



Hamilton

Office of the City Auditor

WATER METER PROGRAM AUDIT and WATER BILLING SERVICE TRANSITION PROJECT

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JANUARY 19, 2023



- Gained an understanding of water metering processes.
- Gained an understanding of operational processes and standards regarding water meter inspections, maintenance best practices and common issues.
- Procured BDO Canada to complete the audit on our behalf, while maintaining oversight of the audit process to ensure quality and value were received.
- Completed additional analysis of the Water Billing Service Transition Project, with a focus on risk assessment.

A background image showing various pieces of water utility equipment, including pipes, valves, and a water meter. The equipment is in shades of blue, green, and red. A semi-transparent blue box is overlaid on the image, containing the text.

AUDIT OF THE HAMILTON WATER METER PROGRAM

Audit, Finance and Administration (AF&A) Committee Presentation

City of Hamilton

January 19, 2023

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AUDIT SUMMARY

BACKGROUND

Hamilton Water is responsible for the City of Hamilton's (the "City) Water Meter Program (the "Program"), which includes the installation, testing, monitoring, repairing, and replacing of approximately 156,000 revenue water meters. The main purpose of the Water Meter Program is to ensure the efficient, timely and accurate metering and billing for water that is used by the City's customers. Through the operation and monitoring of these meters, the Program generates approximate \$240 million in revenue each year.

The City has two (2) contractors who are engaged in the delivery of the Program:

- Alectra Utilities Corporation ("Alectra"), who provides meter reading, customer service, reporting and billing services on behalf of the City, through Corporate Finance; and
- Neptune Technologies ("Neptune"), who provides meter operations services to the City, including but not limited meter installation, meter repair, and preventative meter maintenance, through Hamilton Water, Public Works Department

Since 2019 there have been a number of significant events that have impacted the Water Meter Program's effectiveness, including at least five (5) major billing adjustments totalling approximately \$2 million since June 2021.

AUDIT OBJECTIVE

The objective of this audit was to identify strengths and weaknesses of the City's Water Meter Program. This included a review of various aspects of the program and assessing them against existing policies and procedures.

In addition, a review of the program against industry best practices was conducted to identify strengths, gaps, and opportunities for improvement regarding existing policies and operational procedures. An assessment of the efficiency and effectiveness of program areas, as well as identification of areas for improvement was also be conducted.

AUDIT SCOPE

The scope of the audit included reviewing the various aspects of the Water Meter Program and comparing them against existing corporate and departmental policies and procedures, as well as against industry best practices. The following Program areas were considered during the conduct of the audit:

- Effectiveness of recent corrective actions taken to address 2021-22 large billing issues;
- Applicable operational processes and procedures to verify completeness and gaps;
- Data transfer processes between the City, Alectra and the City's Contractor;
- Work order creation, management and resolution including the transfer of work between Neptune, the City and Alectra;
- Management of consecutively estimated accounts;
- Management of account setup, transfer, and closure;
- Effectiveness of asset management of water meters, preventative/reactive maintenance, and asset renewal;
- Contractor management including inspections by City staff;
- Contractor invoicing;
- Review of program metrics and key performance indicators;
- Handling of soft and hard customer refusals;
- Handling of private plumbing issues affecting meter maintenance activities;
- Management of vacant properties;
- Management of flat rate accounts;
- Process for Large Valve Maintenance (broken valves on private property);
- Billing inquires/complaints process;
- Management of Master/Satellite meters (sub-metering);
- Top 100 Reporting process and procedure; and
- Comparison of meter programs from three (3) comparator municipalities to identify best/comparative practices.

AUDIT METHODOLOGY

The audit was planned and performed to obtain reasonable assurance that the audit objective was achieved. During the conduct phase, BDO systematically administered the audit program, which included a combination of interviews, documentation review, file testing, and benchmarking. The structure of these activities was tailored to directly inform and conclude on each audit control objective as well as their associated audit criteria. This comprised the following:

- Reviewing key documentation;
- Conducting interviews with key stakeholders;
- Conducting benchmarking / comparative practices assessment; and
- Conducting a site visit office to meet with program management, operational supervisors, and frontline roles. This visit included:
 - A walkthrough of the Water Operations Clerk (WOC) daily responsibilities and a systematic review of the program's asset management system.
 - The observation of field activities with Meter Technicians/Investigators (MTIs), which included the execution of three different work order types.

AUDIT CONCLUSION

The City of Hamilton's Water Meter Program is undergoing a period of rapid transformation, both in response to the 2021-22 large billing issues and the fact that their billing agent, Alectra, has notified the City that they are discontinuing their water billing services. Although these issues have brought on a wide array of challenges, they have also presented new opportunities to increase the operational effectiveness and efficiency of the Program as a service provider to the residents of the City of Hamilton.

The audit has identified opportunities for improvement for Hamilton's Water Meter Program. These include the following:

- Lack of contractor performance management, including the establishment of mechanisms to rectify poor vendor performance.
- The establishment of targets, baselines, outcomes, timelines, accountabilities as well as clear methods for collection and reporting for key program metrics.
- Staff turnover at the supervisory and frontline levels.
- Manual data transfer and reporting processes, which combined with staff turnover, has created a backlog in key operational reporting.
- Gaps related to the root-cause analysis which indicates that the corrective and preventative actions identified by Hamilton Water are incomplete and therefore not fully effective in eliminating the risk of future large billing issues



AUDIT FINDINGS

RESOURCE MANAGEMENT



Finding 1: Staff turnover and vacancies within the Program have strained program operations.

Recommendation 1: The City should perform a job evaluation review of the key administrative, supervisory, and superintendent roles within the Program to validate the appropriateness of competency requirements, job descriptions and compensation level within the organization structure of the program.

Priority: High

PROCEDURE AND POLICY FRAMEWORK



Finding 2: The Water Meter Program has a strong procedure framework which clearly defines program roles and responsibilities to City staff. However, some policy and procedure gaps were identified.

Recommendation 2: They City should review its program policy and procedures framework to address identified gaps, as well as identify opportunities to strengthen the framework and enhance authorities to better meet the needs of the City and support appropriate enforcement action.

Priority: Medium

PROGRAM REPORTING AND METRICS



Finding 3: Hamilton Water has begun to adopt a data driven approach to program management and oversight; however, data insights and key program performance metrics require enhancement.

Recommendation 3: The City should develop and implement their program performance management regime by ensuring that each key metric has documented baselines, targets, timeframes for measurement and an outline of how/when the metric would be measured, including the applicable data source and accountabilities.

Priority: Medium

PROACTIVE MAINTENANCE



Finding 4: The City has an effective proactive maintenance program in place for large meters, as well as pilot projects to test new meter technology (e.g., Mach 10 and Cellular Meter Interface Unit) to evolve the program and align with industry best practices.

WORK ORDER MANAGEMENT



Finding 5: The Water Meter Program has established processes and procedures to manage work orders (i.e., creation, execution, and verification of work) to facilitate the completion of program operations. Although there are some opportunities for improvement, work order management is operating effectively.

CONTRACT MANAGEMENT



Finding 6: There is no established contractor performance management framework and limited contractual mechanisms for managing and overseeing the performance of the City's outsourced billing agent.

Recommendation 4: The City should ensure that all vendor contracts establish performance management frameworks, including minimum standards, KPIs and performance reporting; and have sufficient contract mechanisms, including corrective actions clauses where performance does not meet minimum standards, to oversee vendor performance. This includes establishing a dedicated and experienced contract manager tasked with the responsibility of managing and overseeing contract and vendor performance.

Priority: High

Recommendation 5: The City should implement a regular operational meeting attended by all relevant program stakeholders to ensure consistency and alignment of information and progress to support program oversight and delivery.

Priority: Medium

CORRECTIVE ACTION FOR 2021-22 BILLING ISSUES



Finding 7: The Program has implemented preventative and corrective actions that address the identified root-causes of the 2021-22 large billing issues; however, there are gaps in the City's root-cause analysis that should be addressed to increase the effectiveness of these actions.

Recommendation 6: The City should develop a program KPI to track City inspections of Contractor (Neptune) activities.

Priority: Medium

Recommendation 7: The City should develop a report of all intermediate and large meter assets that are currently being estimated at zero consumption to identify, prioritize and investigate any accounts that are at risk of being improperly billed.

Priority: High

Recommendation 8: The City should perform follow-up assessments of the effectiveness of implemented corrective and preventative actions on at least an annual basis to ensure they are effectively addressing identified root causes of 2021-22 large billing issues.

Priority: Medium

DATA TRANSFER AND REPORTING



Finding 8: Data transfer and reporting between Hamilton Water, Alectra, and Neptune are highly manual processes resulting in operational inefficiencies.

Recommendation 9: Where possible, the City should examine opportunities to automate the processing and transfer of key data and information from program reporting into the City's asset management system, which is currently being manually performed by WOCs. Further, the implementation of formalized data validation tools would support accuracy of data and reporting. Opportunities to automate the processing, transfer, and validation of Water Meter Program data into the City's asset management system should be evaluated as a part of requirements for the procurement of a new billing solution/service provider.

Priority: High

APPENDIX A: CONTROL ASSESSMENT RATING

Control Objective	Audit Criteria	Assessment Rating
A. Governance and Reporting	A.1: The City has established governance structures, frameworks, roles and responsibilities that are working effectively, staffed with the appropriate capacity, to enable management and oversight of the Water Meter Program.	Somewhat Effective - 2
	A.2: The City has established a Water Meter Program policy and procedure framework which is effectively managed and communicated with appropriate City staff.	Mostly Effective - 3
	A.3: The City has an effective reporting framework in place to report on program risks, intended objectives, expected efficiencies, cost-savings and service improvements.	Mostly Effective - 3
	A.4: The City has established appropriate communication channels between all relevant Water Meter Program stakeholders in order to support program oversight and delivery.	Somewhat Effective - 2
	A.5: The governance and reporting structures for the City align with industry best practices.	Mostly Effective - 3
B. Vendor Management	B.1: The City has effective vendor management frameworks and mechanisms (including key performance indicators (KPIs), service-level agreements (SLAs), communication channels, audit and inspection rights, and remedies) in place to oversee contractor performance related to the Water Meter Program.	Somewhat Effective - 2
	B.2: The City ensures the accurate and timely invoicing of Water Meter Program contractors.	Fully Effective - 4
	B.3: The vendor management framework and mechanisms for the City align with industry best practices.	Mostly Effective - 3

APPENDIX A: CONTROL ASSESSMENT RATING

Control Objective	Audit Criteria	Assessment Rating
C. Program Operations Management	C.1: The City effectively manages work orders (i.e., creation, execution, and verification of work) to allow for completion of program operations in a fulsome, accurate, and timely manner.	Fully Effective - 4
	C.2: Data integrity and transfer processes exist between the City and the City’s contractors that are designed and operating effectively to allow for completion of program operations in a fulsome, accurate, and timely manner.	Somewhat Effective - 2
	C.3: Work order and data integrity processes and procedures for the City align with industry best practices.	Mostly Effective - 3
D. Billing and Customer Management	D.1: The City has established effective billing processes and controls to identify, mitigate, and resolve billing issues and errors in a timely manner.	Somewhat Effective - 2
	D.2: The City has established policies, processes, and procedures to effectively manage customer accounts, inquiries, complaints, or site access.	Mostly Effective - 3
	D.3: Billing policies, processes, and procedures for the City align with industry best practices.	Mostly Effective - 3

APPENDIX B: CONTROL ASSESSMENT SCALE

Rating Level	Description
1. Not Effective	Significant management attention is needed to improve these practices.
2. Somewhat Effective	Some parts of this element are in place, but key deficiencies exist.
3. Mostly Effective	Most parts of this element are working as intended, but more work is needed in some areas.
4. Fully Effective	No action is required. Everything is working as intended.

APPENDIX C: RECOMMENDATION AND MANAGEMENT ACTION PLAN PRIORITY SCALE

Priority Level	Description
High	The risks identified have a high level of exposure and should be addressed in the immediate or short-term, as a result of significant deficiencies in control structures and systems or required financial adjustments that are material to the organization.
Medium	The risks identified have a medium level of exposure and should be addressed in a timely manner to ensure that they do not escalate or result in a higher level of exposure for the organization.
Low	The risks identified represent lower priority or minor process improvement observations, which should be addressed where practical to improve the overall efficiency and/or effectiveness of the operations of the organization.

Water Billing Service Transition Project

- The Water Billing Service Transition Project will have significant impacts to the City's organizational structure and resources for the next two years.
- A fulsome risk assessment should be performed by the City to ensure:
 - Project objectives are understood
 - Significant risks are identified
 - Plans are implemented to manage the risks
 - Action is taken to prevent or manage any adverse impacts to the City's operations throughout the Project's duration, and after the full solution is implemented

Governance/Project Management Risks

- No representatives from Hamilton Water, Finance, Procurement, Legal, IT, or HR are on the Steering Committee for the Water Billing Service Transition Project.
 - Current steering committee membership is three representatives from Finance.
- No dedicated Project Lead tasked with the responsibility of contract management
 - Weak contract management has been one of the most common audit findings we have identified in our audits in the past 12-18 months.
- No project charter for phases 2 and 3 of the project.

- Project is complex. If not carefully managed, costs could easily exceed the initial \$10M budget.
- If the project is delayed beyond 2024 there is a risk of significant cost overruns as the contract with Alectra (if they allow it) would need to be extended, at the same time as expending resources to operationalize the new system.

Contract Management Risks

- Transition agreement with Alectra is currently being developed, projected completion of June 2023. Until executed there is the risk that the City may not be able to hold Alectra accountable to protect the integrity of its information.
 - Alectra has previously taken actions that were against the Service Agreement's terms or against the interests of the City.
- Legal support is actively needed to support the Transition Agreement and Service Agreements with new vendors.

Information Technology Risks

- Cloud based software has many benefits, but risk of data loss, leakage or unavailability due to cyber threats needs to be managed.
- The number of stakeholders will be increased, with a higher potential number of vendors (call centre, meter reading, bill printing).
 - If automated integrations are not embedded into transition and processes remain highly manual, this may have significant negative impact on service delivery.

- If key staff leave current role and/or organization, there is a risk that all the knowledge/skills accumulated will be lost.
 - This is a significant threat to completing the project on time.
- Risk of poor knowledge transfer from Kaihen (consultant) to the City, could result in continual dependence on external vendors.
- Risk that if no staffing strategy for establishment of back-office functions, development may be difficult and pose severe disruptions for residents.

Organizational and Cultural Risks

- City already faces budgetary constraints, closely managing the project should be a top priority.
- We found that there are:
 - Minimal resources being put towards the project
 - Unclear strategies
 - Tight timelines
- The above suggests a cultural/systemic issue in the City, where roles and responsibilities are not clearly understood, and accountabilities could be clearer.

- Nine audit recommendations made to Hamilton Water for Water Meter Program Audit
 - Management agreed with eight, disagreed with one.
- We recommend that a fulsome risk assessment be completed for the Water Billing Service Transition Project



Hamilton

QUESTIONS?