



Hamilton

Office of the City Auditor

Roads Value for Money Audit



Recommendations and Management Responses

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Office of the City Auditor

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Introduction

The following 25 recommendations will strengthen controls and enhance the value for money achieved in the Roads Program.

Recommendation 1

We recommend that the processes and methodologies for tracking and reporting the infrastructure gap be improved in order to provide more reliable information and effective support for decision making (Appendix A, para. 46).

Management Response

Agreed.

It is imperative that the infrastructure gap be transparent, repeatable and generated from a tested methodology that uses solid data and clear goals. A new methodology will be developed that will encompass all of these requirements in order to provide effective support for decision making. This new methodology will be in alignment corporately via the new role of Director Corporate Asset Management.

Expected Completion Date: Q2 2022.

Recommendation 2

We recommend that State of the Infrastructure (SOTI) Reports be developed into a more effective tool for reporting the state of road assets using a streamlined, consistent process with clearer evidence-based metrics (Appendix A, para. 53).

Management Response

Agreed.

The State of the Infrastructure Report has proven to be a helpful summary of current inventory and condition information of assets when it was initiated decades ago. The use of a letter grade in a SOTI report is being retired, as all assets will have data driven metrics in the future. All asset reporting will be evidence based and through future Asset Management Plan (AMP) updates under O Reg. 588/17.

Expected Completion Date: 2025 - Council determined level of service, including risk assessment, will be developed in the 2025/Phase 3 AMP under O.Reg.588/17.

Recommendation 3

We recommend that future asset management plans incorporate a more robust approach for levels of service and risk management (Appendix A, para. 71).

Management Response

Agreed.

Management has been gathering data to define current levels of service for approval at Council level. Preliminary concepts were presented to GIC November 27, 2020, refer to File 2021 GIC Tax Capital Budget Presentation FCS20101, Slide 11. Council determined level of service, including risk assessment, will be developed in the Asset Management Plan under O.Reg.588/17.

As part of Public Works's approach to continuous improvement in our asset management program, more robust processes for levels of service and risk management are in development. These revised processes will be in alignment with ISO 55000 for Asset Management and ISO 31000 for Risk Management.

Expected Completion Date: Q2 2022.

Recommendation 4

We recommend that the Roads Program develop a strategic plan to address its improvement opportunities, and to map out strategies for achieving long term sustainability and implementing key performance measures (Appendix A, para. 71).

Management Response

Agreed.

Many elements of a Roads Program Strategic Plan exist or are in development, through the balance of 2021 into Q4 2022 these will be pulled together to form a comprehensive Transportation Operational Plan.

Expected Completion Date: Q4 2022.

Recommendation 5

We recommend that performance measures be developed to assist in tracking and monitoring of the long-term sustainability of road assets (Appendix A, para. 79).

Management Response

Agreed.

Similar to responses to Recommendations 1 and 3 Management has been gathering data and establishing a framework to define current levels of service for approval at Council level.

The City specific deterioration model that has been loaded into our Decision Support System (IRISS). Management will update the IRISS system with additional data (see Recommendation 9 response) that will assist in tracking road asset performance. This will be part of a continuous improvement process.

Performance measures specific to long-term sustainability will also be developed. Examples include the asset renewal funding ratio (proposed renewal budget for the next 10 years / forecast renewal costs for next 10 years), and the medium term forecast costs/proposed budget (over 10 years of the planning period). Providing sustainable services from infrastructure requires the management of service levels, risks, forecast outlays and financing to achieve a financial indicator of approximately 1.0 for the first years of the Asset Management Plan and ideally over the 10-year life of the Long-Term Financial Plan. This new methodology will be in alignment corporately via the new role of Director Corporate Asset Management.

Expected Completion Date: Q2 2022.

Recommendation 6

We recommend that road asset management develop strategies and plans to deploy more proactive management of road assets with greater emphasis on preservation (Appendix A, para. 89).

Management Response

Agreed.

We will develop an operational plan for maintenance activities for roadway pavement assets.

Expected Completion Date: Q2 2022.

Recommendation 7

We recommend that senior management consider having the function of road asset management become a separately positioned and overseen function to ensure it has the independence and perspective necessary to develop an effective, objective approach to asset management (Appendix A, para. 90).

**Management
Response**

Agreed.

Pursuant to an internal review and in consultation with the City Manager and the General Manager of Corporate Services and Finance in 2020, a dedicated corporate asset management portfolio has been initiated with a Director recently being recruited. An inventory will be undertaken in 2021 to determine roles and responsibilities as part of the implementation of the Corporate Asset Management office through which clear accountabilities will be established relative to asset management versus the managing of assets.

Expected Completion Date: Q4 2021.

Recommendation 8

We recommend that Roads management systematically track the accuracy of predicted life cycle costs in order to inform, improve and amend pavement deterioration forecasts, treatment timing, cost estimation, and to help identify anomalies (Appendix A, para. 92).

**Management
Response**

Agreed.

Management has updated our Decision Support System with more current condition data.

These reviews will continue in cycles as we gather additional condition data.

In the mid-term (next 3 years), the new Enterprise Asset Management System currently being implemented will allow for the tracking of the accuracy of predicted life cycle in order to improve and amend pavement deterioration forecasts with associated timing, cost and the identification of anomalies. This new system will be instrumental in improving the way life cycle costing is managed in the corporate asset management program.

Expected Completion Date: Q4 2024.

Recommendation 9

We recommend that Management report road pavement condition in a consistent manner across its different reporting mechanisms and collect pavement condition data on a more frequent basis (Appendix A, para. 100).

Management Response

Agreed.

Management has adjusted the use of the previous SOTI reports and pavement condition is scheduled to be collected in the 2022 budget and that will provide the City a 3-year cycle.

The evolution of roads data collection over the last 20 years reveals the way the data is collected has developed over time as technologies emerge. There are strong correlations in automated systems and as we collect more information in the future that will create consistent data sets that can be analyzed over time. A standard operating procedure will be developed for the collection of pavement condition data.

Expected Completion Date: Q1 2022.

Recommendation 10

We recommend that Roads management consider expanding the composition of its overall condition index to include a measure representative of a pavement’s structural adequacy (Appendix A, para. 136).

Management Response

Agreed.

In recent projects Engineering Services has enhanced its pavement structure analysis to develop a more robust pavement design. On a network basis, such investigations will continue to be utilized as we gather data on our roads. However, to acquire an inventory of all 6000+ lane kilometers of road base composition will be a significant undertaking.

Expected Completion Date: Q1 2022.

Recommendation 11

We recommend that Roads management introduce measures to improve its system of oversight to ensure that contractors will be held rigorously to account for substandard performance and to ensure quality deficiencies are compensated for and/or corrected appropriately (Appendix A, para. 145).

Management Response

Agreed.

In 2018 the Construction Group began the implementation of an adjustment sheet. It is a modification from MTO’s End Result Specification (ERS) spreadsheet that applies a payment reduction to the Asphalt Item. This reduction is based on the conformance to the mix design.

A review of the current methodology to hold contractors accountable will be undertaken to ensure that substandard performance and quality deficiencies are compensated for and/or corrected appropriately.

Expected Completion Date: Q4 2022.

Recommendation 12

We recommend that Contractor performance for each contract be tracked and formally evaluated using a consistent and robust process and that the use of contractor ratings from previous performance be considered for implementation as a procurement criterion in order to mitigate the risk of poor results (Appendix A, para. 166).

Management Response

Agreed.

For contractor performance and tracking we have developed a holistic contractor performance summary report. Since 2018 Engineering Services has tracked material performance against each contract contractor, mix design and have taken over 900 samples and tested over 5,500 parameters.

Asphalt quality has risen in that timeframe. Engineering Services is continuing to enhance its specifications while addressing contractor performance. It is within Procurement's workplan to research and develop a more robust Vendor Performance Program. The context of this program has yet to be determined however, Procurement will investigate the potential to use contractor ratings from previous contract performance as a procurement criterion in order to mitigate the risk of poor results.

The Enterprise Asset Management system currently being implemented has the ability to formally track and evaluate vendor performance in conjunction with vendor information found in PeopleSoft. The system considers previous performance as part of the overall evaluation. Implementation is expected in the next 3 years.

Estimated completion date: Q4 2022.

Recommendation 13

We recommend that quality assurance and acceptance testing procedures and criteria be strengthened, including those for asphalt mixes, asphalt cement and recycled asphalt pavement materials (RAP), in order to ensure the risk of poorly performing asphalt is minimized (Appendix A, para. 169, 182).

Management Response

Agreed.

We have reviewed asphalt cement testing processes and have also retained a consultant to develop a Pavement Design Guideline that will take a holistic approach when designing pavements. The Pavement Design Guideline includes a review of RAP. The use of RAP is becoming more prevalent, which can be used and applied in many environmentally friendly pavement technologies.

Estimated Completion Date: Q2 2022.

Recommendation 14

We recommend that Management consider providing more resource support for quality assurance functions and processes to ensure they are robust and work as intended (Appendix A, para. 181).

**Management
Response**

Agreed.

Management agrees with the observation regarding our QA function resourcing. As part of our review on the audit recommendations we will be developing options to support this function. This is likely to form part of the 2022 budget request to Council.

Estimated Completion Date: Q2 2022.

Recommendation 15

We recommend that the design function continue to move away from boilerplate design and embrace AASHTO 93 and MEPDG in a systematic way by developing a design guide, associated procedures, and training, and by considering the merits of establishing such knowledge requirements and expertise in relevant position descriptions (Appendix A, para. 184).

**Management
Response**

Agreed.

Management notes this change will take a few years to complete, as our asphalt design cycle begins to evolve, starting with our programming phase.

Management has undertaken a review to develop a program for pavement designs.

Phase 1 due Q1 2022– Design review. Future phases including training and systems to be developed in 2022.

Expected Completion Date: Q4 2022.

Recommendation 16

We recommend that a review be undertaken of the adequacy of the City’s current degradation fee in compensating the City for the lost value and accelerated deterioration of infrastructure as a result of road cuts (Appendix A, para. 205).

**Management
Response**

Agreed.

Hamilton has been a leader in this area however we agree more can be done and will undertake continuous improvement work in 2021, due date in 2022.

Expected Completion Date: Q4 2022.

Recommendation 17

We recommend that Roads management strengthen its policies to ensure that contractors are incented to complete warranty deficiencies on a timely basis (Appendix A, para. 231).

**Management
Response**

Agreed.

Our contracts have a two-year maintenance period and require performance and, labour and materials bonds. The performance bond includes the warranty period to address the correction of deficiencies.

Engineering Services will review the current practices and policies to complete warranty deficiencies on a timely basis.

Additionally, the Enterprise Asset Management system currently being implemented contains a warranty module that will assist with the tracking of warranty requirements, timing and reporting of instances where issues have been identified. Implementation is expected in the next 3 years.

Estimated completion date: missing, Q1 2022.

Recommendation 18

We recommend that Engineering Services provide information to, and involve Transportation Operations and Maintenance in warranty repairs so they will be alert to potential issues and are given a voice in the adequacy and timeliness with which contractors address deficiencies (Appendix A, para. 239).

**Management
Response**

Agreed.

Public Works have been developing a policy to formalize the project hand over procedures between Engineering Services and Transportation Operations and Maintenance. This policy can be extended to all construction projects within the City including development related works.

A formal Standard Operating Procedure related to asset handover from construction will be developed by Q4 of 2021.

The Enterprise Asset Management system currently being implemented contains a warranty module that will assist with the tracking of warranty requirements, timing and reporting of instances where issues have been identified. This information will be available to staff in both Engineering Services and Transportation Operations and Maintenance. Implementation is expected in the next 3 years.

Estimated Completion Date: Q4 2021.

Recommendation 19

We recommend that all potholes including MMS, non-MMS and those reported by members of the public be subject to tracked and reported remediation time standards (Appendix A, para. 241).

Management Response

Agreed.

A procedure and timeline for managing the repair of potholes that are both inside and are outside the scope of the requirements outlined in the Minimum Maintenance Standards (O. Reg 366/18) was developed. Pothole Repair Management Procedure PW-TOM-RM-P-026-003 was approved in May 2021.

Expected Completion Date: Not applicable. Completed in Q2 2021.

Recommendation 20

We recommend that Roads management explore opportunities for deploying the systematic use of preservation management in optimizing the condition and sustainability of City roads (Appendix A, para. 249).

Management Response

Agreed.

The preservation program will be expanded through the development of an Asphalt Mill and Pave Program, Preventative Asphalt Road Maintenance Program and a Roadway Crack Sealing through the Capital Budget process.

Expected Completion Date: Q1 2022.

Recommendation 21

We recommend that as part of its procurement procedures roads management monitor the bidding process for red flags that may suggest irregularities have taken place and investigate if necessary (Appendix A, para. 258).

Management Response

Disagreed.

Roads management is not permitted to be involved in a competitive procurement bidding process until such time as a contract has been awarded or the procurement process has been cancelled. Participating in manner in the competitive process would be viewed as a perceived or apparent conflict of interest. Procurement is responsible for monitoring the bidding process for red flags however, until bids have been formally submitted, there is no way to determine if any "red flags" are present. Procurement staff would be willing to discuss with Office of the City Auditor any mechanisms to recognize any "red flags" should they occur. Should the Office of the City Auditor recommend that Road management perform some bid monitoring, Roads management would need to be advised specifically of those expectations and if there are any limitations or risks associated with doing so.

Expected Completion Date: Not Applicable.

Recommendation 22

We recommend that when dealing with specialized road work that can only be performed by a limited number of contractors, management work with Procurement to look for other contractors to make the process more competitive (Appendix A, para. 262).

**Management
Response**

Disagreed.

Procurement uses "bids&tenders.ca" as its bidding procurement platform for posting the City's competitive procurement information. This website is widely used by various industries including Municipalities, Education, Health Care, Utility and Engineering and Construction across Ontario and Canada to facilitate an opening bidding process. While other procurement platforms exist, utilizing more than one platform would be redundant and would also create the possibility of inconsistencies between the sites. Online bidding platforms have been in use for a number of years and any vendor looking to submit bids to governmental agencies should be well versed in searching these platforms for opportunities. There are also several tutorials available for any vendor looking to start entering this competitive online market.

Expected Completion Date: Not Applicable.

Recommendation 23

We recommend that in the future, Roads management ensure change orders are approved in writing before work is performed and are sufficiently detailed to allow for subsequent review, validation and cost control (Appendix A, para. 264).

**Management
Response**

Agreed.

We will review and adjust change order procedures in consultation with Finance and Administration to ensure correct protocols are being followed. Subsequent to this review the appropriate procedures will be developed by quality management staff and hosted in the Quality Resource Center.

Expected Completion Date: Q2 2022.

Recommendation 24

We recommend that Management institute sufficient oversight and segregation of duties to ensure procurements undertaken through the roster method meet the requirements (Appendix A, para. 271).

**Management
Response**

Agreed.

Segregation of roles in managing roster programs has been transitioned to the Manager level to ensure that correct oversight is undertaken.

Expected Completion Date: Not Applicable. Completed.

Recommendation 25

We recommend that Roads management work with Finance to ensure proper invoicing for contractor services takes place in accordance with the Construction Act, that progress payment documentation is adequate, that under/overspent budgeted finds are appropriately accounted for, and transfers approved, and that controllership over these funds is sound (Appendix A, para. 280).

**Management
Response**

Agreed.

To resolve Office of the City Auditor's recommendation Management in partnership with Finance and Administration will be aligning Engineering Services with the existing prompt payment processes in order to ensure proper invoicing per the Construction Act and progress payment documentation is occurring for contractor services. Further, Management will ensure controllership of capital funds through the involvement and oversight of Finance and Administration. Roles and responsibilities of the capital function will be reviewed by the Financial, Planning, Administration and Policy division.

Expected Completion Date: Q3/Q4 of 2021.

As part of the Enterprise Asset Management System Project, Public Works in partnership with Finance and other applicable stakeholders are undergoing a review of business processes/procedures that will ultimately transform the current way of doing business and includes project management and governance/controllership principles/frameworks. The project is underway and will be implemented over the next three years. Public Works has committed to updating Council on an annual basis on the status of the project.

Expected Completion Date: Q4 2024.

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