

To: Warden and Members of County Council

From: Director of Public Works

2018-2020 Water Distribution and Wastewater Collection Service Delivery Review – Outcomes and Recommendations

RECOMMENDATIONS

1. That Oxford County Council direct staff to proceed to implement Centralized service delivery of water distribution and wastewater collection operations and maintenance, in order to further optimize operational levels of service, service continuity/redundancy and cost efficiencies as detailed in Report No. PW 2022-32 as follows:
 - a. Provide the Town of Tillsonburg and City of Woodstock formal written notice (June 23, 2022) that the current water distribution and sewage collection operations and maintenance service contract agreements will be terminated by Oxford County in six (January 1, 2023) and eighteen (January 1, 2024) months respectively as part of overall phased service transitions to Oxford County Water and Wastewater Services (effective on the same respective dates);
 - b. Establish and assign a service transition team to effectively facilitate communications, change management, human resources and administrative activities associated with the implementation of the Centralized water distribution and wastewater collection operations and maintenance service delivery model;
 - c. Apply Year 1 Operations and Maintenance savings as appropriate to offset any necessary costs that may be potentially incurred by Woodstock and/or Tillsonburg during the transition from Status Quo service delivery model (i.e. Human Resources/re-employment, stranded assets, etc.);
2. And further, that County Council direct staff to finalize and execute updated engineering services contract agreements with the Town of Tillsonburg and City of Woodstock by September 23, 2022 to ensure the continued joint capital planning coordination and harmonization of County water distribution and wastewater projects with local municipal roadwork projects.

REPORT HIGHLIGHTS

- The purpose of this report is to provide Oxford County Council with specific recommendations and outcomes pertaining to the independent joint Water and Wastewater Operations and Maintenance (O&M) Service Delivery Review (SDR) project.
- Through the SDR, GM BluePlan analyzed the current state of water distribution / wastewater collection O&M services and carried out a detailed comparative analysis of three alternative service delivery models (Centralized – Model A, Localized – Model B, External service – Model C), along with potential enhancements to the current state service delivery model (Status quo plus).
- Staff are supportive of GM BluePlan’s preferred alternative approach – Centralized service delivery – for the operation and maintenance of County-wide water distribution and wastewater collection systems as this approach most optimally balances system operational levels of service, cost and risk.
- The potential implementation of the Centralized service delivery model would achieve numerous enhanced operational efficiencies, strengthen service redundancy, afford more integrated management of water and wastewater assets and attain consistent service level alignment to industry best management practices.
- In addition, the surplus annual financial savings afforded by Centralized service delivery (over \$10 million within the 2022-2031 capital planning period) would collectively serve to help offset potential increases in water and wastewater rates related to residual infrastructure funding gaps noted in several water (i.e. Townships) and/or wastewater systems (i.e. Woodstock, Drumbo, Mount Elgin) over the same timeframe as per the 2022 Asset Management Plan (Report No. CS 2022-20).
- While several water and wastewater systems currently have a projected infrastructure funding surplus over the 2022-2031 period, all but one of the systems are not contributing the annual required investment to ensure long-term financial sustainability (Report No. CS 2022-20). The surplus annual savings noted above could be applied to increase the current average annual investment levels for these systems.

Implementation Points

Upon potential Council adoption of the report, a service transition team will be assigned to effectively facilitate communications, change management and administrative activities associated with the implementation of the Centralized water distribution and wastewater collection O&M service delivery model.

A phased implementation is envisioned to transition contracted O&M services by Tillsonburg and Woodstock to Oxford County Water and Wastewater Services effective January 1, 2023 and January 1, 2024 respectively. Corresponding budgeting of the staffing and resources required to support the Centralized service delivery will be included as part of the 2023 and 2024 Oxford County Budget processes.

If directed, Oxford will then provide the Town and City with formal written notice on June 23, 2022 that O&M service contracts will be terminated by the County in six (January 1, 2023) and eighteen (January 1, 2024) months respectively in accordance with current water distribution and sewage collection service contract provisions (minimum six month notice required to terminate current service contracts).

As engineering services provisions for capital construction works and development services were also included as part of the above noted O&M service contract agreements, new (separate) engineering services contract agreements between the Town/City and the County will need to be negotiated and executed accordingly within 3 months. Updated terms of the engineering services contract agreements have already been substantially drafted and negotiated, but final discussions were paused during the service delivery review.

Future capital planning coordination of County water distribution and wastewater projects with local municipal roadwork projects in Tillsonburg and Woodstock would continue to be harmonized through bundled project coordination and delivery between the municipal engineering departments.

Financial Impact

Annual Operating and Maintenance Expenditures

GM BluePlan carried out a financial review of water distribution and wastewater collection annual operating costs, revenues and user fees (2018 to 2020) using both planned annual budget and year-end actuals financial information provided by Oxford County, the City of Woodstock and the Town of Tillsonburg. In order to ensure direct financial comparison of current state conditions, the total annual operation and maintenance expenditures were normalized to reflect only core activities common to all operating authorities as show in Table 1.

Table 1: Annual Operating and Maintenance Expenditures (2018-2020)

	2018		2019		2020	
	Budget (\$)	Actuals (\$)	Budget (\$)	Actuals (\$)	Budget (\$)	Actuals (\$)
Water Distribution:						
Tillsonburg	937,400	909,041	862,800	844,399	890,000	872,673
Woodstock	1,715,870	1,463,491	1,631,780	1,427,096	1,680,590	1,457,162
Oxford ¹	882,865	862,160	999,523	965,228	1,038,834	873,468
Wastewater Collection:						
Tillsonburg	274,900	253,973	402,700	417,744	423,100	414,280
Woodstock	626,902	505,737	772,003	623,433	837,585	725,657
Oxford ¹	636,413	553,143	726,938	556,879	525,198	428,374

¹ County serviced areas, excludes Woodstock and Tillsonburg service contract areas. Excludes costs (\$277,878) for Oxford County operation and maintenance of vertical assets (i.e. pumping stations, grinder pumps, odour control facilities, etc.) within the water distribution and wastewater collection systems in Woodstock and Tillsonburg.

Following a sensitivity analysis, the normalized current state 2020 financials were then comparatively used as they were deemed to be generally representative of the financial trends between 2018 and 2020. The current state financial efficiency metrics are shown in Table 2.

Table 2: Current State Water and Wastewater System Cost Efficiencies (2020)

	Total Water Services (#)	Total W/WW Pipe (KM)	Total W/WW Budget (\$)	Total W/WW Actuals (\$)	Cost per Service – Budget (\$/Service)	Cost per Service – Actuals (\$/Service)	Cost per W/WW KM – Budget (\$/KM)	Cost per W/WW KM – Actuals (\$/KM)
Tillsonburg	7,261	273	1,313,100	1,286,953	181	177	4,810	4,714
Woodstock	16,192	521	2,518,175	2,182,819	156	135	4,833	4,190
Oxford ¹	12,159	549	1,564,031	1,301,842	129	107	2,849	2,371

¹ County serviced areas, excludes Woodstock and Tillsonburg service contract areas. Excludes costs (\$277,878) for Oxford County operation and maintenance of vertical assets (i.e. pumping stations, grinder pumps, odour control facilities, etc.) within the water distribution and wastewater collection systems in Woodstock and Tillsonburg.

The financial performance (annual cost of service) of the current state service delivery model was comparatively assessed with three alternative model scenarios (Centralized, Localized, External service) as well as with enhanced current state model scenario (Status quo plus).

Table 3: Service Delivery Model Quantitative Comparative Analysis (Rounded Costs)

	Status Quo Plus	Centralized	Localized	External Contract
Scenario Total Operating Expenses	\$ 5,700,000	\$ 4,665,000	\$ 6,160,000	\$ 6,525,000
Status Quo (Baseline) Operating Expenses ¹	\$ 5,675,000	\$ 5,675,000	\$ 5,675,000	\$ 5,675,000
Annual Cost Increase / (Savings) ²	\$ 25,000 0.5 %	(\$ 1,010,000) (18 %)	\$ 485,000 9 %	\$ 850,000 15 %

¹ 2020 budgeted operating expenditures (rounded), not inflated to 2022 dollars

² Excludes any additional one time administrative costs related to transition from Status quo service model

For the Status quo plus and Localized models, additional financial costs (i.e. fleet) are detailed in Comments Section (not referenced during the Service Delivery Review). For the Centralized model, some of the savings in Year 1 may be used to offset costs that may be potentially incurred by Woodstock and/or Tillsonburg through the transition from Status Quo (i.e. Human Resources/re-employment, stranded assets, etc.).

Operational Impacts to Water and Wastewater Rates

As per Report No. **CS 2022-20**, short and long-term anticipated asset lifecycle needs were carried out in the Asset Management Plan Update to assess whether current rate funded water and wastewater reserves are sufficiently balanced to address upcoming water and wastewater system asset management needs (i.e. capital rehabilitation, upgrades, replacement) in order to keep this infrastructure in a state of good repair.

In regards to the linear water distribution and wastewater collection assets, the 2022 Asset Management Plan Update identified notable concerns in the current asset condition of:

- Woodstock wastewater trunk sewers (approximately 80% of the 36 km of trunk sewers in fair, poor and critical condition) and sanitary laterals;
- Woodstock water meters (approximately 90% in fair, poor and critical condition);
- Woodstock, Tillsonburg, Ingersoll and Townships water valves and hydrants (approximately 60% in fair, poor and critical condition); and
- Tavistock sanitary forcemains (approximately 90% in poor and critical condition).

As per Report No. CS 2022-20, notable infrastructure funding gaps over the immediate 10-year capital planning period (2022-2031) are forecast for systems in Woodstock (wastewater - \$22.6 million), Drumbo (wastewater - \$1.8 million), Mount Elgin (wastewater - \$0.3 million) and the Townships (water – \$3.1 million).

A portion of this funding gap will be addressed through the issuance of debenture financing (employment land servicing projects) and potential future development charges funding (if projects deemed eligible). For the remainder, the County will need to investigate opportunities to reduce this residual infrastructure funding gap by increasing water and wastewater rates, issuing more debt (and interest), seeking grant funding opportunities and altering lifecycle strategies and proposed levels of service to defer capital asset replacement.

As water distribution and wastewater collection O&M is rate funded, the surplus annual savings afforded by a Centralized service delivery (over \$10 million within the 2022-2031 capital planning period) would collectively serve to help offset potential increases in water and wastewater rates within the underfunded service areas noted above. Conversely, the annual O&M costs associated with the Status quo plus, Localized and External Service delivery models would increase rates and place additional financial pressure on the associated water and wastewater reserves.

Water and Wastewater Reserves Considerations

GM BluePlan proposed consolidation of the multiple (separate) water and wastewater system reserves into single water and single wastewater “accounts” as another measure to help finance upcoming water and wastewater system asset management needs and manage the residual infrastructure funding gap. This reserve approach is a common financing practice in many municipalities and is currently employed by Oxford for the Townships’ water systems.

As opposed to “sharing” the funds collected from each of the individual systems, the ability to borrow from the collective total of all, or any, systems’ reserves would achieve the same result, by servicing the debt including interest that would have been earned on the reserve balance if it had not been borrowed, as is currently authorized through the County’s Debt Management Policy – allowing borrowing from reserve funds (Landfill Reserve Fund). If this method of funding is to be employed for water and wastewater systems, the Debt Management Policy will require amendments, alternatively the water and wastewater reserves could be converted to reserve funds, requiring amendments to the Reserve Policy.

In other words, water and wastewater funding collected by user fees in a given system can only be used to fund water and wastewater projects in that same system. However, if those systems do not need their reserve funds immediately, they can be intermittently borrowed by another system that requires capital infrastructure improvements now but does not have enough funding in its specific system reserve to cover the costs. The borrowed costs will be repaid, including interest, over time to ensure that each systems' reserves remain whole, so there will be no financial loss to a given systems' reserve balances available for its own future needs.

Although this approach will require additional administrative time and effort to manage, it affords substantive financial benefit and flexibility in financing infrastructure needs within all of the various County water and wastewater systems. Nevertheless, this can already be achieved by borrowing from the Landfill Reserve Fund.

Communications

As per Report No. [PW 2022-19](#), the study consultant (GM BluePlan) actively engaged staff from Oxford County and its member municipalities throughout the independent SDR project to review and analyze existing water distribution and wastewater collection O&M practices/processes, organizational structures, levels of service/performance outputs, risk, historical financial performance, etc., consistent with the Request-For-Proposal scope.

Through various joint and individual workshops, data and information sharing, staff team interviews and regular staff correspondence (email, phone), a number of comprehensive technical memorandums (TMs) were drafted, exchanged, reviewed by staff teams and finalized over the course of the joint SDR study between October 2021 and March 2022. All final TM files were sent to all participating municipal project staff and CAOs on March 22, 2022 and re-sent on April 20, 2022.







The final SDR report was released for public consumption on March 18, 2022 as part of the March 23, 2022 Council agenda bundle release. As per a Transfer Payment Agreement requirement with the Ministry of Municipal Affairs and Housing (MMAH), the final SDR report was also publicly posted on the County website on March 18, 2022.

Through Report No. [PW 2022-18](#) (March 23, 2022), the final SDR report was provided as information to Oxford County Council and was subsequently circulated to all Area Municipal Councils as correspondence information on March 28, 2022.

Since that time, GM BluePlan provided formal information delegation presentations to the Councils of the City of Woodstock (April 7, 2022) and Town of Tillsonburg (March 28, 2022) respectively. Staff considered SDR correspondence received from the City of Woodstock and Town of Tillsonburg on May 6 and 11, 2022 respectively (refer to Attachments 1 and 2). Staff also provided this correspondence to GM BluePlan for review and consideration as part of their information delegation to Oxford County Council planned for June 22, 2022.

Following Council deliberation, Report No. [PW 2022-32](#), along with any potential amendments, will be circulated to the Town of Tillsonburg and City of Woodstock, for information.

Strategic Plan (2020-2022)

					
WORKS WELL TOGETHER	WELL CONNECTED	SHAPES THE FUTURE	INFORMS & ENGAGES	PERFORMS & DELIVERS	POSITIVE IMPACT
		3.iii.		5.ii.	

DISCUSSION

Background

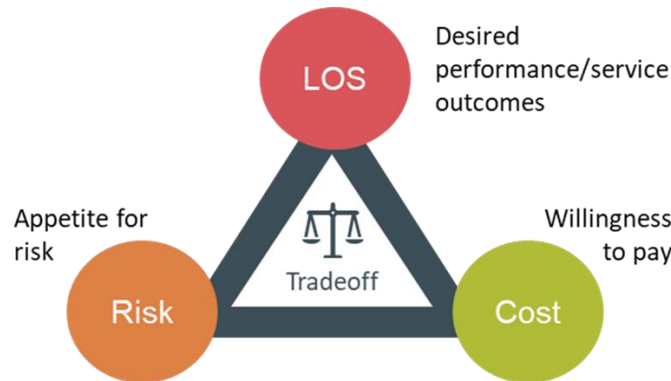
As per Report No. CS 2021-14, staff received direction from Oxford County Council on March 10, 2021 to seek Municipal Modernization funding to undertake a joint Water Distribution and Wastewater Collection O&M SDR project in order to identify potential opportunities to modernize service delivery and reduce future operating costs. This joint SDR Project was one of six initiatives that was ultimately approved for provincial funding (June 30, 2021) under the 2021 Review Stream Modernization Project category.

The joint SDR project was facilitated and completed by an independent study consultant (GM BluePlan) over approximately six months (October, 2021 to March, 2022) through extended information sharing and collaboration with staff from Oxford County and its member municipalities. The objective of the SDR was to determine the most appropriate and cost effective way of operating and maintaining the water distribution and wastewater collection systems across the County, while optimizing service levels.

As described in Report No. PW 2022-19, the SDR also provided a comparative analysis of three alternative service delivery models (Centralized – Model A, Localized – Model B, External service – Model C), along with potential enhancements to the current state service delivery model (Status quo plus). These models were deemed to be the most viable alternative approaches to be carried forward for comprehensive analysis and were selected following consultation with the three municipal stakeholder groups.

Balance of Asset Level of Service, Cost and Risk

Municipal delivery of water and wastewater services are challenged by aging infrastructure, complex legislation, revenue (decreasing water consumption), fiscal constraints and increasing customer expectations. In order to address these challenges while maintaining service levels and financial sustainability, system owners strive to balance three intrinsically connected elements: levels of service, cost of service and risk. When the interplay between levels of service and cost is not balanced, the municipal water and wastewater system owner is exposed to sustainability and/or regulatory compliance risks.



Overall, the desired levels of service for municipalities is to provide safe, reliable and sustainable drinking water and wastewater services. The expected technical levels of service for municipal water distribution and wastewater collection system assets is well documented. A summary of relevant industry best management practice levels of service pertaining to the effective preventative maintenance of water and wastewater system assets is shown in Attachment 3.

Current State – Water Distribution / Wastewater Collection Operations and Maintenance

Under the *Municipal Act, 2001*, the County of Oxford holds exclusive municipal authority and responsibility for all water and wastewater services, including water distribution and wastewater collection as per Section 11(11).

In the current state service delivery model, Oxford County owns all of the water distribution and wastewater collection system assets. Oxford County also operates and maintains all of these same system assets, with the exception of most of its water distribution and wastewater collection system assets that are located within the urban limits of Woodstock and Tillsonburg. In these cases, Woodstock and Tillsonburg operate and maintain water distribution and wastewater collection systems (on behalf of Oxford County) through service contract agreements. Though technically expired and outdated, these 2006 and 2012 agreements have continued to remain in effect given neither party has terminated their respective agreement.

A general overview of the water distribution and wastewater collection system infrastructure (excluding treatment systems, pumping stations and storage) and operational staff levels are detailed in Table 4. In addition, all three operating authorities retain external contracted services (i.e. CCTV, pre-CCTV / sewer flushing, large repairs to sewer manholes, large water meter calibration, etc.) to supplement the maintenance capacity of their operator staff complements.

Table 4: 2020 Water and Wastewater System Infrastructure and Staffing Levels

	Total Water Services (#)	Total Pipe (KM)		Operators (FTE)		Pipe KM per Operator		Services per Operator
		Water	Sewer	Water	Sewer	Water	Sewer	
Oxford ¹	12,159	305	244	6.72	2.28	45.4	107.0	1351
Woodstock	16,192	275	246	9.0	2.5	30.6	98.4	1408
Tillsonburg	7,261	155	118	3.28	0.72	47.3	163.9	1815

¹ Excludes County assets operated and maintained by Area Municipalities under service contract

As noted earlier, the levels of service are critical parameters that describe the extent and quality of water and wastewater services that each municipality provides to its residents and businesses. The levels of service were compared to industry best management practices using various performance measures between 2018 and 2020. The current state 2020 levels of service performance measures (refer to Table 5) were deemed to be generally representative of the levels of service trends between 2018 and 2020.

Table 5: Current State Water and Wastewater Levels of Service (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
	100% of hydrants flushed			
	20% of all hydrants flow tested	Plus		
	7% of sewers inspected with CCTV			
	20% of sewers flushed		Plus	
Sustainable	20% of maintenance holes inspected	Plus		Plus
	Financial metrics - Costs per km and per customer account			

NOTES – Plus: Operational activities exceed service maintenance standard and/or catch-up from prior years.
Green: Performance meets service maintenance standard.
Orange: Performance is 50 to 100% of service maintenance standard.
Red: Performance is 0 to 50% of service maintenance standard.

Comments

As per the approved scope of the joint SDR project, GM BluePlan qualitatively and quantitatively examined the effectiveness of the current state water distribution and wastewater collection service delivery model (Status quo) and compared it with three alternative service delivery models (Centralized, Localized, External service) in terms of both operational levels of service performance and overall financial performance. GM BluePlan also identified a number of potential enhancements to the current state (Status quo plus).

Current State (Status Quo) Comparative Analysis

Levels of Service:

As shown in Table 5, Oxford, Tillsonburg and Woodstock are currently providing water and wastewater distribution and collection services at different service levels. The desired levels of service for municipalities is to provide safe, reliable and sustainable drinking water and wastewater services in a manner that is consistent with industry best management practices. Where operation and maintenance activities levels of service significantly depart from industry targets, opportunities exist to realign such activities to best management practices.

Water and Wastewater System Service Area / Staffing:

As shown in Table 4, Oxford County and Woodstock currently operate similarly sized (i.e. pipe kilometres) water distribution and wastewater collection systems while the systems in Tillsonburg are approximately 50% smaller in size. While there are various classes of water distribution (Class 1,2,3) and wastewater collection systems (Class 1,2) across Oxford County, the class of the system is not representative of the level of effort required to operate and maintain a given system.

Based on the respective water and wastewater operator staff complements, both Oxford and Tillsonburg operators maintain a notably higher amount of overall linear pipe kilometres than Woodstock operators. With respect to the number of customer service connections (based on actual metered accounts), Oxford and Woodstock operators oversee the same number of services respectively (on a service per operator basis), whereas system operators in the Tillsonburg oversee a higher number of services (per operator). These staffing indicators provide a relative comparison of the overall effectiveness and efficiency of respective system operations.

It is further recognized that Oxford operators also service a much broader geographical customer area than Woodstock and Tillsonburg, and incur longer operator travel times/costs comparatively.

Financial Performance:

Current state financial performance efficiency was assessed by GM BluePlan using both planned annual budget and year-end actual financial information provided by Oxford County, the City of Woodstock and the Town of Tillsonburg as shown in Table 2 (refer to Financial Impact section). Specifically, relative total annual O&M cost per service and cost per kilometre (of system pipe) metrics were developed for each of the three operating authorities. In both cases, Oxford demonstrated notably lower relative O&M costs when compared to Tillsonburg and Woodstock and offers the lowest service cost per customer account.

While the metrics previously shown in Table 2 and Table 4 were not used in the financial modelling for the alternative service delivery models, they offer high level indicators of relative financial performance efficiency of current water distribution and wastewater collection O&M services provided by Oxford, Woodstock and Tillsonburg.

Governance Challenges:

Although Oxford holds exclusive municipal authority and responsibility for all water and wastewater services, including water distribution and wastewater collection services, under the *Municipal Act, 2001*, several governance challenges are being experienced by the County under the current water distribution and wastewater collection service contracts with Woodstock and Tillsonburg.

The County has a well established Fees and Charges By-law to ensure that suitable costs for specific services and/or servicing of growth are passed on to those users who are directly responsible for such costs and benefit from these same services. However, it is unclear if the By-law has been consistently applied by Woodstock and Tillsonburg operations and billing as per service contract provisions. In certain cases, the County is not being consistently informed of new water service “turn-ons” (new meter information and service account ownership at occupancy) after the new services have been inspected and approved by Woodstock and Tillsonburg operations. As well, some of the lower tier municipal service providers have historically carried out unilateral decision making to discontinue water service “shut-off / turn-ons” (and associated applied fees) during winter periods, contrary to County Council’s approved Receivable Management policy, service contract provisions and standard municipal practices. In these examples, financial cost recovery for water and wastewater system operation costs has been inappropriately passed on to other existing rate payers who should not be responsible for such costs.

Another significant historical concern involves the practice where a lower tier municipal service provider regularly chooses to unilaterally establish their own water and wastewater operating budget and carry it forward for local municipal approval, in disregard to the upset limit of the operating budget that was established through budget consultation with the County authority and ultimately approved by County Council.

Alternative Service Delivery Model Comparative Analysis

As detailed in Report No. PW 2022-19, each alternative service delivery model was evaluated, through consultation workshops, data review, qualitative/quantitative analyses and comparative municipal benchmarking, in terms of the following:

- Levels of service;
- Strengths, weaknesses, external opportunities and external threats;
- Organizational considerations;
- Risks (operational, staffing, compliance, environmental, technological, financial, reputational / customer and infrastructure); and
- Financial implications.

In addition, while the original project scope afforded qualitative identification of potential enhancements (Status quo plus) to the current state, it became evident during project stakeholder consultation that a quantitative Status quo plus model financial cost estimate also needed to be developed for comparison to the alternative service delivery models (refer to Table 3).

A number of key comparative service delivery model review outcomes and considerations are highlighted below.

Staffing:

The implications to staffing were collectively assessed by GM BluePlan in each of the SDR alternatives, including enhancements to Status quo, as follows:

- **Status quo plus:**
Addition of new front line operators – 4.0 FTEs (Tillsonburg and Woodstock).
- **Localized:**
Addition of new front line operators (4.0 FTEs) as well as addition of new technical staff (4.0 FTEs) to support specialized operational functions (such as DWQMS, By-law Administration/Enforcement, SCADA, Hydraulic Modelling, Infiltration and Inflow Control, Water Financial Plans, System Regulatory Compliance, Servicing Agreements, Climate Change Adaptation, Energy Demand Management).
- **Centralized:**
Reallocation of 16.0 FTEs from Area Municipalities' service contracts to County front line water/wastewater operations (14.0 FTEs), new water/wastewater foreman (1.0 FTE conversion), new water/wastewater locator (1.0 FTE conversion).
- **External Service:**
Municipal front line operational and supervisory staff likely eliminated, although potential exists for operator transfer reallocation to external service provider. Oxford senior management, technical and administrative staff still required to carryout water and wastewater system owner responsibilities (such as billing administration, DWQMS, Backflow Prevention, By-law Administration/Enforcement, SCADA, Hydraulic Modelling, Infiltration/Inflow Control, Water Financial Plans, Regulatory Compliance, Servicing Agreements, Climate Change / Energy Demand Management, Master Planning).

In the Localized model, it is recognized that some of the new technical FTE resourcing may be filled by mid-level technical staff that may already exist in-house, contracted out to external service providers or even contracted back to County services. In this regard, Tillsonburg staff indicated they felt the 2.0 FTEs for new technical staff could be managed using uncommitted capacity of existing staff. Similarly, Woodstock staff indicated they felt the 2.0 FTEs for new technical staff could be filled using existing in-house staff and/or through new Public Works positions (i.e. Work Management Administrator, By-law Enforcement Officer) approved through their 2022 budget. In such cases, any cost recovery associated with these technical staff would trigger an increase in expense reallocations to the rate funded budget and are appropriately represented as expenses in the Localized service delivery model.

In the Centralized model, GM BluePlan proposed an overall consolidation of the Oxford, Tillsonburg and Woodstock front line operations staff complement from 25 to 23 operators. Such consolidation is possible by leveraging greater efficiencies and redundancies afforded in the revised organizational structure. The current partial allocations of supervisory, engineering (GIS, CCTV) and management staff in Tillsonburg and Woodstock were not required for this model.

Under the Centralized model, Oxford would no longer contract out O&M services to Tillsonburg and Woodstock for County owned water distribution and wastewater collection systems assets located within those communities. As there is no sale or transfer of County assets in this alternative service delivery approach, Oxford is not obligated, under “successor rights”, to accommodate any Area Municipal staff that may wish to transfer their employment to Oxford, nor is Oxford obligated to compensate the Area Municipalities for any staff considered surplus. However, Oxford would anticipate employment of Area Municipality staff (up to 16.0 FTEs) provided that they meet the required qualifications and are interested in employment in County Operations. A substantive degree of staff movement would be expected which would serve to preserve local operational knowledge of the Tillsonburg and Woodstock water distribution and wastewater collection systems.

It is also recognized that some Area Municipal staff may not prefer to seek alternative re-employment with Oxford Water and Wastewater Services. In these cases, if these staff could not be re-assignment to alternate roles within their Area Municipality (i.e. waste collection, asset management, development review, storm water management, municipal transit, etc.), they could also be considered for re-assignment to other roles within the County through future budgets in order to address pressures in other service areas. Failing such efforts to re-assign any remaining staff to existing and/or future alternative job functions, the County could apply some of the savings in Year 1 to offset potential one-time staff severance costs incurred by Woodstock and/or Tillsonburg that may associated with the transition from Status Quo. Similarly, current partial allocations of supervisory, engineering (GIS, CCTV) and management staff in Tillsonburg and Woodstock not required under the Centralized service approach could seek alternative cost recovery through reallocation of staff time to other service areas and potential organizational restructuring.

Integrated Asset Management System:

Oxford County Public Works manages its water and wastewater infrastructure asset inventory, adds and tracks asset information and regularly generates asset maintenance work orders using a digital asset maintenance management system (Cartegraph work order system).

Through the County’s Asset Management Systems Review project (refer to Report No. [CS 2019-42](#)), Cartegraph OMS was chosen as the preferred work order system given its ability to be fully and directly configured with key specialized systems such as ESRI GIS (asset geo-registry) and CityWide (financial asset lifecycle modelling) for the purposes of asset management planning. Cartegraph OMS also integrates with other key systems such as WinFuel (fleet asset management), Great Plains (asset financial transactions), etc. as shown in Table 6.

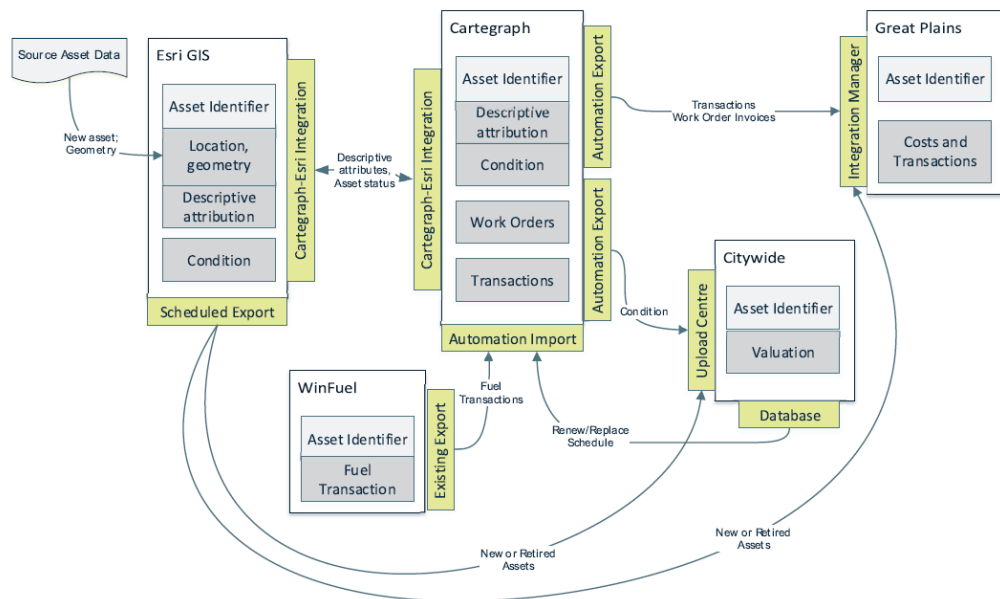
This effective integration between the County’s asset registry, asset maintenance information, and asset financial information ensures that the different work processes for collecting and managing asset information all work together and ensures that the County’s infrastructure assets are maintained in good condition through effective preventative maintenance, optimized infrastructure decision-making and strategic capital planning (replacement, repair, expansion). In this way, the County strives to optimize the useful service life of its water and wastewater assets and promote the overall long term sustainability of its water and wastewater systems as part of overall compliance to O. Reg. 588/17 – Asset Management Planning for Municipal Infrastructure, under the *Infrastructure for Jobs and Prosperity Act, 2015*.

Currently, Tillsonburg employs a MESH work order management system in overseeing O&M activities on the County’s water distribution and wastewater collection assets. Woodstock does not currently have a work order management system in place; however, is considering future utilization of the same MESH system. While MESH affords a level of indirect compatibility with ERSI GIS, it does not fundamentally integrate with CityWide and other systems with the simplicity or flexibility that Cartegraph OMS offers. Also, Woodstock maintains a copy of water distribution and wastewater collection asset GIS data that must be taken at points in time and then imported into the County’s GIS. As a result, optimized infrastructure decision making pertaining to linear water and wastewater assets in Tillsonburg and Woodstock is limited by:

- Time consuming manual processes to achieve current timeliness of asset information;
- Time consuming and error prone manual data entry, transfer and reconciliation; and
- Unnecessary duplication of asset related data.

Such limitations would remain in the Status quo plus, Localized and External service models, but would be eliminated in the Centralized model where operational preventative maintenance activities could be seamlessly integrated into Cartegraph and its associated asset management financial systems. In this way, enhanced asset decision making can be achieved to ensure assets are receiving appropriate preventative maintenance, at the right time, such that its associated useful service life is not prematurely and unnecessarily reduced.

Table 6: Water and Wastewater System Asset System Integration Requirements



Financial Impacts:

In order to ensure direct quantitative financial comparison of the various service delivery models as shown in Table 3, the total annual operation and maintenance expenditures were normalized to reflect only core activities common to all operating authorities. The comparative financial impacts of each model in relation to the current Status quo service approach (~ \$5.675 M annual O&M budget) are summarized as follows:

- **Status quo plus:**

Savings of ~ \$325,000 could potentially be realized from joint procurement and service bundling opportunities, service realignment to industry standards/best management practices, regular application of County's fees and charges by-law and implementation of a user-pay backflow prevention program. However, all savings are more than offset by additional staffing expenses which result in an overall net annual O&M cost increase (~ \$25,000 increase).

Additional one-time administrative implementation costs (service contract renegotiation, transition to Cartegraph automated work order system transition, backflow prevention program development, joint procurement, etc.) are anticipated but related costs were not estimated.

- **Centralized:**

Significant annual operation and maintenance cost savings can be achieved in the Centralized service delivery model (18% decrease, ~ \$1 million in annual savings) largely due to levels of service alignment to industry standards/best management practices, procurement and service bundling opportunities, and service optimization through a singular operational hub approach which allows for many work processes currently performed in triplicate to be reduced to one and greater economies of scale efficiencies.

Additional minor one-time administrative costs (~ \$50,000) would be required for potential implementation (transition and change management plan, operating authority updates, backflow prevention program development, etc.).

- **Localized:**

Net annual O&M cost increase (9% increase, ~\$485,000) largely due to additional operator and technical resources, contracted services and operational oversight required to own and operate expanded linear (forcemains) / vertical (sewage pump stations, grinder pumps, odour control facilities) infrastructure as well as associated specialized non-infrastructure systems (SCADA, Hydraulic models, Sewer Infiltration and Inflow Reduction, Itron water meter reading software, etc.).

The Localized (full asset download) model also excludes significant one-time administrative additional costs (estimated at \$575,000 to \$825,000) related to asset valuation, sale of assets, legal agreements, wholesale water/wastewater rate study, reserve transfers, regulatory licensing change-overs, asset grant funding provisions, etc.

- **External Service:**

Net annual O&M cost increase (15% increase, ~\$850,000) largely driven by increase in total operating costs and inherent change in service delivery.

Additional notable one-time administrative implementation costs (contract tendering, contract agreements, asset management integration, operating authority updates, etc.) are anticipated but were not estimated.

Under the Centralized model, costs related to major fleet equipment (i.e. light duty trucks, heavy equipment) were included in the service delivery review overall annual costing. However, similar costs for fleet and major equipment associated with the Status quo plus and Localized models were not presented during the Service Delivery Review as noted in the following section.

Fleet:

As part of the Centralized service delivery model, Oxford identified and carried forward specific annualized cost allowances for fleet implications in this alternative approach as shown in Table 7. Specifically, Oxford carried annual operating and maintenance expenses for fleet rentals, repair/maintenance, annual capital reserve contributions, etc. In this way, fleet capital replacement costs were funded over the service life of the rental vehicles such that any significant initial upfront fleet capital cost pressures are avoided.

However, although requested as part of the SDR study, neither Tillsonburg or Woodstock referenced any additional fleet needs associated with their staffing increases (4.0 FTEs) or ongoing business case needs (Tillsonburg sewage vacuum truck) that would be required in either of the Status quo plus or Localized alternative service delivery approaches. It would be reasonably expected that additional annualized O&M costs for fleet needs would be incurred as shown in Table 7.

Accordingly, there would be an additional expense of annualized O&M cost for fleet considerations of at least approximately \$95,800 in either of the Status quo plus or Localized service delivery models that were not accounted for in the SDR review (not referenced to consultant). These costs would be similarly representative of the fleet considerations already identified and accounted for in the Centralized service delivery model overall costing.

Table 7: Fleet Cost Implications per Service Delivery Approach

FLEET REQUIREMENTS	CAPITAL COSTS (\$)	ANNUALIZED FLEET O&M COSTS				COMMENTS
		Status Quo + (\$)	Centralized (\$)	Localized (\$)	External Service (\$)	
<i>Tillsonburg:</i>						
W/WW Operators 4x4 3/4 Ton Trucks (2)	110,000	23,000	-	23,000	-	\$11,500/unit (2.5 FTEs)
Vacuum Truck (1)	500,000	52,000	-	52,000	-	2019 DWQMS
TOTAL	Not referenced	Not referenced	-	Not referenced	Not Assessed	
<i>Woodstock:</i>						
WW Operators 1/2 Ton Truck (1)	45,000	10,400	-	10,400	-	1.5 FTEs
Bylaw Enforcement 1/2 Ton Truck (1)	45,000	10,400	-	10,400	-	2022 Budget
TOTAL	Not referenced	Not referenced	-	Not referenced	Not Assessed	
<i>Oxford: ¹</i>						
Foreman 1/2 Ton Truck (1)	45,000	-	10,400	-	-	
Lead Hands 1/2 Ton Trucks (2)	90,000	-	20,800	-	-	\$10,400/unit (2 FTEs)
W/WW Operators 1/2 Ton Trucks (9)	405,000	-	93,600	-	-	\$10,400/unit (11 FTEs)
Locator 1/2 Ton Truck (1)	45,000	-	10,400	-	-	
Backhoe (1)	160,000	-	9,900	-	-	
TOTAL	745,000 ²	-	145,100 ²	-	-	

¹ Fleet rentals initially, no capital costs until replacement at end of vehicle service life

² Fleet capital replacement reserve contributions included in annualized O&M costs

Preferred Service Delivery Model Approach

GM BluePlan has recommended the Centralized service delivery model as the preferred implementation approach which most optimally balances water distribution and wastewater collection system operational levels of service, cost and risk.

Of note, the Centralized service delivery model would achieve numerous enhanced operational efficiencies, afford more integrated management of water and wastewater assets and derive significant annual cost savings. A number of the features of the Centralized service delivery approach are noted as follows:

Organizational Hierarchy / Span of Control / Redundancy:

The proposed organizational revision affords a staffing structure which can leverage greater supervisory span of staff control/oversight, staff economies of scale and enhanced staffing redundancies (front line operations, Overall-Responsible-Operator, Operator-In-Charge) which is more in line with comparative municipalities.

The Centralized 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 approach, with Oxford as both the owner and operating authority allows for many work processes currently performed in triplicate to be reduced to one, and allows for consistent levels of service and efficiencies to be found through economies of scale. The singular operational hub approach is regularly employed by several other upper tier municipalities (Peel Region, District of Muskoka, Halton Region) which service Area Municipalities of similar or larger size to Woodstock or Tillsonburg (i.e. Town of Halton Hills (Georgetown, Acton), Town of Milton, Town of Bracebridge, Town of Gravenhurst, Town of Huntsville, Town of Caledon, City of Mississauga (Port Credit, Streetsville, Cooksville, Malton, Erindale).

As an example, span of control is somewhat limited within in the current water distribution and wastewater collection organizational structure of Tillsonburg (i.e. 75% of manager salary used to oversee only 5.5 water/wastewater FTEs; 100% of one supervisor salary is used to oversee only 4.0 FTEs front line water/wastewater operators) and Woodstock (40% of Road Operations Supervisor to oversee only 2.5 FTEs front line wastewater operators). As a comparison, one Oxford water and wastewater foreperson currently oversees 10.0 FTEs and would have a similar span of control in the revised organizational structure.

Further, redundancy support to Tillsonburg and Woodstock front line water and wastewater operations come from other staff with their Public Works department (who do not hold water or wastewater licences in most cases) whereas Oxford can draw from its trained certified staff in other areas (water and wastewater treatment) which hold multiple licenses, including those for water distribution and waste collection operations. Further, 9.0 FTEs in Woodstock are currently solely dedicated to front line water operations and do not provide any cross over back up support to wastewater collection operations, unlike Tillsonburg and Oxford.

Service Level Alignment to Industry Best Management Practices:

Each operating authority is currently providing water distribution and wastewater collection system services at different service levels. Consistent alignment to industry best management practices will achieve appropriate levels of service pertaining to the technical operability of the system and will provide safe, reliable and sustainable drinking water and wastewater services to all customers across Oxford County.

Integrated Asset Management:

The Centralized service delivery approach would enhance asset decision making and ensure assets are receiving appropriate preventative maintenance, at the right time, such that its associated useful service life is not prematurely and unnecessarily reduced. The consistent application of the County's Cartegraph OMS digital asset maintenance management system for water distribution and wastewater collection assets will permit the optimal and complete bidirectional integration with the County's ESRI GIS, which then integrates with other key specialized systems (CityWide, Great Plains, WinFuel, etc.). In contrast, MESH and/or paper-based work order management approaches employed by Tillsonburg and Woodstock in the Status quo plus or Localized models are limiting as they do not afford full integration in this regard.

This effective integration between the County's asset registry, asset maintenance information, and asset financial information ensures that the different work processes for collecting and managing water distribution and wastewater collection asset information all work together and ensures that these assets (approximately \$1.04 B replacement value) are maintained in good condition through effective preventative maintenance, optimized infrastructure decision-making and strategic capital planning (replacement, repair, expansion).

Capital planning coordination of water distribution and wastewater projects within local municipal roadworks in Tillsonburg and Woodstock would continue to be harmonized through bundled project delivery. This two tier harmonization practice relies upon appropriate coordination and timely communication between municipal engineering/asset management departments. Oxford has fully demonstrated this to be an effective historical approach for coordinating similarly bundled capital works within its other six Area Municipalities.

Streamlined Procurement / Service Bundling:

Like most municipalities, Woodstock, Tillsonburg and Oxford set their staffing levels to meet the base amount of work and they utilize contracted service for specialized services (i.e. sewer CCTV inspection, pre-CCTV/sewer flushing, large repairs to sewer manholes, large water meter calibration) and manage peak workloads that arise throughout the course of the year. Many of these contracted services are individually procured by the respective municipalities and could be bundled into larger contracts to achieve greater purchasing power and scalable cost pricing efficiencies. 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 (approximately 30% of the total cost to operate and maintain all water distribution and wastewater collection systems). Accordingly, approximately \$85,000 of cost savings (5 - 10% annually) could be potentially derived through joint procurement / contracted service bundling in the Centralized service model.

Backflow Prevention User Fee Program:

Implementation of the backflow program will annually afford the reallocation of approximately \$100,000 in front line operator costs from rate to user fees where related backflow device installation, testing and inspection activities can be delivered by appropriately certified third parties (instead of municipal water operators) as is the standard municipal practice across the province.

While not captured in the SDR analysis, it is further recognized that additional annual savings of approximately \$50,000 in operational resources (reallocated from rate to backflow prevention user fees) can be achieved once the backflow prevention user fee program is fully implemented.

Cost Recovery:

The Centralized model would ensure autonomy and enhanced control over cost recovery (i.e. user fees) pertaining to specific services and/or growth. While the County has a well established Fees and Charges By-law, it is unclear whether the By-law has been consistently applied by Woodstock and Tillsonburg operations and billing (i.e. winter water shut-offs, water turn-ons).

Consistent application of the County's Fees and Charges By-law will ensure that suitable users are responsible for such costs, growth pays for growth, and costs are not indirectly passed on to existing rate payers. The proposed implementation of the above noted backflow user fee program also similarly aligns in this regard.

Sustainable Infrastructure Funding:

It is recognized that residual infrastructure funding gaps currently exist in several water (i.e. Townships) and/or wastewater systems (i.e. Woodstock, Drumbo, Mount Elgin) over the 2022-2031 capital planning period. Further, all but one of the water and wastewater systems are not annually contributing sufficient investment funding at levels required to ensure long term infrastructure funding sustainability (refer to Report No. CS 2022-20).

Unlike the Status quo plus, Localized and External Service models, the Centralized model can achieve significant annual O&M cost savings (approximately \$1 million annually) in relation to the current Status quo service approach (~ \$5.675 M annual O&M budget) that can be used to help offset substantive asset capital replacement financial pressures on water and wastewater rates and reserves going forward.

As well, savings could be applied in Year 1 to offset potential one-time costs (i.e. Human Resources/re-employment, stranded assets, fleet, etc.) that may be incurred by Woodstock and/or Tillsonburg during service transition implementation.

Conclusions

Staff are supportive of GM BluePlan's preferred alternative approach – Centralized service delivery – for the operation and maintenance of the County-wide water distribution and wastewater collection systems as this approach most optimally balances system operational levels of service, cost and risk.

The potential implementation of the Centralized service delivery model would achieve numerous enhanced operational efficiencies, afford more integrated management of water and wastewater assets and derive significant annual cost savings that can be used to offset substantive asset capital replacement financial pressures on water and wastewater rates and reserves, along with any potential one-time costs incurred during implementation transition.

SIGNATURES

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Approved for submission:

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ATTACHMENTS

- Attachment 1: SDR Correspondence from the City of Woodstock, (May 6, 2022)
- Attachment 2: SDR Correspondence from the Town of Tillsonburg (May 11, 2022)
- Attachment 3: Water Distribution and Wastewater Collection Industry Best Management Practice Levels of Service