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**The City of St. John's**

# **Review of Winter Maintenance Services**

## **Final Report Executive Summary**

**February 26, 2014**



# Notice to Reader

This report has been prepared by KPMG LLP (“KPMG”) for the City of St. John’s (“Client”) pursuant to the terms of our engagement agreement with Client dated **June 2, 2014** (the “Engagement Agreement”). KPMG neither warrants nor represents that the information contained in this report is accurate, complete, sufficient or appropriate for use by any person or entity other than Client or for any purpose other than set out in the Engagement Agreement. This report may not be relied upon by any person or entity other than Client, and KPMG hereby expressly disclaims any and all responsibility or liability to any person or entity other than Client in connection with their use of this report.

## Information and Limitations

KPMG’s procedures consisted solely of inquiry, document review, comparison and analysis of City provided information, and information provided by comparable jurisdictions.

KPMG relied on information provided by project participants. Information in this report pertaining to the City has been provided by and/or validated by City staff.

The information contained in this report does not constitute an audit of the City’s services, presented data, organization, or governance structure. Any future oriented financial information is unaudited and is highly dependent on future events while noting that the impact of such events may be material.

Accordingly, KPMG does not express an opinion on such matters.

# The Review

KPMG conducted a review of the winter maintenance activities carried out by the Roads Division and the Parks and Open Spaces Division of the City of St. John's. The process undertaken included a review of documentation, interviews with staff, consultation with stakeholders within and external to the City (including two public workshops), and a jurisdictional review identifying comparable practices in Halifax, Fredericton, Quebec City, Saguenay and Mount Pearl.

An Interim Report was provided to the City identifying some actions it could initiate for implementation in the winter of 2014-2015. Those items are addressed in this report as well. Some chapters of the Final Report were drafted in November, and may reflect “now” as being in November, 2014.

This is the Final Report.



**ST. JOHN'S**  
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## Key Findings - Overall Costs

The St. John's winters are more challenging than other Canadian cities. St. John's receives more snowfall, the snow it receives is wetter and heavier, and it has frequent and rapid changes in temperature above and below the freezing point.

### Costs

The budgeted costs of winter maintenance have grown 83% since 2001 while inflation has increased about 26% and the population by about 3% (to 2011). Compared to other cities, St. John's costs are highest per capita, but lower than Halifax when the amount of snowfall is considered. St. John's is also very low density, with more roads per capita than the other cities (similar to Fredericton). Therefore, its snowfall adjusted cost per km is better than Mount Pearl and Saguenay. Fredericton is the lowest cost service provider in all categories and substantially lower than all of the other cities studied.

	2013 Snow Budget	Cost/capita	Cost/lane km	Adjusted for Snowfall	
				Cost/capita	Cost/lane km
St. John's	\$ 9,123,814	\$ 85.93	\$ 6,517.01	\$ 0.26	\$ 19.45
Fredericton	\$ 2,273,000	\$ 40.59	\$ 3,161.34	\$ 0.16	\$ 12.53
Halifax	\$ 19,995,000	\$ 51.26	\$ 5,180.05	\$ 0.33	\$ 33.59
Mount Pearl	\$ 1,972,647	\$ 81.23	\$ 8,219.36	\$ 0.24	\$ 24.54
Quebec City	\$ 38,200,000	\$ 72.05	\$ 5,814.91	\$ 0.24	\$ 19.17
Saguenay	\$ 11,000,000	\$ 75.15	\$ 9,166.67	\$ 0.23	\$ 28.56

Notes: Fleet costs are generally excluded, however the Halifax, Quebec City and Saguenay costs include some fleet costs as part of contracted services. St. John's costs may be slightly higher than shown as the costs of the Parks and Open Spaces group are not included.

Colours – The green shaded cells show the lowest costs, the red shades indicate higher costs.

## Key Findings - Service Levels

St. John's has high standards of road clearance (see page 23 of the Report)- comparable with other cities on the arterials and higher than most cities on residential streets because St. John's strives for bare pavement conditions while most cities are content to remove the bulk of the snow and only salt hills and intersections on residential streets.

The same could not be said for sidewalks (see page 29). After a snow event, most cities finish plowing at least high priority sidewalks before St. John's used to even start. With roadways plowed onto the sidewalks before the sidewalks are started, St. John's was using slow moving snow blowers to clear many sidewalks, taking an extended time after an event to clear the sidewalks.

There are suggestions that more sidewalks should be cleared, but the primary problem appears to be that the designated sidewalks are not being cleared quickly or effectively. Earlier plowing is important, but the only way to keep the sidewalks clear on many streets is more and earlier snow removal so they can be plowed and kept clear instead of the snow simply being pushed back onto the sidewalks. Suggestions include:

- Beginning sidewalk salting and plowing earlier, while the snow is still falling;
- The creation of a dedicated sidewalk crew to ensure sidewalk salting and plowing gets attention early in an event. Having the crew work day shifts will attract more experienced operators given that sidewalk machines are currently the last choice of assignment and are often left to the operators with the least seniority (already implemented); and
- More and shorter routes established and addressed in order of priority, with the highest use sidewalks being given the highest priority.

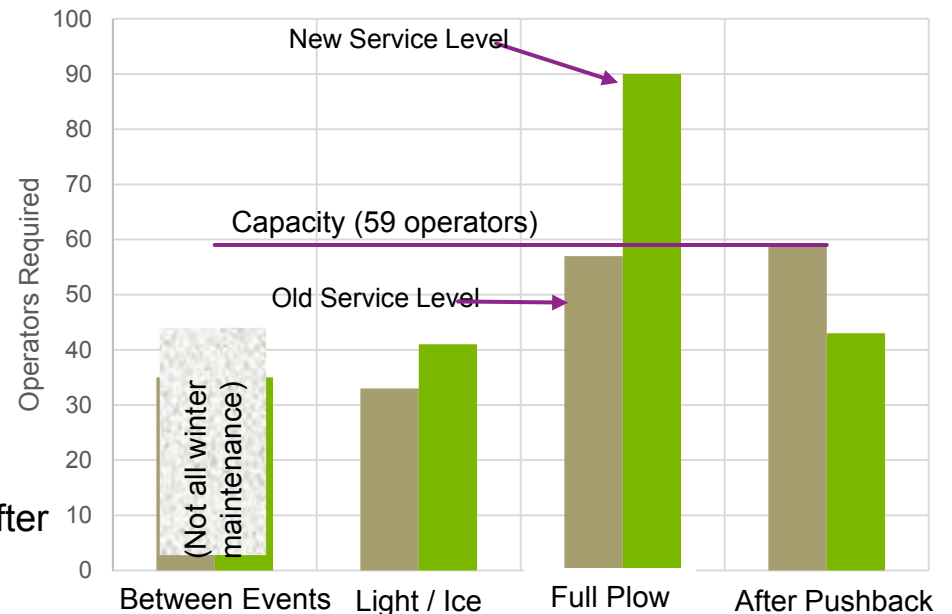
# Operator Requirements

## Higher Peak

As the graph shows, the old service levels were set based on how much the staff of 59 operators per shift could accomplish.

Sidewalk plowing and snow removal was deferred until the operators completed their plow runs and pushback, which generally took a day after the snow stopped.

The new service levels call for sidewalk plowing during the snowfall and snow removal immediately after the snowfall stops. The result, as shown on the graph, is a much higher peak requirement during and immediately after a snowfall. The requirements are lower once the plowing and pushback process is completed.



Finding ways to staff these peak requirements is essential to improving the service levels.

## Key Findings - Service Delivery

St. John's, like Fredericton and Mount Pearl, performs almost all of its winter maintenance using City staff (see page 38). Mount Pearl is approximately 25% more expensive per kilometer of road but provides a higher service level as a result. Fredericton provides a higher service level despite being much less expensive. It does so by having one shift of employees that work a day shift between events, but work as required during weather events. It can have more employees on one shift than St John's has on each of its three shifts, but still have fewer employees and overall lower costs. Salt truck operators have considerable overtime as small events requiring salt application and/or a light plow are frequent, but there are generally only about 10 events per year requiring full plow runs and overtime for all workers. Fredericton has 2 additional operators on night shifts to provide emergency response as/if required (e.g. a flash freeze).

St. John's used to have a one shift system but switched to the current three shift system to reduce overtime and equipment costs and improve service. The actual result has been higher costs, but generally good service on roads. However St. John's has deferred sidewalk plowing and snow removal operations in order to keep the worker requirements to the number on each of the three shifts. It would not be practical to return to a one shift system now. The current requirements that limit the total hours an operator can drive mean that during a long winter storm operators are required to rest after a 16 hour shift and are not permitted to return for 8 hours. The gap when nobody would be salting or plowing would be a problem in St. John's, increasing the risk of impassable roads. Freezing rain or quick temperature changes during the period when no-one is on shift would also create dangerous conditions.

## Key Findings - Contracting

Halifax, Quebec and Saguenay use a different approach to reducing the “standby” costs of having resources available when needed for winter maintenance (see page 44).

Those cities use contractors to perform some winter maintenance, with two general approaches:

- **Hired equipment** – When extra resources are required for a major plow run or for snow removal, they call in hired equipment that comes with an operator and engage them for the period required. St. John’s did some of this last winter by hiring extra trucks to help out with snow removal. Using hired trucks for snow removal more frequently would allow snow removal to begin earlier (it currently commences after the salt trucks are finished salting and plowing) which would help roadways and particularly sidewalks. Using hired equipment for the plow runs would allow the City to staff for the “steady state” versus peak requirements, and would provide extra contracted resources for the peak requirements.
- **Area contracts** – Some cities have assigned certain areas of the city, or certain facilities, to be maintained entirely by contractors (salting, plowing and removal). Halifax reports its cost of sidewalk maintenance is \$12,000 per kilometer in-house, but only \$5,200 per kilometer when contracted. Savings were less on roadways, but are still significant (14%). Saguenay also reported savings of about 10%.

St. John’s decided, based on the Interim Report, to use hired trucks to expand the snow removal program. The report finds it could also use contracted loaders as part of its regular plowing approach during major events.

The table on the next page compares four ways of meeting the peak requirements of a plow run. Moving to an unbalanced shift system (one or two shifts larger than the others) would reduce the costs of improving service, but would also limit the extent of service improvements. Using contracted resources could allow the improved service levels without increasing costs. Both approaches should be implemented. However implementation should be gradual to learn the best approach, and give the industry time to adapt to City requirements (page 61).



# Analysis of Options

	Financial Impact	Risks	Mitigation Options
1 – Increase Staffing on three shifts	Cost \$2M	<b>Low</b> - Some risks around inexperienced seasonal staff and labour disruptions	Expand training program in fall further (leads to higher costs as well)
2 – Increase Overtime during plow runs	Cost \$880K	<b>Highest</b> – High risk of staff unwilling to work all overtime and/or exceed permitted operating hours, leading to large risk of inadequate service during large/multiple events	Combine with option 1, providing some additional staff and less reliance on overtime
3 – Use Contracted Loaders during plow runs	<b>Save \$460K</b>	<b>Medium</b> - New approach, industry unprepared to meet needs, City faces learning curve	Phase in contracting to test best approaches and give industry time to respond
4 – Adopt a two shift system	Cost \$600K	<b>Medium</b> : Some risk staff unwilling to work all overtime and/or exceed permitted operating hours	Pay standby and/or schedule small third shift (10) – reduces risks, and with some deferral of plow runs, could reduce costs

## Key Findings - Equipment Maintenance

**Equipment maintenance was a major issue last winter. Roads did not have sufficient equipment to cover the routes on many days, and the blower attachments for loaders and the sidewalk plows were a particular problem (see page 108).**

Key findings include:

- The equipment itself is appropriate and generally not too old, although age is a factor with the blower attachments;
- There is generally enough spare equipment, although perhaps not with loaders. The major problem is that equipment is down too long, often waiting on parts;
- A comprehensive review of Fleet Operations would help determine how operations can be improved;
- The management of parts must be improved, particularly the determination of what parts to maintain in stock;
- Operator training can be improved to reduce breakdowns;
- Indoor storage is required for sidewalk plows and blower attachments to reduce breakdowns;
- Communications between Fleet, Roads and Supply must be improved; and
- Vehicle acquisition policies should aim to reduce the number of different models of vehicles.

# Key Findings - Long Term Concerns

Key findings (see page 126) include:

- The St. John's harbour is an ideal snow disposal site;
- The City requires a contingency plan in case the harbour becomes unavailable. Expansion of the Robin Hood Bay landfill site or other lands in that area are the best available options; and
- A second depot will be required in the medium-term, and a snow disposal site to handle long-term requirements in the west end. A contingency plan should be prepared for the Southlands/Galway area and appropriate lands acquired.

## Other Key Findings

Some other key findings include:

- Lengthening the winter staffing season would expand operator training opportunities and provide more resources for early and late snow events (see page 64);
- The City has a sophisticated, but incomplete, approach to setting routes for salting and plowing. Some improvements are recommended, with a caveat that adequate resourcing is required for the approach to be productive (see page 71);
- Some of the frustration of staff and the public can be reduced by empowering operators and/or forepersons on certain decisions of when to put the plow blade down, the rate at which salt should be applied in particular circumstances, and expanded consultation on the exact route to be followed (see page 87);
- The overnight parking ban should be imposed the first time there is a major snowfall rather than on an arbitrary date (see page 98); and
- 311 calls must be handled differently to ensure all required information gets to the Roads department and to provide callers a more satisfactory experience (see page 124)



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# Recommendations for Council

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- Plowing of residential streets should be redesigned as described in the report to improve the efficiency of each pass and minimize the frequency that driveways need to be shoveled (page 25).
- Sidewalk service levels should be improved as described in the report, beginning service earlier during an event and focusing resources on the most used/highest priority sidewalks. Windrows should be cleared at bus stops. A daytime crew dedicated to sidewalk clearing should be tested on a pilot basis (page 33).
- Plowing routes for roads and sidewalks should be redesigned as described in the report (page 85, 86).
- Snow removal should commence earlier during events to improve sidewalk and road conditions (page 36), using hired equipment (trucks and loaders) to expand capacity during major events (page 60). Public education/information should be improved as described in the report to reduce the need for staff directing traffic around snow removal crews (pages 124).
- Seasonal workers should be engaged for a longer season (18 or 19 weeks instead of 16 weeks) to provide resources for early or late events and allow more time for training early in the season (page 64). The training program should be expanded, focused on improving effectiveness, reducing equipment damage, and improving supervisory skills with two new seasonal trainer (page 66).
- The City-wide (except downtown) overnight parking ban should go into effect with the first major snowfall (expected to be 10 cms. or more) and include the following:
  - Develop an approach to ban overnight parking (from 1 am to 6 am) on Water and Duckworth Streets during snow events. This could be tested with notice given by social media and subscription email/text messages, but may require an on-street beacons similar to Quebec City (page 99); and
  - Investigate options to reduce parking interference with snow removal using tickets and local tows, or a contracted tow/impound solution (page 100).

# Recommendations for Council

- A review of Fleet Operations should be conducted as described in the report (page 118) to consider how to improve efficiency and effectiveness. In the meantime, an “Equipment Coordinator” position should be added in Roads (page 117).
- A revised protocol for handling 311 calls on snow issues should be developed and external communications improved as described in the report (page 124).
- Expanded depot and snow storage capacity should be planned as follows:
  - Removal of the vehicle impound and construction of indoor parking/storage facilities for the blower attachments and sidewalk plows at Blackler Avenue (page 119);
  - Identification of and acquisition of a suitable site for a second major depot in the southwest urban area. The site should be large enough to accommodate long-term needs of all field operations groups in Public Works and the fleet, with the fuel supply, materials storage and snow storage required to support operations (page 130); and
  - Acquire land in the area bound by East White Hills Road, the Robin Hood Bay landfill site and the ocean with highest priority for a site(s) that can accommodate a permanent snow disposal site large enough to replace the use of the harbour should that become necessary, and to accommodate the potential requirement for a third depot well into the future (page 133).
- The review of design criteria for new subdivisions should consider winter maintenance requirements including consideration of the potential for storm water retention ponds to serve as local snow storage facilities (page 141)