



City Councillor/Conseiller Municipal

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Quartier Capitale/Capital Ward

# Getting Around in the Winter

## Winter Operations & Snow Clearing Report

February 2020

*Prepared by the Office of Councillor Shawn Menard  
City of Ottawa*

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## Introduction

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The 2018-2019 winter season brought with it significant challenges for residents and city staff, with the latter trying to maintain our transportation infrastructure so that the former would be able to move about the city.

The extreme weather events experienced by the city resulted in significant challenges for city staff. It became increasingly difficult to keep our streets, sidewalks, paths and roadways clear and usable. Despite tremendous efforts by city personnel, the city repeatedly experienced situations where infrastructure could not be properly maintained.

Despite the extreme nature of the 2018-2019 winter season, the problems that arose relating to winter maintenance were not unique in their nature; they deviated only in degree from issues residents have been experiencing consistently in recent years.

The 2018-2019 winter season merely exposed existing challenges in the city's Winter Maintenance Operations, magnifying them as more than minor inconveniences.

### **Giving Residents the Chance to Be Heard**

We received thousands of contacts from residents: phone calls, emails and in-person visits. Crews worked 'round-the-clock' to plow streets, and clear and salt sidewalks. But with each additional snow fall or freeze-thaw cycle, their job became more challenging.

The problem was, in part, the weather; but the bigger issue was, and remains, the outdated Winter Maintenance Quality Standards, instituted in 2003 and never updated to reflect the evolving needs of residents or the extreme patterns brought on by climate change.

With nerves frayed, residents were vocal about the shortcomings of the city's snow clearing standards; clearly, they were not meeting the basic needs of residents.

With the deficiencies of the city's Winter Maintenance Quality Standards, my office—in conjunction with the offices of Somerset Ward Councillor Catherine McKenney, Kitchissippi Ward Councillor Jeff Leiper, Rideau-Vanier Ward Councillor Mathieu Fleury and Rideau-Rockcliffe Ward (which was without a councillor at the time)—organized an Information Session on Urban Snow Clearance, focusing on the needs of residents in the city's five urban wards.

The Information Session was held on March 20, 2019. It formed a two-way conversation with city staff presenting information on city's Winter Maintenance Operations and Winter Maintenance Quality Standards; and residents asking questions, providing feedback and insight, and explaining their needs relating to snow clearance and winter maintenance in the city's urban wards.

## The Final Report

This report brings together information on the city's Winter Maintenance Operations (WMO) and Winter Maintenance Quality Standards (WMQS) provided by the city, including the staff presentations<sup>1</sup> delivered at the Information Session<sup>2</sup>, as well as the experiences and needs of constituents, as expressed by residents at the Information Session and through email to the offices of urban councillors. In addition, this report includes updates from city staff about the changes made in preparation for 2019-2020 winter season.<sup>3</sup>

This report calls for the serious consideration of resident proposals by city staff and council, with the understanding that all concerns put forward by residents must be pursued in some fashion, and that most, if not all, of the solutions put forward by residents should be in some form pursued or enacted.

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*This report recognizes the experiences that so many of our residents have communicated in so many ways, and by extension, we recognize the authority and intelligence of their suggestions and proposed solutions for Winter Maintenance Operations in Ottawa.*

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The city is already moving forward with some of the urgent items highlighted by residents, such as a review of the WMQS and an augmented WMO budget, but the details and outcomes of these moves forward must align with the enhanced operations and standards envisioned and outlined by residents. The city's WMO and WMQS must better prioritize the needs pedestrians, transit users and bicyclists, with an emphasis on accessibility, sustainability and equity.

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<sup>1</sup> The staff presentation can be found online here:

[https://d3n8a8pro7vhmx.cloudfront.net/shawnmenard/pages/140/attachments/original/1578428475/Winter\\_MQS.pdf?1578428475](https://d3n8a8pro7vhmx.cloudfront.net/shawnmenard/pages/140/attachments/original/1578428475/Winter_MQS.pdf?1578428475)

<sup>2</sup> A live video of the Information Session on Snow Clearance can be viewed here:

<https://www.facebook.com/councillorshawnmenard/videos/1060548337489317/>, minutes taken at the event can be found here:

[https://d3n8a8pro7vhmx.cloudfront.net/shawnmenard/pages/140/attachments/original/1578429008/Minutes\\_from\\_March\\_20\\_2019\\_Infosession\\_on\\_Snow\\_Clearance.pdf?1578429008](https://d3n8a8pro7vhmx.cloudfront.net/shawnmenard/pages/140/attachments/original/1578429008/Minutes_from_March_20_2019_Infosession_on_Snow_Clearance.pdf?1578429008)

<sup>3</sup> A staff briefing on winter operations service delivery for the 2019-2020 season that can be found here:

[https://d3n8a8pro7vhmx.cloudfront.net/shawnmenard/pages/140/attachments/original/1578428802/SDR\\_Councillor\\_outreach\\_2019.pdf?1578428802](https://d3n8a8pro7vhmx.cloudfront.net/shawnmenard/pages/140/attachments/original/1578428802/SDR_Councillor_outreach_2019.pdf?1578428802)

## Winter Maintenance in Ottawa

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Ottawa's Winter Maintenance Operations (WMO) are governed by the Winter Maintenance Quality Standards (WMQS). The WMQS set the minimum standards for WMO staff to clear the city's roads, sidewalks and pathways of snow. The WMQS are set by City Council and are meant to ensure that a consistent level of service is provided. Despite the positive steps made through increases in the 2020 budget and the reorganization of aspects of WMO that are not defined by the WMQS, it is ultimately the WMQS that will need to be changed if we are to see a significantly higher standard of snow clearance operations in Ottawa.

### **Winter Maintenance Quality Standards (WMQS)**

Ottawa's current WMQS were established in 2003. The WMQS outline the parameters for deploying winter maintenance resources. They dictate when those resources are deployed—based on the amount of snow accumulation and the time elapsed since that accumulation, the size of snow banks, and street clearance; and where those resources are deployed—establishing a hierarchy of streets, sidewalks, bicycle lanes, laneways and pathways to be cleared.

*Ottawa's current WMQS can be found in Appendix A on page 13.*

### **The Need for Change**

It is unmistakable that the city's WMQS need to be updated to bring a higher level of service delivery to residents, especially those engaging in sustainable transportation and those with accessibility needs.

To understand how the WMQS need to be changed, we must examine the current standards. Essentially, roads, sidewalks and pathways with similar characteristics and function are grouped together into various classes. Classes are then used to prioritize maintenance, including the frequency of snow plowing, ice control and snow removal. Road classifications are similar to—but distinct from—sidewalk and pathway classifications.

Staff readily admit that the current classification system gives greater priority to roads than to sidewalks, bicycle lanes and pathways, acknowledging that this is a result of sidewalks, bicycle lanes and pathways not being top-of-mind when the WMQS were developed in 2003. This neglect has been a point of consternation and hardship for those using those modes of transport, in particular.

### **Winter Maintenance Quality Standards Review**

The city has announced that it will be proceeding with a much-needed review of the WMQS, but the timeline of the review and the implementation of its recommendations

means Ottawa residents will continue under the current Winter Maintenance Operations in the near-term.

The recently passed 2020 budget included funding for a consultant to undertake the WMQS review with staff, with an intention to begin the review this spring. It would be expected that the subsequent report would be brought to the Transportation Committee and then to City Council in 2021 in advance of the 2022 budget process. City staff have stated that key dates and timelines will be finalized and communicated soon.

Under this timeline, needed changes to the WMQS would be implemented no sooner than the 2021-2022 winter season, meaning that residents will have to endure at least two more winter seasons before the much-needed changes to the WMQS will be in effect.

Even if recommended changes to the WMQS are presented prior to the 2022 budget process, improvements could be held up depending on the actions of council. Excessive delays and extended deliberations could push the implementation of WMQS improvement into 2022-2023.

There is widespread agreement among stakeholders that an update to the WMQS is both overdue and necessary to remedy the ongoing problems relating to winter maintenance in Ottawa, but the timelines for review and reform do not currently reflect the urgency of the situation.

### **Winter Maintenance Operations (WMO)**

Winter Maintenance Operations follow the guidelines established in the WMQS. Significant improvements to WMO can only be fully realized with the review and refresh of the WMQS. Nonetheless, there are operational improvements that can and are being implemented currently to maximize the city's ability to meet the current inadequate standards with greater efficacy and efficiency.

#### **Current Improvements**

For the 2018-2019 season, WMO staff had approximately 505 operators and supervisors, who deployed up to approximately 585 snow removal vehicles, e.g. combo-plows, graders, loaders, backhoes and sidewalk machines.

Thankfully, the maintenance budget has been increased in the 2020 budget more so than was the case in recent years. This has allowed for the hiring of 22 new full-time employees (FTEs) to the WMO team (although the number of operators has only grown by 5 to total 510), the addition of 10 new

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*One significant example of an improvement is that sidewalk snow clearance operations will now be executed both day and night; previously this had only been done during the day. This does not change the minimum standards for snow clearance on sidewalks, but it will help ensure that those standards are maintained, especially after significant storms.*

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icebreaker machines (increasing the snow removal vehicle total to 595), and new blades on sidewalk plows (that deal with ice more efficiently). WMO staff have also added GPS technology to all sidewalk machines for this season, increased the availability of grit and salt to include all yards, and introduced new catch basin heat maps.

In addition, senior management has informed us that they have empowered operators on the ground and their direct supervisors to use more discretion in their work. This has been done under the assumption that those closest to the situation understand the exigencies and specificities of the areas they serve better than those above them. This is a promising development, but this discretion will nevertheless need to broadly operate within the existing inadequate WMQS.

It is clear that city staff are working diligently to enhance winter operations, and residents have experienced superior snow clearance in the 2019-2020 winter. This is a positive step, and one that we must continue to build on. In additions to the improvements staff have made, we also require structural changes to WMO for Ottawa to function properly during winter weather conditions.

*Additional information about Ottawa's WMO can be found in Appendix B on page 18.*

## The 2018-2019 Winter Season

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The 2018-2019 winter season proved to be the most challenging winter on record for the current WMO staff, some of whom have worked in winter maintenance for more than 40 years. City staff worked day and night, virtually 24/7, all winter long. Senior city staff were pulling staff with relevant experience from other departments to work on winter maintenance operations. The city exhausted all possible contractors.

Snowfall, freezing rain hours and rainfall were all significantly higher than average, and while the number of freeze-thaw cycles was equal to the five-year average, the recovery time between cycles, along with the increased precipitation complicated winter maintenance.

**Figure 1.0**

	2016-17	2017-18	2018-19	5-Yr Avg	20-Yr Avg
Snowfall (cm)	310	235	312	251	225
Freezing Rain Hours	89	64	103	77	65
Freeze-Thaw Cycles	74	86	75	75	70
Rain (mm)	303	255	297	242	236

Back-to-back snowfalls of 25+ cm resulted in a reduction of snow storage capacity, a minimal recovery period for staff and repetitive operations. WMO staff claim that these conditions made it extremely challenging to maintain snow packed standard on Class 2 sidewalks and residential roads.

WMO staff report that in previous years they could expect at least one 4-5 day stretch of temperatures above 0 °C, which gives them an opportunity to get back to a fresh starting point for snow clearance. That did not occur during the 2018-2019 season.

Well over 210,000 tonnes of rock salt were used during this season, up from 182,000 tonnes used in the 2017-2018 season. Below -18 °C, salt does not work well, and that posed a problem as it regularly dropped

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*Lessons were learned during the 2018-2019 season. For example, maintaining snowpack conditions for sidewalks and roads was made problematic by the amount of rain and freeze-thaw cycles. This past season, many areas froze solid, which saw continuous deployment to apply grit and sand; there were many instances of a brief thaw, leading to sidewalks and streets becoming rutted, and then freezing. As a result, the snowpack was thicker than normal, and this translated into huge bricks of ice.*

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below that temperature in the 2018-2019 season.

Examining the five-year and twenty-year averages, total precipitation and freeze-thaw cycles are trending up. With weather fluctuations due to climate change, the winter maintenance complications of the 2018-2019 winter season may be a new reality to which the city will have to adjust.

## The 2019 Information Session on Urban Snow Clearance

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It is within the context of the extreme weather events of 2018-2019 and the issues with winter maintenance that arose that the urban ward councillors convened an Information Session on Urban Snow Clearance. While the specific conditions of the 2018-2019 winter season represented an historical anomaly, Ottawa, like the rest of the world, is living a new reality of unpredictable and unprecedented weather patterns. The 2018-2019 winter season underscored the need for Ottawa to adapt, but it did not create this need out of thin, frozen air.

Further, Ottawans from across the city, and especially within the urban wards, are turning towards sustainable modes of transportation to a greater degree. As they walk, bike or take transit, they are no longer willing to have their transportation and winter maintenance needs relegated to a lower class than the desires of those choosing to drive private vehicles.

The Information Session on Urban Snow Clearance served as a critical point in this nascent movement to update Ottawa WMQS, abandoning antiquated notions of car supremacy and the inability to foster active transportation in winter weather conditions.

The Information Session allowed for a manifestation of this public movement, giving residents a platform to express their concerns, desires and potential solutions for WMQS that would support and facilitate their transportation needs.

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*The move towards sustainable transportation is neither an aberration nor a fad. It is an intentional policy shift within the City of Ottawa. This shift supports the city's goals of intensification, growth and fighting climate change. It is reflected in our transit planning and Road Safety Action Plan. Further, it is a recognition of the desire of the residents of Ottawa to be able to move around their city in different, active, environmentally-friendly ways.*

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### **Residents' Concerns & Suggestions**

With the 2018-2019 winter season came an incredible amount of complaints and concerns registered with city staff, councillor offices and at the Information Session. Residents experienced incredible difficulty moving around Ottawa, with a number of issues being commonly-experienced:

- Residential sidewalks are not sufficiently prioritized, resulting in a situation where ice and compacted snow build up to create an uneven and unsafe walking surface. In some circumstances, these conditions are impassable and effectively trap people with mobility issues in their homes.
- Bus stops are not sufficiently prioritized or cleared, leading to situations where people with limited mobility struggle to board and exit the bus.

- Narrow roads are not prioritized, which leads to a situation where already-narrow roads are reduced to a single lane that is so narrow it becomes difficult for the average car to navigate it, and likely impossible for an emergency vehicle to access it (a legitimate concern as fire trucks in Ottawa tend to be about 2.5 meters wide). This narrowness can also preclude snow plowing and snow removal operations from proceeding, which leads to cars spinning out and getting stuck in already hard-to-navigate narrow roads. These problems become even more pronounced when there is on street parking, which narrows the road even further.
- As with sidewalks, when roads are not plowed sufficiently, there is a buildup of compacted snow and ice that creates an uneven driving surface with ruts so large they are damaging the undercarriage of cars.
- Residents, especially seniors, are struggling to remove the snowbanks in front of their driveway left behind by the plows. The longer it takes for the city to clear a street, the more compacted and ice-laden—and therefore the more difficult to remove—these snowbanks become.
- Clearing frozen-over catch basins and sewers is not prioritized and therefore leads to the pooling of water and flooding. This also leads to pools of water freezing overnight and creating a difficult (or even impossible) situation for pedestrians to navigate.
- Multi-Use Paths (MUPs) along the canal are insufficiently cleared. They become frozen and slushy. There was deep ponding in the 2018-2019 season.
- Snowbank height puts residents in a dangerous situation where they must creep up to be able to see oncoming traffic before making a turn or crossing the street.

Residents also put forth several suggestions during the 2018-2019 season as to how to improve WMO in Ottawa:

- An update to the WMQS that is meaningfully consultative.
- Increased spending and realistic budgeting for WMO in the city's annual budgets.
- The city must account for a changing climate, and the changes to the winter season that come with it, particularly more severe weather events and more variability (leading to an increase in freeze-thaw cycles).  
This requires attention beyond what is within the scope of a WMQS refresh, and likely beyond the standard scope of analysis of WMO staff. A proper forum may need to be identified for this sort of investigation.
- A new strategy to deal with blocked drains and catch basin grates. This could include the city doing more to inform and educate residents about how to locate and clear these grates, WMO staff prioritizing the clearance of these grates, and a pilot project for heated grates.

- More direction and communication from city staff concerning where to place garbage so as not to obstruct plows.
- Increased investment in more ice breaking machines.
- Identifying alternatives to salt use in order to be more environmentally responsible.
- If tall buildings inhibit melting from occurring on certain sidewalks due to shadows, then developers may need to contribute funds (e.g. via development charges or community benefit agreements) that are directed specifically towards winter maintenance.
- The city should not wait for an accumulation threshold to be hit before removing snow. Minimum standards can and should be surpassed by WMO staff, given the inadequacy of current standards.
- Priority should be given to pedestrians (i.e. sidewalk maintenance), at least within the urban core where car ownership is less common.
- Street parking should be banned on many streets (especially narrow and residential streets), if only seasonally.
- There should be gender-disaggregated data. Snow clearance is a gender equity issue. Women are more likely to be low-income, have shiftwork, work multiple jobs, travel in linked journeys, and be responsible for caregiving and shopping.
- Data should be collected/requested regarding number of hospital visits that stem from unsafe winter conditions (e.g., slips and falls on ice). This data represents some of the human and financial costs of inadequate WMO. It could be used to make the case to the province for investing in city WMO, as it would save the province costs through the healthcare system.

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*Snow clearance as a gender-equity issue cannot be ignored. Stockholm has famously switched to “gender-equal” snow clearing, creating a city that works better for all residents, not merely certain demographic groups.*

*Further, this points to a more general need to apply an equity lens to winter maintenance operations. Time and resources will always be limited, and city operations should be focused on breaking down, rather than reinforcing, structural inequalities.*

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*Several of the suggestions from residents are operational changes outside the scope of the WMQS and therefore could be pursued now or in concert with the WMQS refresh. Leadership is required from councillors and from staff to give serious consideration to these suggestions.*

## Conclusions & Recommendations

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Winter Maintenance Operations, much like the city in general, requires a significant paradigm shift. Residents have spoken with a clear voice, declaring the current levels of service, along with the current foci of winter operations, unacceptable. The upcoming WMQS review is a welcome development, but the city must ensure that the resulting changes to the WMQS properly reflect the needs and desires of our residents, address the deficiencies that have been repeatedly identified with the current WMQS, and align with the city's stated desire to create a more equitable, more sustainable, healthier and more livable city.

### Five Principles for Urban Snow Clearance

In order to realize this vision for our future, the city should adopt the following Five Principles to guide winter maintenance operations and urban snow clearance:

- **Accessibility:** WMQS and WMO should be structured to ensure our city remains accessible to residents with mobility issues. Sidewalks, crosswalks, pathways and bus stops must be sufficiently cleared and maintained so that all residents can access them.
- **Equity:** City operations must be modernized so that they are equitable. Decisions must be made as to which sidewalks, bicycle lanes, pathways, laneways and roads get priority snow clearance, but those decisions must be made in a way that residents are treated equitably, regardless of gender, age, income level or mode of transportation.
- **Sustainability:** Our current WMO foster and encourage car dependence, as roads—even those without bus routes—are given a higher level of service than sidewalks, bicycle lanes and pathways. As the city has recently declared a climate emergency and will be seeking to reduce or eliminate our contribution to climate change, city operations must support and encourage efforts to reduce our carbon footprint. Further, operations should be conducted in the most environmentally-friendly way possible. This includes using less salt and incorporating more electric vehicles into the city fleet.
- **Climate Change Resiliency:** The city and residents understand that anthropomorphic climate change has drastically and irreparably changed Ottawa weather patterns<sup>4</sup>. Paradoxically, unpredictability is now predictable. We cannot

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<sup>4</sup> City of Ottawa, *Building a Liveable Ottawa 2031 Preliminary Policy Proposals*.  
<http://ottwatch.ca/meetings/file/91115>

expect winter seasons to reflect past winter weather, and our WMO must be prepared to change and adapt with this new reality. Sufficient resources, quicker response times and service delivery flexibility must underpin changes to the WMQS.

- **A Healthy and Livable City:** Ottawa is going through a transformation. The need to create a healthier and more livable city is acknowledged in recent changes to city planning and policies. This new dedication cannot be confined to just three seasons a year. Residents need to be able to get outside, be active, avoid social isolation and live in community with other Ottawans throughout the entire year. Winter Maintenance Operations must allow for active lifestyles and vibrant communities.

City snow clearing staff work very hard on the front lines and are often faced with very difficult conditions. Residents are frustrated. Many councillor offices are concerned. The current WMQS needs improvement. Our residents deserve snow clearance that supports their daily life, that allows them to continue functioning during Ottawa's winter months.

At the Information Session on Urban Snow Clearance, residents identified specific issues with the current WMO. They also provided suggestions, solutions and guidance to city staff and councillors for both immediate and long-term solutions.

They have told us what they need. It is now our duty to do all we can to meet those needs.

The Office of Councillor Shawn Menard is calling on the City of Ottawa to put every effort into focusing current WMO to support these needs while, concurrently, updating the WMQS so that we may provide residents with the level of winter maintenance they need and deserve.

Ottawa is a winter city. It is a part of our identity. We must now adapt and update our approach to winter maintenance and snow clearing to reflect this identity. Change has started, but there is more work to do.

## Appendix A—Winter Maintenance Quality Standards

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### **Snow Clearance**

There are five primary road classifications, as well as secondary or sub-classifications; for example, 'Subclass A' roads are roads with transit services, whereas 'Subclass B' roads are roads without.

**Class 1 Roadways:** Transitway and highways.

For example, Highway 174, and some sections of the transitway. WMO staff have until two hours after snow accumulation ends to clear snow to the bare surface standard.<sup>5</sup> This is the highest classification of roadway.

**Class 2 Roadways:** Four lane roads separated by a median.

Example: Wellington Street.

WMO staff have until three hours after snow accumulation ends to clear snow to the bare surface standard.

**Class 3 Roadways:** Major/minor collectors (arterials).

Example: Lyon Street.

WMO staff have until two hours after snow accumulation ends to clear snow to the bare surface standard. Typically, Class 2 and 3 are grouped together for reasons of proximity and efficiency.

**Class 4 Roadways:** Rural roads and gravel roads.

Here standards differ by subclass:

- a. WMO staff maintain to bare surface standard and deploy resources after 5 cm of accumulation.
- b. This subclass is different insofar as these roads are maintained at a centre-bare standard (i.e. a metre of road in the centre of the road will be bare).

Sometimes staff will deploy resources before the 5-cm threshold is hit (in anticipation of it being hit) in an effort to be more efficient and responsive.

**Class 5 Roadways:** Residential streets.

Here, once again, standards differ by subclass:

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<sup>5</sup> See the WMQS for a description of the three standards of snow clearance.

- a. Standard residential street. Resources are deployed at 7 cm of snow accumulation. Roadways are maintained to snow-packed surface conditions, and WMO staff have 10 hours after the snowfall to achieve this standard.
- b. Rear yard laneways. Resources are deployed at 10 cm of snow accumulation. Roadways are maintained to snow-packed surface conditions, and WMO staff have 16 hours after the snowfall to achieve this standard.

Roads that are Class 1-3 see a deployment of resources as accumulation of snow *begins*. This ensures that staff can prevent a strong bond from forming between snow and the road, which ensures, in turn, that a bare surface standard can be attained.

**Figure 2.1<sup>6</sup>**

Road Maintenance Class	Road Type	Minimum Depth of Snow Accumulation from the End of Snow Accumulation or Time to Treat Icy Conditions (Depth as per MMSMH)	Time to Clear Snow Accumulation from the End of Snow Accumulation or Time to Treat Icy Conditions (Time as per MMSMH)	Treatment Standard				
				Bare Pavement	Centre Bare	Snow Packed		
1	A	High Priority Roads	As Accumulation Begins (2.5-8 cm depending on class)	2 h (3-4 h)	✓			
	B				✓			
2	A	Most Arterials		3 h (3-6 h)	✓			
	B				✓			
3	A	Most Major Collectors			4 h (8-12 h)	✓		
	B			✓				
4	A	Most Minor Collectors	5 cm (8 cm)	✓				
	B					✓		
	C					✓		
5	A, C	Residential Roads		7 cm (10 cm)	10 h (16-24 h)			✓
	B	and Lanes		10 cm (not defined)	16 h (not defined)			✓

The city maintains similar classifications for sidewalks (see Figure 1.3 below); however, the standards for sidewalks and pathways are much lower.

**Class 1 Sidewalk/Pathway:** Large employment or tourism centres, e.g. Byward Market. These are maintained to bare surface. WMO resources are deployed once 2.5 cm of

<sup>6</sup> All figures in this section are taken from the WMQS

snow accumulation has taken place, and WMO staff have until 4 hours after snow accumulation ends to clear snow to the bare surface standard.

**Class 2 Sidewalk/Pathway:** Essentially all other sidewalks and pathways that are not strictly residential and that fall outside of Class 1 (see a more detailed list of examples in *figure 1.3* below). Standards for Class 2 differ by subclass:

- a. Sidewalks directly adjacent to arterial roads. Resources are deployed at 5 cm with 12 hours to maintain bare surface
- b. All other Class 2 sidewalks/paths. Resources are deployed at 5 cm with 12 hours to maintain snow-pack standard.

**Class 3 Sidewalk/Pathway:** Residential sidewalks/paths. Resources are deployed at 5 cm, and WMO staff have 16 hours to achieve snow-pack standard.

**Class 4 Sidewalk/Pathway:** Unmaintained sidewalks/paths

**Figure 2.2**

Sidewalk/Pathway Maintenance Classification		Minimum Depth of Snow Accumulation for Deployment of Resources	Time to Clear Snow Accumulation from the End of Snow Accumulation or Time to Treat Icy Conditions	Treatment Standard	
				Bare Surface	Snow Packed
1	<ul style="list-style-type: none"> <li>• Downtown business district</li> <li>• Byward Market</li> <li>• Large employment centres</li> <li>• Special tourism areas</li> </ul>	2.5 cm	4 h	✓	
2	<ul style="list-style-type: none"> <li>• Downtown/urban residential neighbourhoods where sidewalks are only safe place to walk</li> <li>• Sidewalks in Villages</li> <li>• Pathways that serve as main community links or to access transit services</li> <li>• Sidewalks along roads with transit service, emergency facilities, public facilities or retail/commercial frontages</li> <li>• Pathways designated as part of the city cycling routes</li> </ul>	5 cm	12 h	Sidewalks directly adjacent to arterial roads	All other locations

3	<ul style="list-style-type: none"> <li>• Sidewalks along rural and suburban collector and residential roads</li> <li>• Paved pathways in rural and suburban neighbourhoods (pathways that are wintered maintained)</li> </ul>	5 cm	16 h		✓
4	<ul style="list-style-type: none"> <li>• Unpaved pathways and trails</li> <li>• Paved pathways that are not winter maintained</li> </ul>	Not winter maintained			

These standards are evidently lower than those maintained for roadways; however, the prioritization within these standards classifications is also suspect. Certainly, the current Class 1 sidewalks/pathways should not be given priority vis-à-vis instances of lower classification sidewalks/pathways when the latter not only see more pedestrian traffic but are also routes that are equally essential or more essential to the daily travel undertaken by residents between work and home.

**Snow Removal**

In addition to clearing snow from roadways, sidewalks and pathways, WMO staff also conduct snow removal services, which are also governed by the WMQS. Much like snow clearing standards, snow removal standards outline a prioritization of roads and establish different thresholds as part of that prioritization (see *Figure 1.4* below). For example, the city will remove or otherwise reduce snowbanks when specific thresholds are hit as it relates to travel widths on roadways. There appears to be no analogous threshold in the WMQS, however, as it relates to travel widths on sidewalks/pathways, but the WMQS does state that snow removal can be triggered when snowbanks are restricting pedestrian or bicyclist traffic; such an ill-defined standard in this respect unsurprisingly does not serve pedestrians with accessibility needs well.

Snow removal resource deployment is also triggered when sightlines are restricted to an extent that it becomes a safety hazard; no specific threshold is set for this criterion, however, and there appears to be no active monitoring of sightline restriction. Finally, snow removal resource deployment can be triggered when there is a need to relieve ‘trap water’ on roadways and sidewalks, and this, too, appears to rely on the city being ‘made aware’ of the issue, with no specific threshold needing to be crossed.

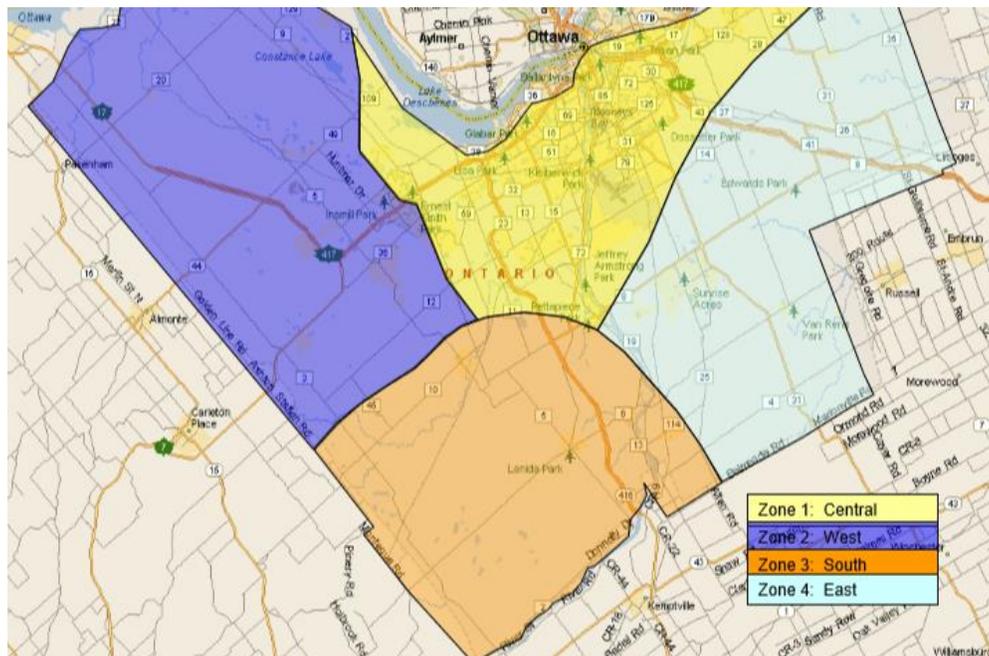
**Figure 2.3**

Road Maintenance Class		Road Type	Minimum Cleared Width	Time
1	A	High Priority Roads	No encroachment onto travel lanes	16 hours
	B			2 days
2	A, B	Most Arterials	Encroachment not to reduce width of any travel lane less than 3.3 m.	2 days
3	A, B	Most Major Collectors	<ul style="list-style-type: none"> <li>Where a parking lane is provided, a clear width of 2.2 m is to be maintained.</li> <li>Streets with high parking permit demand, or with meters or taxi stands on both sides are to have two parking lanes with a clear width of 2.2 m each.</li> <li>Roads with ditches and no curbs that have posted speeds greater than 60 km/h are to have two parking/shoulder lanes with a clear width of 2.2 m each, where possible.</li> </ul>	8 days
4	A, B, C	Most Minor Collectors	<p>Encroachment not to reduce clear width less than 6.0 m (2 lanes of 3.0 m).</p> <ul style="list-style-type: none"> <li>On streets with high parking permit demand, or with meters or taxi stands on both sides, the clear width is to be 8.2 m.</li> </ul>	14 days
5	A, C	Residential Roads and Lanes	<p>Encroachment not to reduce clear width less than 5.0 m (2.8 m travel lane plus 2.2 m parking lane).</p> <ul style="list-style-type: none"> <li>On streets with high parking permit demand, or with meters or taxi stands on both sides, the clear width is not to be less than 7.2 m (2.8 m travel lane plus 2 parking lanes of 2.2 m each).</li> </ul>	14 days
	B		Encroachment not to reduce clear width less than 2.5 m.	

## Appendix B—Winter Maintenance Operations

Before the 2019-2020 winter season, the City of Ottawa had been operating on the basis of four different weather zones (Central, South, East and West). All urban wards fell within Zone 1: Central (see Figure 3.1).

**Figure 3.1<sup>7</sup>**



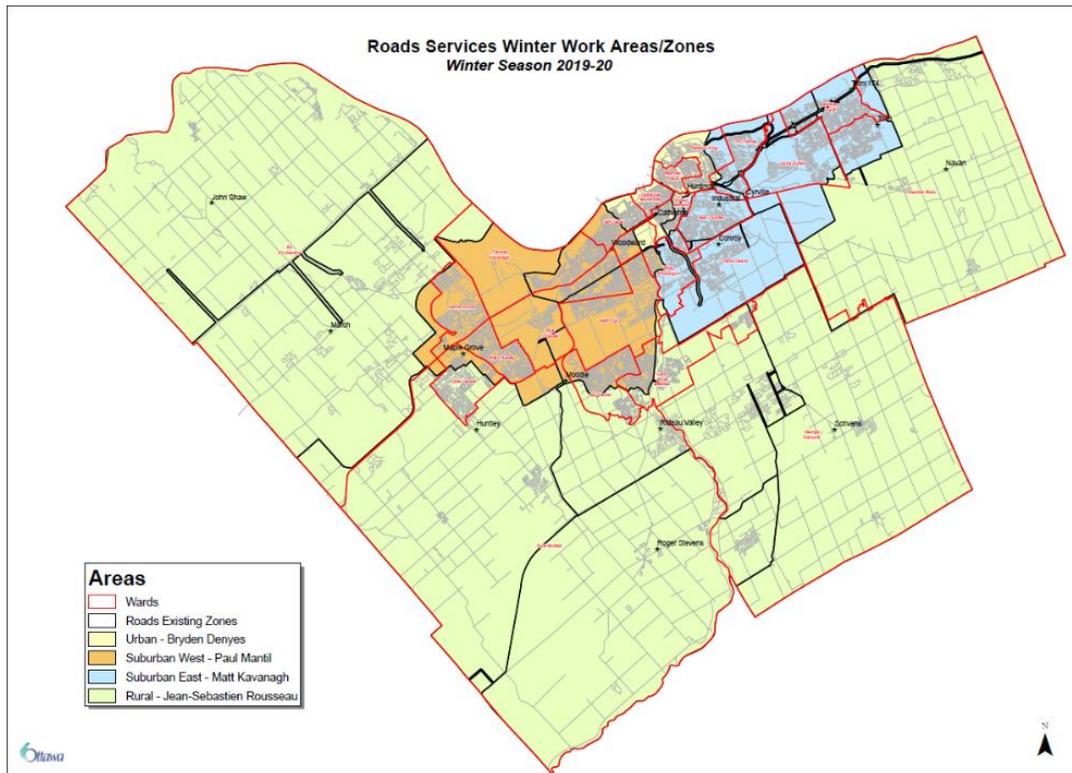
For the 2019-2020 winter season, WMO staff have decided to switch to a new zone structure (see Figure 3.2), in an attempt to create service strategies and consistency for areas of the city that have similar built environments. Staff note that this is a move away from a one-size-fits-all approach and presents an opportunity to make adjustments in areas where growth has created challenges. There remain four zones, but the geography has shifted significantly. All rural areas will now be in one zone with the urban and suburban areas of the city now split into three zones (Urban, Suburban East and Suburban West).

Winter operations staff work out of 18 public works yards across the city. Three of these yards, formerly clustered in the central zone, are now spread across the new urban and suburban zones in the new zone structure. A weather provider and a meteorologist work with city staff to provide weather reports for each of the weather zones as conditions vary from zone to zone. Staff also rely on Environment Canada predictions to inform their operations.

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<sup>7</sup> Taken from the staff presentation on March 20<sup>th</sup>

Figure 3.2<sup>8</sup>



<sup>8</sup> Taken from the staff briefing on winter operations service delivery for the 2019-2020 season.