3	#

Assets currently operated by the Town or City are noted in italics.

- Contractual agreements between County and the Town Tillsonburg and City of Woodstock are not renewed.
- Legal transition of assets and related permits/licenses from Oxford to respective municipalities.
- Transition of all ownership and operating authority responsibilities occurs.
- The Town and City distribute water via County treatment and transmission mains to homes and businesses, collect wastewater and return it to Oxford via trunk mains for treatment.
- Drinking water and wastewater treatment services are purchased at a wholesale rate from Oxford.
- Oxford continues to operate water trunk feedermains, water booster pumping stations and water storage/tower facilities, managed through SCADA. Sewage forcemains, odour control facilities, sewage pumping stations, etc., become operational responsibility of the Town and City.
- Oxford revenues for the Town and City's portion of treatment and reserves are supplied through the wholesale rate.
- Water billing and revenue are managed solely by the Town and City.
- Water and Wastewater Treatment continues to be provided by Oxford staff.

The process for transferring the assets and related legal implications was not within the scope of this project. A detailed assessment of the larger financial and legal implications such as asset valuation, reserve transfers and the cost of borrowing, would be required for further evaluation or implementation of this model.

Model C – Contract WD and WWC of All Systems to External Operating Agency

Oxford to contract out all WD & WWC service management, excluding water treatment and wastewater treatment and operations to an external operating agency or contractor. Within the model, the scope of the assets to be operated by an external agency would include all distribution and collection linear and vertical assets for all local municipalities.

- Contractual agreements with the Town Tillsonburg and City of Woodstock are ceased.
- An RFP or Tendering process is developed.
- Operating authority responsibilities of all of the municipal water distribution and wastewater collection systems is transferred to the external agency/contractor under an operating agreement (required under the *Safe Drinking Water Act*).
- Water and Wastewater Treatment continues to be provided by Oxford staff.
- Feedermains and water/wastewater treatment facilities would not be included.
- All assets continue to be owned by Oxford.

2.4 General Assumptions

The success and effectiveness of any of the service delivery models is subject to several external uncertainties. These uncertainties are realistic and pose pressures on assets, operations and personnel coverage, but since they are applicable across all models, have not been factored into the evaluations.

- New and changing legislation, such as changing requirements for water distribution, wastewater collection, quality management, or asset management;
- Climate change impacts (e.g. flooding, infrastructure condition and demand);
- Hyper-inflation affecting purchased goods, services, fuel and energy costs;
- Impacts of pandemic; and
- Shortage in qualified / licensed staff.

In the financial considerations for Model B, it should be noted that an extensive evaluation process will be required to set the valuation of assets that are to be transferred from Oxford to Woodstock and Tillsonburg, and to define the methodology and cost of that asset transfer. Under the PSAB Tangible Capital Assets, these assets are identified within Oxford's ownership and a methodology will need to be agreed upon for how these assets are transferred. This could be a considerable financial issue for all parties.

3. Current State

Legislated requirements in municipal water and wastewater services is complex and extensive. As such, the model evaluations had to take into consideration the risks, efficiencies and complexities that are involved with each model, and the potential effects on maintaining compliance. Legislative considerations included the *Municipal Act (2001)*, *Safe Drinking Water Act (2002),* and its numerous regulations, with particular focus on the Municipal Drinking Water Licensing Program, the *Drinking Water Quality Management Standard (2017, v.2.0),* the *Ontario Water Resources Act (1990)*, and the *Infrastructure for Jobs and Prosperity Act (2015)*, amongst others. Current municipal by-laws, policies and contracts were also reviewed and considered, including agreements with neighbouring municipalities, by-laws, collective agreements, Asset Management Policy, QMS Policies and Strategic Plans, amongst others.

3.1 Responsibilities

Under the Safe Drinking Water Act, Owners and Operating Authorities both are prescribed duties to:

- Maintain compliance
- Maintain assets in a fit state of repair, and
- Operate systems with trained persons. The County of Oxford has Owner and Operating Authority responsibilities for water distribution and wastewater collection in Beachville, Bright, Brownsville , Dereham, Drumbo-Princeton, Embro, Hickson, Ingersoll, Innerkip, Lakeside, Mt. Elgin, Oxford South, Plattsville , Tavistock, and Thamesford.
- In Tillsonburg and Woodstock WDs and WWCs, operating responsibilities are shared between Oxford, the Town of Tillsonburg and the City of Woodstock.

The general list of key responsibilities is provided.

The core water distribution and wastewater collection responsibilities include:

General

- By-law Enforcement
- Capital & Operating Budget
- Climate Change Adaptation
- Drinking Water Quality Management
- Emergency Management
- Energy Demand Management
- Health & Safety Management
- New Service Inspections
- Source Water Protection
- Water Backflow Enforcement
- Water Efficiency and Conservation Program
- WW Biosolids Land Application

Engineering

- Capital Delivery Support
- Cast Iron Water Main Replacement Program
- Development Application Review
- GIS Maintenance
- Hydraulic Modelling
- System Optimization & Process Engineering
- W/WW Hydraulic Modelling
- WW Inflow & Infiltration Studies

Planning

- Asset Management
- Business Continuity Planning
- Condition Assessments
- Long-term Budget Forecasting
- Master Planning & Class EAs
- Rate Studies
- Secondary Plan / Functional Servicing Reporting
- Water Financial Plan

Customer Communications

- Customer Outreach & Communication
- Customer Service

Operation, Maintenance & Monitoring

- Break Response & Repair
- Hydrant Flow Test
- Hydrant Flushing & Inspection
- Locates
- Maintenance of Drain Valves/Air Release Valves/Pressure Reducing Valves
- Meter Installation/Repair/Maintenance
- O&M of Water Local Main
- O&M of Water Transmission Main
- O&M of WW Forcemain (including swabbing)
- O&M of WW Local & Trunk Sewer
- O&M of WW SPSs, Odour Control Facilities
- Quality Sampling & Testing
- SCADA
- Sewer Flow Monitoring
- Sewer Flushing & CCTV
- Water Backflow Testing
- Water Valve Cycling
- WW Effluent Quality Management
- WW Grinder Pump Inspection & Maintenance
- WW Maintenance Hole Inspection
- WW Septic Tank Inspection

Policy & Legal

- ICI Abatement agreements
- Policy and By-law Setting
- Water Agreements – Norfolk
- WW Agreement - East Zorra-Tavistock

Billing

- Billing and Payments
- Billing Inquiries
- Billing Provider Contract Management
- Meter Reads
- Water Shutoffs

3.2 Levels of Service

Overall, the level of service aim for Oxford and the local municipalities is to provide **safe, reliable** and **sustainable** drinking water & wastewater services to consumers within Oxford County. The levels of service are parameters that describe the extent and quality of services that the municipality provides to its citizens.

It is challenging to align service level objectives between multiple municipalities, as methodologies, data collection methods and data interpretation varies. Each municipality is currently providing water and wastewater distribution and collection services at different service levels.

Table 2 Levels of Service[3], Targets and Comparison, 2020

Commitment	Target Indicator (annual)	Current Performance (2020)		
		Oxford	Tillsonburg	Woodstock
Safe	Zero Ministry non-compliances, orders			
	Zero DWQMS external non-conformances			
	Zero precautionary boil water advisories			
	Zero adverse water quality incidents			
Reliable	100% of critical valves cycled			
	25% of non-critical valves cycled			Plus
	Hydrants regularly flushed (number of flushes)			
	20% of all hydrants flow tested[4]	Plus		
	7% of sewers inspected with CCTV			
	20% of sewers flushed (not including flushing for CCTV)		Plus	
	20% of maintenance holes inspected	Plus		Plus
Sustainable	Financial metrics – to be discussed in Section 3.3	-	-	-

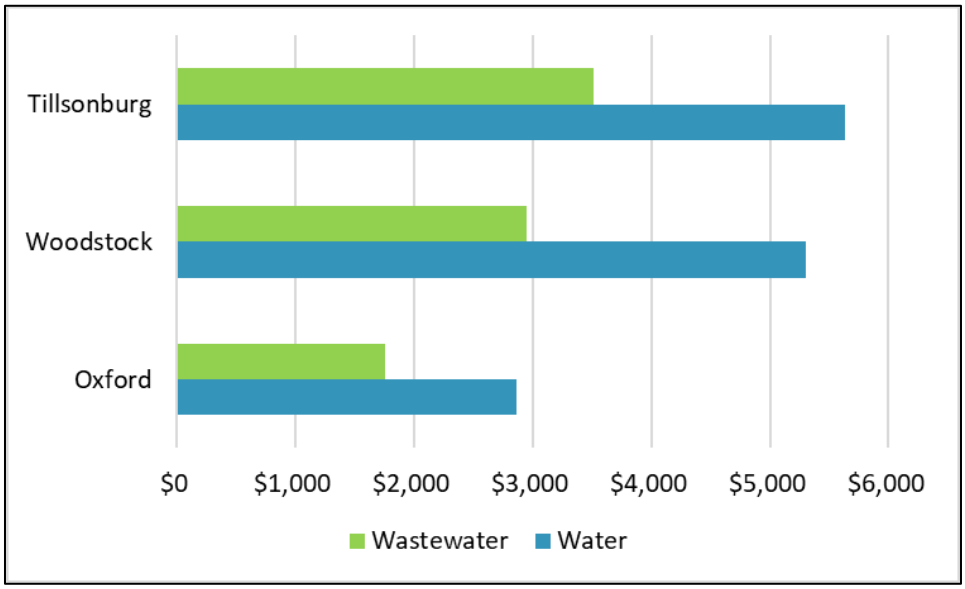
- [3] Green indicates current performance meets the target level. These target levels are considered to optimize and balance operational awareness, asset life, reliability and operational cost.
- Orange indicates current performance is 50-100% of the target, or at least one advisory/adverse occurred. Deviations from these targets may reduce operational awareness, asset life, or reliability, or increase public health risk.
- Red indicates less than 50% of the target is met. Operating at this level may significantly affect operational awareness, asset life, or reliability.
- 'Plus' indicates operational activities exceeded the target. Operating above targets may provide increased asset benefit, but also result in increased operational costs to complete.

- [4] Based on data and staff feedback

3.3 Metrics and Costs

As part of the current state analysis, GM BluePlan looked at some comparators metrics which are often used in benchmarking exercises to assess effectiveness and/or efficiency of operations. The comparison of actual operating costs/km of water distribution and wastewater collection main is shown below.

Figure 3 Water & Wastewater Operating Cost / km, 2020 (actuals)



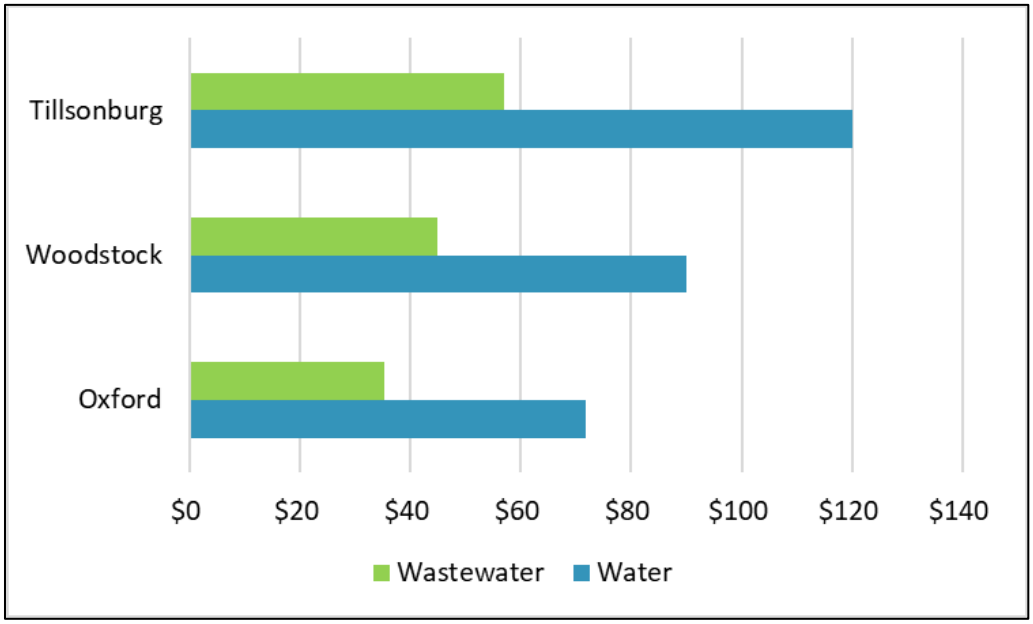
The following table describes the number of operators and the costs per km of watermain and wastewater main by municipality. There are a total of 24.5 operators currently operating all of the distribution and collection systems. Oxford has a lower cost per km of main than Woodstock and Tillsonburg.

Table 3 Operators and Cost per km of Watermain and Wastewater Main Combined, 2020

Water Distribution & Wastewater Collection Combined							
	Total km	# Operators	km / Operator	Actuals $	Budget $	**Actuals $/KM**	**Budget $/KM**
Oxford	549	9	61.00	$1,301,842	$1,564,031	**$2,371**	**$2,849**
Woodstock	521	11.5	45.30	$2,182,819	$2,518,175	**$4,190**	**$4,833**
Tillsonburg	273	4	68.25	$1,286,953	$1,313,100	**$4,714**	**$4,810**
Total	**1343**	**24.5**	**54.82**	**$4,771,614**	**$5,395,306**	$3,553	$4,017

The figure below shows the cost of water and wastewater operations and maintenance indexed to the number of customer accounts (indicated by number of metered water services).

Figure 4 Water & Wastewater Operating Cost per Customer Account (Metered Water Services), 2020



The table below shows the combined cost of water and wastewater indexed to the total number of customer accounts (metered water services). Similar to the cost per km above, Oxford exhibits the lowest cost per customer account.

Table 4 Water and Wastewater Combined Operating Cost Per Customer Account, 2020

Water Distribution & Wastewater Collection			
Total Water Services		**2020 Actuals $/service**	**2020 Budget $/service**
Oxford	12159	$107	$129
Woodstock	16192	$135	$156
Tillsonburg	7261	$177	$181

4. Comparison of Models

With current state established, GMBP proceeded to evaluate three alternate service delivery models to deliver water distribution and wastewater collection services for the County of Oxford. The three most viable models were discussed and selected in consultation with the stakeholder group. The models, related assets, responsibilities and current service levels are provided in this report.

Through consultation workshops, data review and analysis, and comparative municipal benchmarking, each model was evaluated, in comparison to current state or 'status quo'.

- Levels of service were defined and compared.
- Strengths, weaknesses, external opportunities and external threats were discussed and defined.
- Organizational Considerations, Financial Considerations were evaluated in detail.
- Risks were explored in the categories of operational, staffing, compliance, environmental, technological, financial, reputational / customer and Infrastructure risks.

Using the analysis listed above, a qualitative summary of pros and cons was developed and the highlights of that analysis are summarized in the following sections.

4.1 Model A – Oxford Model

This model is estimated to demonstrate a wide range of benefits to Oxford and the citizens of the County. The model allows for the alignment of accountability and responsibility and the control of treatment, distribution and collection services within one singular entity; customer service, billing, operations, planning, engineering and policy-setting are managed solely from one organization across the County, which allows for better coordination amongst the divisions within the County. This singular operational hub and drinking water quality management system as owner and operating authority allows for processes currently performed in triplicate to reduce to one, and allows for consistent levels of service and efficiencies to be found in economies of scale.

These benefits extend to staffing in terms of work process efficiency, coverage of duties in case of absence, OIC and ORO coverage. The span of control for the supervisory and management staff are more in line with comparator municipalities. Staff in Oxford already have experience operating water distribution and wastewater collection systems and these new assumed responsibilities align with those skillsets, thus reducing the need for additional training or licensing.

Drinking Water Quality Management is a rigorous system requiring staff resources to administer and maintain its conformance to the legislated standard. Oxford currently administers the drinking water QMS requirements on behalf of the operating authorities, such as preparation and updates of the Operational Plan and procedures. As stated above, this is currently being carried out in triplicate and can be much more efficient and effective as one owner and one operator.

Oxford has well established processes for operations, maintenance, planning, billing, engineering, budgeting, climate change adaptation and mitigation, water conservation and energy demand management would all apply directly to the additional assets being operated.

Existing County systems and technology well equip the County to take on the additional Operating Authority responsibilities, while increasing seamless access to data.

The transition, however, would not be without some challenges. Oxford staff are less familiar with the Tillsonburg and Woodstock underground linear infrastructure and customers than the current operating authorities, which would require time to learn the details of the systems. In addition:

- The additional geographical scope of coverage lengthens travel/response time for current Oxford operators (assuming an alternative geographical staff reallocation is not afforded).
- Coordination of capital WD and WWC projects within local municipal roads will still require coordination and communication, as is the current practice.
- A detailed transition plan for successful transfer of Operating Authority duties and data will be required.
- Minor administrative licensing change would be required as Oxford would become Operating Authority for the two systems.

4.2 Model B – Local Municipalities Model

This two-tier model is in place in other Ontario municipalities such as Region of Niagara and Region of Waterloo. The main strength of the model stems from the local municipality owning and operating the local infrastructure at service levels and rates based on direct and local community preferences. Existing local municipal staff know their citizens and community.

Certain processes such as billing, budgeting, asset management, and capital delivery may be further streamlined with one owner and operating authority. However, work will still require coordination with the County, such as development review and planning, water and wastewater SCADA systems, capital planning (linear infrastructure within County Roads), and some bylaws.

With this model, the local municipalities will have the authority to set and manage the billing rates for customers directly based on budgeting and capital forecasting within their full authorities. However, the water distribution and wastewater collection costs make up a small portion of the overall costs and they would be required to purchase wholesale water and wastewater treatment services from the County and given the differences in operating costs at each municipality, it is likely that Woodstock and Tillsonburg would have different rates set to meet their needs. If costs rise, the local municipalities will need to raise rates or take on additional debt. This is currently the responsibility of the County as the owner.

Numerous other challenges arise from this model, not due to the service model itself, but the cost and risks of transitioning into this model and taking on new ownership responsibilities.

The most one-time 'administrative' challenges exist with this model. The one-time administration tasks due to the transfer of assets, such as asset valuation, legal agreements, provincial licensing and permits will require staff, legal and consulting resources. The transition to a two-tier model, and resulting contractual agreements, will require the County to conduct a rate study to establish wholesale water and wastewater rates for the local municipalities, accounting for treatment costs and reserves.

New or expanded technology may be required for the new responsibilities for billing, document management and system optimization. This would require one-time purchasing costs, training, and staffing resources.

One-time capital costs for transition are estimated at $575,000 to $825,000, and may include the following initiatives:

- $100,000 -$150,000 - Transition Implementation Plan
- $200,000-$300,000 – Asset Transfer Study - Asset Valuation / Reserve / Debt Considerations for Transfer
- $100,000 - $200,000 Legal Costs
- $100,000 - Initial Wholesale / Retail Rate Study
- $75,000 – Revised Asset Management Plan
- Meter Reading Software (Itron Temetra)
- SCADA

As stated above, the cost of transferred assets and associated cost of borrowing to cover one-time capital or to cover transferred assets is not included and depending on the methodology agreed to by the parties, could potentially be a significant impact.

Operating the WDs and WWCs is currently a familiar responsibility of both Tillsonburg and Woodstock, however this model requires operation of forcemains, transmission watermains, sewage pumping stations and odour control facilities, all of which would be new to Tillsonburg and Woodstock.

There is a need to increase staff capacity and skillsets within both Tillsonburg and Woodstock, to absorb the new responsibilities related to now owning and operating licensed systems, including new vertical assets not operated before by staff. This transition requires additional skilled staff, training, and additional demand on current staff. The additional roles and skillsets are, in a sense, triplicated with this model, although it is acknowledged that the authority and control over budgets will allow for resources to align with rates.

Economies of scale and consistent service levels can be experienced when one group or role manages the same tasks for multiple municipalities, and inversely, some redundancies or loss of efficiencies arise when several smaller groups are carrying out the same tasks in smaller areas. There was some expectation that the additional duties, other than water/wastewater operators, could be partially absorbed by current staff, however, they may not possess the necessary skillsets and expertise to absorb new and additional program responsibilities, such as drinking water QMS, billing administration, hydraulic modelling, SCADA systems, backflow prevention, inflow/infiltration studies,

etc. in addition, it was noted at several workshop discussions that Woodstock and Tillsonburg staff are operating at full capacity.

4.3 Model C – External Agency/Contractor Model

The strength of this model is the ability to harness the experience, expertise and breadth of a larger agency or contractor to carry out operating authority responsibilities that are its core business all day every day. Contracting to an external agency allows for both the County and the local municipalities to transfer some of the risk and responsibility of operating water and wastewater distribution and collection to a third party, while tightly managing and controlling the work done and service levels achieved.

There are several weaknesses with this model. The first being the contractor's staff will be completely unfamiliar with the Tillsonburg, Woodstock and Oxford underground linear infrastructure and customers than the current operating authorities are dealing with, which would require time to learn the details of the systems.

There will need to be a comprehensive operating contract developed and an elaborate RFP or tendering process. Once that is completed there will need to be an extensive transition plan developed, which would be the most complex of all of the models. This entire process is expected to take 18 to 24 months, at a minimum, to accomplish and through the financial modelling there does not seem to be the financial incentive that corresponds with the level of effort.

Most contracting entities are profit motivated and decision on the wellbeing of the assets could be affected due to the divergence of interests. As well, any changes in legislation will allow the contractor to claim extras and there are numerous pieces of legislation that are rumoured to be coming on the wastewater side of the business.

Lastly, this model will be the most disruptive to existing staff in the County and Area Municipalities. Once the contractor has been hired, most frontline staff experience and knowledge will be lost and this creates a situation where the municipality could be married to the contract model in perpetuity with no ability to regain the staff or knowledge in the future, should they want to someday revert back to an in-house model.

4.4 Financial Comparisons

In addition to the qualitative analysis above, a financial model was developed for each scenario to come up with an estimated operating cost of operations and maintenance. This was then used as a comparator to the status quo.

Throughout the consultation and data review (2018-2020), it became evident that a financial estimate for a fourth service model should be considered, Status Quo Plus. Based on scope restrictions, this model was not evaluated through earlier sections of this report, but financial comparisons have been included. The model involves no changes to the current service delivery method but assumes some

efficiency improvements are implemented based on service levels and desired synergies as well as the addition of new staff that have been requested by Tillsonburg and Oxford.

The results of the financial modelling are listed below.

Table 5 Summary of Overall Annual WD and WWC Opex for Each Model

Status Quo (baseline)	$	5,673,185
Model A	$	4,666,059
Model B	$	6,161,004
Model C	$	6,524,163
Status Quo - Plus	$	5,702,035

Compared to Status Quo, Model A equates to an estimated **annual savings of $1,007,126, or 18% reduction in the operating cost**. Operational surplus could be applied to reserves to assist with the impending infrastructure deficits. Based on County municipal staffing projections only (not including GM BluePlan staffing recommendations), the resulting overall Model A cost would be $4,396,059.

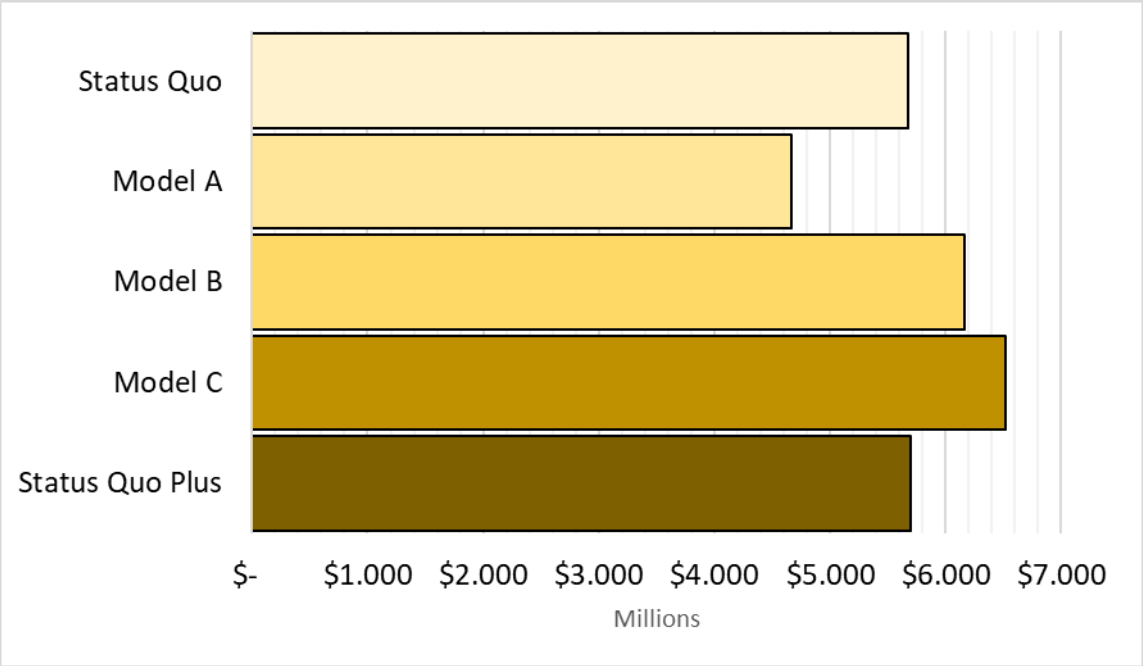
Compared to Status Quo, Model B equates to an estimated **annual increase of $487,819 This increase equates to an approximate 9%** increase in total operating costs. The increases are generally related to increased staffing required for ownership and operation of the linear and vertical infrastructure. Based on local municipal staffing projections only, (not including GM BluePlan staffing recommendations), the resulting overall Model B cost would be $5,611,004.

Compared to Status Quo, Model C equates to an estimated **annual increase of $850,978. This increase equates to an approximate 10%** increase in total operating costs, which has the potential to result in increased customer water rates. The increases are generally related to the change inherent to service delivery by an external contractor.

Compared to Status Quo, the Status Quo Plus Model equates to an estimated that savings of approximately $326,847 may be realized from bundling of goods/contracted services, reallocation of operational labour hours to align with industry standards, regular application of the County's fees and charges by-law, and administering a user-pay backflow prevention program. This is offset by an additional staffing cost of $355,698 to address new service levels standards. In total, **the estimated net annual increase is $28,850**.

These totals are also shown on the following chart. It should be noted that the models were developed using 2020 budgeted values and have not been inflated to current dollars but are relative.

Figure 5 Comparisons of Overall Annual WD & WWC Operating Expenditures



Further breakdown of the expenditures by cost category and municipality, for each model, is provided in Appendix A and Appendix B.

Financial estimates of the three original service delivery models indicate that Model A is estimated to have lower overall operating costs to operate and maintain all of the WDs and WWCs within the County, including vertical and linear distribution and collection infrastructure. This could result in an increase contribution to reserves of approximately $1 million, without increasing water and wastewater rates.

5. Industry Best Practices

One of the deliverables for this assignment was to analyze the current state and identify any best practices that could be implemented regardless of the decision on which model was selected.

The following is a high-level summary of the identified initiatives. It should be noted that these best practices would most likely require further work by the parties to explore their viability and identify a path towards implementation.

5.1 Backflow as a User Fee

Backflow of water from industrial users' systems into the drinking water system is a real and serious threat to the safety of the drinking water. The County has identified this as a priority in its annual Management Reviews as part of its drinking water QMS. The County is in the process of developing a Backflow Prevention By-law to address the risk.

Currently, Woodstock has a process in place where backflow devices have been installed, maintained and inspected within the industrial sector within its borders. The City has approximately one dedicated FTE and approximately $100 K budgeted for this activity. Authority for this activity is lacking as Oxford has not yet passed a by-law laying out the responsibilities and costs for this program. Tillsonburg and the rest of the communities in Oxford do not have a formal program yet for backflow prevention devices.

The best practices throughout almost all municipalities across Ontario, is to have a by-law passed that passes the responsibility for installation, maintenance and annual inspection of these device to the industrial sector customer (user pay model). This removes the cost burden of this activity from the residential homeowner who is not posing a threat to the drinking water and places that onus, cost and responsibility to the industrial customer that is connected to the system and is the entity that has introduced the threat to the system.

GMBP recommends that the County finalize its Backflow Prevention By-law and introduce a user pay system that is self funding to address the issue of possible cross contamination from industrial and commercial customers.

5.2 Standard Service Levels

As stated above, Woodstock and Tillsonburg are acting as the Operating Authority for the WD and WWC systems for Oxford, who owns the assets. Woodstock and Tillsonburg are both performing this service under contracts with the County, which have not been updated in the last decade and are technically expired. Each entity is providing different standard levels of service with respect to operations and maintenance of the assets.

Over the recent years and prior to this assignment, the parties were meeting to discuss updating those contracts and in those discussion the concept of standardized operating parameters was brought

forward. Although those discussion were halted during this exercise a table of service standards was brought forward.

GMBP has reviewed the table of service industry standards and agrees that these are best practices as identified by AWWA and WEF and we recommend that which ever model is pursued that these service levels should be adopted throughout all of Oxford County. This would create consistency across the County and the resources that are currently being used exceeding those standards could be shifted to areas of the system where those standards are not being met.

5.3 Joint Procurement

Throughout the course of the year there are inherent peaks and valleys that arise with respect to the operations and maintenance of the water distribution and wastewater collection systems. Most municipalities, including Woodstock, Tillsonburg and Oxford set their staffing levels to meet the base amount of work and they utilize contracted service to supplement either a skill set that they do not currently employ or to address the peak workload that is occurring at a given time.

In addition to contracted services, each municipality individually purchases materials that are required to operate and maintain the systems, with the exception of fuel procurement (EMOP). Over all three municipalities, there is approximately $1.7 million budgeted for contracted services and materials and supplies. That is almost 30% of the total cost to operate and maintain all of the systems in Oxford.

GMBP recommends that a procurement group or committee be established amongst all three municipalities that consists of purchasing professionals, management staff and operations staff to look for ways to jointly procure additional services and materials. It is estimated that 5 to 10% of this cost could be avoided through economies of scale as well as a reduction in administrative time to tender and manage these contracts.

The total value of purchased goods and services in Status Quo is $1,575,594, which can lend to significant opportunity for savings. The following table summarizes some goods that are currently jointly procured or bundled, which may relate to water and wastewater activities. The three municipalities perform standalone procurement for goods and services that are common across water and wastewater, where potential for joint procurement savings exist. Some adhoc informal sharing of purchased items currently occurs between the groups as needed.

Table 6 Joint Procurement and Bundling Status for Oxford/Tillsonburg/Woodstock

Service	Currently Jointly Procured or Bundled Tenders?	Opportunity for Potential Savings?	Comments
W & WW Goods			
Fuel	Yes		EMOP joint purchasing group
Fleet/Equipment rentals		Yes	All individual procurement currently. Mini-excavator, welding equipment & light duty fleet rentals
Water meters	Yes		Iconix Waterworks (County pricing), includes Tillsonburg and Woodstock
Meter transmitter	Yes		Itron transmitters are supplied by Wolesley Canada (County pricing)
Meter software (Oxford only)			Itron Temetra – water reading software package, including handheld radios and equipment for contracted meter reading
Piping, valving & appurtenances		Yes	All individual procurement currently
Gravel / Stone		Yes	All individual procurement currently
Asphalt			All individual procurement currently
W & WW Services			
Watermain Break		Yes	
Watermain Swabbing		Yes	
Locates		Yes	If external provision is considered
Fleet Maintenance		Yes	Small repairs in house
Hydrant Flow Testing		Yes	
Meter Installations		Yes	
CCTV		Yes	
Sewer Flushing		Yes	Main sewer lines
MH Inspections/ Repairs		Yes	Small repairs in house
Sewer/ Forcemain Repair		Yes	Excavation/trucking on larger excavations and lining/sport repairs contracted out

5.4 Collapsing Water and Wastewater Reserves

Oxford currently has numerous reserves set up to address future capital expenditures. There are currently 11 reserves set up for wastewater (one for each local municipality) and 4 reserves set up for water (one each for Tillsonburg, Woodstock and Ingersoll and a fourth for the remainder of the local systems).

Transfers in or out of each of these reserves originates from the surplus/deficit between the revenues and expenditures of a particular municipality. The issue that is arising is the fact that many of these reserves are experiencing peaks and valleys at different times throughout the 10-year horizon and creating pressures on the reserve itself.

GMBP recommends that the County consider collapsing these reserves into one water reserve and one wastewater reserve which would offer more flexibility to the County to allocate funds to the required capital project and smoothing out the peaks and valleys somewhat. There would also be a reduced effort in accounting to manage these 15 reserves. It is understood that this is a much more complex decision that has been identified here and that it would require Finance to explore further.

5.5 Capital Coordination in the ROW

Regardless of the model that is chosen, there will be assets in the ROW that will require replacement and rehabilitation and coordination of these capital works is critical to ensure that each municipality understands what the priorities are of their partner municipalities. Depending on the model decided upon, there will be situations where the local municipality will be doing work on a County Road, or the County will be doing work on the local road.

GMBP recommends that a formal coordination committee be set up that includes, finance staff, management staff, engineering staff and planning staff to review the annual capital requirements and look for opportunities to better coordinate the work within the ROW. The group would also look for opportunities to shift projects into the future or backwards to gain alignment with their municipal partners and future growth projects.

5.6 Inflow and Infiltration

Like many municipalities across province, Oxford experiences substantive costs related to wastewater pumping and treatment of extraneous flows which are present due to high I&I into the WWC systems. Although certain rates of I&I are expected and incorporated in the design of all municipal wastewater infrastructure, industry best practice is to focus on reducing or minimizing I&I into the WWC systems to reduce the cost of pumping and treating extraneous flows and to increase existing capacities. Types of I&I reduction projects include removing cross-connections from storm sewers and catchbasins, sewer lining or replacement, maintenance hole lining and disconnection of downspouts and weeping tile drains, for example.

5.7 Cost Recovery

Costs related to specific services and growth can often be incurred without corresponding revenues (through fees and charges) to offset. Initiatives should be considered to ensure services not offered to the general public are covered through a suitable user fee, specifically items around growth. It is important that all municipalities apply the County's Fees and Charges By-law consistently to ensure that growth pays for growth and that these costs are not indirectly passed on to the rate payer.

An example of a cost recovery initiative that may be further considered is below.

Non-Revenue and Unaccounted Water Usage

Water that is treated and distributed but not billed is considered non-revenue water and can contribute to financial losses when not offset by rate revenues. Also, water usage that is unaccounted for, such as meter error, leaks or theft, can relate to significant financial costs. Several recovery considerations are discussed below related to non-revenue and unaccounted water.

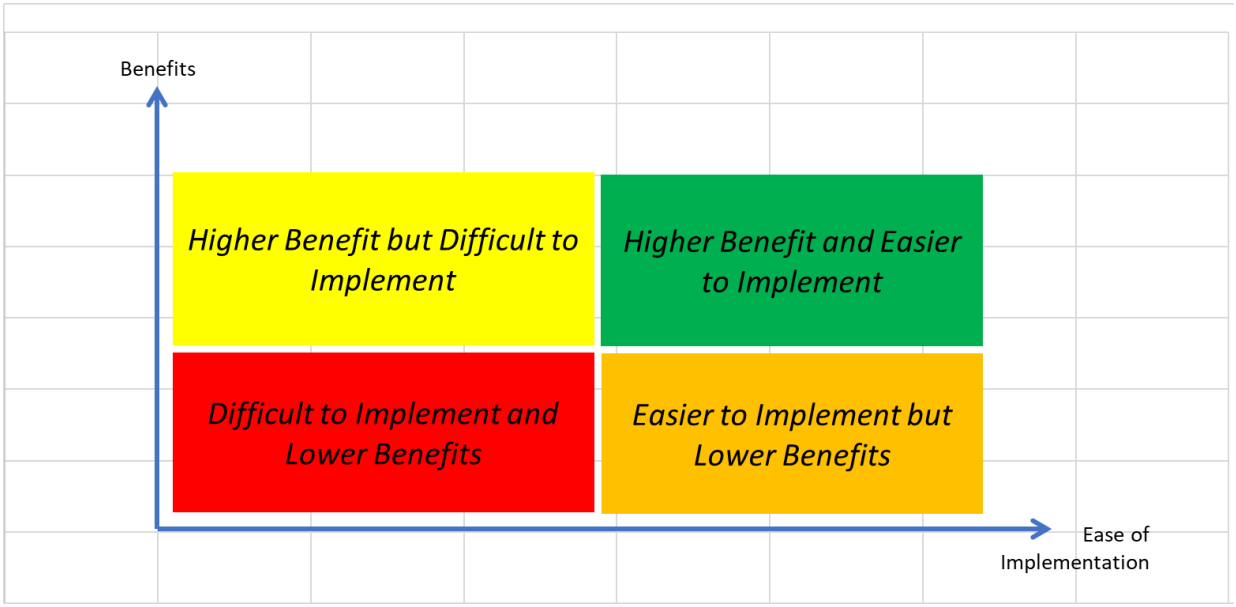
- There may be opportunity to increase accountability for non-revenue water use within the County. Internal services use water for municipal processes, which may be unaccounted for in billing. Water is often used through hydrants for fire services training exercises, flushing irrigation lines, hydrant/main flushing, and this usage may not be fully be captured though accounting processes.
- Capital construction (municipal) and watermain commissioning also require water which may not be consistently metered.
- Accounting for water use for through metered hydrant connections or flow estimations allows for improved internal cost recovery.
- With a quantified assessment of non-revenue water, unaccounted water can be further explored. Unaccounted water may arise through meter error or bypasses, unaccounted usage, or theft, for example. Estimates of losses from watermain breaks or known leaks should also be tracked and included. A study on the amount of unaccounted water and its costs will further indicate the most suited recovery initiatives.

6. Ease of Implementation

As requested in the RFP, an implementation scatterplot was prepared, showing the proposed ease of implementation and benefits for each model. The scatterplot visually plots the comparatives for each model, based on the information from consultation, data review, and technical memos.

The purpose of plotting the ease of implementation and benefits for each model is to show the most viable options compared to those with less benefits or implementation ease. The figure below shows how this placement is portrayed, with models in the top right quadrant likely to demonstrate the easiest transition with the most benefits.

Figure 6 Example Plot Showing Preference of Quadrants



- Those models that land in the green area show high benefit and are expected to be easier to implement. These are high priority 'quick wins' and are recommended.
- Models with scores in the yellow area offer high benefits but are challenging to implement, which can be considered from recommendation, but would require a robust implementation strategy.
- Models with scores in the orange area offer easy implementation but fewer benefits, and are generally lower priority or not recommended.
- Finally, models with scores in the red area offer lower benefits and are difficult to implement, and are generally not recommended.

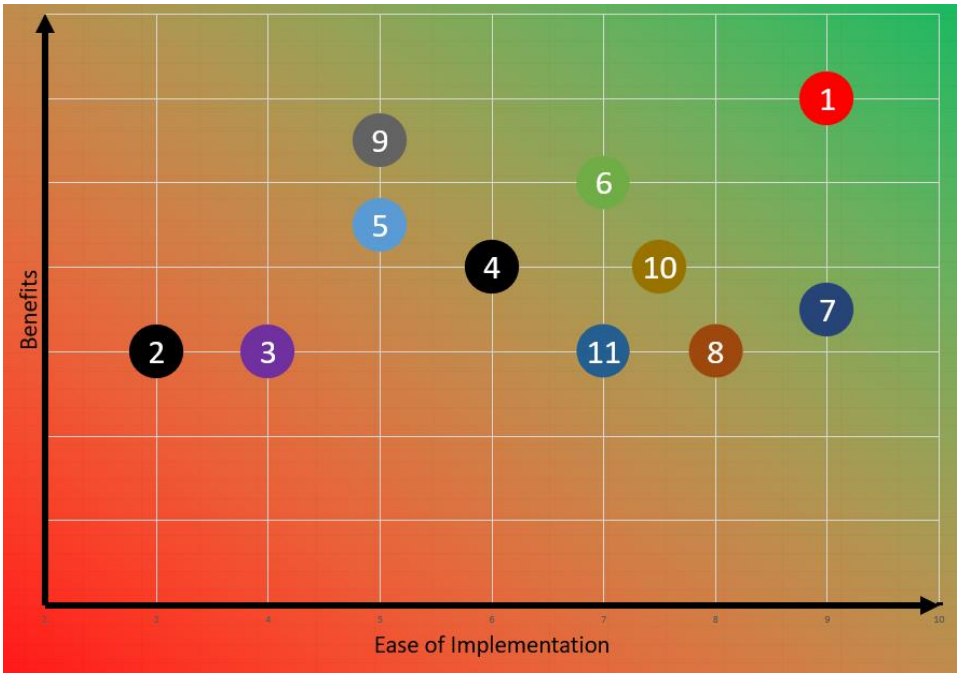
To plot the scores for each model, the ease of implementation and expected benefits were quantified using the table below, based on ease and benefits to the County of Oxford and its citizens. Higher scores indicate the more favourable options based on the noted criteria.

Table 7 Ease of Implementation and Benefits Scoring

Score	Highly Positive / Advantageous	Moderately Positive	Somewhat Positive/ Neutral
	3	2	1
Ease of Implementation			
Ease of implementation / change	Relatively simple, smaller process or procedural changes, less formalities or legal requirements	Moderate changes, changes require consultation with some stakeholders	Difficult, changes required across the organization, formal planning required, require consultation with many stakeholders
Time to implement	Prompt, swift change within one to two quarters	Moderate timing, within one year	Extended timing, at least one or more years
Costs to implement	Low operating and/or capital costs to implement, no debt incurred	Moderate costs to implement, some debt incurred	Higher costs to implement, likely that significant debt may be incurred or long-term costs
Benefits			
Cost Savings	Substantial, repeatable cost savings expected	Moderate cost savings expected	Minor/No cost savings expected
Customer Experience	Customers will experience enhanced service or improved value for money	Customers may experience service improvements or more value for money	Customers likely will not experience improvements
Service Levels	Service levels will be improved and aligned across all municipalities	Service levels may be improved in some municipalities	No service levels improvements are expected

Based on the analysis and consultation, each model was evaluated and scored using the above framework, resulting in the plot shown below.

Figure 7 Ease of Implementation and Benefits for Various Models and Best Practices



1	Model A
2	Model B
3	Model C
4	Status Quo Plus
5	User Pay Backflow
6	Standard Service Levels
7	Joint Procurement
8	Collapsing W and WW Reserves
9	Capital Coordination in the ROW
10	Inflow & Infiltration Studies
11	Cost Recovery

The chart above shows the implementation of Model A (item 1) as the highest scoring initiative, demonstrating substantial benefits and relatively simple, timely and low cost implementation. Model B (item 2) and Model C (item 3) both demonstrate fewer benefits with more difficulty to implement and higher costs.

Items 5 to 11 are the Best Practices identified in section 5 of this report and fall in various areas of benefit and ease of implementation. These items are all considered of reasonable effort, defined benefits and recommended to be initiated regardless of which model is chosen. The Status Quo Plus (item 4) is essentially the compilation of items 5 to 11 and hence its scoring and placement on the graph is more difficult to implement but offering substantial benefits.

Scoring is provided in Appendix C.

7. Recommendation

In our opinion, **Model A** offers the most advantages and least number of disadvantages and risks to the County and its citizens. It is recommended that Model A be further pursued as the preferred model to deliver water distribution and wastewater collection services in Oxford County.

Model A involves the County of Oxford assuming full Operating Authority responsibility for the WDs and WWCs in Tillsonburg and Woodstock, and continuing as WD and WWC Operating Authority for all of the other Area Municipalities. The County continues to own all of its assets in this regard and contractual agreements with the Town of Tillsonburg and City of Woodstock would not be renewed.

Model A is the only model that offered annual savings, rather than estimated increases in costs.

- In Model A, the annual operational savings for overall WD and WWC are estimated at approximately $1 million, in comparison to the current expenditures in status quo.
- The one-time capital costs to implement Model A, estimated at $50,000, is significantly lower than Model B, estimated at $575,000 to $825,000. Minor one-time capital costs to implement Model C and the Status Quo Plus are likely, but these were not calculated as part of this assignment.

Beyond financial benefits, other considerations for Model A contribute to this recommendation.

- In terms of the customer experience, Model A offers similar customer service as the other models, and would streamline customer service approach, documentation and response across all of the Area Municipalities.
- Model A allows for service levels to be optimized, consistent across all Area Municipalities, and based on the best practice standard operating parameters and processes.
- Established and proven systems and resources can be utilized, including the Oxford Customer Relationship Management (CRM) System, Work Order Management System (WMS), GIS system, and staffing.
- As Owner, Oxford is already carrying out the planning, billing and engineering responsibilities, including such processes as Hydraulic Modelling. Master Planning, Billing, Policy and By-law Enforcement, Source Water Protection, and SCADA. Oxford is also managing the drinking water QMSs within the WDs and WWCs, including some DWQMS operating authority responsibilities within Tillsonburg and Woodstock. Oxford also has an established Asset Management Plan in place for all of the assets.
- Under Model B, these activities would require a triplication of many of these efforts, would require additional resources, and would eliminate the economies of scale that will be found in Model A.

In 2021 budget deliberations, Oxford Council has given staff direction to freeze fixed water/wastewater rates (Woodstock) and freeze wastewater fixed rates (Townships) at 2020 levels for the period between 2021 to 2024. This direction has resulted in the use of water and wastewater rate reserves to offset cost increases, which already have numerous large draws to deal with the required water/wastewater infrastructure investments identified in the 2017 Asset Management Plan (AMP) as well as servicing of new employment lands (not covered through development charges). Oxford is in the process of

finalizing an update to the 2017 AMP, and this is expected to add further pressure on rate reserves as overall increase to the water/wastewater infrastructure replacement costs are anticipated. Adopting Model A will allow Oxford to reduce operating expenditures by approximately $1 Million annually, which could be directed to these reserves without raising rates for customers.

Finally, as identified in the scatterplot graph in Section 6, Model A is identified as the option with the greatest ease of implementation and benefits, with substantive annual operational cost savings. It is estimated that this model could be implemented in as little as 3 to 6 months.

Regardless of which model is chosen, all of the best practices listed should be implemented. These initiatives are outlined in Section 5.

7.1 Future Organizational Structure

The structure for Model A below is proposed as a sustainable approach to delivering the expanded operation and maintenance services. Based on the County's current level of operators per km of pipe, it is estimated 23 operators in total would be required for all systems - 17 WD operators and 6 WWC operators.

- Of the 17 WD operators, it is estimated that 10 would be allocated to the north and 7 allocated to the south.
- For the WWC operators, 3.5 operators would be attributed to the north and 2.5 to the south.
- Dedication of 2.0 Utility Locate Technicians for County-wide coverage.

8. Next Steps

Should Model A be approved by County Council for implementation, the following steps are suggested for planning and consideration.

1. *Set up a transition team*. This transition team should include staff from the following areas in Oxford:
   - Senior Management
   - Operational management staff
   - Human resources staff
   - Finance staff
   - Legal staff or consultation
   - Drinking water QMS staff
   - Communications staff

   Representation from Woodstock and Tillsonburg, including Senior Management and support staff as needed from Operations, Corporate Services, Legal, Finance and Human resources.

   Clearly define the key stakeholders, responsibilities, authorities and staffing complements.

2. *Develop a Project Charter* that includes the values that are to be followed and the overall objectives and responsibilities of the parties.

3. *Develop a Communications Strategy* that clearly identifies the key stakeholders and the messaging to each group. This should go down to the tactical level and identify who will be discussing what. Stakeholder should include Council, CAOs, unions, staff, the Public, the MECP, etc.

4. *Develop a Change Management Plan* to ensure that the objectives and values set up front are being adhered to and accomplished while minimizing disruption. A change management plan helps manage the change process, and also ensures control in budget, schedule, scope, communication, and resources. The change management plan will minimize the impact a change can have on the organizations involved, employees, customers, and other important stakeholders.

5. *Explore asset considerations* including fleet, facilities, and equipment that will be required, and any stranded assets in Woodstock and Tillsonburg that may be transferred or purchased by Oxford.

6. *Review the Collective Agreements* to ensure commitments are met and issues such as potential successor rights are explored and resolved.

7. *Identify and address other legal and administrative issues* such as Operating Authority administrative changes under the Municipal Drinking Water License, new staff reporting relationships and organization changes, and so on.

Appendix A

Financial Breakdown of Each Model by Cost Category

	Status Quo	Model A	Model B	Model C	Status Quo Plus
Salaries & Benefits	$2,687,245	$2,788,927	$3,452,943	$3,090,332	$2,839,687
Materials & Supplies	$926,550	$880,223	$962,900	$1,065,533	$880,223
Purchased Service	$772,635	$734,003	$736,285	$888,530	$695,371
Overhead, Internal Charges & Other	$1,286,754	$262,906	$1,008,876	$1,479,768	$1,286,754
Total	**$5,673,184**	**$4,666,059**	**$6,161,004**	**$6,524,162**	**$5,702,035**
Notes	Other includes overhead for corporate & engineering, and Oxford work in Tillsonburg and Woodstock.	Other includes overhead for equipment and general.	Other includes overhead for corporate, engineering and WWW general.	Other includes overhead for corporate & engineering and Oxford work in Tillsonburg and Woodstock.,	Other includes overhead for corporate & engineering and Oxford work in Tillsonburg and Woodstock.

Appendix B

Financial Breakdown of Model A, Model B and Status Quo Plus by Cost Category

Woodstock Water	Status Quo	Model A	Model B	Status Quo Plus
Salaries & Benefits	$1,060,530	$0	$1,432,972	$908,088
Materials & Supplies	$195,200	$185,440	$195,200	$185,440
Purchased Service	$61,800	$58,710	$61,800	$55,620
Internal Charges & Insurance	$286,260	$0	$172,390	$286,260
Other	$76,800	$0	$190,670	$76,800
Total	**$1,680,590**	**$244,150**	**$2,053,032**	**$1,512,208**
Woodstock Wastewater	**Status Quo**	**Model A**	**Model B**	**Status Quo Plus**
Salaries & Benefits	$229,590	$0	$229,590	$331,218
Materials & Supplies	$48,650	$46,218	$85,000	$46,218
Purchased Service	$322,735	$306,598	$286,385	$290,461
Internal Charges & Insurance	$171,310	$0	$135,030	$171,310
Other	$65,300	$0	$101,580	$65,300
Total	**$837,585**	**$352,816**	**$837,585**	**$904,507**
Tillsonburg Water	**Status Quo**	**Model A**	**Model B**	**Status Quo Plus**
Salaries & Benefits	$463,100	$0	$886,356	$463,100
Materials & Supplies	$199,400	$189,430	$199,400	$189,430
Purchased Service	$76,500	$72,675	$76,500	$68,850
Internal Charges & Insurance	$134,200	$0	$134,200	$134,200
Other	$16,800	$0	$16,800	$16,800
Total	**$890,000**	**$262,105**	**$1,313,256**	**$872,380**
Tillsonburg Wastewater	**Status Quo**	**Model A**	**Model B**	**Status Quo Plus**
Salaries & Benefits	$144,000	$0	$144,000	$347,256
Materials & Supplies	$63,700	$60,515	$63,700	$60,515
Purchased Service	$75,000	$71,250	$75,000	$67,500
Internal Charges & Insurance	$137,800	$0	$137,800	$137,800
Other	$2,600	$0	$2,600	$2,600
Total	**$423,100**	**$131,765**	**$423,100**	**$615,671**

Oxford Water	Status Quo	Model A	Model B	Status Quo Plus
Salaries & Benefits	$556,247	$2,788,927	$556,247	$556,247
Materials & Supplies	$388,300	$368,885	$388,300	$368,885
Purchased Service	$17,200	$16,340	$17,200	$15,480
Internal Charges & Insurance	$77,087	$77,087	$77,087	$77,087
Other	$153,265	$145,100	$0	$153,265
Total	**$1,192,099**	**$3,396,339.00**	**$1,038,834.00**	**$1,170,964.00**
Oxford Wastewater	**Status Quo**	**Model A**	**Model B**	**Status Quo Plus**
Salaries & Benefits	$233,778	$0	$123,778	$233,778
Materials & Supplies	$31,300	$29,735	$31,300	$29,735
Purchased Service	$219,400	$208,430	$219,400	$197,460
Internal Charges & Insurance	$40,720	$40,720	$40,720	$40,720
Other	$124,613	$0	$0	$124,613
Total	**$649,811**	**$278,885.00**	**$415,198.00**	**$626,306.00**

Appendix C – Scatterplot Scores

	Model A	Model B	Model C	Status Quo Plus	User Pay Backflow	Standard Service Levels	Joint Procurement	Collapsing W and WW Reserves	Capital Coordination in the ROW	Inflow & Infiltration Studies	Cost Recovery
Plot Number	1	2	3	4	5	6	7	8	9	10	11
Ease of implementation/ change	3	1	1	2	1	3	3	2	0	3	2
Time to implement	3	1	1	2	2	3	3	3	2	2	2
Costs to implement	3	1	2	2	2	1	3	3	3	2.5	3
Total - Ease of implementation	9	3	4	6	5	7	9	8	5	7.5	7
Cost Savings	3	1	1	1	2.5	2	2.5	1	2.5	3	2
Customer Experience	2	2	1	2	1	2	1	2	2	1	1
Service Levels	3	2	3	3	3	3	2	2	3	2	2
Total - Benefits	8	5	5	6	6.5	7	5.5	5	7.5	6	5