








Service delivery review of winter maintenance operations report
for The Regional Municipality of Durham
January 30, 2023

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Disclaimer

This written communication (the “Final Report”) has been prepared for the Regional Municipality of Durham (“Durham” or “the Region”) per the terms of our Statement of Work, executed on July 28, 2022, between the Region and Deloitte LLP (“Deloitte” or “we”). All financial and operational information in the Final Report was provided by the Region as part of this review. Deloitte makes no representations about, nor has Deloitte verified or audited the accuracy or correctness of any information provided by the Region. The Region’s leadership maintains responsibility for verifying the accuracy or correctness of this information.

All analysis and recommendations outlined within the Final Report are based upon interviews with the Region and external groups, data collected from the Region and other additional information provided as at the date of this report. The Final Report is based on information collected and assessed over the course of this project and serves as a preliminary view of the opportunities identified and selected to date based on high-level financial, operational, and regulatory assumptions. Any insights and/or considerations on the opportunities presented are subject to further diligence and alignment with the Region’s management.

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The data and Final Report are provided as of January 30, 2023, and we disclaim any undertaking or obligation to advise any person of any change in any fact or matter affecting this analysis, which may come or be brought to our attention after the date hereof. Without limiting the foregoing, in the event that there is any material change in any fact or matter affecting the analyses after the date hereof, we reserve the right to change, modify or withdraw the analysis.

Executive summary

Executive summary

Background

How to read this Executive Summary

The Executive Summary provides an overview of the project, describes the themes of the opportunities identified, provides a summary of the opportunities identified, and outlines the opportunities based on priority. The WMO opportunities section provides further details of the background, characterizations, cost savings and investments needed, implementation considerations and qualitative benefits to be realized.

Purpose

Deloitte was engaged by The Regional Municipality of Durham (the “Region”) to undertake an efficiency review of the Region’s Winter Maintenance Operations (the “Review” or “WMO”), the goal of which was to identify opportunities to modernize and improve the efficiency of WMO. The scope of the Review included current state evaluation, including workshops, opportunity identification, validation and prioritization workshops, and providing a final report.

This report documents the Region’s current winter maintenance process and analysis, discusses jurisdictional scan results, identifies opportunities for efficiencies, and provides actionable implementation steps and benefits that have been organized by theme. Opportunities were categorized by potential annual cost savings, efficiency impact, level of service (“LOS”) impact, investment required, level of risk involved, and duration to implement. Finally, this report provides a summary of priorities and next steps associated with each opportunity for the Region’s consideration.

Objectives, project principles, and scope

The objective, as specified by the Region, was to complete a review of the Region’s current service delivery model to identify opportunities for efficiencies in the Region’s current winter maintenance processes and the potential benefits that could be gained from leveraging these opportunities.

Our approach

Our work was delivered in four phases:

Phase 1 – Current state evaluation: Assessed intended outcomes, program and service definitions, technology utilized in the delivery of service, and financial information. We also conducted five interviews with Service Leaders and one interview with WMO staff to understand current operations, potential opportunities and challenges.

Phase 2 – Opportunity identification: In this phase we identified potential opportunities for the Region to consider. We conducted benchmarking analysis, performed an outcome and financial analysis, conducted a best practices sweep of the service, held interviews with key stakeholders, and evaluated the technology horizon of key technologies currently utilized in the delivery of the service. We also interviewed three GTA municipalities to discover better practices to be leveraged in WMO.

Phase 3 – Service review workshops: Held workshops to validate the opportunities identified and then prioritized the opportunities based on available resources. We worked closely with the Region to ensure that the prioritized opportunities are actionable and built trust and support from stakeholders who may be impacted.

Phase 4 – Final reporting: This report is a result that outlines the opportunities that were identified, the jurisdictional scan information and finally information regarding how the final top 10 prioritized opportunities were chosen.

Executive summary

Summary of opportunity themes

The following provides a brief summary of the 20 opportunities identified by common themes.

People management

The Region currently employs full-time employees, and while the majority of the team has significant experience in WMO, there are improvements that can be made to the staffing complement and practices to help ensure that personnel are adequately trained and strategically allocated to help drive operational efficiencies.

Contract management

The Region currently operates with a variety of contractors across the different depots. There is an opportunity to improve the contracts to ensure they have clear and quantifiable clauses to ensure contractors deliver their service in a consistent manner.

Standard operating procedures

The Region’s standard operating procedures (“SOPs” or “SOP”) around WMO currently meet or exceed the minimum maintenance standards as set out in *Ontario Municipal Act 239/02 Minimum Maintenance Standards for Municipal Highways*. However, the Region’s SOPs are not formally documented, communicated nor are these publicly available. This creates a disconnect between WMO that should be delivered in accordance with the Region’s SOPs and WMO expected to be delivered by citizens. Communicating the details of the Region’s SOPs and adhering to them will help drive operational efficiencies.

Material optimization

Salt is highly important to WMO as approximately 35,000-50,000 metric tons of salt is used each winter season. While the Region has an established system in place regarding its inventory management, further steps could be taken to help increase accessibility of salt/alternative materials and optimize salt usage.

Technology optimization

The Region utilizes several advanced technologies in WMO. Further training, reporting and integrating with existing technologies will ultimately benefit the Region’s WMO efficiencies and service levels, allowing for greater benefit from the technologies currently employed.

The following legend provides description of the symbols to be used in the subsequent table on pages 6 and 7.

Opportunity characterization legend					
Cost savings (Annualized)	Efficiency impact	LOS impact	Investment	Risk	Duration to implement
H ≈2+% of baseline \$>200,000	H Highly increases efficiency	I Increase LOS	H 2+% of baseline \$>200,000	H Likely possibility of a high risk	ST Short term
M ≈1–2% of baseline \$100,000–\$200,000	M Moderately increases efficiency	D Decrease LOS	M 1–2% of baseline \$100,000–\$200,000	M Possibility of a moderate risk	MT Medium term
L ≈0–1% of baseline \$0–\$100,000	L Low or no impact on efficiency	N Neutral to LOS	L 0–1% of baseline \$0–\$100,000	L Remote possibility of a low risk	LT Long term

Executive summary of 20 opportunities agreed on with the Region

Theme	Opportunity	Brief description	Cost savings	Efficiency impact	LOS impact	Investment	Risk	Duration to implement
People management	1. Additional operational training — Practical experience*	Pair new operator with experienced operator to accelerate practical experience/efficiency and performance	L	M	N	L	L	ST
	2. Individualized technology training*	Tailor technology training to staff's proficiency to increase effectiveness and technology adoption	L	M	I	M	L	MT
	3. Technical support — Super users	Pair technology experts with less experienced staff to increase overall technological proficiency	L	M	I	L	L	MT
	4. Re-design shifts*	Reschedule shifts to cover WMO needs	L	M	I	H	H	LT
	5. Depot restructure*	Investigate restructuring the existing organizational structure and separate the department into two distinct sub-services (Sewer and Water, and Road Maintenance)	H	H	I	H	H	LT
Contractor management	6. Increase contractors' accountability — Contract clauses *	Ensure that future contracts have clauses regarding repercussions to hold contractors accountable (i.e., for poor service)	H	H	I	L	M	LT
	7. Increase contractors' accountability — Mandatory training*	Require contractors to attend training to ensure service quality	H	H	I	L	M	LT
	8. Increase contractors' accountability — Geotab	Monitor Geotab data for contractors to ensure efficiency	H	H	I	L	L	MT
	9. Increase contractors' accountability — Supervisors*	Require a supervisor for all contractors to ensure the Region has a point of contact should there be service quality issues	H	H	I	L	M	LT
Standard operating procedures	10. Communication with Council	Communicate with Council on the documented SOPs, expected LOS, and how citizens can find out information	L	H	N	L	M	ST
	11. Citizen awareness	Provide additional information to citizens (i.e., electronic signs and updates to the Region's website) to minimize the number of inquiries	L	M	I	M	L	MT
	12. Document the Region's standard operating procedures*	Document and share the SOPs to inform the LOS that can be expected in the Region	H	M	D	M	M	MT
	13. Handling insurance claims	Publish the WMO SOPs, communicate with regional police, and provide further education to assist with handling claims and performing discoveries	L	M	I	L	L	MT

* Represents the top ten opportunities identified during our prioritization workshop with the Region.

Executive summary of 20 opportunities agreed on with the Region

Theme	Opportunity	Brief description	Cost savings	Efficiency impact	LOS impact	Investment	Risk	Duration to implement
Material optimization	14. Automated salt application	Install sensors on trucks to automate salt disbursement	H	H	I	M	L	MT
	15. Alternative solutions for salt supply	Explore alternative solutions for salt including sand and other materials based on weather, cost and environment needs	L	H	N	M	L	LT
Technology optimization	16. Geotab — Maximo integration*	Integrate Geotab and Maximo to allow Maximo to automatically extract data currently accumulated within Geotab	L	M	N	H	M	LT
	17. Geotab — Workforce integration*	Integrate Geotab and Workforce to allow Geotab to automatically extract data from Workforce	L	M	N	H	M	LT
	18. Geotab reporting	Design and implement Geotab reporting for management purposes (i.e., consolidated information) to better understand WMO	M	M	I	H	M	MT
	19. Handling insurance claims — Geotab	Create a Geotab report designed to extract the specific detailed information required to handle claims and perform discoveries	L	M	I	L	L	ST
	20. Dash cams	Install dashcams in vehicles to monitor conditions	L	M	I	L	M	ST

* Represent the top ten opportunities identified during our workshop with the Region.

Executive summary

Benefit realization on winter maintenance operations opportunities



Efficiency impact

We have identified 20 impactful opportunities and prioritized the top 10 that will result in increased efficiency for the Region. This remained a core focus and objective throughout the process to ensure that all opportunities either directly or indirectly yield efficiency improvements in WMO.



Potential financial impacts

The comprehensive and collaborative approach undertaken through this review identified common themes and interdependencies within the opportunities that will facilitate recurring annualized benefits rather than identifying non-recurring opportunities. If the Region implemented all of the opportunities identified, it would expect annualized cost savings of between 8 – 13% of the \$9.55 million baseline analyzed. The initial investment required for implementing these opportunities would be approximately 13% of the baseline. Projecting the net impact of the annual costs savings and the initial investment over 3 years, the Region would expect **total savings of \$1 – 2.5 million.**



Employee impact

The implementation of these opportunities would also bring benefits to the work environment of the Region’s staff. Specifically, implementing these opportunities could lead to increased employee satisfaction and reduced burnout from improved training programs, simplified work processes, and a higher sense of support from management.



Implementation impacts

While it is necessary to implement the full suite of recommendations under each service area, prioritization of implementation steps is a key success factor on the road to improving WMO. The remainder of this report will provide detailed information on each opportunity with further insight into the challenge addressed, characterization, and other considerations. Next steps for each opportunity can be found in the “Implementation Steps” section of each detailed opportunity.

Current winter maintenance process and analysis



Expense baseline

In 2021, the Region incurred \$9.55 million of winter maintenance expenditures across all depots.

Expenses by activity

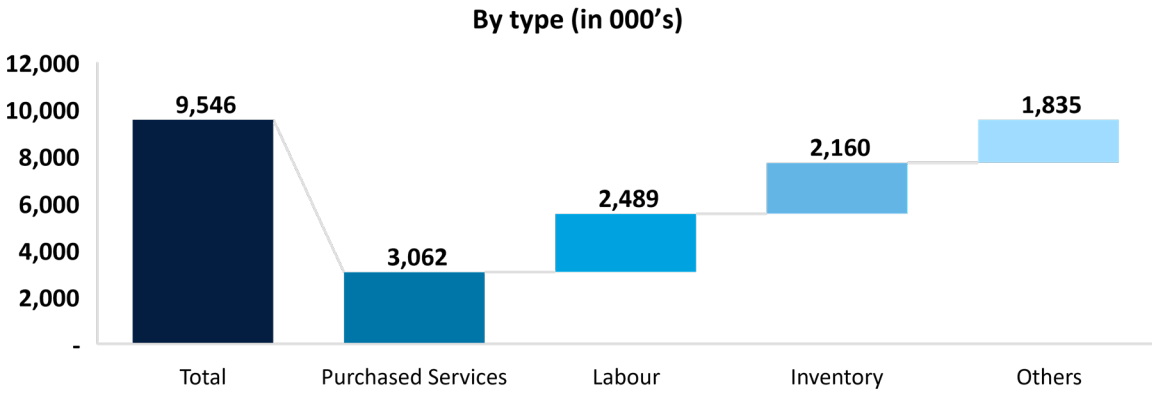
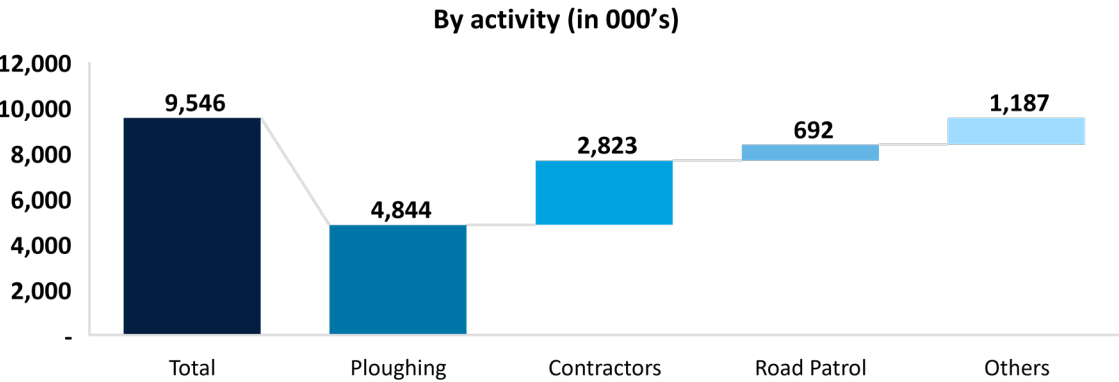
Expenses can be traced to four main activities performed by the Region’s depots: plowing, contractors (plowing, road patrol and other Winter maintenance operation tasks performed by contractors), winter road patrol, and others. Others includes but is not limited to snow removal, snow fencing, winter road supervision, winter road patrol, drainage, spring cleaning, and off-duty time.

As the Region is primarily responsible for plowing activities on major arterial roads, this activity is significant, representing approximately 50% of the total baseline. Contractors also carry out a considerable portion of WMO at the Region, representing approximately 30% of the total baseline. Road patrol represents approximately 7% of the total WMO baseline at the Region. The remaining winter maintenance services the Region provides represent approximately 13% of the expenses.

Expenses by type

The largest portion of winter maintenance expenditures relate to purchased services, which primarily consists of contractor operations, representing approximately 32% of the total baseline. Labour costs are the next highest expense as the Region employs full-time employees as part of WMO, representing approximately 26% of the total baseline. The next largest is the amount of inventory such as salt required to deliver WMO at the Region, representing approximately 23% of the total baseline. The remaining expenditures incurred relate to others, representing approximately 19% of the total baseline.

Winter control operations baseline



Expense trends

In 2021, the Region incurred \$9.55 million of winter maintenance expenditures. Overall, total expenditures on WMO have decreased by \$3.8 million since 2019. This is primarily due to there being 359 winter events in 2019 compared to 302 in 2020 and 292 in 2021.

Expenses by activity

During the period of 2019 to 2021, the Region’s depots performed four main WMO activities (i.e., plowing, contractors, winter road patrol, and others).

Although the weight of each activity expenditure in relation to total spending remained roughly consistent, there were major reductions in the costs.

The largest reductions were in contractor expenses (33% decrease) and plowing (30% decrease). The Region also experienced slight decreases in winter road supervision, drainage, and off-duty time.

These were offset by increases in other spending, including snow removal, snow fencing erection, winter road patrol, spring cleaning, etc., with the highest being in winter road patrol expenses (11% increase).

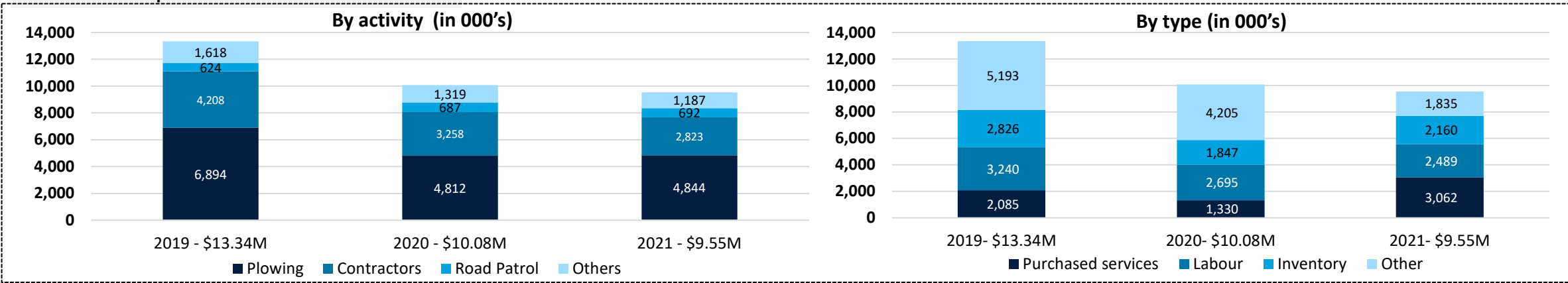
Expenses by type

During the period of 2019 to 2021, the Region tracked four main expense types (i.e., purchased services, labour, inventory, and other).

Overall, there were major reductions regarding the amount spent, including a reduction of \$3.26M from 2019 to 2020 and of \$3.79M from 2019 to 2021. These reductions were primarily driven by fewer winter events in 2020 and 2021 compared to 2019 and occurred approximately evenly across all expense types.

There was a reclassification of expenses for services agencies provided by the lower area municipalities between other expenses and purchased services. As a result, spending on service agencies was recorded in other expenses in 2019 and 2020, and as purchased services in 2021.

Winter control operations baseline



Current winter maintenance process and analysis

Service description



Service profile

Service type	External
Service driver	Legislation
Delivered by	Region Staff/ Contractor
2021 expenses	\$9,546,000
Full-time Employees (FTEs)	246
KPIs used	None

Overview

The Region is responsible for delivering winter maintenance services on 2,461 km of roads, including winter road patrol, snow plowing and salting of roads, anti-icing, and snow removal. The service is delivered by a hybrid of staff and contractors. They employ 246 FTEs, including 127 full time operators, and utilize the services of 27 contracted trucks. The FTEs work out of five depots in Orono, Sunderland, Ajax/Pickering, Oshawa/Whitby, and Scugog. The depots provide road maintenance services as well as water and sewer services.

The Region follows the Ontario Municipal Act 239/02 *Minimum Maintenance Standards for Municipal Highways*. In our interviews it was noted that there is a disconnect between Ontario’s minimum standards and the higher standards deployed in practice. We also noted that the similar standards appear to be utilized across depots. Through our interviews it was mentioned that the northern roads and roads with drifting snow may require different materials to be used at different times, as the standard salt applications do not always make sense. It was noted that the current practices are not fine tuned for the different weather patterns and road types. Operators were very favourable in their comments regarding the equipment deployed by the Region for WMO.

People management

We noted that the standard shifts for winter maintenance operators are as follows: Monday through Friday there is a day shift from 7:30 am to 3:30 pm, with mandatory standby from 3:30 pm to 7:30 pm and 5:30 am to 7:30 am; also, there is a night shift from 11:30 pm to 7:30 am with mandatory standby from 7:30 pm to 11:30 pm and from 7:30 am to 9:00 am during the winter period. There is no shift during weekends and holidays. Staff are called up in a hierarchical order if there is a snow event at those times. This was an issue for the supervisors, as they need to make several calls to find staff to cover those shifts.

We also noted that because the staff perform both water and sewer work as well as roads, the Region requires the employees to obtain their water licenses within several years of being employed. The jurisdictional scan revealed that other jurisdictions do not combine these services and have a separate roads group, therefore, these services were not performed by the same employees. We noted that having the services combined and requiring employees to have/obtain their water license makes recruiting personnel harder, and compensation higher.

We observed that operators are trained in both plowing and technology use, but there are opportunities to improve on this training in both areas.

Contractor management

The use of contractors by the Region helps alleviate shift coverage issues when there is a storm event. We noted in our interviews, that there are cases where the Region needed to re-plow the work of the contractor due to quality. One depot has a designated individual to manage the contractor. We reviewed the agreements entered with the contractors and noted that there were no clauses to address the quality of service, early payment discounts, training of contractors and other best practices.

Current winter maintenance process and analysis

Service description (continued)

Standard operating procedures

The Region's SOPs around WMO currently meet or exceed the minimum maintenance standards as set out in the *Ontario Municipal Act 239/02*. However, the Region's SOPs are not formally documented, communicated or publicly available. This creates a disconnect between WMO that should be delivered in accordance with the Region's practices and WMO expected to be delivered by citizens. In our interviews we heard about many anecdotal issues, which we will discuss further in the opportunities section, that are a direct result from not having the Region's WMO SOPs documented, and these included:

- calls to depots asking for information on when services can be expected
- need for communication of a severe storm warning to ask citizens to stay off the roads
- covering shifts is difficult during storms
- decisions as to when to deploy resources is more subjective without documented SOPs
- not optimizing resource deployment depending on the event (i.e., plowing too soon)
- material usage that could be better refined for the weather patterns
- legal claims that attempt to hold the municipalities to a higher standard than the *Ontario Municipal Act 239/02* requires
- contracted operators are not believed to perform to the same SOPs as the regional operators, as the SOPs are not formally communicated

The opportunity to document and follow the SOPs will provide the Region with a number of benefits as discussed in the opportunities section .

Material optimization

Salt is highly important to WMO, as approximately 35,000-50,000 metric tons of salt are used by the Region each winter season. While the Region has an established system in place regarding its inventory management, further steps could be taken to help increase accessibility of salt/alternative materials and optimize salt usage.

As mentioned above we noted through our interviews that some operators would like more flexibility in the materials used in WMO and when they are to be used. Salt can be spread which is then plowed away a few hours later due to drifting snow. Sand works better with drifting snow in colder conditions. Currently, the Region uses few alternative materials for WMO, other than salt and brine. Additionally, they do not utilize automated salt and material spreaders in their WMO. The SOPs are currently not prescriptive to the weather, road and regional WMO conditions to support more efficient and effective material usage.

Technology optimization

The Region deploys several technologies for use in WMO to help track the vehicle and weather information, employee and driving times, workorders for storm events, etc. These include Geotab, a fleet management system, Workforce, a system that tracks labour time, and Maximo, a workorder system that assesses the cost of a storm. These technologies are advanced; however, more can be done with them to achieve their full value for the Region and gain more efficiencies. The systems currently do not integrate and there are still many instances of collecting paper information, as not all the information is easy to extract from the systems in a report. This duplicates efforts and can provide data that does not reconcile with other data (i.e., two versions of the truth). Reporting from these systems can be very difficult (e.g., on a consolidated weather event), and the Region is therefore not getting the full benefit from the systems that they have already invested in and should evaluate external opportunities as it pertains to technology.



Jurisdictional scan



Jurisdictional scan

Winter maintenance operations

We compared the Region to other Ontario jurisdictions using publicly available information as follows:

Criteria	Durham	Waterloo	Peel	Halton	York	Kawartha
Total km covered	2,461	1,736	1,688	1,159	4,382	1,672
Total spend	\$9,665,302	\$8,845,312	\$5,810,014	\$6,029,377	\$24,482,129	\$7,613,045
Cost per lane km	\$3,927	\$5,095	\$3,442	\$5,202	\$5,587	\$4,553
Percent of operating expenses	0.68%	0.73%	0.22%	0.64%	1.06%	3.13%

Note: Information was obtained via Financial Information Repository 2021.

On a cost per km basis Durham was the second lowest but has the second highest number of km to cover.

Three jurisdictions (JS) were contacted and were able to provide further information below based on remaining anonymous:

Criteria	Durham	JS 1	JS 2	JS 3
Number of employees	127	80	90	N/A
Total overtime hours	3,827	300	7,272	4,500
Total overtime pay	\$1.56M	N/A	\$0.18M	\$0.21M
Number of contracted operators	27	24	N/A	N/A
Total spend on contracted services	\$3.06M	\$3.30M	\$2.14M	\$11.43M
Total spend on contractor standby	\$1.71M	\$2.00M	N/A	\$9.24M
Total salt usage (tons)	35 – 50,000	20,000	17,413	50,844
Number of salt suppliers	1	1	N/A	N/A

Other observations	Materials	Technologies	Contractors	Comparisons (from both charts)	Shift coverage
	<ul style="list-style-type: none"> Salt is used by all jurisdictions. In addition to salt, JS 1 uses brine, JS 2 uses sand, and JS 3 and Durham use both materials. 	<ul style="list-style-type: none"> All jurisdictions use Geotab or a Geotab equivalent. Aside from Geotab, JS 1 utilizes another technology for reporting, and JS 2 utilizes a different technology for material deploying and tracking. 	<ul style="list-style-type: none"> Both JS 1 and JS 2 have an employee that manages contractors' contracts, while Durham does not. 	<ul style="list-style-type: none"> York has the highest expenses per lane km. Durham covers the second largest area and employs the highest number of employees. JS 3 contracts out 78% of their WMO, which explains why JS 3 spends the most on contracted services. 	<ul style="list-style-type: none"> JS 1 and JS 2 have employees who perform 24/7 patrol. JS 2 follows three 8-hour shifts. Durham follows two regular 8-hour shifts, two 4-hour standby shifts, and another two 2-hour standby shift that overlaps with the regular 8-hour shifts.

Note: Some information was not provided by all jurisdictions interviewed, this table includes all JS data that was provided.

Identification of opportunities for efficiencies by themes, including benefits



People management



Additional operational training

Practical experience



Description and rationale

- The Region is currently hiring operators with the appropriate credentials, but new hires may lack practical WMO experience. Given the complexity of activities within WMO (e.g., plowing, salting, etc.), not all new operators may have sufficient working knowledge to perform their duties in the most efficient and effective manner.
- As part of the onboarding process, the Region should provide formalized practical experience opportunities for new operators, in addition to their current training, by requiring each new operator to log a certain number of hours working alongside an experienced operator and assisting them while performing WMO, which will help to facilitate learning.
- This will provide new operators with practical, real-life experience in addition to the current training, which will accelerate their efficiency level and performance.



Characterization

Efficiency Impact	Moderate	<ul style="list-style-type: none"> • This opportunity will contribute to expediting the knowledge transfer process, raising the operators’ experience level more rapidly, and thereby reducing the likelihood of issues potentially caused by inexperienced operators. • As a result, this opportunity will yield direct improvements in efficiency and effectiveness.
Service Level Impact	Neutral	<ul style="list-style-type: none"> • While this opportunity will raise the truck operators’ experience level more rapidly, the overall service level performance for the Region will not be affected.
Investment	Low	<ul style="list-style-type: none"> • The investment of doubling up the time of having two drivers together on a shift, while not insignificant, will be a minimal cost to the overall operations. • Depot supervisors will need to invest time and effort in planning and scheduling the experience sessions (i.e., determining how many hours of practical experience new operators need and then assessing the performance of new operators after the training to determine if additional practical experience may be required).
Risk	Low	<ul style="list-style-type: none"> • There is a low risk that this opportunity may cause some staff members to be displeased with teaching new operators in addition to performing their day-to-day tasks. However, the benefits of having efficient and effective co-workers, and a team-oriented workforce will assist in mitigating this risk.
Duration to Implement	Short-term	<ul style="list-style-type: none"> • If this opportunity is accepted by the Region, it can be implemented for new operators by the following winter season.

Additional operational training

Practical experience (continued)



Annual cost savings — Low (<\$100,000 savings)

Initial investment

- Time must be invested by the depot supervisors to schedule. Costs associated with this time are expected to be low (up to \$100,000).

Annualized cost savings

- This opportunity will create additional training for each new operator which will cost the Region minimally more training dollars than they currently are spending.
- This opportunity lowers the likelihood of operator inefficiencies (i.e., material waste, labour costs associated with redoing a route, etc.). Therefore, the Region will realize an annualized cost savings which are expected to be low (up to \$100,000).



Qualitative benefits

- This opportunity will result in increasing the new operators' effectiveness of job performance, as this practical experience will provide the new operators with hands-on situations that they will learn from and be able to more effectively handle when these situations are encountered in the future.
- This opportunity will pair seasoned operators with new operators, leading to more opportunities to build camaraderie, creating a more teamwork-oriented environment and helping increase morale.



Implementation steps

Short-term

1. Identify new winter maintenance operators (i.e., all operators who have not operated a vehicle during a previous winter season).
2. Pair new winter maintenance operators with seasoned winter maintenance operators and determine how many hours of operation training are to be provided to the new operator.
3. Provide guidance to seasoned operators as to what hands-on knowledge they need to transfer over to new operators and .
4. Upon completion of the practical experience, both the new operator and the seasoned operator will provide their supervisor with a signed form indicating that the training has been completed.
5. One month after the training, assess the performance of new operators to determine if additional practical experience may be required.
6. Gather feedback and adjust the job shadowing program as time progresses.

Individualized technology training

Description and rationale

- The Region has made investments in new efficiency-improving technologies to assist in WMO, such as Geotab. Currently, the Region provides a one-size-fits-all training when a new technology is implemented. This does not consider that staff may have different comfort levels with technology use. This means the pace of adopting new technologies could be vastly different between users.
- The Region should re-develop its technology training program so that it is tailored to the technological proficiency of each staff member. This program should start with an assessment of the overall technological proficiency of individual staff members (Novice—Intermediate—Expert). Each member would then be assigned to the version of the technology training program that corresponds to their assessed proficiency level. Assessment of staff members proficiency to be performed on a periodic basis. The Region will have to develop three versions of the technology training program, one for each proficiency.
- This will increase the effectiveness of technology training as it would reduce unnecessary training time for members that are already proficient, while providing more attentive assistance to less proficient ones.

Characterization

Efficiency Impact	Moderate	<ul style="list-style-type: none"> • This opportunity will help staff members be more comfortable with the technology that they use on a day-to-day basis, thereby improving the efficiency and effectiveness of technology use.
Service Level Impact	Increase	<ul style="list-style-type: none"> • This opportunity will allow the Region to perform their services at a higher level and utilize technology to increase the level.
Investment	Moderate	<ul style="list-style-type: none"> • The investment associated with this opportunity consists of costs of re-designing current technology training programs.
Risk	Low	<ul style="list-style-type: none"> • Employees may not like being categorized as to their level of proficiency, however, this should change over time as more training makes the novices more proficient.
Duration to Implement	Medium-term	<ul style="list-style-type: none"> • This opportunity will require management to re-develop its technology training program and assess employees' level of technological proficiency.

Individualized technology training (continued)



Annual cost savings — Low (<\$100,000 savings)

Initial investment

- Time must be invested by the Region to create a technology proficiency assessment as well as re-designing its current technology training program. Costs to develop are expected to be moderate (\$100,000 - \$200,000).

Annualized cost savings

- This opportunity will reduce training time for operators at the expert level proficiency. However, costs will increase for training operators at the novice level proficiency. The net result would be low in costs.
- Using the technologies more effectively will result in low annualized cost savings, which are expected to be up to \$100,000.



Qualitative benefits

- Introduction of technologies requires change management, as these technologies result in minor changes to the day-to-day operations. This opportunity helps to better manage that change, thus creating more value realization from the technologies deployed.
- This opportunity will allow the staff members to partake in the appropriate level of training for their proficiency level and will improve their adoption of technology and tools.



Implementation steps

Medium-term

1. Identify what are the differentiating factors in terms of technological proficiency between a novice, intermediate and expert level employee.
2. Create an assessment that will help the Region categorize their employees into the three proficiency levels, based on the differentiating factors identified.
3. Re-design the current technological training program for each proficiency level.
4. Evaluate the re-designed technological training program with a subset of employees to collect feedback and adjust as needed.
5. Launch the proficiency assessment across the whole department and commence the re-designed training program.
6. Gather feedback and adjust the technological training program as time progresses.
7. Consider re-evaluating the employee's technological proficiency on an annual or periodic basis as needed.

Technical support

Super users

Description and rationale

- The Region has made investments in new efficiency-improving technologies to assist in WMO, such as Geotab. Currently, the Region provides a one-size-fits-all training when a new technology is implemented. This does not consider that the regional staff members may have different comfort levels with technology use. This means the pace of adopting new technologies could be vastly different between users.
- The Region should organize a system where staff members, who have novice level proficiency, have a super user (i.e., an expert level proficiency colleague) to go to when they have questions regarding any piece of technology the Region is currently using.
- This will provide the staff members, who have novice level proficiency, with a point of contact regarding how to use the technology. This will in turn increase their proficiency with technology.

Characterization

Efficiency Impact	Moderate	<ul style="list-style-type: none"> • This opportunity will help staff members be more comfortable and proficient with the technology that they use on a day-to-day basis, thereby, improving productivity of the Region’s staff members. • As a result, this opportunity will yield direct improvements in efficiency.
Service Level Impact	Increase	<ul style="list-style-type: none"> • The increased use of technology through this opportunity will allow the Region to perform their service at a higher level.
Investment	Low	<ul style="list-style-type: none"> • The investment associated with this opportunity consists of the time and effort required to organize the peer system.
Risk	Low	<ul style="list-style-type: none"> • There is a low risk that the opportunity will cause expert level proficiency staff members to be displeased with the additional workload stemming from questions from novice level proficiency staff members. However, the benefits of having efficient and effective co-workers, and a team-oriented workforce will assist in mitigating this risk.
Duration to Implement	Medium-term	<ul style="list-style-type: none"> • The super user system can start in the short term. However, the rest requires management to re-develop its technology training program and assess employees’ level of technological proficiency, which is why it is medium-term.

Technical support

Super users (continued)



Annual cost savings — Low (<\$100,000 savings)

Initial investment

- Time must be invested by regional staff to select and organize the super users. Costs associated with this time are expected to be low (up to \$100,000).

Annualized cost savings

- This opportunity will require the Region to invest time into analyzing expert level proficiency staff members and selecting a subset of super users, the resulting costs are expected to be low (up to \$100,000).
- Expert level proficiency employees will be spending time helping employees with technology, the resulting annualized costs for time spent are low (up to \$100,000).
- Using the technologies more effectively will result in low annualized cost savings, which are expected to be up to \$100,000.



Qualitative benefits

- This opportunity will lead to more opportunities to build camaraderie, creating a more teamwork-oriented environment and helping increase morale.
- This opportunity will provide staff members who have a novice level proficiency will eventually become more familiar with the technology by learning hands on from the super users. This will in turn increase their comfort with technology.



Implementation steps

Medium-term

1. Leveraging the implementation steps from the opportunity of “Individualized technology training”, the Region will create a group of super users that stem from the expert level proficiency staff members. This group will be the point of contact for the novice proficiency level staff members for all technology related questions.
2. Conduct an introduction session, where the Region can communicate the qualitative benefits of the peer system. The session could also serve as an opportunity for the staff members to meet the Region’s super users (i.e., a group of expert level proficiency staff members).
3. Formally launch the opportunity.
4. Gather feedback and adjust the opportunity as time progresses.

Re-design shifts

Description and rationale

- WMO shifts, during the winter operations period, are currently organized in the following manner: regular day shifts would be from 7:30 am to 3:30 pm, with mandatory standby from 3:30 pm to 7:30 pm and 5:30 am to 7:30 am, and regular night shifts would be from 11:30 pm to 7:30 am, with mandatory standby from 7:30 pm to 11:30 pm and 7:30 am to 9:30 am. There is no shift on weekends or holidays.
- We noted in the jurisdictional scan that other jurisdictions have three shifts a day and cover weekends with WMO staff.
- The current shift schedule does not cover all times that may be required for WMO. Staff are called up in a hierarchical order if there is a snow event during times outside the current regular day shift. This was an issue for the supervisors, as they need to make several calls to find staff to cover those shifts.
- There are standby hours on shifts to cover times that are not covered by a typical shift. The Region needs to take a closer look at the utilization of staff to get a better understanding of when employees/contractors on standby are utilized and how they can provide better coverage on weekends and holidays.
- Re-designing the shift balance could provide more coverage for WMO. This may cost more overall because of more employees needed for shifts. Payments for standby and opportunities for overtime would need to be studied further to ensure a balance is achieved to cover shifts and remunerate employees. This opportunity is interrelated with department restructuring opportunity described in the “department restructuring “ section.

Characterization

Efficiency Impact	Moderate	<ul style="list-style-type: none"> • This opportunity will achieve a more consistent LOS across shifts and will increase the Region’s staffing flexibility in response to weather conditions. As a result, this opportunity will yield moderate improvements to efficiency.
Service Level Impact	Increase	<ul style="list-style-type: none"> • This opportunity will allow the Region to perform their service at a higher level by having more coverage during a winter storm.
Investment	High	<ul style="list-style-type: none"> • The Region will need to invest sufficient time in conducting a thorough analysis of idle time vs. peak time in both personnel and equipment resources to identify the most optimal shift balance and achieve appropriate coverage. • This may result in higher costs for more staff to cover shifts, offset by a reduction in standby pay depending on the balance reached.
Risk	High	<ul style="list-style-type: none"> • Re-designing the shift could cause reduced pay for some staff members. This risk can be mitigated by ensuring that this is a data-driven exercise, is a balanced and phased approach, and includes input from the labour union and staff members.
Duration to Implement	Long-term	<ul style="list-style-type: none"> • The Region should invest time in pilot testing and monitoring initial data prior to full scale implementation. • Engagement and agreement from the labour union will be required prior to implementing the re-designed shift balance.

Re-design shifts (continued)



Annual cost savings — Low (<\$100,000 savings)

Initial investment

- Time must be invested by regional staff to review historical data, develop optimal schedules, run parallel pilot testing of this opportunity, receive Council approval, and negotiate with the Union. Costs associated with this time are expected to be low (up to \$100,000).

Annualized cost savings

- This opportunity would have minimal cost savings depending on the shift balance reached. It could cost the Region more in staffing costs to cover shifts. This would be offset by a reduction in standby costs.



Qualitative benefits

- This opportunity allows for staff members to have a more organized schedule, thus reducing burnout and increasing morale as staff members can now better plan their time for personal commitments.
- This would provide a huge benefit to supervisors and patrol in the time and effort that they take to ensure times are covered through call-ups.
- This reduces the risk of not having coverage in the case of a large and long snow event, which is a concern that grows as staffing shortages occur.



Implementation steps

Long-term

1. Perform detailed analysis of historical data (i.e., which periods the Region utilizes employees/contractors on standby and number of storm events with durations).
2. Develop an optimized re-designed shift schedule.
3. Negotiate contracts with the Union to accommodate an optimized re-designed shift schedule.
4. Pilot test the optimized re-designed shift schedule in parallel with current shift scheduling (i.e., compare the winter maintenance season results of the current shift schedule to the pre-determined optimized re-designed shift schedule) to see potential increase in efficiency and effectiveness.
5. Modify the optimized re-designed shift schedule accordingly.
6. Formally launch the optimized re-designed shift schedule.
7. Gather feedback and adjust the optimized re-designed shift schedule as time progresses.

Depot restructure

Description and rationale

- Currently, the Region’s depots provide multiple services (sewage, water, and road maintenance). Since the Depot’s Roads Department provides water and sewer services, the Region requires staff members to have or be willing to obtain their water licenses. This requirement has made it increasingly difficult for the Region to hire staff members for certain services (i.e., road maintenance) that do not require this level of certification.
- The Region can re-design the existing organizational structure and separate the depots into two distinct sub-services (Sewer and Water, and Road Maintenance). This will increase the accessibility the Region has to qualified candidates and provide the Region greater flexibility when hiring, as they will be able to hire staff members according to the needs and skillsets required of each sub-service.
- We noted in our jurisdictional scan that other jurisdictions have separate departments for road maintenance and for water.
- For depots with less employees this opportunity could result in increased costs required for more employees, without gaining efficiencies (see risks below). There may be a need for shared services between depots to ensure efficient service scheduling and delivery. The restructuring would need to be carefully planned and rolled out over several years (i.e., only new employees could be hired directly to one or the other department). Senior operators would not have to choose which department to be in, unless they want to, etc., to ensure a fair and smooth rollout.

Characterization

Efficiency Impact	High	<ul style="list-style-type: none"> • This opportunity will allow staff members to become more proficient at their day-to-day tasks, as they will have a smaller set of activities/responsibilities. • The Region will be able to hire more experienced employees for road maintenance, given that the water licenses credentials will no longer be required. • As a result, this opportunity will yield direct improvements that will increase efficiency for the Region.
Service Level Impact	Increase	<ul style="list-style-type: none"> • The Region would have a specialized workforce, which will allow the Region to perform their specialized services at a higher level.
Investment	High	<ul style="list-style-type: none"> • Management will need to invest sufficient time and effort in planning the structure and functions of the re-designed department structure. • This should otherwise be net neutral, as the same number of staff would perform the same services, deployed in a different way.
Risk	High	<ul style="list-style-type: none"> • This opportunity requires changes to job descriptions and levels for unionized staff. • For some staff they enjoy the variety of the positions and the potential for overtime from either service. This could be mitigated by a slower rollout. • Water and sewer have a different funding base. This would need to be an additional consideration in the viability of this opportunity.
Duration to Implement	Longer-term	<ul style="list-style-type: none"> • This opportunity will take time to design and consider optimal options for the restructuring and would require agreement from unions.

Depot restructure (continued)



Annual cost savings — High (>\$200,000 savings)

Initial investment

- Time must be initially invested in re-designing and negotiating contracts with the Unions, setting up the separate departments, communicating with IT, HR and finance, and revising all documents pertaining to process/protocol. The time spent performing these tasks is anticipated to be significant and the resulting costs are expected to be moderate (\$100,000-\$200,000).

Annualized cost savings

- The WMO staff without water licenses should be more abundant and easier to hire. This should reduce the entry level position cost for a plow operator.
- Additionally, this opportunity could lead to a reduction in resources spent on water and sewer contractors to perform work during winter maintenance season. Annualized cost savings are expected to be high (>\$200,000).
- This should otherwise be net neutral, as the same number of staff would perform the same services, deployed in a different way.



Qualitative benefits

- This opportunity will allow staff members to become more proficient at their day-to-day tasks, as they will have a smaller set of activities/responsibilities.
- The Region will be able to hire more experienced employees for road maintenance, given that the water licenses credentials will no longer be required.



Implementation steps

Long-term

1. Analyze historical data, identifying the ideal employee requirement for each service (i.e., how many employees are required to perform specific water and sewage service, and how many employees are required to perform specific road maintenance services).
2. Model the opportunity using implementation year's data to see the potential savings the Region would have, should they separate the services into two departments.
3. Re-design and negotiate contracts with Council/Union.
4. Set up the two new departments, communicate with IT, HR and finance, and revise all documents pertaining to process/protocol.
5. Utilize the revised department structure going forward.



Contractor management

Increase contractor accountability

Contract clauses

Description and rationale

- A portion of WMO is carried out by contractors, however, the LOS delivered by contractors is anecdotally reported by supervisors and road patrol to be lower when compared to that of regional operators.
- The current contracts do not include best practice clauses that would increase contractor performance and accountability, (e.g., penalty for poor performance, mandatory training, standby charges, Geotab analysis of data on contractor vehicles, early payment discounts, and contractor supervisors).
- The Region should reassess future contracts with contractors to ensure that the contracts include provisions regarding penalty for poor performance, mandatory training, optimized standby charges, reporting and analysis from Geotab on contractor vehicles, early payment discounts, and a contractor supervisor to monitor the LOS provided by the contractors. Should there be instances where the contractor fail to meet these clauses, there will be repercussions (i.e., poor performance resulting in the contractor’s re-plowing at no cost to the Region or paying a stipulated penalty). While re-negotiating the contracts with the contractors, the Region should negotiate shorter contract term lengths (i.e., 5 years), which will increase the Region’s flexibility.
- This opportunity will increase efficiency of the Region, as they will now spend less resources on contractors and receive an improved LOS.

Characterization

Efficiency Impact	High	<ul style="list-style-type: none"> • This opportunity will minimize resources spent on contractors and minimize duplicated efforts (i.e., re-plowing certain routes), thus reducing regional staff hours and assisting the Region in minimizing staff costs. • As a result, this opportunity will yield higher efficiency and effectiveness for the Region.
Service Level Impact	Increase	<ul style="list-style-type: none"> • This opportunity will minimize the duplicated efforts (i.e., re-plowing certain routes), thus allowing regional staff to be utilized on other WMO. • Service levels will increase as the route will always be cleared to the contracted standard.
Investment	Low	<ul style="list-style-type: none"> • This opportunity will require time and effort in analyzing the current terms of the contracts, however, given that this is a one-time exercise, the time and effort needed will likely be minimal.
Risk	Moderate	<ul style="list-style-type: none"> • This opportunity is dependent on there being sufficient bidders to generate sufficient negotiating power. This could potentially result in an extended negotiating process with contractors due to the added requirements and clauses being negotiated. There is a risk that the Region may not be able to negotiate these terms into contractor agreements. It was noted that contractors are also experiencing staff shortage issues. As a result, they may be less inclined to bid.
Duration to Implement	Long-term	<ul style="list-style-type: none"> • This opportunity is a long-term opportunity, as current contract durations generally extend anywhere between now and up to 10 years. This opportunity can not be implemented until a contract has expired.

Increase contractor accountability

Mandatory training

Description and rationale

- A portion of WMO is carried out by contractors, however, the LOS delivered by contractors is anecdotally reported by supervisors and road patrol to be lower when compared to that of regional operators.
- The Region should ensure that the Region's LOS is adequately communicated to the contractors and future contracts should include a clause where contractors must attend WMO training.
- Ensure contractors provide their staff with relevant training in accordance with Regional training. This would likely reduce the number of instances where regional staff members are required to re-plow certain routes that have been contracted out.

Characterization

Efficiency Impact	High	<ul style="list-style-type: none"> • This opportunity will minimize resources spent on contractors and minimize duplicated efforts (i.e., re-plowing certain routes), thus reducing regional staff hours and assisting the Region in minimizing staff costs. • As a result, this opportunity will yield higher efficiency and effectiveness for the Region.
Service Level Impact	Increase	<ul style="list-style-type: none"> • Improved training of operators should increase services provided.
Investment	Low	<ul style="list-style-type: none"> • This opportunity will require time and effort in analyzing the current terms of the contracts and developing specified contractor training, however, given that this is a one-time exercise, the time and effort needed will likely be minimal.
Risk	Moderate	<ul style="list-style-type: none"> • This opportunity is dependent on there being sufficient bidders to generate sufficient negotiating power. This could potentially result in an extended negotiating process with contractors due to the added requirements and clauses being negotiated. There is a risk that the Region may not be able to negotiate these terms into contractor agreements. It was noted that contractors are also experiencing staff shortage issues. As a result, they may be less inclined to bid.
Duration to Implement	Long-term	<ul style="list-style-type: none"> • This opportunity can not be implemented until the current contractors' contracts have expired; contract durations are usually 10 years.

Increase contractor accountability

Geotab

Description and rationale

- A portion of WMO is carried out by contractors, however, the LOS delivered by contractors is anecdotally reported by supervisors and road patrol to be lower when compared to that of regional operators.
- The Region should maximize their use of Geotab reports on data from the Regional vehicles, operated by contractors, to analyze contractor operations (i.e., route adherence, material usage, and all other metrics).
- This opportunity will increase efficiency of the Region, as they will now have the necessary data captured to ensure that the contractors are utilizing the Region’s resources in an efficient manner.

Characterization

Efficiency Impact	High	<ul style="list-style-type: none"> • This opportunity will maximize the usage of the Region’s resources in monitoring contractor services, thus increasing the Region's efficiency.
Service Level Impact	Increase	<ul style="list-style-type: none"> • This opportunity will minimize the duplicated efforts (i.e., re-plowing certain routes), thus allowing regional staff to be utilized on other WMO. • Service levels will increase as the route will always be cleared to the contracted standard.
Investment	Low	<ul style="list-style-type: none"> • This opportunity will require time and effort in analyzing data coming from contractor vehicles, however, given that this is an exercise that is already being performed for the Region’s vehicle, the additional time required is anticipated to be minimal.
Risk	Low	<ul style="list-style-type: none"> • Geotab is already deployed on the vehicles utilized by contractors. This will require monitoring contracted drivers through this data.
Duration to Implement	Medium-term	<ul style="list-style-type: none"> • This opportunity is a mid-term opportunity as Geotab is currently installed on all contractor vehicles, but reporting is not well designed to understand.

Increase contractor accountability

Supervisors



Description and rationale

- A portion of WMO is carried out by contractors, however, the LOS delivered by contractors is anecdotally reported by supervisors and road patrol to be lower when compared to that of regional operators.
- Currently, the Region does not have a dedicated contracted or regional staff supervisor at each depot to monitor contractor staff performance.
- The Region should reassess future contracts with contractors to ensure that the contracts include provisions for a dedicated contractor supervisor at each regional depot to contact, initiate, and monitor contractors.
- This opportunity will help the Region monitor contractor performance as they will have a dedicated point of contact to ensure contractor service levels are achieved.



Characterization

Efficiency Impact	High	<ul style="list-style-type: none"> • A dedicated contractor supervisor will now be responsible for ensuring the contractors meet a certain standard LOS. This will reduce regional staff hours spent re-doing contractor routes. • As a result, this opportunity will increase efficiency and effectiveness for the Region.
Service Level Impact	Increase	<ul style="list-style-type: none"> • This opportunity will minimize the duplicated efforts (i.e., re-plowing certain routes), thus allowing regional staff to be utilized on other WMO. • Service levels will increase as the route will always be cleared to the contracted standard.
Investment	Low	<ul style="list-style-type: none"> • This opportunity will require time and effort in analyzing the current terms of the contracts, however, this is a one-time exercise.
Risk	Moderate	<ul style="list-style-type: none"> • This opportunity is dependent on there being sufficient bidders to generate sufficient negotiating power. This could potentially result in an extended negotiating process with contractors due to the added requirements and clauses being negotiated. There is a risk that the Region may not be able to negotiate these terms into contractor agreements. It was noted that contractors are also experiencing staff shortage issues. As a result, they may be less inclined to bid.
Duration to Implement	Long-term	<ul style="list-style-type: none"> • This opportunity is a long-term opportunity as contract durations are usually 10 years, thus this opportunity cannot be implemented until a contract has expired.

Increase contractor accountability

Overall



Annual cost savings — High (>\$200,000 savings)

Initial investment

- Time must be invested by regional staff to develop contractor training, connect Geotab on the contractor vehicles to the Region's system, and negotiate with the contractors. Investments are expected to be low (up to \$100,000).

Annualized cost savings

- On an ongoing basis, the Region's management must monitor contractor performance and provide repercussions should the contractor fail to meet the expected LOS required.
- Additionally, the Region must monitor, process, and assess Geotab information retrieved from contractors' vehicles. Annualized costs are expected to be low (up to \$100,000).
- This opportunity increases the contractors' knowledge on the LOS provided by the Region leading to an appropriate LOS provided by the contractor. Specifically, this opportunity could result in potential early payment discounts, potential reduction in contractor standby charges, and reduction in the Region's staff members being required to re-plow certain routes that have been contracted out. Annualized cost savings are expected to be high (>\$200,000).



Implementation steps

Medium-term

1. Prioritize all contracts (i.e., identify which contracts are about to expire, which contracts had multiple bidders, etc.).
2. Coordinate with the Region's legal and procurement teams to re-design contracts to define the expected LOS and repercussions, should the contractor fail to achieve the expected LOS, and all the other clauses mentioned in this opportunity.
3. Implement re-designed contracts for all future RFPs and quotations.
4. Monitor contractor performance and provide repercussions, should the contractor fail to achieve the expected LOS.
5. Monitor, process, and assess Geotab information retrieved from contractors' vehicles.



Qualitative benefits

- This opportunity will hold contractors to the same service level standards that the Region expects from its staff members. This will reduce the Region's staff members being required to re-plow certain routes that have been contracted out, potentially leading to an increase in regional staff morale.

Standard operating procedures



Communication with Council

Description and rationale

- Currently, the Region is providing WMO at a level in excess of legislative requirements set out by *the Ontario Municipal Act*. However, the Region's WMO SOPs are not sufficiently documented on a public forum. Therefore, despite meeting and exceeding legislative requirements, citizens often reach out to Councillors for information on when WMO services are to be delivered. This can cause disruptions in operations if the Region is addressing individual requests for information or re-routing resources.
- The Region should present the newly documented SOPs to Council to inform them of the expected LOS that will be provided in practice by the Region's WMO. Additionally, the Region should provide Council with information regarding where they can direct community members to provide them with real-time information regarding WMO or winter storms (i.e., the regional website which will show the regional routes that are the responsibility of the Region). Please see next opportunity - Citizen awareness.
- Communicating to Council and citizens about where they can find information will allow staff to focus on completing the standard delivery service in a timely fashion and minimize disruptions.

Characterization

Efficiency Impact	High	<ul style="list-style-type: none"> • This opportunity aligns Council's service level expectation with the Region's SOPs, leading to more informed, clear, and effective communication of service level expectations. This will enable the Region to conduct operations during weather events and minimize disruptions. • As a result, this opportunity will yield direct improvements in efficiency and effectiveness.
Service Level Impact	Neutral	<ul style="list-style-type: none"> • Council and citizens will be given clear and effective communication of service level expectations around WMO in a weather event, however, the overall service level performance for the Region will not be affected.
Investment	Low	<ul style="list-style-type: none"> • Time will be invested engaging with Council to establish a standardized forum/process for effective communication. The initial investment required to implement this opportunity is low, as there is little to no monetary investment needed.
Risk	Moderate	<ul style="list-style-type: none"> • This opportunity bears the inherent risk of increased citizen demand for services. The increased flow of information to the citizens may increase the demand for information over time, which could increase costs.
Duration to Implement	Short-term	<ul style="list-style-type: none"> • This SOPs can be formalized and implemented this upcoming winter.

Communication with Council (continued)



Annual cost savings – Low (<\$100,000 savings)

Initial investment

- The initial investment required to implement this opportunity is low, as there is simply time spent reporting to Council to consider. Costs associated with this time are expected to be low (up to \$100,000).

Annualized cost savings

- Since this opportunity is not predicated on reducing operations, annualized cost savings are expected to be low (up to \$100,000).
- Value is driven by the high efficiency level impact.



Implementation steps

Short-term

1. Leveraging the “Document Region’s SOP” opportunity on page 39, prepare a presentation to Council that explains what the SOPs are in practice during a weather event, noting that the Ontario regulations are met by these SOPs. This presentation could also outline and distinguish regional roads versus local municipal roads.
2. As part of this presentation, include information on how citizens can inform themselves as to what they can expect during a weather event.
3. As part of this presentation and any ongoing communications with Council, discuss how Council can access storm information when needed (i.e., through the storm warning protocols being developed and the website information being developed for citizens).



Qualitative benefits

- Reporting real-time zone completion updates directly to citizens via the Region’s website could alleviate the need for citizens to reach out to the Region or Councillors for this information.
- A public and transparent communication plan regarding WMO, and SOPs will ensure that the Region’s service levels are well understood and supported by Council and citizens.

Citizen awareness

Description and rationale

- The Region currently has WMO information located on the Region's website, however, the information included on this site is quite general and does not provide the community with specific information, which contributes to citizens reaching out to the Region or to their Councillor to gain this information.
- Providing more details such as detailed SOPs, winter storm warnings, or links to TrackMyPlow, which is run by the Ministry of Transportation and includes real-time plow information for 37 areas across Ontario, will help inform the public about ongoing WMO and set expectations.
- The Region could introduce electronic signs on regional roads to convey, in real time, that there is an ongoing significant weather event and to caution drivers to reduce speed, to drive with care, and to not be travelling unless it is unavoidable.
- The Region is already working on other severe weather event communication systems which, along with the website and signs, will aim to prevent unnecessary travel and accidents during a storm. This would allow WMO to be deployed more strategically during a severe storm with reduced traffic.
- This opportunity will increase the Region's effectiveness when communicating with its community members by raising citizen awareness of road conditions and weather events.

Characterization

Efficiency Impact	Moderate	<ul style="list-style-type: none"> • This opportunity could aim to minimize and prevent accidents through better communication of winter storm events and driving conditions to the public. • Communicating unsafe driving conditions should decrease traffic. This would increase efficiency of the plow operations, as this would allow WMO to be deployed more strategically during a severe storm with reduced traffic. • This communication should decrease the need for the public to reach out using other methods such as calling the Region or Council to gain this information. • As a result, this opportunity should yield moderate direct efficiency improvements.
Service Level Impact	Increase	<ul style="list-style-type: none"> • By providing this added information on winter road conditions using signage, using a winter storm warning system and utilizing the Durham website, this increases the LOS regarding WMO.
Investment	Moderate	<ul style="list-style-type: none"> • The investment required is moderate given that the Region only needs to purchase signs and install/maintain them. The Region will also need to update their website to include more functions, including subscribing and possibly expanding TrackMyPlow.
Risk	Low	<ul style="list-style-type: none"> • There is a risk that citizens may not feel that the information given is adequate for their needs. They may also feel that the scheduling of services does not meet their needs. Continued education can manage these expectations of service levels.
Duration to Implement	Medium-term	<ul style="list-style-type: none"> • The Region will have to determine the specific locations to install the electronic signs. Then the Region would be required to purchase and install the electronic signs. This will require extensive planning and execution time.

Citizen awareness (continued)



Annual cost savings – Low (<\$100,000 savings)

Initial investment

- This opportunity requires a moderate initial monetary investment (\$100,000 - \$200,000), as the Region will need to purchase and install electronic signs and update the Region's website.
- This opportunity will require the Region to invest time into analyzing its current road network and determining the ideal location to have electronic signs. The Region will also incur time setting up appropriate networks/infrastructure to utilize this data. Costs associated with this time are expected to be low (up to \$100,000).

Annualized cost savings

- On an ongoing basis, the Region will be required to spend resources maintaining electronic signs and the website information. Annualized cost savings are expected to be low (up to \$100,000).
- This opportunity will minimize accidents and claims, thus assisting the Region in reducing time spent on discovery/claims. Net annualized cost savings are expected to be low (up to than \$100,000).



Qualitative benefits

- This opportunity allows the Region to better communicate the road conditions to the public, potentially saving lives and reducing life altering accidents.
- Communicating WMO activities in real time to citizens should reduce inquiries and complaints, as citizen expectations for service should be alleviated by understanding the published SOP.



Implementation steps

Short-term

1. Analyze the Region's website to determine the appropriate user interface for the newly incorporated information.
2. Consider internal staff members' expertise to determine if there is a need to hire external resources to perform the web work.
3. Update website with the information noted.

Medium-term

1. Analyze the Region's road network to determine the ideal location to have electronic signs.
2. Identify multiple suppliers of electronic signs and identify the specific product that meets the Region's needs.
3. Depending on the budget needed, obtain Council approval.
4. Purchase and install electronic signs in predetermined locations.
5. Set up appropriate networks/infrastructure to utilize the electronic signs.
6. Monitor and maintain the electronic signs.
7. Continue storm warning rollout plans that have been started by the Region.

Document Region's standard operating procedures

Description and rationale

- Currently, the Region is providing WMO at a level in line with or in excess of legislative requirements set out by the Ontario Municipal Act. However, the Region's WMO SOPs are not sufficiently documented on a public forum. Therefore, despite meeting legislative requirements, the Region or Councillors are often contacted by citizens for information on when services are to be delivered. This can cause disruptions in WMO if the Region is addressing individual requests for information or re-routing resources.
- Currently, the Region is providing a "one size fits all" approach to delivering WMO and has not considered road types or weather patterns, nor are the operators encouraged to use their judgement as to what makes sense based on their experience (i.e., not salting roads with drifting snow).
- There is an opportunity for the Region to formally design, document, communicate and publish WMO SOPs. The published SOPs should be based on road types and weather patterns, and would need to still meet or exceed the provincial standards. The published SOPs should allow for regional operators to utilize their professional judgment in certain situations. Doing so will lead to more appropriate levels of service under specific circumstances. Implementing this opportunity will allow citizens to have better insight at a granular level as to how the Region delivers WMO (e.g., how fast the Region needs to send out plows).
- Publishing the Region's WMO SOPs will help increase the awareness of ongoing WMO with citizens, aligning expectations and actual operations. This leads to staff being able to focus on completing the standard delivery service in a timely fashion and minimize disruptions.

Characterization

Efficiency Impact	Moderate	<ul style="list-style-type: none"> • Designing and following SOPs in practice will increase efficiencies across the Region, especially if they are fine tuned to the roads and weather patterns at the various depots and include the ability to apply judgement. • As a result, this opportunity will yield moderate efficiency impact.
Service Level Impact	Decrease	<ul style="list-style-type: none"> • This opportunity is keeping citizens, as key stakeholders, informed with clear and effective communication of service level expectations. • As a result, this opportunity will allow the Region to abide by the Region's SOPs versus the effort required to achieve higher citizen expectations.
Investment	Moderate	<ul style="list-style-type: none"> • The investment required to act on this opportunity is moderate, as there is time and resources invested into designing, documenting and publishing the Region's SOPs.
Risk	Moderate	<ul style="list-style-type: none"> • Transparency must be balanced with risks. Legal claims may utilize the published SOPs to either claim they are too low or that they weren't correctly followed. • This risk is mitigated by the fact that the Region is providing WMO at a level in line with or in excess of legislative requirements set out by the Ontario Municipal Act, thus the Region is meeting expectations.
Duration to Implement	Medium-term	<ul style="list-style-type: none"> • The documentation and tuning of the details of the SOPs plus the approval process will take additional time. Educating supervisors and operators on the documented SOPs will also take time.

Document Region's standard operating procedures (continued)



Annual cost savings – High (>\$200,000 savings)

Initial investment

- This opportunity will require the Region to invest time into documenting and publishing the Region's SOPs. Costs associated with this time are expected to be moderate (\$100,000 - \$200,000).

Annualized cost savings

- Annualized cost savings are based on the indirect opportunity cost of operational inefficiencies stemming from communication gaps during significant weather events and providing the LOS appropriate to the situation, given the road type, weather condition, and operator professional judgement.
- Value of this opportunity is driven by the moderate efficiency impact; annualized cost savings are expected to be high (>\$200,000).



Implementation steps

Medium-term

1. Identify appropriate individuals to create the SOPs taskforce.
2. Have the SOPs taskforce analyze the Ontario Municipal Act to ensure SOPs meets these standards.
3. Design the SOPs to consider situations where different standards would be required. This may be in different areas of the Region, on different classes of roads, at different times of day, and for different weather patterns.
4. The SOPs should consider providing leeway to operators to use professional judgement, while still meeting minimum requirements.
5. Gather feedback and revise SOPs as required.
6. Roll out the SOPs by training and communicating them with supervisors and operators.
7. Publish them on the website and report them to Council.



Qualitative benefits

- Having a documented and publicly available SOPs will reduce calls to depots asking for information on when services can be expected, help identify when to communicate a severe storm warning, help with covering shifts and ensuring hours are on side, optimize resources, optimize material usage/mix, better support the legal claims process, and hold contracted operators to the same standards.
- Allowing for operator judgement in specific circumstances will lead to better morale, as operators will feel more empowered to do the right thing in the circumstances.

Handling insurance claims

Description and rationale

- The Region is spending a lot of time and resources handling insurance claims. In some instances, the cause of an accident is stated to be “road conditions” by the police. Despite the Region providing WMO at a level in line with or in excess of legislative requirements set out by the Ontario Municipal Act, lawyers are holding municipalities to a higher standard. As such, the Region attempts to deliver an increased LOS to lower the possibility of these insurance claims. This has caused the Region’s WMO to be overstretched and has led to operators doing more than what is required. This can result in the Region spending significant resources when it is not required, leading to operation inefficiencies and increased costs.
- To address this, the Region should publish their SOPs, as mentioned earlier, meet with regional police to better understand how the cause of an accident is typically documented, and train their staff members on how to better use Geotab data for handling claims and performing discoveries.
- This opportunity will result in less time spent by regional employees accumulating appropriate information required by the Region to defend against these claims, thus enabling them to focus on operational tasks. Additionally, the Region will be publishing the SOPs, requiring external lawyers filing claims against the Region to prove that the Region was negligent in applying these SOPs. Lawyers should not be expecting higher standards, which are not in line with the Region's SOPs and the law.

Characterization

Efficiency Impact	Moderate	<ul style="list-style-type: none"> • This opportunity will reduce the amount and time it takes to handle claims and perform discoveries. • As a result, this opportunity will yield direct efficiency improvements.
Service Level Impact	Increase	<ul style="list-style-type: none"> • This opportunity will reduce the amount of time staff members have to spend on discovery/claims, thus enabling them to focus on operational tasks. • As a result, this opportunity will directly increase the service level.
Investment	Low	<ul style="list-style-type: none"> • The financial investment needed for this opportunity is low, as the Region needs to invest time in conducting workshops (i.e., meeting with the regional police and setting up Geotab training sessions).
Risk	Low	<ul style="list-style-type: none"> • Risks are low as the Region is providing WMO at a level in line with or in excess of legislative requirements set out by the Ontario Municipal Act.
Duration to Implement	Medium-term	<ul style="list-style-type: none"> • This opportunity is a medium-term opportunity, as the Region will need to coordinate meetings between the depot’s roads department and Durham’s Regional Police Service. It will also take some initial time to provide regional staff members training on extracting appropriate information from Geotab.

Handling insurance claims (continued)



Annual cost savings – Low (<\$100,000 savings)

Initial investment

- This opportunity will require the Region to invest time into setting up workshops with the regional police and setting up staff training on Geotab reporting. Costs associated with this time are expected to be low (up to \$100,000).

Annualized cost savings

- This opportunity will create additional training (i.e., communicating with regional police to better understand how causes of accidents are typically determined and additional Geotab training for staff members). Annualized costs are expected to be low (up to \$100,000).
- Annualized cost savings stem from maximizing Geotab's function to lower time necessary to respond to handle claims and perform discoveries. Annualized cost savings are expected to be low (up to \$100,000).



Qualitative benefits

- This opportunity can potentially serve as an educational workshop, as the Region's police force and depots will now have a better understanding of each other's protocol and procedures (i.e., how police officers determine the cause of a road accident and what is legal requirement for the depots when it comes to maintaining roads during WMO).



Implementation steps

Medium-term

1. Create project team to commence outreach to the Durham's Regional Police Service to better understand road conditions and accidents.
2. Coordinate this opportunity with the design and documentation for SOPs to ensure they are up-to-date.
3. Release SOPs to the public.

Refer to slides 51 and 52 for the implementation steps pertaining to Geotab training.

Material optimization



Automated salt application

Description and rationale

- Plow operators currently manually disperse salt. The air temperature may not always be indicative of road surface temperature, as this can vary significantly based on exposure to the sun. As road surface temperature has a significant bearing on effective salt usage, this can result in inaccurate application of salt in certain areas, leading to operational inefficiencies and sunk costs.
- The Region can implement technology enabled sensors in equipment to disperse salt automatically based on the road surface temperature and speed of the plow. The sensors will facilitate real-time reporting and automatic adjustments to the rate at which salt is dispersed.
- Temperature sensors will enable the Region to interlock the machinery, thus reducing operator judgment and having better process controls over the use of material. This can increase operational efficiencies, environmental benefits and cost savings in situations where the Region may have previously re-salted routes.

Characterization

Efficiency Impact	High	<ul style="list-style-type: none"> • Automated salt application will allow the operator's focus to remain on the road, minimizing the attention given to manually changing the rate of salt application. • As a result, this opportunity will yield direct improvements in operators' efficiency that will increase efficiency for the Region.
Service Level Impact	Increase	<ul style="list-style-type: none"> • This opportunity will yield a higher LOS that is tailored to the conditions.
Investment	Moderate	<ul style="list-style-type: none"> • An initial moderate investment is required to purchase and integrate the new technology sensors with current equipment.
Risk	Low	<ul style="list-style-type: none"> • While there is an inherently low risk associated with this opportunity, technology failure can cause disruption of operations. This can be mitigated by ensuring operators can revert to manual operation if required.
Duration to Implement	Medium-term	<ul style="list-style-type: none"> • The Region must conduct a feasibility assessment of current equipment and procure the required sensors and distributors.

Automated salt application (continued)



Annual cost savings – High (>\$200,000 savings)

Initial investment

- This opportunity requires moderate initial monetary investment (\$100,000-\$200,000), as there is equipment to purchase and install (i.e., sensors).
- Alternatively, the Region can perform an assessment of their current technologies (i.e., Geotab) to determine if Geotab sensors, already installed on the trucks, have the capabilities of integrating with the current salt dispensers on the trucks. If integration is achievable, additional time will be required to integrate the systems. This will result in initial time investment. Costs are expected to be moderate (\$100,000-\$200,000).

Annualized cost savings

- The automation of salt application can yield significant savings, as sensors can identify variances between road surface and air temperature, thereby accurately applying the amount of salt required.
- A study¹ has noted up to a 50% decrease in the amount of salt used throughout winter when using this equipment. The Region spends approximately \$2M per annum on inventory. This means, applying a more conservative reduction of 15-35% in the quantity of salt used, this opportunity could result in a high annualized cost savings of \$300,000-\$700,000.



Qualitative benefits

- This opportunity allows the Region to deliver a scientifically consistent service.
- Lower road salt usage will be beneficial for the environment and reduce infrastructure damage.
- Lower road salt usage would also result in a lower effort required to actively manage inventory.



Implementation steps

Short-term

1. Conduct feasibility assessment of current equipment and determine whether it can support new sensors; or conduct feasibility assessment of current equipment and determine whether it can integrate with Geotab.

Assuming feasibility assessment is affirmative, proceed.

Medium-term (New sensors)

1. Procure and install the sensors in the equipment.
2. Conduct pilot testing prior to full-scale implementation.
3. Monitor performance and integrate improvements, as necessary.

Medium-term (Geotab)

1. Integrate Geotab and the current salt dispensers.
2. Conduct pilot testing prior to full-scale implementation.
3. Monitor performance and integrate improvements, as necessary.

¹ Minnesota Pollution Control Agency (September 2017). *Minnesota Stormwater Manual: Salt Reduction and Cost Saving Examples*

Alternative solutions for salt supply

Description and rationale

- Salt is currently secured from one supplier. While the Region has made active efforts to identify a secondary supplier within the market, the lack of available suppliers in Ontario has resulted in supplier risk. If this supplier faces any adverse economic or environmental conditions, the cost to secure salt may increase and the Region's salt supply may be at risk. Events such as industrywide salt shortages or prolonged unexpected extreme winter events may also directly impact the Region's supply.
- The Region can continue to explore other sources of salt supply and different procurement arrangements, along with considering the use of alternative materials.
- This opportunity will provide the Region with more flexibility in acquiring or stockpiling necessary winter maintenance materials, as well as alleviate supplier risk arising from the supplier dominant market.
- Salt does not work as well in the colder temperature and in drifting snow, which is experienced by some parts of the Region. Sand as an alternative requires more clean-up in the spring, but its use would not result in a significant increase in time.
- Alternative materials, such as beet juice, are also more environmentally friendly.

Characterization

Efficiency Impact	High	<ul style="list-style-type: none"> • Minimizing supplier risk and material dependency will provide the Region with greater flexibility in conducting operations. • As a result, this opportunity will yield direct improvements that will increase efficiency.
Service Level Impact	Neutral	<ul style="list-style-type: none"> • This opportunity will yield no impact on the service level.
Investment	Moderate	<ul style="list-style-type: none"> • Initially, the Region will invest time exploring innovative solutions for salt supply. • Once identified, the Region will incur costs associated with a secondary supplier/alternative material use.
Risk	Low	<ul style="list-style-type: none"> • There is a risk of alternative suppliers possibly being less dependable. Additionally, there is a risk that prices of alternative materials may increase over time after the Region has switched materials.
Duration to Implement	Long-term	<ul style="list-style-type: none"> • Based on the current supplier market, a longer-term sales cycle would be required to secure additional vendors that offer favorable terms to the Region, and for the Region to secure and implement alternative materials.

Alternative solutions for salt supply (continued)



Annual cost savings – Low (<\$100,000 savings)

Initial investment

- The investment required to implement this opportunity is low, as there is currently a lack of secondary suppliers and alternative solutions have not been identified. However, a moderate investment may be required in the long-term, should an additional supplier arise, or the decision is made to invest in alternative materials with a need for new material dispensers.

Annualized cost savings

- Given the supplier dominant market, this opportunity is expected to yield low (up to \$100,000) annualized cost savings in current market conditions.
- However, continuing the effort to identify innovative solutions to salt supply, including alternative materials, will mitigate the opportunity cost of the Region reacting to market changes (i.e., high unit price, lack of supply, supplier risk, etc.).
- Additional clean-up costs may be incurred in the spring to sweep away sand.
- There would be savings due to reducing the impact of salt on roads and infrastructure. Repairs and replacements could be delayed with less salt use.



Qualitative benefits

- This opportunity showcases to the community that the Region is considering the environmental impacts of its WMO and is setting an example from an environmental, social, and governance perspective.
- Utilizing alternative materials could be more environmentally friendly and could have a positive impact on other aspects of the Region, including the Region's infrastructure.



Implementation steps

Short-term

1. Assess the risk of significant industry salt shortage and determine the Region's risk tolerance as it relates to service level expectations.
2. Leveraging the "Document Region's SOP" opportunity on page 39, to allow operators to utilize sand instead of salt in colder temperatures or in drifting snow.

Long-term

1. Continue to search for secondary suppliers and/or long-term contracts to mitigate the effects of supply and price sensitivity.
2. If the use of alternative materials is determined to be feasible, the Region will acquire the alternative materials and implement them into the Region's WMO. This may result in the Region investing in new material dispensers.

Technology optimization -
evaluate external opportunities
as it pertains to technology



Geotab

Maximo integration



Description and rationale

- The Region currently uses Maximo to track the costs associated with a winter storm under a workorder. Fleet information that is currently being tracked by Geotab is manually input into Maximo. This results in inefficient use of regional staff members' time and creates a risk of inconsistent data within the two sources.
- The Region can integrate Geotab and Maximo to allow Maximo to automatically extract data currently accumulated in Geotab. This will decrease information overlap and increase accuracy for management reporting.
- This opportunity will streamline operations for both operators and supervisors as they will no longer need to manually record information, such as salt usage, into Maximo.



Characterization

Efficiency Impact	Moderate	<ul style="list-style-type: none"> • Increased accuracy and timeliness in information as well as minimization of information overlap will enable the Region to ensure that WMO are further optimized. • As a result, this opportunity will yield direct improvements that will increase efficiency.
Service Level Impact	Neutral	<ul style="list-style-type: none"> • This opportunity will yield no impact on the service level.
Investment	High	<ul style="list-style-type: none"> • The initial investment required in integrating Maximo and Geotab is high given the complexity and specialization of the software project.
Risk	Moderate	<ul style="list-style-type: none"> • Any software integration carries a moderate risk of additional costs arising during implementation.
Duration to Implement	Long-term	<ul style="list-style-type: none"> • A system integration project can be intensive and require significant planning and execution time.

Geotab

Maximo integration (continued)



Annual cost savings – Low (<\$100,000 savings)

Initial investment

- The initial investment required in integrating the two systems is high (>\$200,000) given the unique complexity and specialization of the software project.
- Investment components to consider include a feasibility assessment, data architecture, data infrastructure, and subject matter expertise in Geotab and Maximo.

Annualized cost savings

- The annualized cost savings are driven by the reduction of manual entry and reconciling data between the systems.
- Improved reporting by storm could increase efficiency and drive down the costs of storm responses when these costs are better understood.



Qualitative benefits

- This opportunity provides a factual reporting on how much it costs the Region to clear a weather event. This will help the Region better forecast their expenditures.
- Additionally, the opportunity lowers the amount of time operators and supervisors spend inputting data into systems, allowing them to better utilize their time and efforts on other tasks.



Implementation steps

Short-term

1. Discuss plan for system harmonization with key stakeholders.
2. Conduct feasibility assessment.

Assuming stakeholders wish to continue, and feasibility assessment is affirmative, proceed.

Long-term

1. Establish a steering committee for this project.
2. Conduct procurement process to identify external vendors that can facilitate this integration.
3. Implement the integration through testing and user acceptance.

Geotab

Workforce integration

Description and rationale

- The Region currently uses Workforce to plan shifts and track the clock-in/clock-out time of staff members. Because Workforce is not integrated with Geotab, operators need to clock in when arriving at the depot and clock in again once they go to their vehicles. This results in inefficient use of regional staff members' time.
- The Region can integrate Workforce with Geotab to allow Geotab to automatically extract data from Workforce, thus reducing manual input and duplication of information.
- This opportunity will streamline operations for operators as they will no longer need to clock in twice, thereby increasing efficiency. Additionally, with Workforce and Geotab integrated, management will have all data points related to operator efficiency compiled, thus allowing management to make more informed decisions.

Characterization

Efficiency Impact	Moderate	<ul style="list-style-type: none"> • Increased accuracy and timeliness of information, as well as minimization of information overlap and discrepancies, will enable the Region to ensure that WMO are further optimized. • As a result, this opportunity will yield direct improvements that will increase efficiency.
Service Level Impact	Neutral	<ul style="list-style-type: none"> • This opportunity will yield no impact on the service level.
Investment	High	<ul style="list-style-type: none"> • The initial investment required in integrating Workforce and Geotab is high given the complexity and specialization of the project.
Risk	Moderate	<ul style="list-style-type: none"> • Any software integration carries a moderate risk of additional costs arising during implementation.
Duration to Implement	Long-term	<ul style="list-style-type: none"> • A system integration project will be intensive and require significant planning and execution time.

Geotab

Workforce integration (continued)



Annual cost savings – Low (<\$100,000 savings)

Initial investment

- The initial investment required in integrating the two systems is high (>\$200,000) given the unique complexity and specialization of the software project.
- Investment components to consider include a feasibility assessment, data architecture, data infrastructure, and subject matter expertise in Geotab and Workforce.

Annualized cost savings

- The annualized cost savings are driven by the reduction of manual entry and reconciling data between the systems.
- Better tracking of time in one system could result in efficiencies.



Qualitative benefits

- This opportunity eliminates unnecessary manual input from staff members, increasing morale for staff members as they will now be able to better utilize their time and efforts on other tasks.



Implementation steps

Short-term

1. Discuss plan for system harmonization with key stakeholders.
2. Conduct feasibility assessment.

Assuming stakeholders wish to continue and feasibility assessment is affirmative, proceed.

Long-term

1. Establish a steering committee for this project.
2. Conduct procurement process to identify external vendors that can facilitate this integration.
3. Implement the integration through testing and user acceptance.

Geotab reporting

Description and rationale

- Geotab supplies a wealth of data regarding fleet management and enables tracking by plow, weather, salt use, fuel usage, geographic positioning, plow up/down information, etc. Geotab takes data every few minutes, however, it does not easily report out consolidated data. For example, Geotab will provide the temperature every few minutes, but not the average temperature for a shift.
- The Region can work with Geotab to design custom reports for management purposes that show consolidated information to better understand WMO (e.g., reports by storm, material and labour use, km driven, idle time, etc.).
- This opportunity will result in more appropriate and useful information being extracted from Geotab, allowing management to make more informed decisions.

Characterization

Efficiency Impact	Moderate	<ul style="list-style-type: none"> • This opportunity will reduce the amount of time and effort required to make decisions regarding WMO. • As a result, this opportunity will yield direct efficiency improvements.
Service Level Impact	Increase	<ul style="list-style-type: none"> • This opportunity will reduce the amount of time it takes to get data out of Geotab in a usable format to draw insights, thus enabling staff to focus on operational tasks. • As a result, this opportunity will directly increase service levels.
Investment	High	<ul style="list-style-type: none"> • The Region will need to engage a Geotab expert team to assist in the design and implementation of specialized Geotab reports.
Risk	Moderate	<ul style="list-style-type: none"> • This project will have a moderate risk because it requires customization and subject matter expertise.
Duration to Implement	Mid-Term	<ul style="list-style-type: none"> • Engaging a Geotab expert to work with the Region to design and implement Geotab reporting will take a moderate amount of time.

Geotab reporting (continued)



Annual cost savings – Moderate (\$100,000 - \$200,000 savings)

Initial investment

- The Region will need to engage a Geotab expert team to assist in the design and implementation of specialized Geotab reports. Costs are expected to be high (>\$200,000).

Annualized cost savings

- Improved reporting from Geotab on all aspects of WMO fleet could increase efficiency and drive down the costs of storm responses when these costs are better understood. The resulting savings are expected to be moderate.



Implementation steps

Short-term

1. Create a Geotab reporting project team.
2. Procure a Geotab reporting expert to work with the Region.
3. Develop custom reports that will provide the most insights to management to assist with WMO decision making.
4. Train management on running the custom reports.
5. Gather feedback and further adjust custom reports as required.



Qualitative benefits

- This opportunity increases the Region's ability to make decisions regarding WMO, allowing management to better utilize their time (i.e., handling other tasks or assisting the team with operations).

Handling claims

Geotab



Description and rationale

- The Region is spending a lot of time and resources handling insurance claims. Despite the Region providing WMO at a level in line with or in excess of legislative requirements set out by the Ontario Municipal Act, lawyers are holding municipalities to a higher standard. The process of handling insurance claims can be very time consuming, as some of the required information is retrieved from paper logs vs. electronic records maintained in Geotab.
- Some supervisors can extract the data from Geotab that is required. The Region can then create Geotab training specifically for the regional staff members who handle claims and perform discoveries. In this training, individuals can learn to better extract data from Geotab, reducing the time spent accumulating the information required by the Region to defend against these claims.
- If the reporting is too cumbersome, this opportunity along with the previous one, can involve the design of new reports that extract the relevant information from Geotab.
- This opportunity will result in less time spent by regional employees accumulating appropriate information required by the Region to defend against insurance claims, thus enabling them to focus on operational tasks. Additionally, the data maintained in Geotab is more detailed and accurate than the information maintained on paper logs, enabling the Region to prepare a more adequate defense against claims.



Characterization

Efficiency Impact	Moderate	<ul style="list-style-type: none"> • This opportunity will reduce the amount of time it takes to handle claims and discoveries. • As a result, this opportunity will yield direct efficiency improvements.
Service Level Impact	Increase	<ul style="list-style-type: none"> • This opportunity will reduce the amount of time staff members have to spend handling claims and performing discoveries, enabling them to focus on operational tasks. • As a result, this opportunity will directly increase service levels.
Investment	Low	<ul style="list-style-type: none"> • Geotab reporting is currently in place. However, more training is needed for staff to utilize these reports.
Risk	Low	<ul style="list-style-type: none"> • This project will have a low risk as it helps with insurance claims defence.
Duration to Implement	Short-Term	<ul style="list-style-type: none"> • Training all staff on how to extract the claims data will not take long.

Handling claims

Geotab (continued)

Annual cost savings – Low (<\$100,000 savings)

Initial investment

- This opportunity will require the Region to invest time in developing and performing training .
- The Region may need to engage a Geotab expert to assist with customizing a new report for claims.
- Costs are expected to be low (up to \$100,000)

Annualized cost savings

- Annualized cost savings will result from maximizing Geotab’s data to lower the time necessary for handling claims and performing discoveries. Annualized cost savings are expected to be low (up to \$100,000).

Implementation steps

Short-term

1. Create a Geotab taskforce comprised of members who are well-versed in the functionality of Geotab.
2. Identify the information/functions within Geotab that will provide the most assistance to staff members when they are dealing with claims/discoveries.
3. Decide if new reporting is required to be extracted from Geotab, as applicable.
4. Create training material to showcase how to use these Geotab reporting and extract this information.
5. Coordinate with individual depots to set up training sessions.
6. Gather feedback and further adjust the training material if need be.

Qualitative benefits

- This opportunity reduces the time it takes regional staff members to accumulate information as part of handling claims and performing discoveries, allowing them to better utilize their time (i.e., handling other administrative tasks or assisting the team from an operational perspective).
- This opportunity will allow the Region to accumulate more detailed and accurate information as part of the claims/discovery process.

Dash cams

Description and rationale

- The Region does not currently have the ability to remotely monitor a weather event and the Region's WMO response to it.
- The Region can install dash cams (non-audio) on each winter maintenance vehicle to document and validate the weather patterns, the WMO actions taken by the Region's employees (e.g., plowing, salting, brining, etc.), and the LOS provided.
- Footage from the dash cams can provide more detailed information such as weather patterns, hazardous conditions, material effectiveness, traffic conditions, etc.
- The Region should develop and implement a dash cam policy to illustrate the type of data collected, the method of storage, and the length of time the data is stored.
- The dash cams can also be used to document whether the contractors are providing the appropriate LOS and to assist with insurance claims.

Characterization

Efficiency Impact	Moderate	<ul style="list-style-type: none"> • This opportunity will reduce the amount of time it takes to monitor a weather event. • As a result, this opportunity will yield direct efficiency improvements.
Service Level Impact	Increase	<ul style="list-style-type: none"> • This opportunity will reduce the amount of time staff members have to spend monitoring a storm. It can also increase efficiencies and safety by making quicker decisions about what WMO activities to do and what materials to use in certain situations. As a result, this opportunity will directly increase service levels.
Investment	Low	<ul style="list-style-type: none"> • The financial investment required to implement this opportunity will be the cost of non-audio dash cams and cloud-based storage costs.
Risk	Moderate	<ul style="list-style-type: none"> • There is a risk that regional staff might feel as if they are being monitored. Education and awareness of how the cams will be used, including for safety and that they will not be recording any audio, should assist in mitigating this risk.
Duration to Implement	Short-term	<ul style="list-style-type: none"> • Based on the low complexity of this opportunity, it can be implemented in a short period of time.

Dash cams (continued)



Annual cost savings – Low (<\$100,000 savings)

Initial investment

- This opportunity requires a low monetary investment (up to \$100,000), which includes the costs of installing the non-audio dash cams, cloud-based storage, development and implementation of dash cam policy, and providing training to all operators on how to operate the dash cams.
- The Region will also spend time conducting a thorough analysis to see what is the optimal dash cam to be installed, developing a dash cam policy, and training module for operators on how to use the dash cams and the benefits of having them installed in vehicles. Costs associated with this time are expected to be low (up to \$100,000).

Annualized cost savings

- This opportunity will reduce the amount of time it takes to monitor a weather event.
- It may assist with fine tuning the LOS to the event in real time.
- As a result, this opportunity will result in a low level of cost savings.



Qualitative benefits

- This opportunity will allow the Region to accumulate more detailed and accurate information as part of a weather event.
- It will assist with insurance claims and discoveries.
- It will assist with monitoring contractor LOS.



Implementation steps

Short-term

1. Conduct research and determine the most suitable non-audio dash cam for the Region's purposes.
2. Install the dash cams onto each winter maintenance vehicle.
3. Provide operators with training on how to utilize the dash cams, and what the dash cams information will be used for.
4. Set up a process around supervising the use of dash cams.
5. Continue monitoring the effectiveness of dash cams.

Priorities and next steps



Validation and prioritization workshop

Deloitte facilitated a workshop with WMO management from the five depots (Orono, Sunderland, Ajax/Pickering, Oshawa/Whitby, and Scugog) to discuss the validation and prioritization of the opportunities identified. Our workshop consists of two segments:



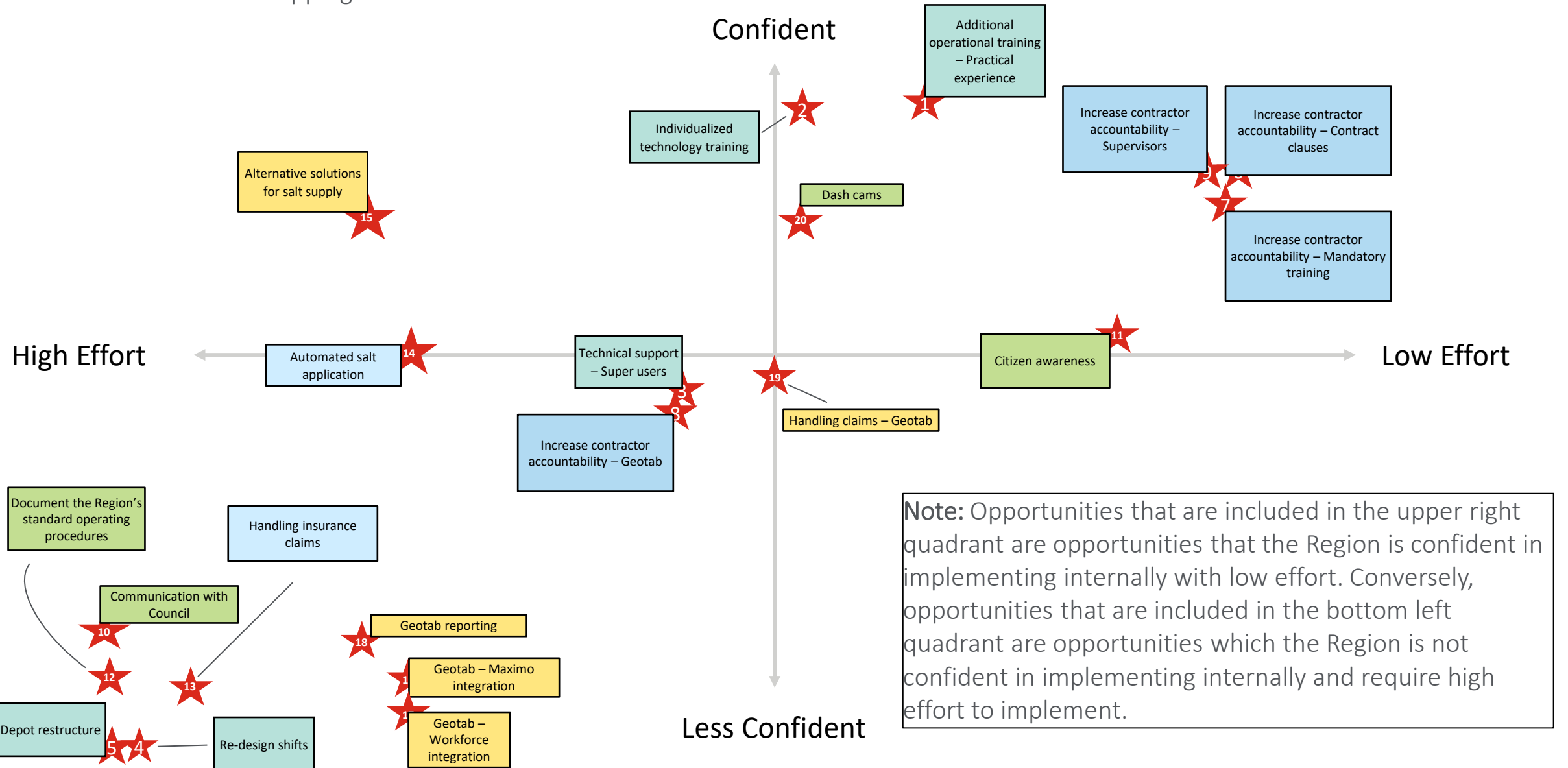
- Obtain feedback from the team regarding opportunities identified
- Gather insights into areas that require increased focus, further analysis, or new ideas that could potentially be explored

- Categorized the opportunities identified as a team by level of effort and by confidence level
- Obtain consensus on duration to implement the opportunities
- Asked for top ten prioritized opportunities as a takeaway

During this workshop, WMO management validated the opportunities identified and added others to arrive at 20 opportunities in total. WMO management then discussed and determined the level of effort required to execute each opportunity and the level of confidence the Region has about executing the opportunity. The “Confidence and effort mapping” results from this workshop are shown on pages 61.

Workshop outcomes

Confidence and effort mapping



Note: Opportunities that are included in the upper right quadrant are opportunities that the Region is confident in implementing internally with low effort. Conversely, opportunities that are included in the bottom left quadrant are opportunities which the Region is not confident in implementing internally and require high effort to implement.

Opportunity implementation

Top ten

In addition to the prioritization performed during the workshop, WMO management selected the top 10 opportunities which they believe to be the most impactful and can be implemented immediately:

Theme	Opportunity	Brief description	Effort	Confidence	Efficiency impact	Duration to implement
People management	Re-design shifts	Reschedule shifts to cover WMO needs	H	L	M	LT
Technology optimization	Geotab — Maximo integration	Integrate Geotab and Maximo to provide workorder information	H	L	M	LT
Technology optimization	Geotab — Workforce integration	Integrate Geotab and Workforce to reduce manual input of time	H	L	M	LT
People management	Depot restructure	Investigate restructuring the existing organizational structure and separate the department into two distinct sub-services (Sewer and Water, and Road Maintenance)	H	L	H	LT
Contractor management	Increase contractor accountability — Supervisors	Require a supervisor for all contractors to ensure the Region has a point of contact should there be service quality issues	L	H	H	LT
People management	Additional operational training – Practical experience	Provide job pairing for new operators to increase experience level	M	H	M	ST
Standard operating procedures	Document the Region’s standard operating procedures	Document and share the SOPs to inform the LOS that can be expected in the Region	H	L	M	MT
Contractor management	Increase contractor accountability — Mandatory training	Require contractors to attend training to ensure service quality	L	H	H	LT
People management	Individualized technology training	Tailor technology training to staff’s proficiency to increase effectiveness and technology adoption	M	H	M	MT
Contractor management	Increase contractor accountability — Contract clauses	Ensure that future contracts have clauses regarding repercussions to hold contractors accountable for poor service and add other clauses	L	H	H	LT

Opportunity characterization legend

Effort	Confidence	Efficiency impact	Duration to implement
H High effort	H High confidence	H Highly increases efficiency	ST Short term
M Medium effort	M Medium confidence	M Moderately increases efficiency	MT Medium term
L Low effort	L Low confidence	L Low or no impact on efficiency	LT Long term

Next steps- implementation roadmap

Looking at the top 10 most impactful opportunities WMO management selected, Deloitte has put together an implementation timeline. For details pertaining to each opportunity's implementation, please refer to their appropriate opportunity page.

Opportunity	2023	2024	2025	Immediate next steps and notes
Re-design shifts	X	X	X	Perform detailed analysis of historical data. Commence discussions with all stakeholders to pilot test re-designed shift.
Geotab – Maximo integration	X	X	X	Discuss plan for system harmonization with key stakeholders and conduct feasibility assessment.
Geotab – Workforce integration	X	X	X	Discuss plan for system harmonization with key stakeholders and conduct feasibility assessment.
Depot restructure	X	X	X	Analyze historical data, identifying and modeling the ideal employee requirement for each service. Commence discussions with all stakeholders to pilot test a department restructure.
Increase contractor accountability – Supervisors	X	X	X	Coordinate with the Region's lawyers to start including necessary clauses. Identify soon-to-be expiring contracts and commence negotiations.
Additional operational training – Practical experience	X	-	-	Start pairing seasoned operators with staff members new to WMO at each depot.
Document the Region's standard operating procedures	X	X	-	Create the SOPs taskforce. Design SOPs and ensure designed SOPs meet the Ontario Municipal Act standards.
Increase contractor accountability – Mandatory training	X	X	X	Coordinate with the Region's procurement and legal teams to start including necessary clauses. Identify soon-to-be expiring contracts and commence negotiations.
Individualized technology training	X	X	-	Identify differentiating factors in terms of technological proficiency between a novice, intermediate and expert level employee, and create an assessment. Design new technology training specific to each proficiency level.
Increase contractor accountability – Contract clauses	X	X	X	Coordinate with the Region's procurement and legal teams to start including necessary clauses. Identify soon-to-be expiring contracts and commence negotiations.



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