



Public Works and Infrastructure Committee

**Thursday, October 11, 2018
4:00 PM**

Henry Baker Hall, Main Floor, City Hall



OFFICE OF THE CITY CLERK

**Public Agenda
Public Works and Infrastructure Committee
Thursday, October 11, 2018**

Approval of Public Agenda**Adoption of Minutes**

Public Works & Infrastructure Committee - Public - Sep 6, 2018 4:00 PM

Tabled Reports

PWI18-14 9th Avenue North – Courtney Street to Pinkie Road

Recommendation

That this report be received and filed.

PWI18-15 Snow Routes Pilot Program Update

Recommendation

1. That the Snow Routes Pilot Program implemented in 2017/18, become part of a regular winter maintenance program.
2. That the snow routes be expanded to include an additional 11km section on the following Arterial and Collector streets, for the 2019/2020 winter season be approved;
 - i. Victoria Avenue (Albert Street to Pasqua Street)
 - ii. Winnipeg Street (College Avenue to Broadway Avenue)
 - iii. Winnipeg Street (Victoria Avenue to Ross Avenue)
 - iv. Broadway Avenue (Broad Street to Park Street)
 - v. 13th Avenue (Toronto Street to Broad Street)
 - vi. 14th Avenue (Toronto Street to Winnipeg Street)
 - vii. 14th Avenue (Albert Street to Halifax Street)
 - viii. 15th Avenue (Winnipeg Street to Elphinstone Street)
 - ix. Toronto Street (Victoria Avenue to College Avenue)
3. That Administration bring updates on snow routes, as part of the Annual Winter Maintenance report.
4. That the City Solicitor be directed to prepare the necessary amendments to



OFFICE OF THE CITY CLERK

Regina Traffic Bylaw No. 9900 (Bylaw) to authorize the requirements for an expanded Snow Routes Program, as detailed in Appendix A to this report.

5. That \$70,000 of the 2019 Winter Road Maintenance operating budget be used to fund the capital and operating expenses associated with the implementation of an expanded Snow Routes Program.
6. That this report be forwarded to the September 24, 2018 City Council meeting for approval.

PWI18-16 Winter Maintenance Summary Report

Recommendation

That this report be received and filed.

Administration Reports

PWI18-18 Water Master Plan

Recommendation

1. That City Council approve the Water Master Plan (WMP) and authorize the use of the WMP as a guide for future water-related decisions and actions.
2. That Administration provide a progress report regarding implementation of the WMP to the Public Works and Infrastructure Committee in 2021.
3. That this report be forwarded to the October 29, 2018 meeting of City Council for approval.

Adjournment

AT REGINA, SASKATCHEWAN, THURSDAY, SEPTEMBER 6, 2018

AT A MEETING OF PUBLIC WORKS AND INFRASTRUCTURE
COMMITTEE
HELD IN PUBLIC SESSION

AT 4:00 PM

These are considered a draft rendering of the official minutes. Official minutes can be obtained through the Office of the City Clerk once approved.

Present: Councillor Sharron Bryce, in the Chair
Councillor Lori Bresciani
Councillor Jason Mancinelli
Councillor Barbara Young
Councillor Andrew Stevens

Also in Attendance: Council Officer, Donna Mitchell
Legal Counsel, Jayne Krueger
Executive Director, Transportation & Utilities, Karen Gasmo
Director, Solid Waste, Lisa Legault
Waste Minimization Specialist, Ben Brodie

APPROVAL OF PUBLIC AGENDA

Councillor Jason Mancinelli moved, AND IT WAS RESOLVED, that the agenda for this meeting be approved after tabling reports PWI18-14 9th Avenue North – Courtney Street to Pinkie Road, PWI18-15 Snow Routes Pilot Program Update and PWI18-16 Winter Maintenance Summary Report to the October 11, 2018 meeting of the Public Works and Infrastructure Committee.

ADOPTION OF MINUTES

Councillor Lori Bresciani moved, AND IT WAS RESOLVED, that the minutes for the meeting held on June 7, 2018 be adopted, as circulated.

ADMINISTRATION REPORTS

PWI18-17 Organic Waste Service Recommendation

Recommendation

1. That City Council approve a residential year-round curbside food and yard waste collection and processing service, described as Service Option 4 in this report.

2. That City Council approve Service Option 4's preliminary implementation plan, recognizing that:
 - a. The total cost of the preliminary implementation plan as presented is \$3.5 million in capital funding from the Solid Waste Reserve to be considered in the 2019 budget process.
 - b. A competitive procurement process will begin in 2019 to facilitate final plan development and the construction and operation of an organic processing facility.
 - c. A pilot will be conducted in 2020 to test, evaluate and adjust any service details prior to city-wide implementation.
 - d. Administration will return to City Council with the final implementation plan in Q2 of 2021.
 - e. City-wide implementation as presented will be complete by 2023.
 - f. Funding the annual operating expenditures of Service Option 4 from general revenue or a user fee, will be determined by City Council's decision regarding a solid waste curbside collection services funding policy, to be considered through a subsequent report that will be brought forward in October 2018.
3. That City Council approve Service Option 2, a full growing season yard waste depot for implementation in 2019, establishing a permanent depot site as well as a lead into Service Option 4.
4. That this report be forwarded to the September 24, 2018 meeting of City Council for approval.

Councillor Lori Bresciani moved, AND IT WAS RESOLVED, that the recommendations contained in the report be concurred in.

ADJOURNMENT

Councillor Barbara Young moved, AND IT WAS RESOLVED, that the meeting adjourn.

The meeting adjourned at 4:44 p.m.

Chairperson

Secretary

September 6, 2018

To: Members
Public Works and Infrastructure Committee

Re: 9th Avenue North – Courtney Street to Pinkie Road

RECOMMENDATION

That this report be received and filed.

CONCLUSION

Due to the proximity of the Regina Bypass to Pinkie Road, options for managing traffic flow in and around 9th Avenue North are limited. City of Regina (City) Administration, with input from the Ministry of Highways and Infrastructure (MHI) and major land developers, have developed a short and long-term plan for the 9th Avenue North corridor from Courtney Street to Pinkie Road, which will optimize traffic flow and minimize impacts to adjacent landowners. It will also allow access to development, while ensuring that 9th Avenue North can be maintained as an expressway connection to the bypass.

BACKGROUND

The MHI is in the process of constructing a new bypass around Regina. Due to the proximity of the 9th Avenue North interchange and Regina Bypass, the City is not permitted to maintain all traffic movements at the intersection of 9th Avenue North and Pinkie Road, nor to signalize that intersection now or in the future. The MHI has the authority to close all or part of any public highway through *The Highways and Transportation Act, 2007*.

With all movements not permitted at the intersection of 9th Avenue North and Pinkie Road in both the short and long-term, the City's long-term plans for the road network require adjustments to these new conditions.

The City and MHI agreed to cost-share a Value Engineering Study (VE) that would explore different options for managing traffic along the 9th Avenue North corridor. This report provides an overview of the VE process and illustrates the short and long-term plans for the corridor.

DISCUSSION

In the summer of 2017, the City retained the services of ISL Engineering who partnered with eHan Engineering to conduct a series of Value Engineering and Risk Assessment Workshops, as well as providing traffic analysis. In September of 2017, the first workshop was held and participant organizations included the City, MHI, Dream Development, Harvard Development and Forster Projects. The purpose of this workshop was to brainstorm ideas for managing short

and long-term traffic flow on and around the 9th Avenue North corridor, given the constraints presented by the location of the Regina Bypass.

The workshop resulted in the creation of 66 different options for managing traffic in and around the corridor. Through a series of discussions and voting processes, the options were subsequently narrowed to three, which were subjected to more detailed traffic analysis and cost estimating before the second workshop.

A smaller group comprised of all the previously mentioned stakeholders reconvened in December of 2017 to establish the formal criteria to rank each of the options against a series of criteria, such as traffic performance, accessibility and impact to landowners, cost, overall functionality and to create a benefit-cost ratio for each of the options to establish a preferred option.

While a preferred long-term option was identified, additional follow-up items were necessary to ensure that all stakeholder concerns were addressed in the short-term. Specifically, the MHI had indicated that all left-turn movements at the intersection of Pinkie Road would not be permissible in the short-term; however, the west-bound to south-bound left turn movement was deemed to be an important turn movement in the short-term for some stakeholders.

Following the workshop, the City and MHI agreed that a west-bound to south-bound left turn movement onto Pinkie Road from 9th Avenue North could be safely accommodated in the short-term and the MHI have subsequently made plans to include the construction of this left turn lane as part of their current project that would enable that movement, while blocking the unsafe movements that were of concern in the Regina Bypass construction project. This can be found in Appendix A - 9th Avenue Corridor - Short-term Plan.

The long-term plan is shown in Appendix B - 9th Avenue Corridor - Long-term Plan. While the City had intended for Pinkie Road to be an all-turns intersection at 9th Avenue North in both the short and long-term, this is no longer a viable option due to short weaving distances that would pose safety concerns and negatively affect the operation of the Regina Bypass in the long-term.

As illustrated in Appendix B, the long-term plan calls for restricted access to 9th Avenue North from Pinkie Road. In order to manage traffic volumes from the future Coopertown neighbourhood, in the absence of all-turns movements at Pinkie Road, the importance of the future connection north of Fairway Road is elevated.

To manage traffic volumes and maintain 9th Avenue North as an expressway and ultimately a freeway, the long-term plan calls for interchanges at both Courtney Street (consistent with City's previous plan) and at Fairway Road, as well as an off-ramp from the Regina Bypass at roughly the mid-point between 9th Avenue North and Armour Road.

While the long-term plan will be subject to change and refinement closer to implementation, which will be years if not decades away depending on the pace of growth, the short-term plan is imminent and must be in place prior to the opening of the Regina Bypass in 2019.

The work associated with the 9th Avenue North corridor was accelerated to meet timeframes associated with the Regina Bypass Project construction schedule. The City has also been conducting a study related to the function and planning of the Courtney Street and Pinkie Road corridors from 9th Avenue North and Dewdney Avenue and the findings from that study will consider the outcome from the 9th Avenue North Corridor VE and will be presented to City Council separately.

RECOMMENDATION IMPLICATIONS

Financial Implications

Any costs to the City associated with the short-term work will be funded through Servicing Agreement Fees (SAFs). Any financial implications to the City associated with the long-term work will be in accordance with applicable SAF policy in effect at the time of the work. Any costs associated with both the short and long-term solution will be included in ongoing cost-sharing negotiations with MHI for the 9th Avenue North interchange.

Environmental Implications

None with respect to this report.

Policy and/or Strategic Implications

The proposed solution does not directly conflict with policies within *Design Regina: The Official Community Plan Bylaw No. 2013-48* or the Transportation Master Plan; however, the design solution is not consistent with the City's original intent for the Fairway Road/Coopertown Boulevard north leg or the Pinkie Road corridor. The Coopertown Neighbourhood Plan will require a future update to reflect the changes to the 9th Avenue North corridor.

Other Implications

None with respect to this report.

Accessibility Implications

None with respect to this report.

COMMUNICATIONS

A copy of this report is being provided to the stakeholders who have been engaged in previous discussions related to the intersection of 9th Avenue North and Pinkie Road.

A letter will be provided to property owners within 1,000 m of the intersection of 9th Avenue North and Pinkie Road advising them of the short-term changes they can expect at the intersection. Proper signage will be placed at the intersection of 9th Avenue North and Pinkie Road in advance of the changes being made. Residents can learn more about the Regina Bypass and the 9th Avenue North interchange at reginabypass.ca/.

DELEGATED AUTHORITY

The recommendation contained in this report is within the delegated authority of the Public Works & Infrastructure Committee.

Respectfully submitted,

A handwritten signature in black ink, appearing to read 'SBzdel'.

Shauna Bzdel, Director
Planning Department

Report prepared by:
Shanie Leugner, Manager, Business Support

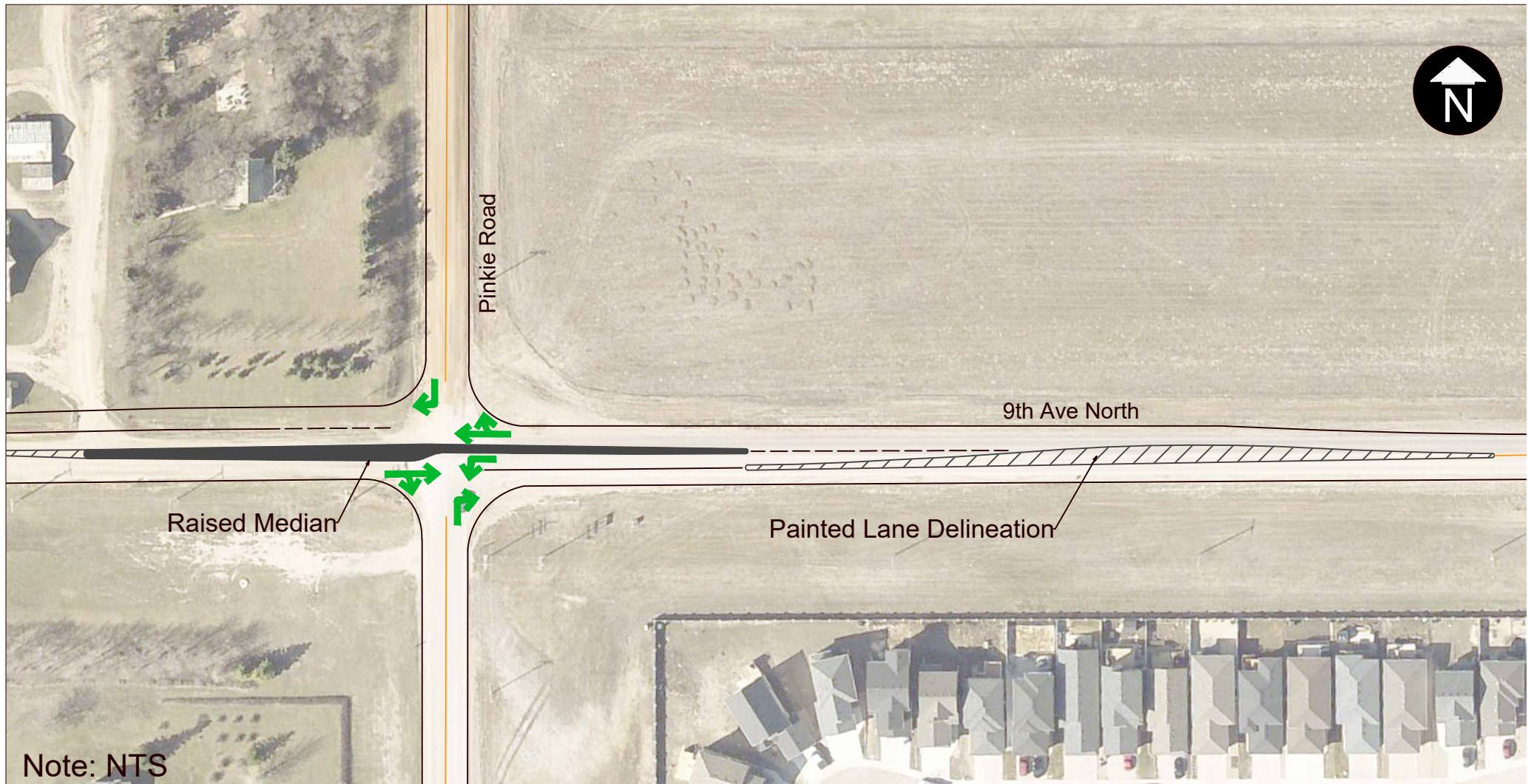
Respectfully submitted,

A handwritten signature in blue ink, appearing to read 'Diana Hawryluk'.

Diana Hawryluk, Executive Director
City Planning and Development

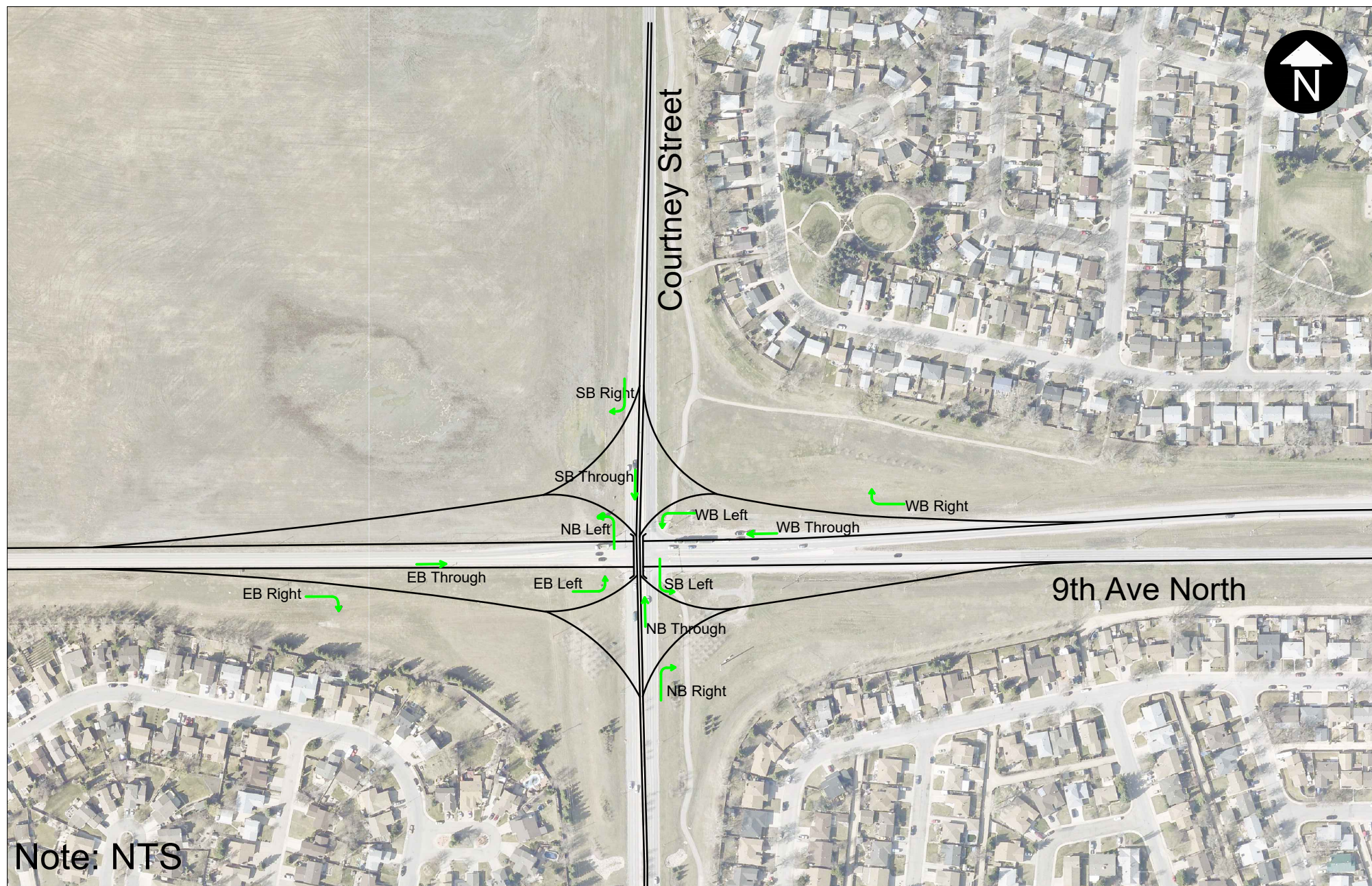
APPENDIX A

9th Avenue North & Pinkie Road - Short-term Plan



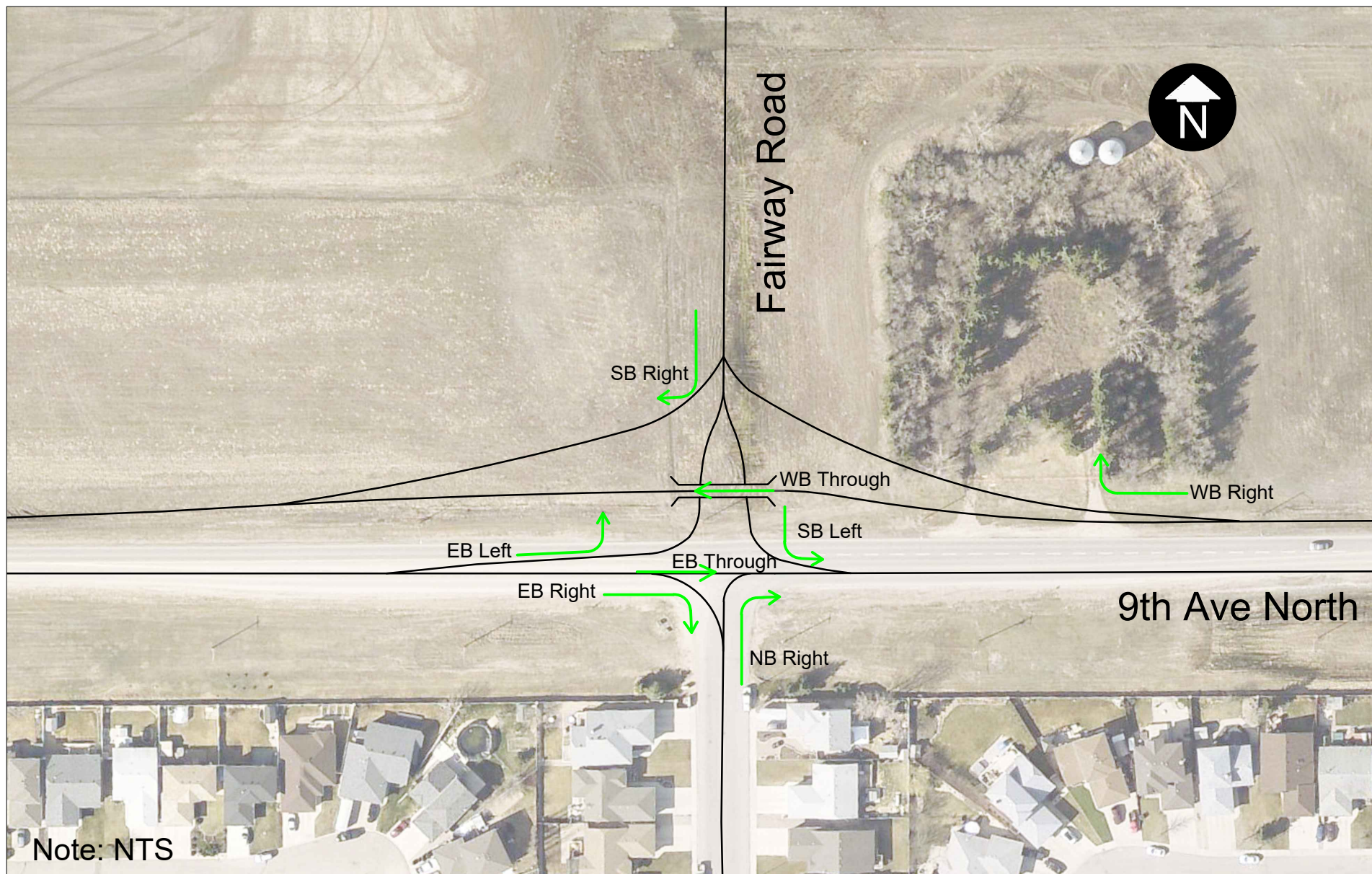


9th Avenue North & Courtney Street - Long-term Plan - Concept Only



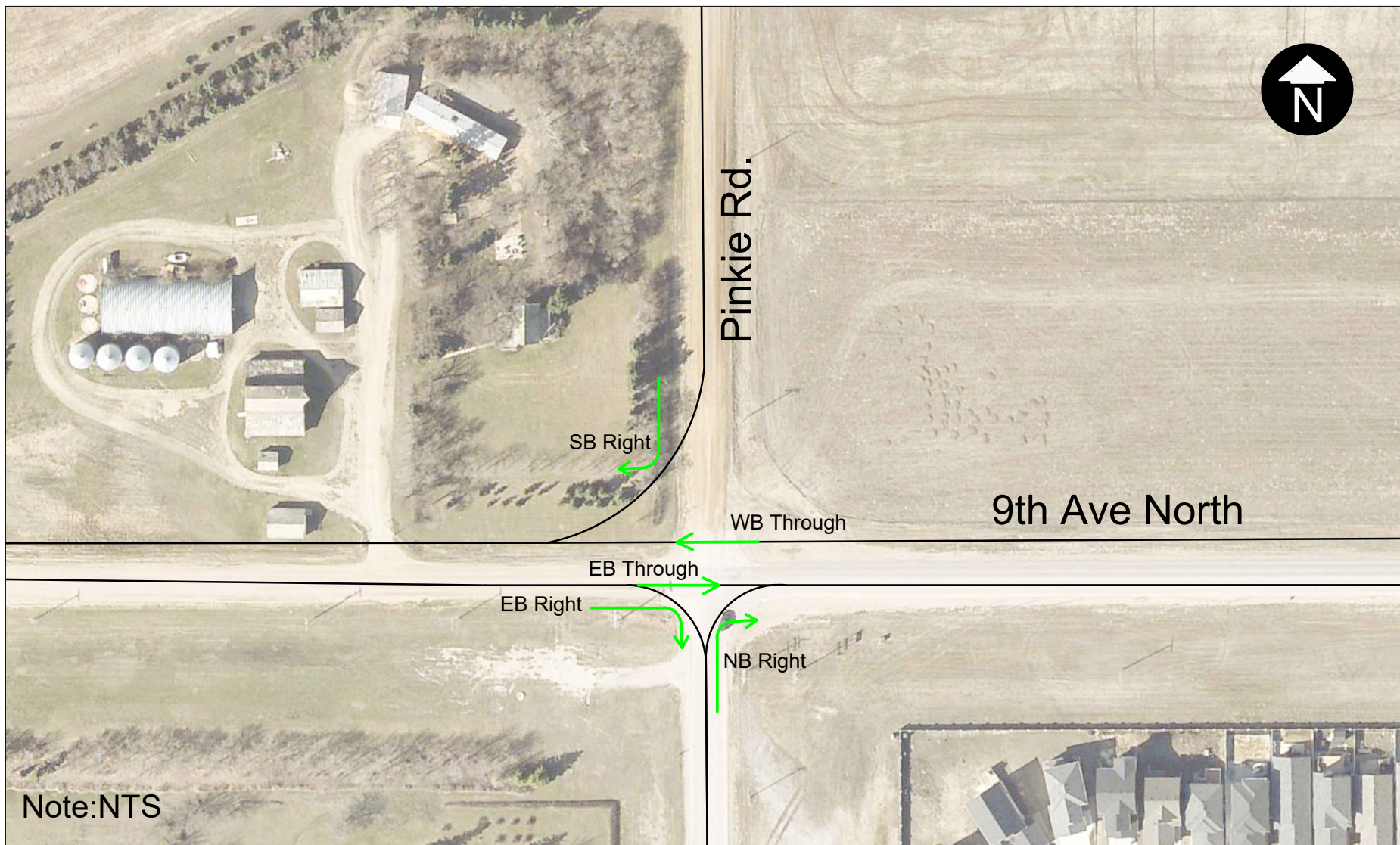


9th Avenue North & Fairway Road - Long-Term Plan - Concept Only





9th Avenue North and Pinkie Road - Long-term Plan - Concept Only



September 6, 2018

To: Members
Public Works and Infrastructure Committee

Re: Snow Routes Pilot Program Update

RECOMMENDATION

1. That the Snow Routes Pilot Program implemented in 2017/18, become part of a regular winter maintenance program.
2. That the snow routes be expanded to include an additional 11km section on the following Arterial and Collector streets, for the 2019/2020 winter season be approved;
 - i. Victoria Avenue (Albert Street to Pasqua Street)
 - ii. Winnipeg Street (College Avenue to Broadway Avenue)
 - iii. Winnipeg Street (Victoria Avenue to Ross Avenue)
 - iv. Broadway Avenue (Broad Street to Park Street)
 - v. 13th Avenue (Toronto Street to Broad Street)
 - vi. 14th Avenue (Toronto Street to Winnipeg Street)
 - vii. 14th Avenue (Albert Street to Halifax Street)
 - viii. 15th Avenue (Winnipeg Street to Elphinstone Street)
 - ix. Toronto Street (Victoria Avenue to College Avenue)
3. That Administration bring updates on snow routes, as part of the Annual Winter Maintenance report.
4. That the City Solicitor be directed to prepare the necessary amendments to *Regina Traffic Bylaw No. 9900* (Bylaw) to authorize the requirements for an expanded Snow Routes Program, as detailed in Appendix A to this report.
5. That \$70,000 of the 2019 Winter Road Maintenance operating budget be used to fund the capital and operating expenses associated with the implementation of an expanded Snow Routes Program.
6. That this report be forwarded to the September 24, 2018 City Council meeting for approval.

CONCLUSION

This report is based on the recommendation of report *CR17-7 Snow Routes Pilot Program* and provides feedback on the Snow Routes Pilot Program, successfully implemented on five km of road network during the 2017/2018 winter season.

Based on benchmark data, the Snow Routes Pilot Program did provide both operational efficiencies and improved traffic flow on streets cleared under the program.

Additionally, based on the positive response of the resident survey conducted after the pilot season, Administration recommends continuing with the current program, while strategically expanding the program to an additional 11 km of arterial and collector roads during the 2019/2020 winter season.

The pilot evaluation found that roadway travel widths after clearing and voluntary compliance with the parking bans were all positive factors in the initial program.

The 2018/2019 winter season will also be used to study the road sections proposed under the expansion plan and prepare for any changes that may be required operationally. Based on the timeframes to install additional signage and the communications required, Administration is recommending that any capital investments (signage and communications) related to expanding the program would be funded through carry forward from the initial pilot and through the winter maintenance operating budget. Work to expand the program would be carried out during Q2 and Q3 of 2019.

BACKGROUND

At the January 30, 2017 meeting of Council report *CR17-7* was presented with the following recommendations:

1. *That City Council authorizes the implementation of a Snow Routes Pilot Program (the “Pilot Program”) on a 5km section on the following Category 1 and 2 streets, beginning in the fall of 2017 and through the 2017/2018 winter season:*
 - i. *Victoria Avenue (Broad Street to Winnipeg Street);*
 - ii. *Winnipeg Street (Victoria Avenue to College Avenue); and*
 - iii. *College Avenue (Winnipeg Street to Abbott Road).*
2. *That City Council approve the enforcement of a parking ban when declared on streets selected for the Pilot Program, as Snow Routes.*
3. *That City Council directs Administration to bring back a report in 2018 that evaluates the effectiveness of the Pilot Program, with future recommendations.*
4. *That City Council instructs the City Solicitor’s office to prepare amendments to The Regina Traffic Bylaw, 1997, No. 9900 (the “Bylaw”) to incorporate the requirements for the Pilot Program as detailed in Appendix C to this report.*
5. *That City Council authorizes \$85,000 of the 2016 Winter Road Maintenance operating budget be used to fund the capital and operating expenses associated with the implementation of the Pilot Program.*

Based on the above approval by City Council, a Snow Routes Pilot Program was launched in the

2017/2018 winter season on five km of roads identified as good candidates during initial research. Benchmarking data was collected during the 2016/2017 season to measure the effectiveness of the initial pilot program.

DISCUSSION

Analysis of the initial season indicates that there are significant operational efficiencies and safer end conditions as follows:

- On an average, it took approximately 20 per cent less time to complete plowing of the snow routes with the parking bans in place.
- The average time taken to complete plowing during the 2017/2018 pilot was 51 minutes.
- The average time taken to complete plowing during the 2016/2017 pre-pilot was 62 minutes.
- There was 35 per cent additional lane width achieved during the 2017/2018 pilot for traffic to travel these sections of road, due to better snow clearing.
- There was 36 per cent reduction achieved during the 2017/2018 pilot in maximum snow ridge height, due to uniform distribution of snow along the route.
- Public perception was positive through the Feedback Survey conducted shortly after the first season; of the 848 residents, more than 70 per cent were in favour of expanding the program.

Key highlights of the data from the pilot and findings from the resident survey can be found in Appendix B.

Administration explored three options with respect to the expansion of the Snow Routes Program. These options are:

Option 1 - Status Quo: Snow Routes on existing 5 km of Pilot locations: (Not Recommended)

This option would retain the current 5 km of roads considered as snow routes, but no further expansion would occur at this time.

Advantages:

- Minimal cost to continue running the Snow Routes Program on the 5 km stretch
- No need to remove existing Snow Routes Signage installed on these sections of roads

Disadvantages:

- Will not fully satisfy the strong support of the residents to have an expanded Snow Routes Program, as indicated by survey findings (2016 and 2018 surveys)
- Limits the program to 5 km which does not address all areas of concern due to parked vehicles during the winter season
- The potential to increase operational efficiencies will not be realized

Option 2: Staged Expansion – Add 11 km to current program during 2019/2020 season: (Recommended Option)

This option was developed based on feedback from the public and internal stakeholders. Data analysis done during the pilot season indicated that the program did deliver measurable improvements. Additional roads were identified based on proximity to the current program area and are trouble spots due to a high volume of on street parked vehicles. This can cause internal stakeholders, such as Winter Maintenance operators, Transit Services, Traffic operations and Emergency Services, issues during the winter months.

Further changes to the *Regina Traffic Bylaw, No. 9900* are required to expand the program, see Appendix A.

Advantages:

- Staged implementation will enable replicating the successful implementation of the program on a 5 km section during 2017/2018 by utilizing the learnings from the pilot. A staged expansion of the program on relatively smaller street sections can be managed more effectively.
- Expansion to highly critical streets as identified by various internal stakeholders, will address trouble spots first, while continuing towards a city-wide Snow Routes Program.
- Supporting areas are well equipped to support the expansion of the program on an additional 11 km to replicate success.
- Roads identified under this option generally have alternate parking locations available in the vicinity. This includes the roads around the hospital area, where Saskatchewan Health Authority provides hospital staff a Park & Ride service that operates to the Regina General Hospital, Monday to Friday from 6 a.m. to 9 p.m. and provides on-site parking Saturday, Sunday and any Statutory Holiday.
- Streets identified under this option are near or are an extension of the street sections already approved under the program. This would promote a better level of awareness about the program amongst residents.
- Due to the high volume of vehicles parked in these areas, the movement of traffic in these areas would be improved during the winter months.
- This option will provide minimal operational challenges for Administration, as the street sections are close together.

Disadvantages:

- This option will still not cover 100 per cent of the street sections in the city with similar challenges during winter, due to on street parking.
- Expansion of the program is dependent on the capacity of the supporting areas like Traffic Engineering, Parking Services and Communications.
- Although alternate parking will be generally available on adjoining streets or blocks for the duration of temporary parking bans, residents may have to park their vehicles away from their regular parking spots. Certain street sections may provide more challenges than others.

- The expanded program may not be the same for all 11 km street sections identified under Option 2. Operational changes will be required to cover certain street sections like hospital routes. Operational changes may include reduced timeframes of parking bans on certain critical streets adjoining the hospital, time of day for plowing operations, as well as an enhanced communication strategy with those affected.

**Option 3 - Cease Snow Route Program:
(Not Recommended)**

This Option considers discontinuing the implementation of a Snow Routes Program in the city. This Option would require removing the permanent Snow Routes signs installed on the 5 km road sections and educating the residents on why the program is being discontinued. This would be despite a successful pilot, encouraging program results and strong initial support from the residents.

Advantages:

- No change in the winter maintenance operation
- No change in the parking services operation
- No communications cost implications
- No additional signage required

Disadvantages:

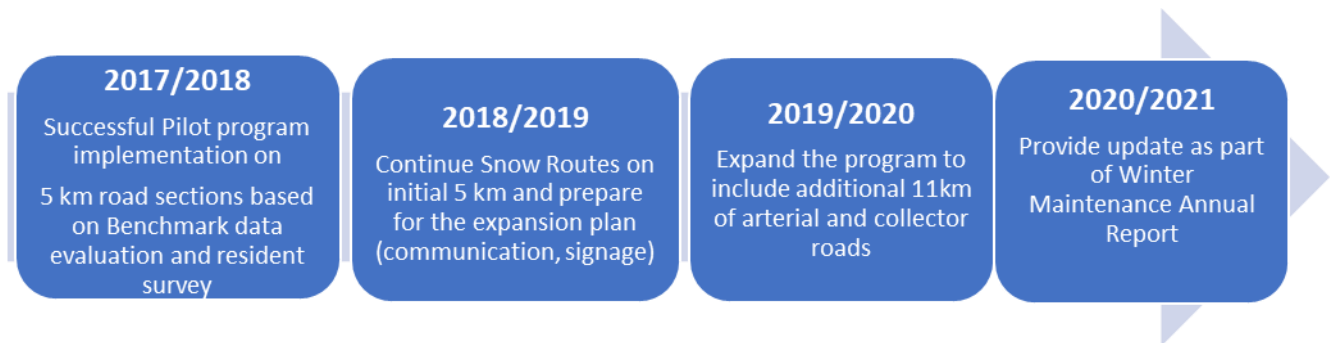
- Will not satisfy residents desire to have a Snow Routes Program
- Increased costs associated with the removal of snow route signage
- There will be additional communication costs to implement a similar program in future
- No efficiencies will be gained for winter maintenance operation during plowing
- Mobility issues will remain during winter, due to parked vehicles on these streets
- Increased chances of property damage on these streets during winter, due to parked vehicles
- Continued traffic flow issues due to reduced lane widths in the winter

Based on the above, Administration is recommending a phased in expansion of snow routes to other City of Regina (City) streets. The change management approach and benchmarks for success used in the pilot, will be used to evaluate and assess an expanded program during the 2020/2021 season. This will help in further optimizing a Snow Route Program for other parts of the city. See Appendices C and D for details.

The proposed implementation for an expanded program for the 2019/2020 winter season, would allow Administration time to install additional signage, provide communications to residents and collaborate with other departments to ensure an effective approach is in place.

Figure 1. Below indicates the proposed timeline for the implementation of an expanded program.

Figure 1: Snow Routes Expanded Program Timeline



RECOMMENDATION IMPLICATIONS

Financial Implications

The implementation costs for the pilot in the 2017/2018 winter season was \$54,000, of the \$85,000 budgeted. Spending for the pilot was broken down to \$36,000 for communications and \$18,000 on signage. The unused funds could be used for the expansion of the program, if approved by Council.

Capital expenditures for implementing an expanded Snow Route Program on 11 km of the road network would require a total of \$70,000, including \$32,000 for signage and \$38,000 for communications. Revenues and expenditures of Parking Services are not included here, as the enforcement costs proved to be negligible and ticketing revenue exceeded the operating costs.

Expanding the program is expected to result in operational efficiencies. Evaluation of the efficiencies gained will be completed after the successful implementation of the expanded program.

Environmental Implications

Expanding the Snow Routes Program will have a positive environmental impact, due to the improved traffic flow, resulting in reduced fuel consumption and exhaust emissions.

Policy and/or Strategic Implications

The Snow Routes Program expansion will assist Winter Maintenance crews in providing safe transportation, better mobility and accessibility on city streets and is in line with *the Design Regina: The Official Community Plan (OCP)* as follows:

Section D3, Transportation, Goal 1-Sustainable Transportation, 5.4. “Establish all-season design and maintenance priorities for roads, sidewalks and pathways to ensure the transportation network provides safe travel, access and mobility, including for the following:

- 5.4.1 Key transit facilities*
- 5.4.2 Key pedestrian and cycling routes*
- 5.4.3 Public buildings and institutions”*

Other Implications

Analysis of the pilot indicates that expansion of the program will result in increased efficiencies of winter maintenance operations, reduced claims due to property damage, improved driving conditions and provide safer roads for residents. Properly cleared streets will help create a more positive image of the City in the eyes of residents, businesses and visitors.

Accessibility Implications

Administration will continue contact with residents with accessibility and parking issues and will monitor Service Regina calls for any concerns related to mobility.

COMMUNICATIONS

Multiple communication channels will be used to ensure that residents are well informed about the expanded program. This will include focused communications for snow routes in the vicinity of the hospital as well as communications regarding the changes to the *Regina Traffic Bylaw, No. 9900*.

DELEGATED AUTHORITY

The recommendations contained in this report require City Council approval.

Respectfully submitted,



Norman Kyle, Director
Roadways & Transportation

Respectfully submitted,



Karen Gasmo, Executive Director
Transportation & Utilities

Report prepared by:
Neeraj Saroj, Acting Manager, Winter District Maintenance

Appendix A
Amendment to the Regina Traffic Bylaw No. 9900

Proposed Amendments Regarding Snow Routes

The amendments to *The Regina Traffic Bylaw No. 9900* will be to add the following provisions:

1. Additional Arterial and Collector Road sections subject to a snow route are:
 - Victoria Avenue (Albert Street to Pasqua Street)
 - Winnipeg Street (College Avenue to Broadway Avenue)
 - Winnipeg Street (Victoria Avenue to Ross Avenue)
 - Broadway Avenue (Broad Street to Park Street)
 - 13th Avenue (Toronto Street to Broad Street)
 - 14th Avenue (Toronto Street to Winnipeg Street)
 - 14th Avenue (Albert Street to Halifax Street)
 - 15th Avenue (Winnipeg Street to Elphinstone Street)
 - Toronto Street (Victoria Avenue to College Avenue)
2. Section 91(4) needs to be amended to allow the City to tow around the corner for violations of temporary street closure (section 64), temporary street permit violations (section 65) or snow routes (section 64.1).

Existing Bylaw Sections regarding Snow Routes

64.1 (1) No person shall park or stop a vehicle or permit a vehicle to be parked or stopped on any street or portion of any street identified as a snow route in Schedule "O" to this Bylaw.

(2) Subsection (1) applies when the City Manager declares snow routes to be in effect.

(3) A declaration announcing snow routes to be in effect shall remain in effect for a period of 24 hours unless sooner terminated or extended by further declaration of the City Manager with such 24 hour period commencing and being effective from the time specified in the declaration.

(4) The City Manager shall inform the general public of the existence of the snow route declaration using whatever means he or she may deem advisable. RESTRICTED USE OF HIGHWAYS 39

(5) All vehicles parked on designated snow routes while a declaration is in effect may be moved, without notice, for such distance as is necessary, or impounded by the City at the expense of the registered owner of the said vehicle." (#2017-3, s. 64.1, 2017)

SCHEDULE “O”

SNOW ROUTES

The following streets or portions of streets are designated as snow routes when a snow route declaration is in effect in accordance with Section 64.1 of this bylaw:

CATEGORY 1 ROADS 1. Victoria Avenue (Broad Street to Winnipeg Street); and 2. College Avenue (Winnipeg Street to Abbott Road).

CATEGORY 2 ROADS 1. Winnipeg Street (Victoria Avenue to College Avenue). (#2017-3, s. 2017)

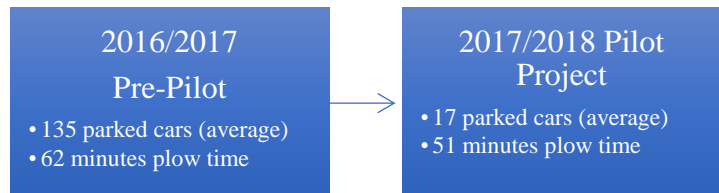
Appendix B: Highlights of the Snow Routes Pilot Program

Overview of the Pilot Program:

- Implemented on 5 km of street sections during 2017/2018.
- Four Snow Routes parking ban declarations:
 - November 5, 2017
 - December 5, 2017
 - March 6, 2018
 - March 24, 2018
- Declaration and temporary parking ban notifications issued at least 8 hours before the parking bans came into effect.
- Extensive communication and education activities were aimed at residents living on, passing through and parking on the designated snow routes.
- Media tactics included social media feeds, brochures, public open houses in the area, media announcements and automated email notifications.
 - Increased communications included one-on-one meetings with businesses, care-homes, school staff, hospital officials and residents with disability signs.
- Benchmark evaluation based on identified criteria completed using information gathered during 2016/2017 pre-Pilot Program and 2017/2018 Pilot Program.
- Survey was carried out after the Pilot Program to gather residents' feedback.

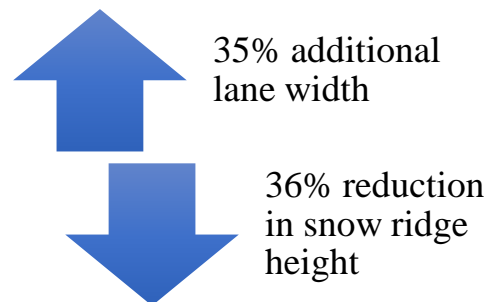
Compliance & Parking Enforcement:

- There was a very high-level compliance during the Pilot Program implementation after each declaration. Almost 90 per cent less cars were parked on designated streets when the temporary parking bans were in effect, compared to the previous year.
- Average number of parked cars during 2017/2018 Pilot Program: 17 cars
- Average number of parked cars during 2016/2017 Pre-Pilot Program: 135 cars
- A total of 53 warning leaflets were issued during the first snow route declaration of the season to create public awareness.
- A total of 52 parking tickets were issued in total during four declared snow route parking bans.



Operational Efficiencies:

- On an average, it took approximately 20 per cent less time to complete plow of the snow route with the parking bans in place.
- Average time taken to complete plow during 2017/2018 Pilot: 51 minutes
- Average time taken to complete plow during 2016/2017 Pre-Pilot: 62 minutes



- There was 35 per cent additional lane width achieved during 2017/2018 Pilot for traffic to travel these sections of road, due to better snow clearing.
- There was 36 per cent reduction achieved during 2017/2018 Pilot in maximum snow ridge height, due to uniform distribution of snow along the route.

Snow Route Pilot Project Feedback Survey:

An online survey was conducted from April 25 to May 7, 2018 (just after the season) to gather firsthand information from residents who live, travel, park or have businesses on the route.

Survey respondents belonged to one of the following categories:

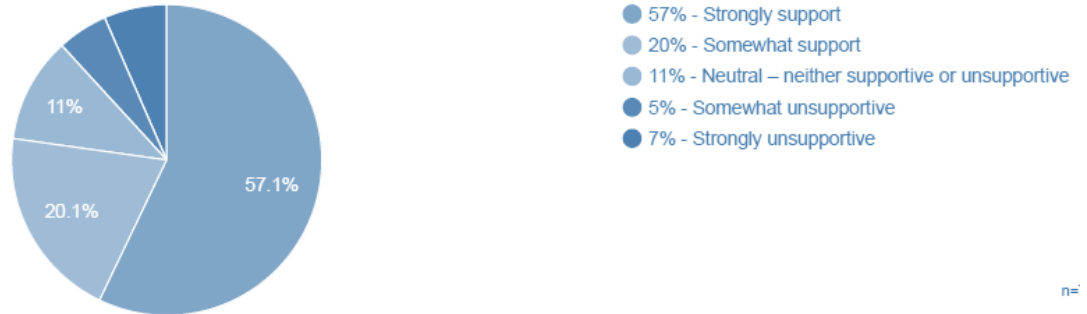
- Regularly travelled along the snow route locations
- Lived on the snow route locations
- Regularly parked on the snow route locations

A total of 848 residents responded to the survey. Approximately 60 per cent agreed that the Pilot met the goals and over 70 per cent supported a Snow Routes Program for other parts of the City's road network. Some residents preferred that snow removal be included in the snow routes plan.

Results from the survey will be used to help inform future policy direction and decisions regarding snow routes in Regina.

Survey Results Summary

Do you support Regina introducing a permanent snow route program on major roads to plow snow more quickly and efficiently?



Snow Route Pilot Survey Summary:

How respondents were affected by snow routes pilot	Total Survey Respondents: 848	Agree- Pilot project met the objectives	Support a permanent snow route program
I live on the Snow Routes	147	64%	79% 56% strongly supportive 23% Somewhat supportive 6% strongly unsupportive
I regularly travel through a snow route	610	58%	77% 57% strongly supportive
I regularly park on a snow route	100	61%	69% 49% strongly supportive 20% somewhat supportive

Site Photos Before and During Snow Routes Pilot:



Communications & Media

What do I have to do when a Snow Route is declared?

When a snow route is declared, that means there is no on-street parking along the route for the 24-hour duration of the ban. Vehicles can be parked in your own driveways, in garages, or on adjacent streets where legally allowed.

The no-parking zones are easily identified by blue signs with a white snowflake. Vehicles left parked on snow routes during a temporary parking ban will be ticketed \$120. This penalty is in line with other municipalities and according to the City's Traffic Bylaw.

If you have a parking permit from the Saskatchewan Abilities Council Parking Program for People with Disabilities, contact us at 306-777-7000.

Other information:

- ❖ **Why were these roads selected?** This snow route was selected based on extensive consultation with Regina residents in 2016. These roads are typically difficult for snow plows to efficiently clear, largely due to on-street parking.
- ❖ **Can my street be a Snow Route?** Once the pilot program has been reviewed and if it proves successful, we'll determine other locations appropriate for the next phase of a snow routes program.
- ❖ **Will these Snow Routes mean my street won't get cleared?** The City of Regina's winter maintenance program is not impacted by the pilot program. Snow clearing depends on the type of road you live on and the amount of snow accumulation.
- ❖ **When will the Snow Route streets be cleared?** The route will be cleared within 24 hours of a snow event when more than five centimetres of snow accumulates. This is consistent with the Winter Maintenance Policy.
- ❖ **Can I park on my street if it's been cleared but the ban is still on?** Crews may not be finished and could return. Parking on the snow route while the 24-hour parking ban is in effect could result in a ticket.
- ❖ **Will you be clearing sidewalks?** Just like all other areas of the community, residents are asked to clear their sidewalks and the frontage of their home as specified in the Winter Maintenance Policy.

Understanding the Snow Route Pilot Project

Whether you live, work, drive or park on the snow route, your feedback is important to us.

Take the Snow Route Survey by May 7.

When is a Snow Route declared?

- ❖ When a snowfall has reached a minimum of five centimetres of accumulated snow.
- ❖ At least eight hours before the parking ban is in effect.
- ❖ Any day of the week.

For example:

Snow Route Declared at 3 p.m. Tuesday	No Parking on Snow Route Starting 8 a.m. Wednesday to 6 a.m. Thursday
---------------------------------------	---

What are Snow Routes?

Snow routes help improve traffic flow after a storm by declaring a 24-hour parking ban along a designated route to snow clearing. With no vehicles in the parking lane, a more thorough snow clearing from curb-to-curb can be achieved. This improves traffic flow along the busiest roadways and helps make winter operations more efficient.

- ❖ Victoria Avenue between Broad Street and Winnipeg Street
- ❖ Winnipeg Street between Victoria Avenue and College Avenue
- ❖ College Avenue between Winnipeg Street and Arcola Avenue

Questions?


Contact Service Regina at 306-777-7000 or visit Regina.ca/snowroutes.

When do I know when a Snow Route is declared?

Snow Routes will be declared by 3 p.m. the day before the parking ban is in effect. Information will be shared on our website, Facebook and Twitter pages, through public service announcements and by email notifications. Sign up for email notifications at Regina.ca/snowroutes.

We strongly encourage neighbourhood residents and businesses to sign up so you know when a snow route is declared. It's the most direct way for us to let you know when a snow route has been declared and the 24-hour parking ban will be in effect.

You are free to park as normal the following morning if there has been no declaration by 3 p.m. the day before, no matter what the weather brings.



City issues dozens of warnings on Regina's first snow route parking ban

Next time drivers could face a \$120 ticket

CBC News · Posted: Nov 05, 2017 11:50 AM CT | Last Updated: November 5, 2017



Stephanie Taylor @_stephaniejane · 5 Nov 2017
This is what the sign looks like BTW. #yqrtraffic



1

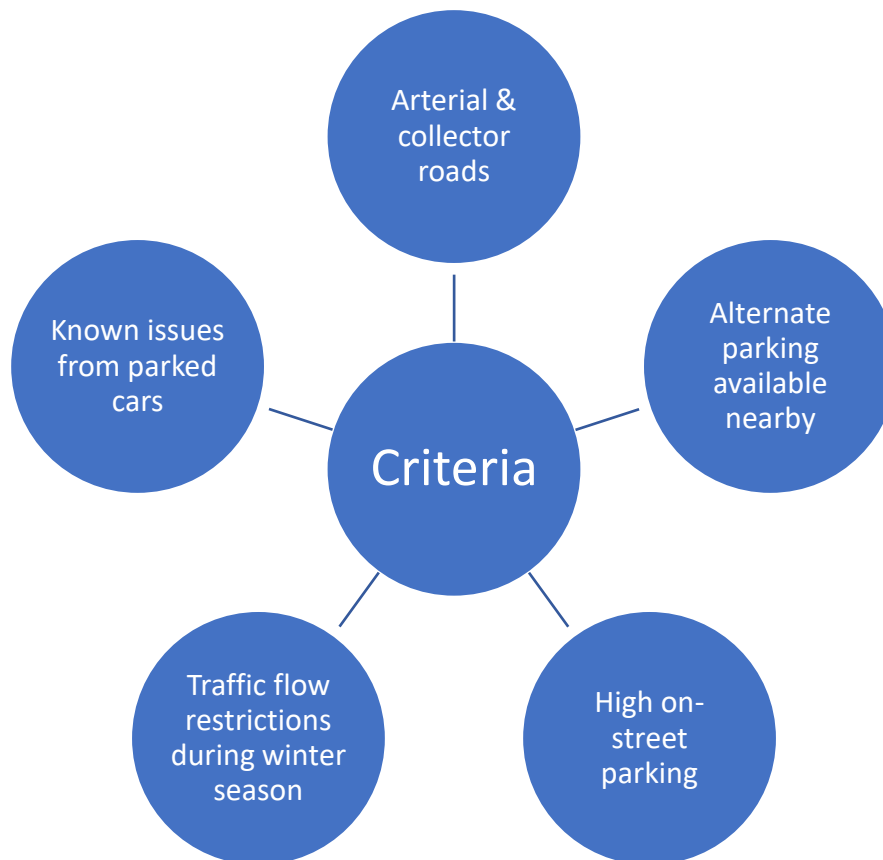
Appendix C:
Snow Routes Pilot (2017/2018) vs. Benchmark Data (2016/2017)

Key Parameters	Benchmark	Pilot
	2016-2017 (average)	2017-2018 (average)
# of Parked Cars during parking ban	135	17 average
# of Parking tickets issued		52 parking tickets issued during season 53 warning leaflets were issued during the first storm
Fines paid within period		\$4,680 for 39 tickets as of May 24, 2018
# of tickets paid voluntarily		39 tickets paid as of April 3, 2018
# of tickets resulting in appeal		4 reviews received total
# of tickets where appeal was successful		1 withdrawn by prosecutor
Time taken to complete the plow on Pilot (average)	62 minutes	51 minutes
End conditions achievement: Min. road width due to parked cars Winnipeg St (SB)	2.2 m	2.97 m
End conditions achievement: Maximum ridge height- with parked cars (Winnipeg Street-worst scenario)	0.64 m	0.41 m average for 3 storms. Not considered the big storm of 6 March, 2018
End conditions achievement: Maximum ridge height (No parked cars)	0.42 m	0.27 m average for 3 storms. Not considered the big storm of March 6, 2018
% of available parking spots in adjoining streets with additional cars from snow routes parked	50% capacity was available after accommodating cars from snow route streets	Over 25% parking capacity was still available after accommodating cars from snow route streets
Number of concerns relating to accessibility issues reported	Nil	Nil
Number of incidents/collisions/near misses reported	Nil	Nil
Service Requests received	Nil	15 Service Requests and 29 calls – General information relating to Snow Routes, survey etc.
# of vehicles parked longer than 24 hours	Nil	Nil

Appendix D
Snow Routes Expansion Plan
Criteria for Selection and Proposed Locations – 2019/2020

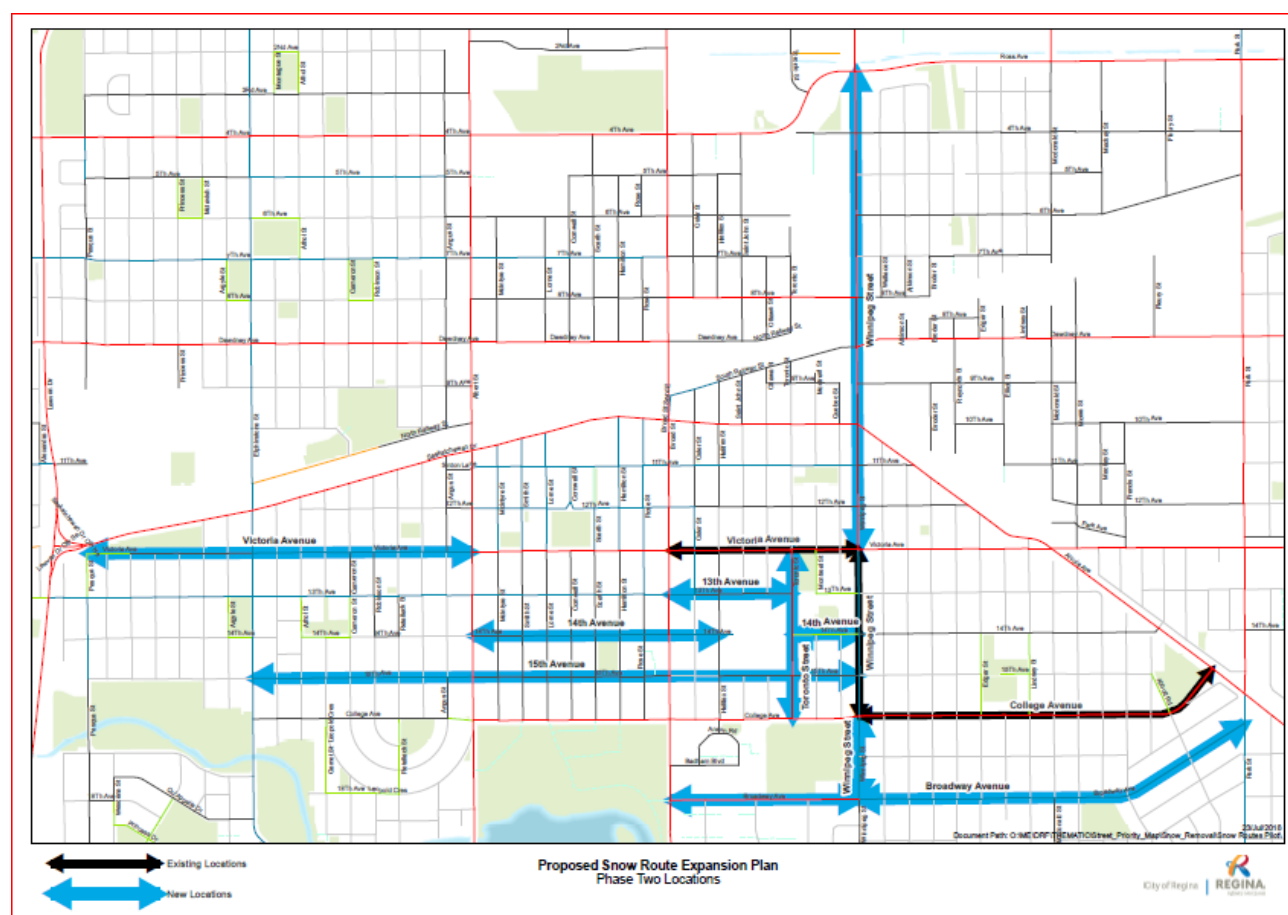
Criteria for 11 km Expansion 2019/2020:

- Arterial and collector roads
- Stakeholders identified street sections with known issues due to parked vehicles
- Street sections known to cause traffic flow restrictions during winter
- Street sections with high on-street parking
- Street sections meeting the above criteria with sufficient alternate parking availability nearby during temporary parking bans



Expansion - Proposed Locations (2019/2020)

Street	From-To
Victoria Avenue	Albert Street to Pasqua Street
Winnipeg Street	College Ave to Broadway Avenue
Winnipeg Street	Victoria Avenue to Ross Avenue
Broadway Avenue	Broad Street to Park Street
15th Avenue	Winnipeg to Elphinstone Street
14th Avenue	Albert Street to Halifax Street
14th Avenue	Toronto Street to Winnipeg Street
13th Avenue	Toronto Street to Broad Street
Toronto Street	Victoria Avenue to College Avenue



Although some road sections in the vicinity of the proposed expansion may meet the criteria laid out for inclusion in the Snow Route expansion plan for 2019/2020, Administration will consider those in the future for any expansion to the program. Roads surrounding the Hospital area are challenging based on the amount of on-street parking. Administration will focus on some of these smaller road sections first during 2019/2020 expansion and try to expand the program in small steps to ensure program success.

***Possible Option for a future Citywide Snow Route Expansion Plan:**

Administration will review the success of Snow Route expansion on 11 km during 2019/2020 winter season, based on the benchmarks identified in Appendix B and C. This will help to inform any further expansion of the program. Previous research has already identified approximately 60 km of arterial and collector street sections that currently allow on-street parking as potential future snow route locations, due to varying levels of similar challenges regarding parked vehicles. This research could form a basis of the future expansion studies.

Expansion does come with challenges around sustainability and will require a careful step by step progression. This includes considerations like internal stakeholder resource capacity, public awareness and readiness for change, capacity of the towing industry, relatively limited experience with managing snow routes and guidelines set under the Winter Maintenance Policy.

Based on feedback from residents, there may also be opportunity to change the program in the future to include snow removal. This would be an enhancement to the current Winter Maintenance Policy and is not recommended at this time, as it is not in line with the current guidelines in the Policy to trigger snow removal activities.

***Further evaluation required**

September 6, 2018

To: Members
Public Works and Infrastructure Committee

Re: Winter Maintenance Summary Report

RECOMMENDATION

That this report be received and filed.

CONCLUSION

The 2017/2018 winter season overall, can be described as average when analyzing environmental data and measurements, but also had two unusual weather events, including freezing rain in January and a major snowfall event in March. The majority of the Winter Maintenance Policy (Policy) objectives were met throughout the winter season. Expenditures are typical and Administration is forecasting to be slightly below budget, even after a budget reduction in 2018, due to improved efficiencies and cost reductions. The budget reductions were a result of improved routing of equipment, less reliance on contracted equipment due to reduced downtime of City of Regina (City) equipment and reductions in sand/salt due to liquid salt trials.

As a result of the unusual storm events, Administration will undertake the following actions:

- Communications for the Sandbox Program will be increased.
- Resources allocated to keep the sandboxes stocked for the public to use.
- Revising our tendering process for contracted services; this will allow us to have more equipment available during storm events.
- Review of how transit routes are prioritized, ensuring priority transit routes are addressed before other streets in the same category.

BACKGROUND

Approved by City Council on December 18, 2006 and implemented in November 2007, the Policy guides operations that effectively supports the health, safety, attractiveness, and economic viability of the city. Reviewed annually, the Policy was created to provide an acceptable and consistent level of service when maintaining the road network and to ensure safe winter driving conditions for the residents of Regina. This includes guidelines and timelines regarding the plowing of streets, sidewalks, and alleys following snow events, and routine maintenance of the road network during the winter months.

A full review of the Policy will commence in 2018 and will be brought back to City Council in late 2019, along with any budget implications for a 2020 implementation of the new Policy.

DISCUSSION

Appendix A of this report provides a detailed summary of the 2017/2018 winter maintenance activities and weather conditions. The following are highlights of that report.

Environmental Conditions:

The winter season is defined as the period from October 1 to April 30.

Regina residents experienced:

- Slightly below average snowfalls
- Average temperatures
- The largest snow event in over five years
- Increased freeze/thaw cycles and slippery conditions, including a freezing rain event in January with unprecedented use of free public sand
- More days with snowfalls of less than 2 cm.

Budget & Expenditures:

The 2017 fiscal year budget was \$9.234 million with expenditures of \$6.936 million. The 2018 budget is \$8.491 million which is \$743,000 less than 2017, due to efficiencies and innovation. These include improved routing of equipment, reduced downtime for equipment and a reduction in dry sand.

Expenditures as of June 30, 2018, are \$5.141 million, which is approximately 2/3 of our overall costs for the annual budget for January to April. These months are when the most snow removal activities occur. The total expenditures for 2018 are forecasted to be \$7.879 million, which is slightly below the budget, based on average conditions expected for October through December.

Policy Objective Achievements:

The community experienced five major snow events requiring plowing operations and winter maintenance activities outlined in the Policy.

Highlights of the achievements included:

- Applied over 14,600 tonnes of sand and salt to mitigate slippery road conditions.
- Applied 2,425 tonnes of sand and salt to City streets, sidewalks, and alleys during the freezing rain event.
- Supplied 349 tonnes of sand to our sandboxes for residents to use on their sidewalks and driveways, because of the freezing rain event.
- Stored and maintained over 316,000 cubic meters of snow at the Snow Storage Site.
- Responded to 3,109 Service Requests with 91 per cent responses within 48 hours.
- Successfully implemented Regina's first Snow Routes Pilot Project.
- Generated \$424,000 in revenue at the Snow Storage Site.

During the 2017/2018 winter season 3,109 Service Requests were received, of which the majority required action - an inspection of the location, scheduling of an activity, providing a response, or calling the resident and discussing the issue.

Most of the calls were related to ice control and the March snow event. Of the 650 residents requesting a call back, we achieved 91 per cent contact within the 48-hour corporate timeline. Administration will continue to work at ensuring timely information is provided regarding winter maintenance activities.

Unusual Events:

Freezing Rain:

The city experienced a freezing rain event on January 9 that created slippery and hazardous conditions for both vehicular and pedestrian traffic. At this time there was very little snow cover, which led to the ice on the sidewalks adhering for an extended period. Crews responded immediately and applied over 2,400 tonnes of sand and salt to the roads, sidewalks, and alleys over an eight day period.

Although the driving conditions on the roads after this event returned to acceptable levels within a few days, the sidewalks in the city became difficult to navigate due to the layer of ice on them. Crews salted and sanded sidewalks that are the City's responsibility to make them safe and promoted the Sandbox Program for residents to address their sidewalks.

The efforts in keeping the roads safe and passable during this event were recognized by the community, receiving 26 Service Bouquets thanking the City for their efforts. The Sandbox Program was also picked up by national media as a unique service the City provides residents.

Going forward, during similar events, Administration will look to increase communications related to the community sandboxes, as well as reviewing options to address these kinds of events through the Policy review.

March Blizzard:

During the first week of March, the community experienced the largest snowfall in over five years. Through a strategic approach, all available resources (15 City graders and all 10 contractor graders, in addition to our sanding/plow trucks) were deployed to clear roads, alleys and sidewalks over several challenging and difficult days. During this period, the City also worked to ensure City services such as transit and waste collection were not negatively impacted.

During this event, all available contractor resources were called upon to assist with snow removal activities. After two days, the contractor resources were allocated strictly to the clearing of residential roads, which continued non-stop until all roads and alleys had been plowed.

The communications approach focused on educating residents about the work being done to keep roads safe and ensure good winter driving conditions. Messages across a variety of platforms such as radio, television and social media, were used to educate and remind residents that roads

are categorized and prioritized so the busiest, most-used roads in the community are plowed before roads less travelled.

Lessons Learned & Continuous Improvement:

As a result of the two unusual events, Administration has learned that we will need to be more prepared. Going forward, Administration will be undertaking the following actions, should they be required:

- Revising our tendering process for contracted services in the winter to have more equipment available in a major event.
- Looking at continuing and expanding the Snow Routes Pilot Program to be able to clear roads quicker and more efficiently.
- Reviewing how Transit routes are prioritized and ensuring they are elevated in relation to other roads in the same prioritization category; this would be to provide service to category 2 and 3 Transit routes in advance of other roads in these categories.
- Increasing communication and resources to the Sandbox Program, should freezing rain events occur.
- Increased use of liquid salts to allow sand to better adhere to the road surface and to improve the time required for roads to become bare pavement.

A review of the Policy is scheduled to begin in 2019, to ensure it is aligned with *Design Regina: The Official Community Plan*, the *Transportation Master Plan* and community needs. This will involve both internal and external stakeholder meetings, public engagement sessions and analysis of both financial and operational impacts. The results from this review will be brought to City Council for discussion and approval in late 2019, for implementation in the 2020/2021 winter season.

RECOMMENDATION IMPLICATIONS

Financial Implications

None with respect to this report.

Environmental Implications

None with respect to this report.

Policy and/or Strategic Implications

Roadways & Transportation will continue to review the Policy, to ensure that it aligns with *Design Regina: The Official Community Plan* and the *Transportation Master Plan*.

Other Implications

None with respect to this report.

Accessibility Implications

None with respect to this report.

COMMUNICATIONS

Since the implementation of the Policy, Winter District Maintenance staff have engaged in stakeholder meetings with both internal and external groups to discuss the challenges the winter season brings and ways to better communicate and mitigate the challenges.

In addition, the annual summary report is sent to a list of interested parties that has evolved over time and both of these processes continue today.

DELEGATED AUTHORITY

As there are no recommendations to change the policy at this time, the Public Works and Infrastructure Committee has delegated authority to receive and file this report.

Respectfully submitted,

A handwritten signature in blue ink, appearing to read 'N. Kyle'.

Norman Kyle, Director
Roadways & Transportation

Respectfully submitted,

A handwritten signature in blue ink, appearing to read 'Karen Gasmo'.

Karen Gasmo, Executive Director
Transportation and Utilities

Report prepared by:
Chris Warren, Manager, Winter Maintenance

ANNUAL WINTER MAINTENANCE SUMMARY

2017/2018





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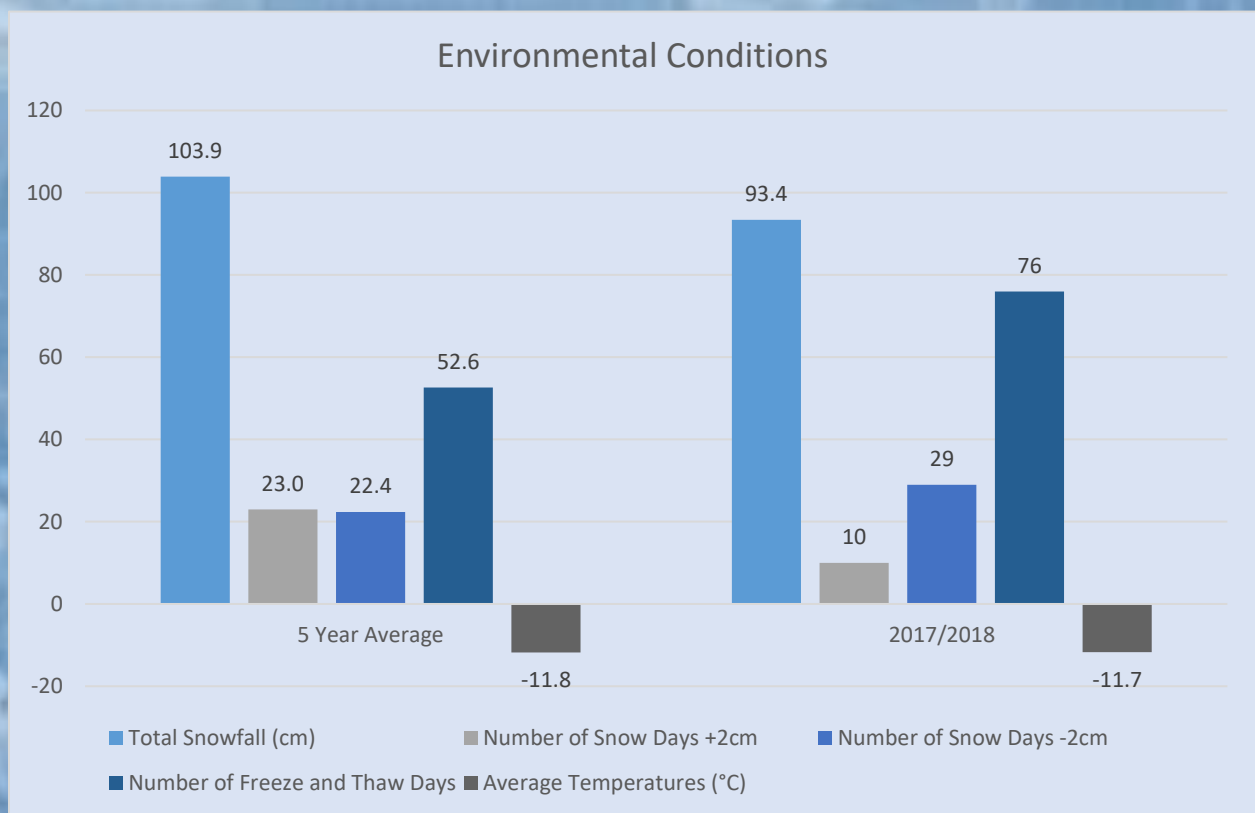
Introduction

Approved by City Council on December 18, 2006 and implemented in November 2007, the Winter Maintenance Policy (Policy) guides operations that effectively supports the health, safety, attractiveness, and economic viability of the city. Reviewed annually, the Policy was created in an effort to provide an acceptable and consistent level of service when maintaining the road network and to ensure safe winter driving conditions for the citizens of Regina. This includes guidelines and timelines regarding the plowing of streets, sidewalks, and alleys following snow events, and routine maintenance of the road network during the winter months.

2017/2018 Accomplishments

- ❄ Applied over 14,600 tonnes of sand and salt to mitigate slippery road conditions
- ❄ Applied 2,425 tonnes of sand and salt to city streets, sidewalks, and alleys during the freezing rain event
- ❄ Supplied 349 tonnes of sand at our Winter Sandboxes for residents to use on their sidewalks and driveways as a result of the freezing rain event
- ❄ Stored and maintained over 316,000 cubic meters of snow at the Snow Storage Site
- ❄ Responded to 3,109 Service Requests with 91 per cent responses within 48 hours
- ❄ Successfully implemented Regina's first Snow Routes Pilot Project
- ❄ Generated \$424,000 in revenue at the Snow Storage Site
- ❄ Average temperatures & below average snowfall during the first half of the season allowed collaboration with other branches resulting in a total cost savings and cost avoidance of \$761,000

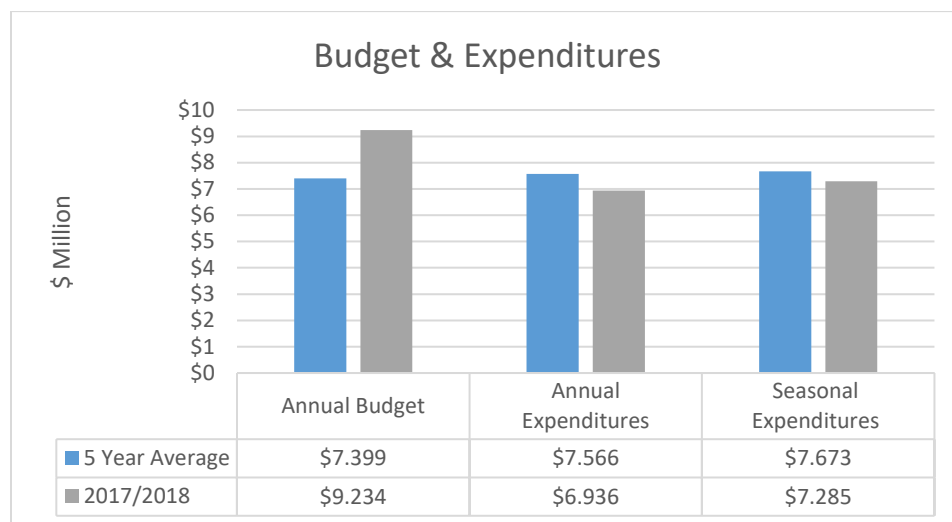
Regina residents experienced below average snowfalls and close to average temperatures, the largest snow event in over five years and increased slippery conditions due to a freezing rain event in January with unprecedented use of free public sand.



Budget & Expenditures

The Winter Maintenance budget is used for the delivery of services to meet the objectives outlined in the Policy. The 2017 budget was \$9.234 million and total expenditures were \$6.936 million, with a surplus of \$2.298 million. As part of the 2017 and 2018 budget process, the Winter Maintenance Branch identified major savings as a result of several years worth of efficiencies, initiatives, and analysis of winter maintenance activities. In total, the branch budget was reduced by \$685,000 because of routing efficiencies for sidewalk and road plowing and a decreased reliance on rental equipment and contractor support. The expenditure reductions are ongoing and will continue to be realized into the future.

The 2018 budget is \$8.491 million, with current expenditures of \$5.141 million as of June 30, 2018. The total expenditures for 2018 are forecasted to be \$7.879 million, based on average conditions expected for October through December. It is anticipated that there will be another surplus of approximately \$612,000 at the end of 2018. This is based on another below average winter and due to cost avoidance from work performed for and funded from other areas.



**Seasonal expenditures represent traditional winter season expenditures between October and April*

Winter Road Maintenance Reserve:

The Winter Road Maintenance Reserve is an operating reserve used to manage annual fluctuations in the winter road maintenance program expenditures that may arise due to unpredictable winter events. Through a reserve review and subsequent Council approval in May 2018, which included analyzing historical expenditures, it was determined that a minimum limit of \$1 million and maximum limit of \$2 million was found to be reasonable to fund any fluctuations in seasonal expenditures. Funds exceeding the \$2 million cap were transferred; \$4.8 million to the Social Development Reserve and \$1.89 million to the General Fund Reserve, for a total of \$5.69 million at the end of 2017.

POLICY OBJECTIVES



All roads are made passable for **EMERGENCY RESPONSE VEHICLES**



PRIORITY 1 ROADS: Normal winter driving conditions and reasonable sidewalk access are provided on key routes through systematic plowing and sanding operations



PRIORITY 2 ROADS: Normal winter driving conditions and reasonable sidewalk access are provided along regional commercial developments and secondary routes through systematic plowing and sanding operations



PRIORITY 3 ROADS: Normal winter driving conditions are provided along tertiary routes through systematic plowing & sanding operations



Safety and travel efficiency are provided through the plowing and removal of windrows from in front of **GUARD RAILS** & off of **BRIDGE DECKS**



ALLEYS are passable for the collection of solid waste collection & access by utility companies & the public



Normal winter driving conditions are maintained with **SNOW REMOVAL** operations



RESIDENTIAL and low volume routes are made passable through **PLOWING** operations

Policy Objective Achievements



1,100 km of roads

Winter Maintenance activities require a great deal of coordination as the City crews cover a lot of distance when clearing snow each winter. There are nearly 1,100 km of roads in our community and winter crews are hard at work during all hours to keep our roads safe.

14,600 tonnes of sand and salt



The community experienced five major snow events requiring major plowing operations and winter maintenance activities outlined in the Policy.



316,000 m³ of snow at the Snow Site

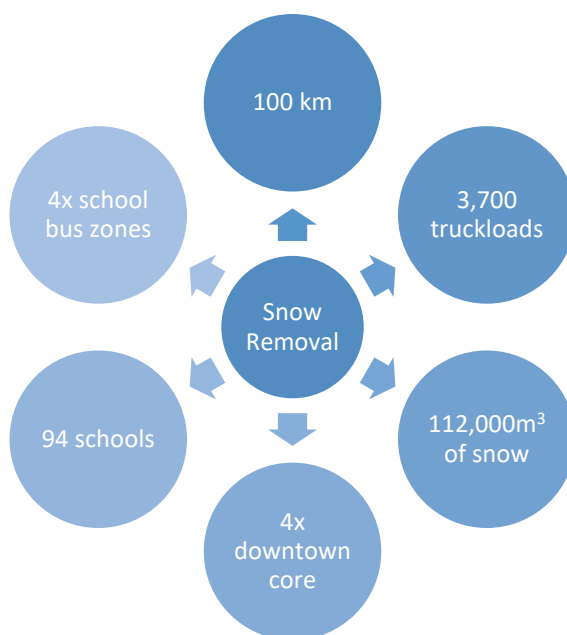
2017-2018 Major Snow Events

Date	Accumulation	Systematic Plow by Category					
		1	2	3	4	5	Alleys
November 4	10 cm over 24 hours	x	x	x	x		
December 4	7 cm over 24 hours	x	x				
February 3	6 cm over 24 hours	x	x				
March 5	35 cm over 48 hours	x	x	x	x	x	x
March 23	10 cm over 8 hours ¹	Cancelled due to melting					

9
Community
Sandboxes

44 fills

369
tonnes of
sand



¹ Due to warm temperatures and melting snow, the Systematic Plow and Routine Maintenance activities were cancelled after 18 hours

Winter Maintenance Modes

When staff move into the Winter Maintenance Branch in November of every year, they are scheduled to provide around the clock service with 20-hour coverage, seven days a week. This helps minimize overtime while improving response time during storms.

When the snow starts falling, roads are prioritized and the busiest roads are cleared first. Factors that contribute to the priority include traffic volumes, traffic speeds, and emergency routes. While the snow is falling, winter crews primarily focus attention on Category 1 and 2 streets and this is called Storm Mode in the Policy. Category 1 roads include our major arterials and high-speed roads such as Lewvan Drive, Ring Road, Albert Street and Broad Street. Category 2 roads include streets like Elphinstone Street, Broadway Avenue and Regina Avenue. We continuously cycle these streets providing ice control and plowing operations for the duration of the snow event. The objective is to keep the major roads passable for the duration of the storm.

Storm Mode means priority clearing of Category 1 & 2 roads like:

- | | |
|------------------|-----------------------|
| ❄️ Lewvan Drive | ❄️ Elphinstone Street |
| ❄️ Ring Road | ❄️ Broadway Avenue |
| ❄️ Albert Street | ❄️ Regina Avenue |
| ❄️ Broad Street | |

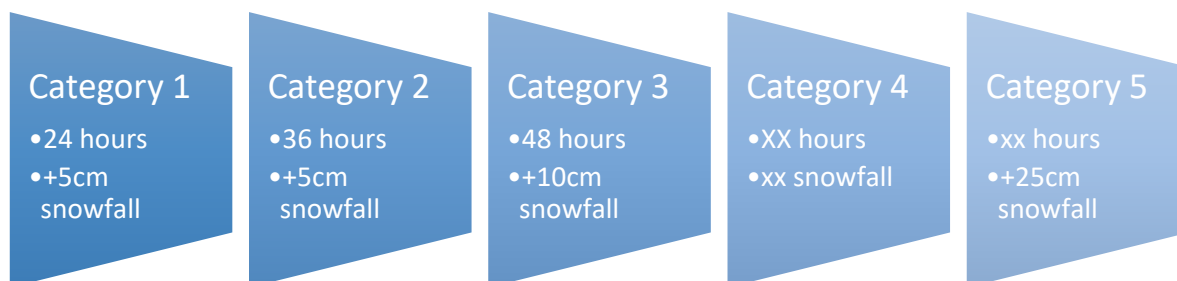
After the snow stops falling, we restart plowing operations to ensure the busiest roads are plowed first, working our way through the road network – Systematic Mode.

Category 1 roads are cleared within 24 hours and Category 2 roads are cleared within 36 hours, provided the community received over 5 cm of snow. These are often completed at the same time as many of these roads intersect so it is operationally efficient to combine them.

As the Category 1 and 2 roads are completed, crews move to Category 3 roads, plowing them within 48 hours if accumulations were 10 cm or greater. These include low volume major collectors like Dalgliesh Drive, Harvard Way and Woodland Grove Drive. It also includes industrial/commercial roads and Transit routes that are not on Category 1 or 2 roads.

Then we move on to Category 4 roads which include streets around school zones, like Maple Leaf Crescent, Coronation Street, Cowan Crescent and other minor collectors. Category 1 through 4 streets usually experience a Systematic Plow about five times in a season.

Category 5 roads are plowed after 25 centimetres of snow, when weather and time permits. These residential roads have the lowest traffic volumes. While we may not plow them as often, we make sure that they are passable for services such as garbage and recycling collection through other maintenance activities such as the Ice Shaving program.



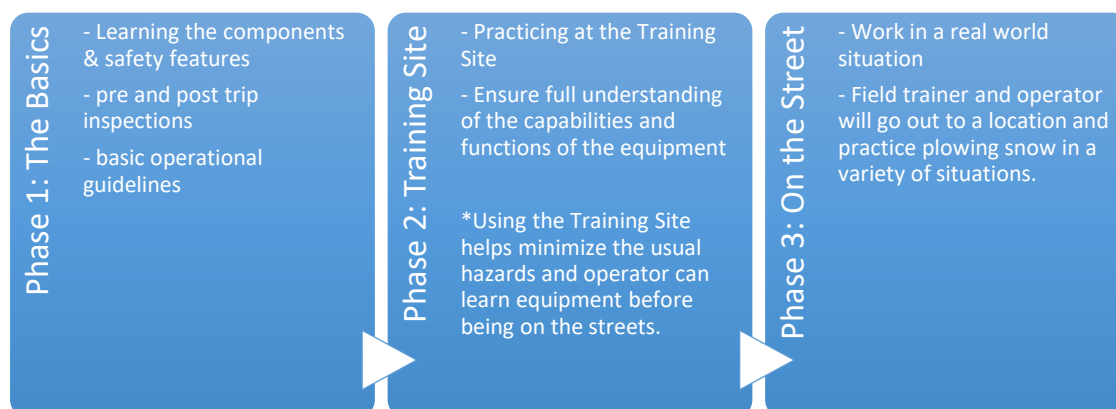
After Systematic Mode is completed, crews go into Routine Maintenance, returning to all roads to ensure that proper plowing operations took place and that the end conditions meet the Policy guidelines or post snow event cleanup including making sure all transit stops have snow ridges cleared to a minimum of 12 meters in length within seven days on Category 1 & 2 roads.

Routine Maintenance includes activities include:

- ❄ Snow Removal on Category 1 and 2 roads
- ❄ Ice control
- ❄ Checking, plowing, and snow removal at:
 - ❄ Schools - school bus unloading zones are free of snow ridges
 - ❄ Transit Routes and Hotspots - parking lanes clear and safe travel widths
 - ❄ Bridge decks and guard rails - for safe travel over and around
- ❄ Plowing and ice control on sidewalks that are City responsibility
- ❄ Snow Storage Site maintenance and operation (24/7)
- ❄ Filling and maintaining sand boxes for public use

Training Program

Winter operations require the use of heavy equipment like motor graders, front end loaders, tandem axle plow trucks, semi-trucks, loader mounted snow blowers and bulldozers. To ensure the safety of our staff and the public, to comply with Occupational Health and Safety legislation, and to deliver quality programming to our residents, all operators go through extensive training. The equipment training program has three phases, done under the supervision of a Field Trainer. This is done regardless of whether or not there is snow to give operators the experience they need before the snow falls.



Extraordinary Events

Every winter brings its own, unique challenges and the 2017-2018 season was no different.

Freezing Rain

Freezing rain events are rare in Regina, but they can happen. On January 9, the community was showered with rain in the afternoon and evening which quickly created icy conditions due to frozen pavement and cold air temperatures. City streets, sidewalks, and alleys became very hazardous and difficult to navigate for both vehicular and pedestrian traffic.

“GOOD JOB!!!!!! I was scared to death thinking about what the roads were going to be like this morning on my commute to work. They were perfect. High five to all involved.”

Service Request - January 10, 2018

“We have gotten absolutely zero negative feedback from staff. Your staffs’ efforts are very much appreciated.”

Dave Hughes, Manager
Solid Waste Collection

Crews responded immediately, initially focusing on applying sand and salt to the main roads, arterials and collectors, as they see the most traffic and city sidewalks that we maintain. Once the main roads like Albert Street and Ring Road were in good driving conditions, we moved to residential roads. From January 11 to 13, we applied sand and salt to over 500 km of the road network. Working with our partners in the Solid Waste Department, we cycled through 298 km of back alleys, coordinating our efforts to ensure Solid Waste and Recycling collection services were maintained. Within three days, all alleys were treated.

In total, Winter Maintenance crews applied 2,425 tonnes of sand and salt to city streets, sidewalks, and alleys during the eight days following the freezing rain event. Our efforts were recognized by the community - the Winter Maintenance Branch received 26 Service Bouquets thanking the City for their efforts.

We will review ice control activities on roads, sidewalks, and alleys as part of the upcoming Policy Review, engaging stakeholders at all levels to receive feedback and provide options on future levels of service that the community desires. In the interim, we will continue to ensure that our community moves safely throughout the winter months whether Policy guidelines apply or not, adapting to any weather conditions that we might encounter.

March Blizzard

In late February, long range forecasts were calling for a large snow event in early March. Snow events of this magnitude do not happen often, – the last +30 cm event was November 2012. However, with careful planning, we were well equipped to carry out the plowing and sanding operations based on the Policy guidelines.

In preparation, we began notifying and confirming availability of off-duty staff, contractors, and our Fleet Services staff of equipment requirements. Collaboration with Transit and Solid Waste was essential to ensure minimal impacts to City services. Work plans were generated, increasing coverage and ability to respond to Service Requests and emergency calls. A Communications strategy was employed to ensure appropriate notifications to the community and media.

When the snow began to fall on March 3, crews were on shift and responded immediately, launching into Storm Mode. Continuing for 48 hours and totaling over 35 cm, the snow kept crews busy as they cycled the arterial and collector roads, high speed roads and perimeter roads. Attention was also paid to known trouble spots including priority roads leading to EVRAZ Place as the Tim Horton's Brier was in full swing.

When the snow stopped falling in the evening of March 5, crews switched into Systematic Mode. Because more than 35 cm had accumulated, all major activities were triggered including plowing arterial and collector roads (Category 1, 2, 3, 4), plowing residential roads (Category 5), plowing grid roads, plowing all alleys, sidewalk plowing of those that are City responsibility, plowing and snow removal on bridge decks and around guard rails, snow removal at all Transit Stops, snow removal at all schools, and snow removal in the Downtown core as well as arterial and collector roads.

"Big shout out to the hard-working City employees that have done a fantastic job in 48 hours to clear so much of our city. We LOVE Regina and are proud of the fantastic work that has been done to make our city moveable. YAAAH!"

Service Request – March 7, 2018

Winter Maintenance crews worked 20 hours per day, seven days a week, utilizing 45 to 70 pieces of equipment over a three-week period, to complete these activities.

In response to this storm and in an effort to continually improve our operations, we are committed to:

- ❄ Undertaking a review of the Plow Lists to ensure transit routes are plowed sooner than other Category 3 and 4 roads that do not contain a transit route.
- ❄ Creating better tools for our supervisory staff to ensure they are assigning the most effective and appropriate plow lists based on the time of day that the snow stops falling and a Systematic Plow begins.
- ❄ Investigate opportunities to attract more interest from our contractor supporting partners to increase access to additional resources during large snow events.

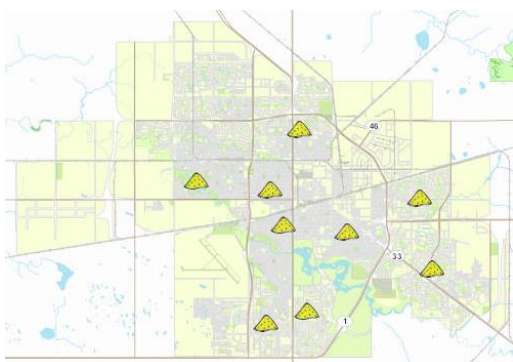
These actions will ensure that resources are available and assigned in the most efficient way to ensure the roads that handle the majority of the traffic in the city will be cleared and drivable in the quickest time possible.

Unique Services

Sandboxes

The City offers free sand at nine locations throughout the community for residents to use to help keep their sidewalks and driveways safe. You can find the yellow bins at community centers with a map located on the City website. Residents are encouraged to bring their own container and fill it up with sand to use on their sidewalks and driveways.

Though the program typically does not receive much attention, the freezing rain we had in January brought it to the forefront. On January 10, a Public Service Announcement was sent out highlighting the activities that winter crews were undertaking to address the slippery conditions and reminding the community of the Sand Box program. The story was picked up by all major



news outlets and became the top story of the community. Within hours, residents flocked to the sandboxes at record levels, using over 85 tonnes of sand in the first 36 hours following the rain. To compare, the yearly average usage was 68 tonnes in the past five years.

As winter crews tried to balance the priorities of public safety – ice control on our streets - with the demand to keep the sandboxes filled, it became evident that additional strategies were required. The sandboxes were being emptied almost as quickly as they were filled. Six of the nine locations have adequate space for additional sand storage so on the evening of January 10, winter crews put large loads of sand directly onto the ground beside the sandboxes which helped satisfy the demands of the public. This continued until January 15 when demand subsided after 349 tonnes of sand was given out.

9 Community Sandboxes

44 fills

369 tonnes of sand

2018/2019 Service Improvements

Based on current process improvements and as a result of the unusual events in 2018 Administration will be undertaking the following improvements to the winter maintenance activities:

- ❄ Revising our tendering process for contracted services in the winter in order to have more equipment available in a major event
- ❄ Looking at continuing and expanding the Snow Routes Program in order to be able to clear roads quicker and more efficiently
- ❄ Reviewing how Transit routes are prioritized and ensuring they are elevated in relation to other roads in the same prioritization category

- ❄ Increasing communication and resources to the Sand Box Program should freezing rain events occur
- ❄ Increased use of liquid salts to allow sand to better adhere to the road surface and to improve the time required for roads to become bare pavement

Communication with the Community

The communications approach for the 2018/19 winter season focused on educating residents about the work being done to keep roads safe and ensure good winter driving conditions. Messages were used to educate and remind residents that roads are categorized and prioritized so the busiest, most-used roads in the community are plowed before roads less travelled.

Several paid communication tools such as radio, television, online advertising and billboards helped inform the public of our winter operations and activities. These tactics featured winter maintenance equipment with a simple, clear message about safe winter conditions. Similar advertising was used on our social media channels, Facebook and Twitter, and shared on Regina.ca.



Increased communications were used following the major snow event and to advise residents of the Residential Snow Plow. Between March 1 and April 30, the traffic to Regina.ca increased to 54,252 page views, with the largest spike in traffic on March 7 with 20,914 views.

We received 52 media requests on winter maintenance and related activities and held seven media scrums to answer questions.

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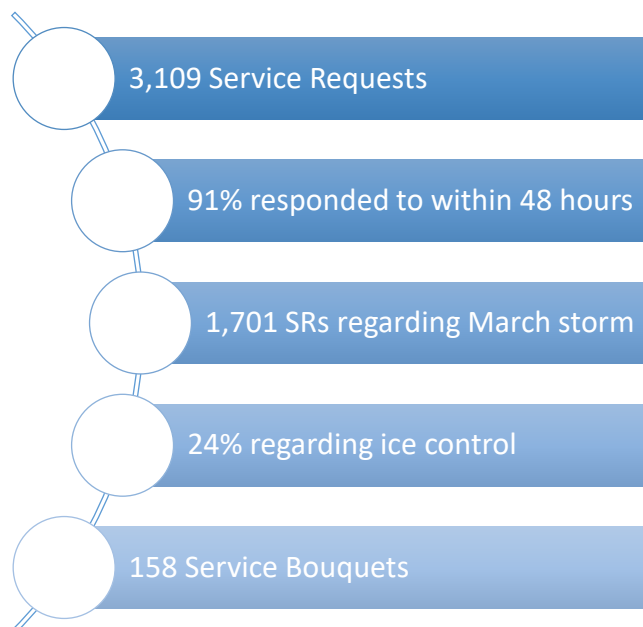
52 media requests &
7 media scrums

Service Requests

Winter District Maintenance handled 3,109 Service Requests. While this number seems high, it is a major reduction compared to the peak of 10,315 Service Requests in 2012 and the five-year average of 3,970 per season. Consistent application of Policy guidelines, success in meeting targets, and ongoing communication strategies on our levels of service have contributed to this decline. The majority of the Service Requests require action - an inspection of the location, scheduling of an activity, providing a response, or calling the customer and discussing the issue. 650 customers requested a call back; we achieved 91 per cent contact within the 48 hour corporate timeline.

Thank you @CityofRegina for your hard work getting the snow moved. It was a treat to see some pavement again this afternoon. We take so much for granted.

The March snow storm generated 1,701 or 55 per cent of all Service Requests and focussed primarily on street plowing, snow ridges, and blocked driveways. Most concerns were addressed by explaining the operations and what residents can expect during storm response. Blocked driveways and snow ridges on sidewalks were also brought to our attention via Service Regina and addressed in a timely manner; this justifies the importance of the enhanced resource allocation and inspection process to identify when major concerns exist.



Service Requests received outside of the storm focused on ice control. This is partially due to the January rain but also because of the above average number of freeze and thaw cycles. Temperatures reached both above and below zero on 76 days throughout the winter. This creates frost, black ice and slippery conditions.

Success in Collaboration

We investigate and explore innovative solutions on an ongoing basis to reduce the cost of delivering policy objectives, maximize resources, assist other departments when there is capacity and reduce spending on contracted services, when they are not required. There are also many partnerships and collaborative efforts between our many stakeholder groups, both internal and external, that aid in the delivery of our services. We meet annually with various groups to discuss the challenges that winter brings and how the Policy can help, ways to enhance communication to discuss issues, and confirm working relationships that benefit both parties involved:

Internal Stakeholders	External Stakeholders
<ul style="list-style-type: none">•Bylaw Enforcement•Parking Services•Parks Maintenance•Financial Services•Financial Operations•Fleet Services•Service Regina•Traffic Engineering•Transit Services•Solid Waste•Development Engineering•Facilities Building Services•Communications•Water & Sewer Construction•Service Regina•Landfill Operations•Asphalt Production & Materials Engineering	<ul style="list-style-type: none">•Bike Regina•Regina Public School Division•Regina Catholic School Division•Regina Downtown Business Improvement District•RM of Sherwood•Regina Bypass•Ministry of Highways

Supporting Internal Branches

Staffing numbers are based on the minimum number of employees required to fulfill the guidelines in the Policy throughout an average winter season. Because every winter is different, there are challenges in ensuring operations have consistent and meaningful activities at all times. To balance staffing needs operationally, we have forged several partnerships throughout the corporation showcasing the mutual benefits. Continuing for several seasons, we provided trucking and hauling services for Water & Sewer Construction, Landfill Operations and Asphalt Production & Materials Engineering that would normally be performed by an external contractor. This created a cost avoidance to the Winter Maintenance budget of over \$178,000 and an additional costs savings of \$583,000²³ in performing the work in favour of contracted services.

² Based on actual Winter Maintenance cost vs. 3-year average Contractor rates per tonne (AP&ME)

³ Based on actual Winter Maintenance cost vs. 2018 Contractor rate for same amount of hourly work performed (Landfill & WS Construction)

Crews also addressed potholes and sunken utility cuts that become hazardous throughout the season contributing to a cost avoidance of more than \$309,000 to the Winter Maintenance budget as these activities are funded by Asphalt Services budgets.

Sweeping and Alleys

There has been substantial collaboration between the Sweeping & Alley Services branch over the years, historically in clearing snow from back alleys and grid roads, and more recently in spring sweeping activities as weather and conditions permit. When temperatures reach above freezing and snow starts to melt, the 24/7 shift scheduling and Equipment Training program provides an excellent platform for our Boulevard and Arterial Sweeping programs which are typically done at night when traffic is at its lightest. Having Winter Maintenance staff execute allows efficient delivery of this program.



Parks Maintenance

Snow clearing on sidewalks is similar to the work done by Parks Maintenance on the pathway systems in City parks. Staff meet regularly to discuss synergies, this season crews assisted in clearing the pathway through Rochdale Park; the large snowfall event in March proved difficult to clear with Parks Maintenance equipment. Reciprocally, Parks Maintenance provided support in helping Winter Maintenance crews clear Transit Stops after the large snow event, allowing us to complete the work faster. We provided trucks and Parks Maintenance provided the operators and tractor loader, clearing all Transit stops of snow in the Northeast District while we worked in the other areas of the community.

Solid Waste

Winter Maintenance and Solid Waste staff discuss the challenges of garbage collection in the winter months on several occasions throughout the year. Every fall we update maps and records with the most current collection schedules to ensure snow clearing activities do not interfere or are inhibited by carts placed on the street or in the alley. During the March snow storm, we worked closely with Solid Waste staff scheduling plowing operations based on collection activities ensuring services were maintained, including residential plowing.

Transit Services

Maintaining transit routes and Paratransit Service is a high priority during the winter months, particularly when there is a big storm. We have worked with Transit Services to enhance clearing at transit stops that see a high number of users that are accessibility challenged, called Transit

Hotspots. Beginning in 2014, crews ensure transit stops, transit lanes, and curb face at pickup and drop off points are free and clear of snow. The locations are reviewed annually and the program has grown from enhanced maintenance activities on 6.4 km of the transit route network to 9.7 km. During the 2012-2013 season, Paratransit Services identified that there were several instances where services were reduced because of road conditions. By increasing communications between the two areas, we have overcome this barrier and can report that on an annual basis that Paratransit drivers have experienced limited to no issues over the past five years.

Bylaw Services

Winter staff meet in the off-season to discuss a wide range of issues including illegal dumping of snow, the Clean Property Bylaw investigation process, and commercial sidewalk snow clearing. In previous years, Bylaw Services contracted sidewalk clearing adjacent to commercial properties when the property owner was not clearing snow within 48 hours of a snow event. This past winter, our internal crews worked with Bylaw to take on this work, clearing two locations that were not compliant. This not only created a cost-avoidance but also ensured consistent and adequate snow clearing.



Regina School Boards

Winter staff meets annually with representatives from Regina Public School Division and the Regina Catholic School Division, representing the 94 schools in our community. Regular discussions include issues raised from principals and parents, locations where school yards can be used for snow storage, school contact information and the notification process, optimum times to perform maintenance activities around schools to maximize safety and processes to report issues. This partnership has proven to be very successful in reducing the number of issues the schools face, with the most recent example including testimonials from both school boards commending winter staff for the work performed and Policy compliance during the major snow event in March.

Emergency Services

One of the mandates of the Policy is to ensure continuity of emergency services such as Fire and Protective Services, Regina Police Services, and Regina EMS during a snow event. From November to April, there are staff and equipment working in all areas of the city so the ability to respond to an emergency can be done quickly. We are also in direct communication with Operational Services Dispatch, which is a 24/7 operation and can respond at a moment's notice to ensure the safe passage of all emergency vehicles throughout the city. During an emergency situation and when a road is blocked or impassable, Fire, Police, and EMS call Operational Services. A Winter Maintenance Supervisor is immediately notified and crews dispatched to address the concern.

Looking Forward

With a commitment to continuous improvement, we are excited to embark on initiatives that will help improve winter maintenance services for future seasons. The following are enhancements currently being worked on or identified to be brought forward in future winter maintenance recommendations.

Snow Routes Project

Report *PWI17-1* and subsequent approval in *CR17-7* recommended the implementation of a Snow Routes Pilot Project on a 5 km section of roads during 2017-2018 winter season. The Pilot Project analysis demonstrated that crews plowed the snow 20 per cent faster, snow ridges were more consistent, road widths and travel lanes were less impacted and that those who park on the snow route were aware and moved their vehicles when a snow route was declared. The pilot was also welcomed by the community as shown in a survey of 848 residents; more than 70 per cent of respondents support expanding the Snow Route Program.



We will be requesting an expansion of the pilot, adding an additional 11 km to the Snow Route Project. We will recommend a staged approach, continuing with criteria that made Phase 1 successful. Due to the timing of the budget process and the typical winter season, Phase 2 would be implemented in the 2019-2020 season with capital costs related to signage installation and communication efforts taking place in the

summer of 2019. Phase 1 will continue through the upcoming season to maintain the consistency, education, and momentum of the successes achieved during the Pilot Project.

Use of Liquid Salt in Ice Control

Historically, we have used dry sand and salt to mitigate slippery conditions. This method is only effective on calm days with little wind, lower traffic volumes and when the temperature is -10 degrees Celsius or warmer. With daily average lows range from -10 to -20 degrees Celsius throughout the winter months, this makes the current system ineffective for much of the season.

Liquid salt trials were conducted over the last few winter seasons. Statistical analysis has shown that the depth of snowpack on the road surface is reduced by 79 per cent and the pavement surface condition improved by 33 per cent when pre-wetting the dry sand with liquid salt. Good driving conditions are achieved quicker and the amount of sand and salt required is reduced. Magnesium chloride, used during the trials, is far less corrosive than dry salt (sodium chloride) currently used in our Ice Control Program, and thus reducing the negative impact on our infrastructure and to the environment.

Because the trial was successful, we will be expanding the program to approximately 30 per cent of the road network next season, with the intentions of expanding it city wide in 2019-2020 should the positive benefits continue. While this change requires a significant amount of training, long-term benefits will be realized through a phased and methodical approach to implementation. We will continue to educate the public and answer any questions they may have as the program expands.

Policy Review

In order to better align winter activities with the Official Community Plan and Transportation Master Plan, a review of the Winter Maintenance Policy is scheduled to begin in 2018. This review will reflect the community needs that have evolved since the Policy was approved in 2007. Through internal and external stakeholder meetings and public engagement sessions, we will gather feedback and community input. This will be used to form the basis of potential options for winter maintenance, with financial and operational analysis providing guidance to any changes that may be proposed.

The results of the review will then be brought to City Council for discussion and approval in late 2019 with budget implications and new Policy implementation for 2020.

October 11, 2018

To: Members
Public Works and Infrastructure Committee

Re: Water Master Plan

RECOMMENDATION

1. That City Council approve the Water Master Plan (WMP) and authorize the use of the WMP as a guide for future water-related decisions and actions.
2. That Administration provide a progress report regarding implementation of the WMP to the Public Works and Infrastructure Committee in 2021.
3. That this report be forwarded to the October 29, 2018 meeting of City Council for approval.

CONCLUSION

This report provides an overview of the WMP and outlines the goals of the water service. The WMP can be found in Appendix A to this report.

The WMP adheres to the Financial Principles of *Design Regina: The Official Community Plan Bylaw No. 2013-48* (OCP) related to the benefits model by ensuring that the costs of the water service are paid through user fees by customers who directly benefit from the service.

Investments in utility services are made on the basis of providing the greatest benefits to stakeholders within four investment drivers:

- 1) Maintaining Levels of Service (LOS)
- 2) New Regulations and Improved Environmental Protection
- 3) Enhancing LOS
- 4) Growth

The WMP groups its 11 goals within seven service categories, including:

- 1) Reliable Service
- 2) Regulatory Compliance
- 3) Environmental Stewardship
- 4) Service Delivery Support
- 5) Customer Service
- 6) Servicing Development
- 7) Financial Sustainability

The WMP, through implementation, will provide a water service that will maintain or improve LOS, reduce risk and vulnerabilities, and accommodate growth. The WMP is not a commitment for future investment, but will help inform decisions made by Administration and Council, especially during rate reviews, annual business planning and budget processes.

BACKGROUND

Clean and safe water is essential to the health and well-being of the community. The City of Regina (City) is committed to providing potable water to customers and planning for a sustainable water service that supports growth and addresses challenges related to climate change, environmental conditions, deteriorating infrastructure and funding constraints. The WMP is an overall assessment of Regina's water service and system.

The City defines a master plan as a long-term plan of up to 25 years that describes citywide outcomes for a service or group of services and should have a strong link to the OCP. The WMP describes the growth and renewal plans for infrastructure that support water service delivery to maintain or improve LOS while minimizing risk. It considers the regulatory, social, economic and environmental outcomes expected of the water service in evaluating problems and opportunities and proposing investment in the water system. It is not a commitment for future investment but will help inform decisions made by Administration and Council, especially during rate reviews, annual business planning and budget processes.

The WMP is a comprehensive water service planning document to guide the way the City plans, constructs, operates and maintains the water system based on an understanding of current conditions and future demands.

The City plays a key role in achieving the OCP goals by delivering water service to more than 220,000 customers in and around Regina through a diverse system of assets. Assets that support this service delivery include:

- Buffalo Pound Lake (provincial asset)
- Buffalo Pound Water Treatment Plant (BPWTP; managed by BPWTP Corporation)
- Five water storage reservoirs
- Three water pump stations
- More than 1,700 km of water pipes and building service connections
- More than 5700 hydrants
- Nearly 73,000 water meters
- Eight groundwater wells

The City provides water service as a public utility service in accordance with *Section 17 of The Cities Act*. The City established the Water and Sewer Utility (the Utility) to fund capital and operating requirements that support delivery of water, wastewater and stormwater services to Regina residents. *Section 22.4 of The Cities Regulations* requires Council to adopt a capital investment strategy that includes the method used for determining capital plans respecting the waterworks. The capital requirements (investment strategy) are determined based on studies and

assessments, including the WMP, that take into account the infrastructure needs of the Utility required to deliver water service and meet the service goals.

DISCUSSION

The WMP adheres to the Financial Principles of the OCP related to the benefits model by ensuring that the costs of the water service are paid through user fees by customers who directly benefit from the service.

The WMP is primarily made up of the following sections:

- Current Reality
- Future Vision
- Implementation Plan

Current Reality

The water service is vital to the health and well-being of residents, as well as for irrigation, commercial and industrial use. The current state of system assets (pipes, pumps, etc.) has been described in terms of the LOS they provide and risks at both the strategic and asset level. It has been found that the service is generally meeting LOS, but still has room to improve. Further analyses, planning, monitoring and ongoing commitment can allow for a robust water system that meets the needs of customers.

The Utility plans for current and future requirements over a 25-year horizon using an investment planning approach to define the right level of investment to deliver sustainable services while maintaining long-term financial viability. Investments in Utility services are made on the basis of providing the greatest benefits to stakeholders within four investment drivers as follows:

- 1) **Maintaining LOS** – Reduce risk to maintain current LOS to customers. This takes a risk-based approach to asset failure and considers the life cycle of assets. (e.g. replacing a small diameter watermain to reduce watermain breaks).
- 2) **New Regulations and Improved Environmental Protection** – Increased demand to comply with new regulatory requirements or higher level of environmental protection.
This considers whether the project is intended to deliver improved environmental stewardship in terms of sustainable reductions on day to day environmental impacts in terms of air, land, water, waste etc. (e.g. adding a chlorine booster station to treat well water during water shortage events).
- 3) **Enhancing LOS** – Increased demand due to a permanent improvement in the LOS to customers. This considers the delivery of sustained and tangible improvement to the LOS, improving resiliency, or improving staff working environment. (e.g. adding additional water wells to improve resiliency during water shortage events).
- 4) **Growth** – Increased demand due to increased population. This considers increasing capacity to accommodate projected growth and future demands (e.g. Eastern Pressure

solution to add an additional pump station, reservoir and pipes to support new growth areas).

Currently, the majority of investments are directed towards maintaining LOS, with relatively smaller investments going towards improving environmental protection, enhancing LOS and supporting growth. In 2018, of the \$25 million capital funding invested in the Water Service, \$21.5 million went towards maintaining LOS. This demonstrates that commitments to reduce risk and move towards a reliable service that meets current regulatory, safety and service objectives is paramount.

Future Vision for Water Service

The City aims to provide utility services to the community that are sustainable. The WMP sets out the actions and 25-year capital upgrade plan to meet LOS that reflect regulatory, operational and economic outcomes, reduce risk and accommodate growth to achieve the vision of the OCP.

The Water Service Categories, as described below, along with the Guiding Principles, reflect the vision for Regina's water service delivery and system.

Goals

Water service goals are set out in seven service categories that reflect the regulatory, social, economic and environmental for sustainable water service delivery. Each category includes an example of an action that supports the goals of that category. A detailed action plan is provided in the WMP.

- **Reliable Service** aims to provide ongoing reliable service of a suitable quality and capacity.

Goal 1: Provide water at adequate pressure and in sufficient quality and quantity to satisfy the requirements for domestic and commercial use and for fire protection.

Goal 2: Ensure water will be available with only minimal local disruptions for system maintenance and rare large-scale disruptions due to unforeseen catastrophe.

A specific action to achieve these goals is to increase investment in water infrastructure renewal. This includes more condition assessment of large diameter watermains and more small diameter watermains being replaced or rehabilitated.

- **Regulatory Compliance** serves to protect customer interests by meeting or exceeding our regulatory obligations.

Goal 3: Provide water that meets Provincial water quality standards and objectives.

A specific example to achieve this goal will be the implementation of chlorine stations for emergency well water usage.

- **Environmental Stewardship** is about acting in the best interest of our customers and the environment.

Goal 4: Enhance water efficiency.

Goal 5: Support environmental conservation and sustainable water management.

A specific example to achieve these goals will be a water audit to quantify non-revenue water and determine actions to improve water efficiency.

- **Service Delivery Support** focuses on providing a prompt response to customer service appointments while minimizing the length of any service disruptions.

Goal 6: Be responsive to service requests.

Goal 7: Minimize length of service disruption.

A specific example to achieve these goals will be to review our operational procedure and reporting process for service disruptions to demonstrate responsiveness to interruptions and enable comparison to other similar Cities.

- **Customer Service** fosters communication to customer inquiries and collecting on utility billings in an efficient, accurate and timely manner.

Goal 8: Be responsive to customer inquiries and needs.

Goal 9: Produce and collect on utility billings in an efficient, accurate and timely manner.

A specific example to achieve these goals will be to evaluate and implement the Water Meter replacement project, which includes evaluating the benefits of implementing Advanced Metering Infrastructure.

- **Servicing Development** focuses on providing access to service when and where it is needed.

Goal 10: Accommodate growth and redevelopment within planning policy by providing water service.

A specific example to achieve this goals will be the implementation of the Eastern Pressure Solution Project, which will include a new pump station, reservoir and large diameter pipes.

- **Financial Sustainability** aims to recover the full cost of service delivery.

Goal 11: Ensure water service is financially sustainable.

A specific example to achieve this goal will be to continue the annual review and update of the Utility capital investment plan and process, including improvements from other

action items, to reflect better information or changing conditions and ensure the full costs of water service are identified and considered.

Each goal has a rationale and a number of identified policies and actions that will assist the Administration in tracking, measuring and achieving the outlined goals. The attached WMP outlines in detail each rationale, policy and action. The Service Categories identified for the water service align with the direction of the OCP, support the Community Priorities and move toward sustainable water service delivery. Collectively, the Service Categories and associated LOS, along with the cost of managing water assets to deliver service, enable the assessment of the sustainability of Regina's water service.

Implementation Plan

The WMP goals are intended to be realized over the next 25 years through staged implementation of the policies and actions outlined in the WMP. Several factors will influence the implementation of planned actions and capital investments, including:

- Changing operating conditions
- Financial capacity
- Pace of growth

The water system exists to deliver water service to customers. Initiatives that support maintaining current LOS include ongoing operating and infrastructure renewal work. Initiatives that address future water demand include system infrastructure upgrades to support growth, new regulatory requirements, greater environmental protection and improved LOS.

Most operational activities will be maintained at current levels in the short term but may be refined as a result of continuous improvement efforts. The attached WMP document provides the full proposed five-year water capital plan.

The WMP sets out the goals and capital investment needed to meet LOS that reflect regulatory, operational and economic outcomes, reduce risk and accommodate growth to achieve the vision of the OCP. Financing scenarios with a mix of rate increases and debt were evaluated with the Utility Model to assess financial sustainability in line with the WMP goals and principles. Financial analysis of the proposed 25-year water capital plan using the Utility Model indicates that low to moderate rate increases along with some debt issuance will be needed to fund the plan. In general, operating expenditures are expected to increase, primarily due to new infrastructure added to the system.

RECOMMENDATION IMPLICATIONS

Financial Implications

The budget requirements from the WMP are included in the long-term 25-year Utility model and will be reflected in future budget requests. The five-year capital plan is also included in the attached WMP for review.

Environmental Implications

There are no direct environmental implications with this report.

Policy and/or Strategic Implications

The WMP sets out the long-term plans and strategies for providing water service and contributes strongly to the following OCP Policy Goals:

- *Section B: Financial Policies: Goal 1 – Financial Principles: Use a consistent approach to funding the operation of the City of Regina.*

1.1 Allocate the cost of delivering programs and services based on the following principals, which shall be referred to as the benefits model:

1.1.2 Where the benefits of a program or service are directly attributable to specific beneficiaries, the costs are to be paid through user fees or other similar charges.

- *Section B: Financial Policies: Goal 2 – Sustainable Services and Amenities: Ensure that City of Regina services and amenities are financially sustainable.*

1.3 Optimize the use of existing services/amenities:

1.3.1 Establish an asset management framework and program;

1.3.2 Provide affordable and cost-effective services and amenities in accordance with available financial resources and capabilities; and

1.3.3 Require that new development meets City standards for infrastructure servicing and require the development proponent to provide any upgrades necessary as a result of the new development.

1.4 Develop infrastructure in accordance with the phasing and financing policies adopted in Section E, Goal 5 of this Bylaw and Map 1b – Phasing of New Neighbourhoods and New Mixed-Use Neighbourhoods.

1.5 Provide infrastructure that meets expected growth and service levels, in accordance with financial resources and capabilities.

- *Section B: Financial Policies: Goal 3 - Financial Planning: Ensure the sustainability of the City by understanding and planning for the full cost of capital investments, programs and services in advance of development approval and capital procurement.*

1.6 Make decisions on capital investment based on an understanding of the strategic priorities of the City and overall fiscal limitations.

1.7 Align capital development plans with the policies of this Plan:

1.7.1 Coordinate capital plans with phasing of growth and development in accordance with the phasing and financing policies adopted in Section E, Goal 5

of this Bylaw and Map 1b – Phasing New Neighbourhoods and New Mixed-Use Neighbourhoods;

1.7.2 Update capital plans annually to account for changes in the timing and location of development;

1.7.3 Identify and evaluate each capital project in terms of the following, including but not limited to:

- Costs;*
- Timing and phasing in accordance with the phasing and financing policies adopted in Section E, Goal 5 of this Bylaw and Map 1b – Phasing of New Neighbourhoods and New Mixed-Use Neighbourhoods;*
- Funding sources;*
- Growth-related components;*
- Required financing and debt servicing costs;*
- Long-term costs, including operations, maintenance and asset rehabilitation costs;*
- Capacity to deliver; and*
- Alternative service delivery and procurement options.*

1.7.4 Identify a range of applicable funding sources over the lifecycle of an asset.

1.8 Consider the following prioritization in developing capital investment plans:

1.8.1 Support INTENSIFICATION AREAS;

1.8.2 Completing BUILT OR APPROVED NEIGHBOURHOODS; and

1.8.3 Developing NEW NEIGHBOURHOODS.

- *Section C: Growth Plan: Goal 2 – Efficient Servicing: Maximize the efficient use of existing and new infrastructure.*

1.4 Make use of residual capacity of infrastructure in existing urban areas.

2.6 Phase and stage development in accordance with the phasing and financing policies adopted in Section E, Goal 5 of this Bylaw and Map 1b – Phasing of New Neighbourhoods and New Mixed-Use Neighbourhoods.

- *Section D2: Environment: Goal 3 – Water Protection: Maintain the integrity of Regina's aquifers, surface and groundwater resources.*

4.8 Develop strategies to protect the quality and quantity of surface and ground water resources from contamination and impacts.

4.9 Work with stakeholders to establish an AQUIFIER management framework that protects AQUIFIER water quality.

4.11 Work with the province and other stakeholders to develop and update an inventory and assessment of the status of surface water and watersheds.

4.12 Implement an integrated watershed planning approach to deal effectively with relationships between land use, water quality management, and water supplies.

4.13 Work with stakeholders to protect the City of Regina's primary and secondary water sources to ensure they are not compromised by new development or other impacts.

- *Section D4: Infrastructure: Goal 1 – Safe and Efficient Infrastructure: Meet regulatory requirement and industry best practices for design, construction and operation of infrastructure.*

6.1 Design, construct and operate infrastructure to comply with relevant legislative and regulatory requirements.

6.2 Ensure new and reconstructed infrastructure follows industry best practices and overall City standards for design and construction.

- *Section D4: Infrastructure: Goal 2 – Asset Management and Service Levels: Ensure infrastructure decisions result in long-term sustainability.*

6.3 Prepare and implement an asset management strategy for infrastructure to:

6.3.1 Guide City planning and operations;

6.3.2 Establish a service framework and LOS for existing and new assets; and

6.3.3 Focus resources for managing and investing in infrastructure.

6.4 Adopt a continuous improvement framework to address the current infrastructure gap and ensure that future requirements for infrastructure are aligned with the priorities, goals and policies of this Plan.

6.5 Determine requirements to upgrade and finance existing infrastructure to service new developments at defined service levels.

- *Section D4: Infrastructure: Goal 3 – Planned Infrastructure for Growth: The infrastructure needed for growth will be planned from a long-term perspective.*

6.6 Develop infrastructure plans that will:

6.6.1 Address both short- and long-term growth requirements;

6.6.2 Manage the impacts of new development on system-wide services;

6.6.3 Optimize use of existing infrastructure to minimize financial and environmental impacts of growth; and

6.6.4 Align the approval process for capital funding with requests for ongoing operating funding.

6.8 Assess infrastructure requirements prior to reconstruction to ensure that the design accommodates future growth, where feasible.

- *Section D4: Infrastructure: Goal 4 – Conservation and Environment: Design infrastructure that conserves resources and minimizes impacts on the environment.*

6.10 Monitor the demand for City Water and develop environmental conversation strategies.

Other Implications

None with respect to this report.

Accessibility Implications

None with respect to this report.

COMMUNICATIONS

Water Security Agency (WSA), the provincial water regulator, was consulted and engaged in the development of the WMP and the review of the recommended plan. The Regina and Region Homebuilders' Association (RRHBA) was also engaged through a presentation of the WMP process and recommended capital plan.

DELEGATED AUTHORITY

The recommendations contained in this report require City Council approval.

Respectfully submitted,

A handwritten signature in blue ink, appearing to be 'Pat Wilson', with a long horizontal stroke extending to the right.

Pat Wilson, Director
Water Works

Respectfully submitted,

A handwritten signature in blue ink, appearing to be 'Karen Gasmo', with a stylized, cursive script.

Karen Gasmo, Executive Director
Transportation & Utilities

Report prepared by:
Water and Sewer Engineering



Water

Master Plan

City of Regina



REGINA
Infinite Horizons

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Executive Summary

In 2013, City Council approved the *Design Regina: The Official Community Plan Bylaw No. 2013-48* (OCP), providing high-level policy direction to guide growth and change in the community. The Water Master Plan (WMP) is a comprehensive Water service planning document designed to support the OCP Community Priorities of “achieve long term financial viability”, “promote conservation, stewardship and environmental sustainability” and “foster economic prosperity”. The WMP sets out the long-term plans and strategies for providing water service and delivers more detailed direction on nine OCP Policy Goals related to Financial Policy, Growth Plan, Environment Policy and Infrastructure Policy outlined in Sections B1, B2, B3, C2, D2, and D4 of the OCP.

Clean and safe water is essential to the health and well-being of the community. The City of Regina (City) is committed to providing potable water to customers and planning for a sustainable water service and system. The goals of Regina’s Water and Sewer Utility (Utility) are set out in seven Service Categories that collectively reflect the regulatory, social, economic and environmental outcomes for water, wastewater and drainage service delivery. The goals and actions of the WMP are structured around these Service Categories and based on the guiding principles used as part of a consistent approach for all Utility services and assets, along with the concept of integrated water resource planning.

The Service Categories provide a holistic view of the water service provided to Utility customers. Along with the associated Level of Service (LOS) and cost of delivering service, they enable the assessment of the sustainability of Regina’s water service. The WMP identifies 11 goals and 64 planned actions to achieve the outcomes for Regina’s water service delivery. The Service Categories identified for the water service align with the direction of the OCP, support the Community Priorities and move toward sustainable water service delivery.

The WMP sets out the actions and a 25-year capital upgrade plan to maintain or improve LOS, reduce risk and vulnerabilities and accommodate growth that contribute significantly to achieving the vision of the OCP.

The WMP will guide the way the organization plans, constructs, operates and maintains the system for the delivery of water service to customers now and in the future; however, it is not a commitment for future investment. This policy direction will

help inform decisions made by Council as part of the defined budget process and over the course of their ongoing deliberations. Investments will be reviewed each year through the City's annual budget process and only when Council adopts the budget will investments be approved.

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City of Regina Policy

Title	Water Master Plan
Policy Tracking #	2018-3-TU
Version	Draft for Public Works and Infrastructure Committee
Link to the Official Community Plan	<p>This master plan provides further policy direction on the following Official Community Plan Goals:</p> <ul style="list-style-type: none"> • Financial Principles (B1) <ul style="list-style-type: none"> ○ Use a consistent approach to funding the operation of the City of Regina. • Sustainable Services and Amenities (B2) <ul style="list-style-type: none"> ○ Ensure that City of Regina services and amenities are financially sustainable. • Financial Planning (B3) <ul style="list-style-type: none"> ○ Ensure the sustainability of the City by understanding and planning for the full cost of capital investments, programs and services in advance of development approval and capital procurement. • Water Protection (D2 3) <ul style="list-style-type: none"> ○ Maintain the integrity of Regina's aquifers, surface and groundwater resources. • Efficient Servicing (C2) <ul style="list-style-type: none"> ○ Maximize the efficient use of existing and new infrastructure. • Safe and Efficient Infrastructure (D4 1) <ul style="list-style-type: none"> ○ Meet regulatory requirements and industry best practices for design, construction and operation of infrastructure. • Asset Management and Service Levels (D4 2) <ul style="list-style-type: none"> ○ Ensure infrastructure decisions result in long-term sustainability. • Planned Infrastructure for Growth (D4 3) <ul style="list-style-type: none"> ○ The infrastructure needed for growth will be planned from a long-term perspective. • Conservation and Environment (D4 4) <ul style="list-style-type: none"> ○ Design infrastructure that conserves resources and minimizes impacts on the environment.

Service Level Definition	<p>This master plan provides further policy direction on the following City of Regina services:</p> <ul style="list-style-type: none"> • Potable Water
Policy Owner	Director of Water Works
Next Scheduled Review	The Water Master Plan is scheduled for review every five years.

Introduction

Purpose

Clean and safe water is essential to the health and well-being of the community. The City is committed to providing potable water to customers and planning for a sustainable water service that supports growth and addresses challenges related to climate change, environmental conditions, aging and deteriorating infrastructure and funding constraints. The Water Master Plan (WMP) is an overall assessment of Regina's water service and system.

The City defines a master plan as a long-term plan of up to 25 years that describes city-wide outcomes for a service or group of services with a strong link to the *Design Regina: The Official Community Plan Bylaw No. 2013-48* (OCP). The WMP describes the growth and renewal plans for infrastructure that support water service delivery to maintain or improve Level of Service (LOS) while minimizing risk. It considers the regulatory, social, economic and environmental outcomes expected of the water service in evaluating problems and opportunities and proposing investment in the system. It is not a commitment for future investment, but will help inform decisions made by the Administration and Council, especially during rate reviews and annual business plan and budget processes.



Scope

The WMP is a comprehensive water service planning document to guide the way the City plans, constructs, operates and maintains the system based on an understanding of current conditions and future demands. The WMP sets out the long-term plans and strategies for providing water service and contributes strongly to the following OCP Policy Goals:

OCP Financial Policies

Goal 1 – Financial Principles

Use a consistent approach to funding the operation of the City of Regina.

Goal 2 – Sustainable Services and Amenities

Ensure that City of Regina services and amenities are financially sustainable.

Goal 3 – Financial Planning

Ensure the sustainability of the city by understanding and planning for the full cost of capital investments, programs and services in advance of development approval and capital procurement.

OCP Growth Plan

Goal 2 – Efficient Servicing

Maximize the efficient use of existing and new infrastructure.

OCP Environment

Goal 3 – Water Protection

Maintain the integrity of Regina's aquifers, surface and groundwater resources.

OCP Infrastructure

Goal 1 – Safe and Efficient Infrastructure

Meet regulatory requirement and industry best practices for design, construction and operation of infrastructure.

Goal 2 – Asset Management and Service Levels

Ensure infrastructure decisions result in long-term sustainability.

Goal 3 – Planned Infrastructure for Growth

The infrastructure needed for growth will be planned from a long-term perspective.

Goal 4 – Conservation and Environment

Design infrastructure that conserves resources and minimizes impact on the environment.

The City plays a key role in achieving these OCP goals by delivering water service to more than 220,000 customers in and around Regina through a diverse system of assets. Assets that support this service delivery include:

- Buffalo Pound Lake (provincial asset)
- Buffalo Pound Water Treatment Plant (BPWTP; jointly owned with the City of Moose Jaw)
- five storage reservoirs
- three pump stations
- more than 1,700 km of pipes and building service connections
- more than 5,700 hydrants
- nearly 73,000 water meters
- eight groundwater wells

Process and Engagement

Water Security Agency (WSA), the provincial water regulator, was consulted and engaged in the development of the WMP and the review of the recommended plan. The Regina and Region Homebuilders' Association was also engaged through a presentation of the WMP process and recommended plan.

Role of the Municipality

The City provides water service as a public utility service in accordance with Section 17 of *The Cities Act*. The City established the Water & Sewer Utility (the Utility) to fund capital and operating requirements that support delivery of water, wastewater and stormwater services to Regina residents. Section 22.4 of *The Cities Regulations* requires Council to adopt a capital investment strategy that includes the method used for determining capital plans respecting the waterworks. The capital requirements (investment strategy) are determined based on studies and assessments, including the WMP, using an asset management approach that takes into account the infrastructure needs of the Utility to deliver water service and meet the service goals.

Guiding Principles

The WMP adheres to the Financial Principles of OCP related to the benefits model by ensuring that the costs of the water service are paid through user fees by customers who directly benefit from the service.

The WMP also incorporated the following Guiding Principles that have been used for several years as part of a consistent approach for all Utility services. They should continue to be integrated into all water service planning and operations.

Regulatory Compliant - The WMP recognizes the City's first commitment is to comply with legislation, regulatory and statutory requirements.

Customer-Focused and Risk-Based - Decisions about water service delivery will be informed by understanding current performance (LOS) and the associated cost of managing assets and maintaining LOS. The WMP will consider the risks involved with meeting LOS objectives, using root cause analysis and proactive management strategies where beneficial.

System-Focused and Whole Life Perspective - Service delivery must be assessed system-wide by the WMP. The WMP will consider the 'big picture' of service delivery, including the impact of managing the system throughout all stages of the asset life cycle.

Innovative and Forward-Looking & Sustainable - The WMP will foster an innovative approach to delivering LOS objectives so they may be met in an effective and sustainable way. Due regard will be given for the long-term stewardship of assets, including resilience to climate change and environmental change, so the water service will be delivered in a sustainable manner.

Needs-Driven and Robust, Repeatable & Defensible Decision Making - Utility rate recommendations will be informed by the City's asset management approach, including LOS and capital investment plan from the WMP. Decisions and actions resulting from the WMP will incorporate a formal, consistent and repeatable approach.

Current Reality

Regina is located within the natural environment in ways unique among larger Canadian cities. Regina receives its source water from Buffalo Pound Lake, located 56 kilometers away. The source water comes from rainfall and snowmelt from the Rocky Mountains, through the South Saskatchewan River and eventually diverted to Buffalo Pound Lake. Both the distance of source water and its dependence on natural processes (e.g. rainfall) present challenges to water service delivery. The water treatment, transmission to the city, storage and distribution to users encompasses the Water service.



Water is treated near the Buffalo Pound Lake by the Buffalo Pound Water Treatment Plant (BPWTP). As of 2016, the BPWTP became a non-profit corporation legally known as the Buffalo Pound Water Treatment Corporation. The City of Regina and the City of Moose Jaw jointly own the plant, with Regina owning 73 per cent and Moose Jaw owning 27 per cent. The Buffalo Pound Board of Directors governs the plant on behalf of both cities. Using the revised evaluation criteria, the BPWTP

generally meets current demand except during some very high peak demand periods in summer. However, assuming no additional demand management strategies to manage peak water use are implemented, the City anticipates water supply needs will surpass the plant capacity by 2025 leading to upgrade of the BPWTP.

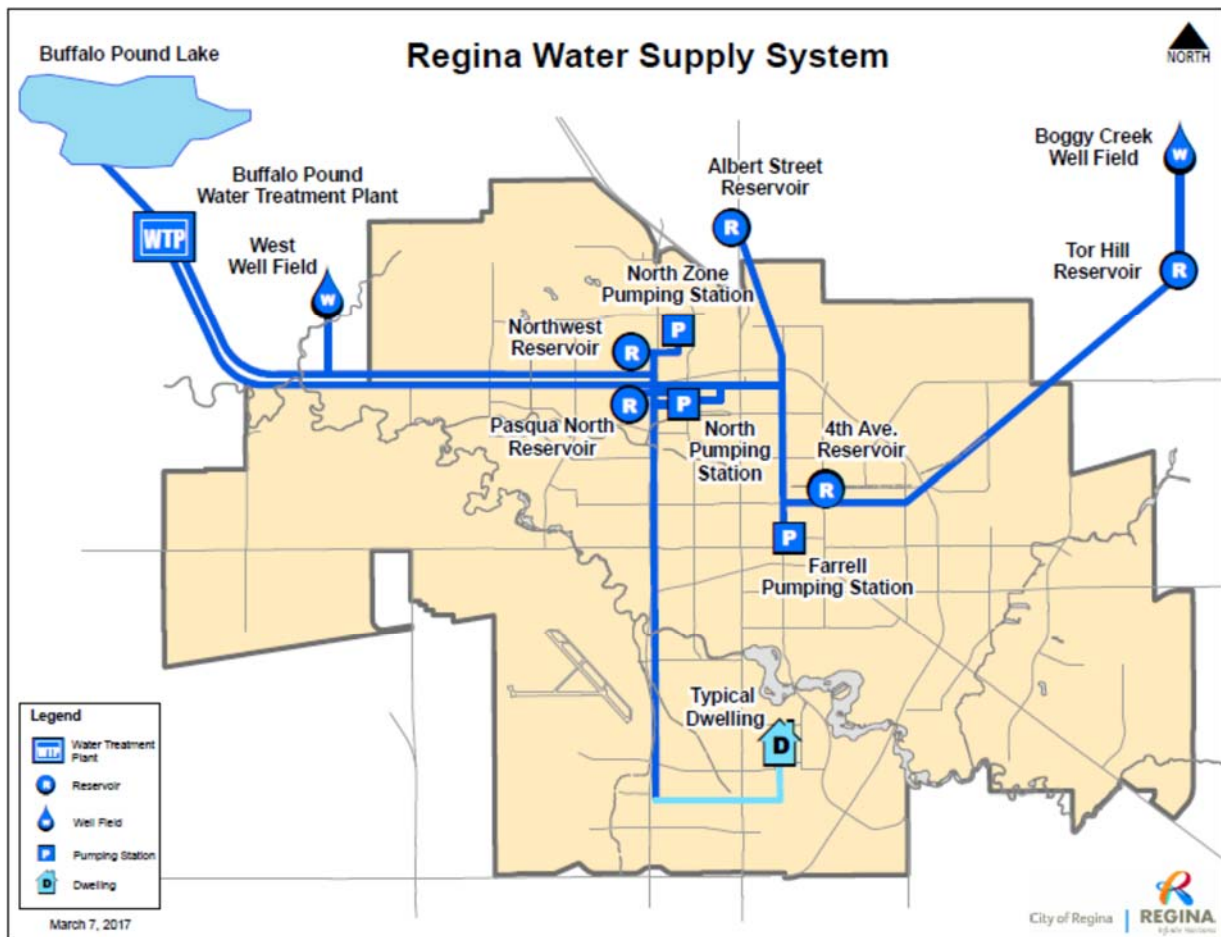


Figure 1: Regina's Water System

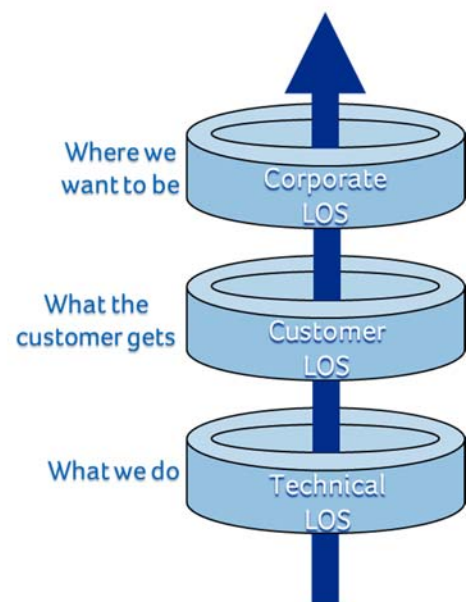
From BPWTP, two transmission lines transport water to the city. Water is stored in reservoirs to maintain supply at key locations in the community. From the reservoirs, three pumping stations distribute the water through a combination of large and small diameter pipes, totaling 1,155 km, to individual service connections (See Figure 1). Water is delivered to customer's taps through service connections with meters to measure the amount of water use. Metering not only helps customers understand

their use, but can be also be used to influence customer behavior; for example, by encouraging conservation through pricing and education.

The City provides water service to residential, institutional, commercial and industrial customers in Regina, as well as extra-municipal customers in surrounding areas. Within Regina, the City provides safe, reliable water service available with minimal interruption to customers. For water service to surrounding areas, the City enters into separate extra-municipal agreements which outlines the terms and conditions relating to the quantity, quality and availability of service delivery.

The purpose of these assets is to support the delivery of water service to our customers; therefore, realizing the most value from these assets requires an understanding of the LOS they provide and the cost of delivering service.

Levels of Service (LOS) reflect the regulatory, social, environmental and economic outcomes that the City agrees to deliver to water customers. As shown, LOS are defined and connected at three levels: Corporate, Customer and Technical (asset and operational). LOS assess performance by tracking measures over time considering corporate objectives related to water service delivery, what customers receive for water service and what the City does to provide water service to customers. LOS are also used to assess risks, identify needs and prioritize investment. They establish high level business drivers and inform decisions about directing resources to maintain or enhance LOS over the long term.



Proposed measures for water service at the customer level were developed in 2012 from internal stakeholder input, then tracked and aggregated to observe any trends. Current performance of the Water service shows stable trends except for regulatory, which has decreasing LOS. This decline is due to two non-compliance events in 2015. The first event was related to use of the ground water wells during the BPWTP water outage due to unique environmental conditions at Buffalo Pound Lake. The second event was associated with exceeding the regulatory limits for trihalomethane levels in drinking water due to changes in source water quality.

Water service delivery to Regina customers was also assessed through limited focus group surveys from Viewpoints Research in 2012. Customers felt clean and safe drinking water was paramount. Overall, the focus groups were satisfied with the reliability of the service but some complaints were expressed about odour/taste issues and excessive chlorine levels. Also, some participants had complaints about interruptions to service, while others found service disruptions and repairs were addressed in a punctual manner. Results from both the LOS trends and the customer survey indicate the water service is generally adequate in most areas, but still has room for improvement.

Many factors can influence service delivery, impacting the LOS measures. Growth influences service delivery by placing additional demands on the water system through new development and intensification. With climate change, extreme weather events can be expected, which could compromise the source water at Buffalo Pound Lake. New regulation, as well as the availability of funding or changes in



political/public expectations for improved environmental stewardship efforts, may place additional demand on service delivery. Also, other changes in expectations from customers can influence the way service is delivered; the targets and goals of service delivery will need to adapt through time. These influencers on the water system can present risks to service delivery.

Risks to the water system are both at the strategic level and asset level. Strategic risks can include:

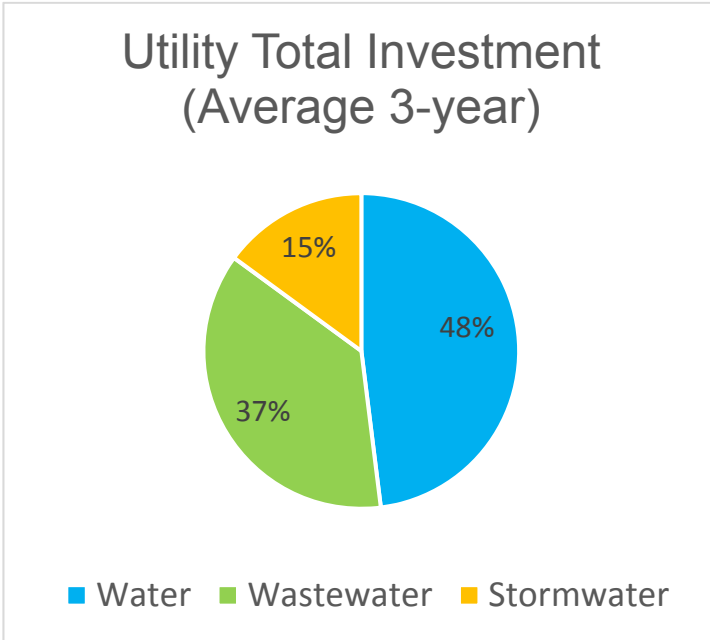
- funding shortfalls
- unforeseen weather events
- water supply shortfalls
- poor quality asset data
- non-compliance with regulation
- deteriorating infrastructure
- decreased water consumption

These are not risks pertaining to a specific asset, but can affect service delivery as a whole. Specific asset risks are identified for failure of the critical infrastructure (such as BPWTP, pumping stations, reservoirs, or transmission lines), storage shortfalls and failure of the distribution system. Mitigating measures are in place to reduce the likelihood and severity of these system and asset risks. Some of these measures include planning strategic and local capital projects, refining operational tasks and procedures, building a critical spares inventory and developing an emergency response plan. Although much work has been done to mitigate risks, there are still opportunities to improve.

The Water service is vital to the health and well-being of residents, as well as for irrigation, commercial and industrial use. The current state of these assets has been described in terms of the level of service they provide and risks at both the strategic and asset level. It has been found that the service is generally meeting LOS, but still has room to improve. Further analyses and planning can allow for a robust water system that meets the needs of customers.

How we invest

The City invests steadily in the water, wastewater and stormwater systems that support service delivery. As shown in Figure 2, for 2016-18 the average total Utility investment is more than \$100 million/year with the majority invested in the water service.



Utility Service	Average total investment/year
Water	\$48.2M
Wastewater	\$37.1M
Stormwater	\$15.0M
Total	\$100.3M

Figure 2: Utility total yearly average Investment

Note: Includes investment funded by external sources, primarily Servicing Agreement Fees (SAFs). Investment includes treatment, Water Works operating activities and support.

To fund capital and operating expenditures, the Utility is set to operate on a full cost recovery basis using user rates and charges. In 2018, the water rate increase of two per cent funded operating costs and most of the planned water capital investment needs.

The Utility plans for current and future requirements over a 25-year horizon using an investment planning approach to define the right level of investment to deliver sustainable services, while maintaining long-term financial viability. Investments in Utility services are made on the basis of providing the greatest benefits to stakeholders within four investment drivers as follows:

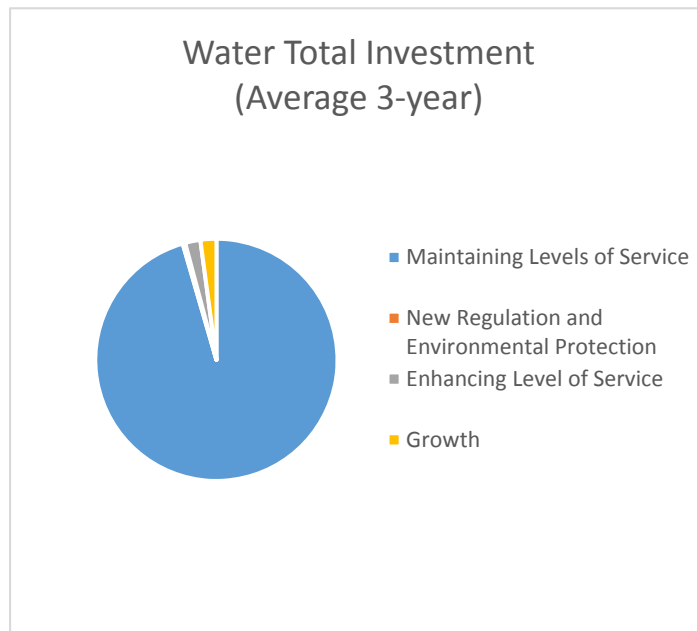
1. **Maintaining LOS** – Reduce risk to maintain current LOS to customers. This takes a risk-based approach to asset failure and considers the lifecycle of assets.
2. **New Regulations and Improved Environmental Protection** – Increased demand to comply with new regulatory requirements or higher level of

environmental protection. This driver also considers whether the project is intended to deliver improved environmental stewardship in terms of sustainable reductions on day-to-day environmental impacts in terms of air, land, water, waste, etc.

3. **Enhancing LOS** – Increased demand due to a permanent improvement in the LOS to customers. This considers the delivery of sustained and tangible improvement to the LOS, improving resiliency, or improving staff working environment. This driver also considers whether the project improves service to meet current standards, policies or level of service.
4. **Growth** – Increased demand due to increased population or industry. This considers increasing capacity to accommodate projected growth and future demands.

Currently, the majority of investments are directed towards maintaining LOS with relatively smaller investments going towards enhancing LOS. Figure 3 shows the three-year average investment. Of the \$48.2 million invested in the Water service, \$46 million went towards maintaining LOS. This demonstrates commitments to reduce risk and move towards a reliable service that meets current regulatory, safety and service objectives is paramount. Meeting the demands of growth and improvements to service delivery are still considered, but generally don't require the same level of investment.

Operating expenditures provide for treated water from BPWTP as well as ongoing operational procedures related to system monitoring and routine maintenance. The following chart includes costs related to treated water, Water Works operating activities and support that contribute to maintaining LOS.



Water service	Average total investment
Maintaining LOS	\$46.0M
New Regulation & Environmental Protection	\$0.2M
Enhancing LOS	\$1.0M
Growth	\$1.0M
Total	\$48.2M

Figure 3: Water total Investment

Note: Includes investment funded by external sources, primarily SAFs. Investment includes treatment, Water Works operating activities and support contributing to maintaining LOS.

Assumptions

The WMP is based on the following assumptions:

- Water service requirements incorporate growth in population projections (300K and 500K population) and development phasing plan (300K) as set out in the OCP.
- Financial resources available to fund the water service does not include potential future grant funding.
- Growth-related water infrastructure is paid for through external sources as set out in the SAF policy.

Future Vision

Vision

The City aims to provide utility services to the community that are both sustainable and affordable. The WMP sets out the actions and 25-year capital upgrade plan to meet LOS that reflect regulatory, environmental, operational and economic outcomes, reduce risk and accommodate growth to achieve the vision of OCP for the City.

The concept of integrated water resources planning and the Utility Service Categories as described below, along with the Guiding Principles reflect the vision for Regina's water service delivery and system.

Integrated Water Resource Planning

Provincial water resources are designated by watershed boundaries. Regina's utility services draw on water resources of two regional watersheds: Upper Qu'Appelle River Watershed and Wascana Creek Watershed. As previously discussed, Regina's source water is Buffalo Pound Lake, located in the Upper Qu'Appelle River Watershed. Wascana Creek, located within the Wascana Creek Watershed, is a seasonal stream that originates east of Regina and flows into the Qu'Appelle River system near Lumsden. It serves as the receiving stream for treated wastewater and stormwater runoff from Regina. These conditions mean the City, as a utility service provider, contributes significantly to the sustainable stewardship of the surrounding watersheds. It also means the requirements and costs for water and wastewater are impacted by Regina's location within these watersheds. Sustainable stewardship considers managing the water, wastewater and stormwater systems in an integrated, holistic manner.

Traditionally, municipalities managed water under three general umbrellas - water, wastewater and drainage. These represent the three service areas under Regina's Water and Sewer Utility:

- **Water System** - Includes the water supply, pumping and distribution to provide potable drinking water for residential, institutional, commercial and industrial customers, as well as for fire protection and greenspace management.
- **Wastewater System** - the collection system gathers wastewater from residential, institutional, commercial and industrial customers to be treated at

the wastewater treatment system. This treated water is then released to Wascana Creek.

- **Stormwater System** - collects water from rainfall and snowmelt to be discharged to the Wascana and Pilot Butte creeks.



To contribute to the sustainable stewardship of the watersheds and effectively manage water as a resource, all three services and systems (water, wastewater and stormwater) should be managed as an integrated system. Understanding the interactions of the three systems will help reduce future upgrade costs and provide a more sustainable service. This means considering the interactions between services including:

- **Water and Stormwater** - With Buffalo Pound Lake located a considerable distance away from Regina, water conservation is imperative. Innovative stormwater management considers runoff as a resource, rather than just a nuisance to be disposed and presents an opportunity to use runoff as a supplemental water source that lowers water consumption and peak demand. This approach also lowers peak flows from stormwater runoff in Regina to minimize erosion of receiving streams and support sustainable stewardship of the creeks.

- **Wastewater and Stormwater** - Stormwater can enter the wastewater collection system through a variety of mechanisms, collectively known as inflow and infiltration (i&i). When it rains or snows, stormwater runoff can enter wastewater pipes through manholes, cross-connections and leaks in the wastewater collection system. This can result in basement flooding and in extreme situations, bypasses to the receiving waters and poses a risk to health and safety as well as property.
- **Water and Wastewater/Stormwater** – Water is distributed through pressurized pipes underground. On occasion these pipes can develop leaks and allow drinking water to escape. This water can enter a nearby wastewater collection system and be transported to the Wastewater Treatment Plant (WWTP), or the leaked water can enter the stormwater system which could result in chlorinated water entering Wascana Creek. This results in lost revenue for the leaking water and a potential increase in expenditure on collecting and transporting the leaked water in either the wastewater or stormwater system. By implementing leak minimization strategies, the Utility can reduce cost and further protect the surrounding environment.

Goals

The goals of Regina's Water and Sewer Utility are set out in seven Service Categories that collectively reflect the regulatory, social, economic and environmental outcomes (LOS) for water, wastewater and stormwater service delivery as follows:

1. **Reliable Service** aims to provide ongoing reliable service of a suitable quality and capacity.
2. **Regulatory Compliance** serves to protect customer interests by meeting or exceeding our regulatory obligations.
3. **Environmental Stewardship** is about acting in the best interest of our customers and the environment.
4. **Service Delivery Support** focuses on providing a prompt response to customer service appointments while minimizing the length of any service disruptions.
5. **Customer Service** fosters communication to customer inquiries and collecting on utility billings in an efficient, accurate and timely manner.
6. **Servicing Development** focuses on providing access to service when and where it's needed.
7. **Financial Sustainability** aims to recover the full cost of service delivery.

The Customer Service and Financial Sustainability Service Categories are Utility-wide outcomes that cross over the three services. The other five Service Categories are consistent across water, wastewater and stormwater, but with goals specific to each Utility service.

The WMP is based on the seven Utility Service Categories that guide the development and evaluation of policies, service goals, LOS and strategies for the water service and system. Collectively, the Service Categories and associated LOS, along with the cost of delivering service, enable the assessment of the sustainability of Regina's water service. The Service Categories identified for the water service align with the direction of the OCP, support the Community Priorities and move toward sustainable water service delivery.



Policy Direction

The following section provides the water service goals and rationale for each of the seven Utility Service Categories described earlier. Key actions, timeframes and resources associated with these goals are outlined in Appendix A.





Reliable Service aims to provide ongoing reliable service of a suitable quality and capacity.

SERVICE CATEGORY #1: RELIABLE SERVICE

The following policies and actions support the Financial, Environment and Infrastructure Policies in the OCP and contribute to the Community Priority to “Achieve Long-Term Financial Viability”.

Water service and infrastructure are vital to the health and well-being of residents, the community and the environment. Reliable service delivery is the hallmark of any water utility and is assessed by the pressure, quantity and quality of water provided for use, as well as the availability of water with limited interruption. The City remains committed to providing reliable, high-quality water service to customers in the city and surrounding areas.

The policies within “Reliable Service” focus on maintaining service levels related to the quantity, quality and availability of the water service to customers in the most cost effective manner.

Goal 1: Provide water at adequate pressure and in sufficient quality and quantity to satisfy the requirements for domestic and commercial use and for fire protection.

Rationale

Focusing on maintaining satisfactory pressure, quantity and quality of drinking water to customers while enhancing service delivery as needed will be important for the City to continue providing reliable water service to customers.

Goal 2: Ensure water will be available with only minimal local disruptions for system maintenance and rare large-scale disruptions due to unforeseen circumstance.

Rationale

It is important to develop a strategy to maintain system infrastructure and build resilience in service delivery that will ensure water is available for customers to use and for fire protection, including during emergency events.



Regulatory Compliance serves to protect customer interests by meeting or exceeding our regulatory obligations.

SERVICE CATEGORY #2: REGULATORY COMPLIANCE

The following policies and actions support the Infrastructure Policies in the OCP and contribute to the Community Priority to “Foster Economic Prosperity”.

Water service and infrastructure delivers safe and clean drinking water to residents in Regina and some surrounding areas providing a core service which supports customer’s quality of life and standard of living. Water Security Agency (WSA) regulates water supply and distribution in Saskatchewan through *The Waterworks and Sewage Works Regulations*, in line with the *Guidelines for Canadian Drinking Water Quality*. Permits for the construction and operation of water systems require specific standards to protect human health, ensure consistent water quality, and minimize impacts to the natural environment. The City holds an operating permit outlining requirements for water quality, operator certification, routine facility inspections, testing and reporting.

The policies within “Regulatory Compliance” address legal requirements of constructing water works and of providing water that is safe to consume and use.

Goal 3: Provide water that meets Provincial water quality standards and objectives.

Rationale

Complying with Regina’s Permit to Operate will ensure only safe clean drinking water is supplied to customers. Securing Permits for Construction will ensure water supply is available and allocated.



Environmental Stewardship is about acting in the best interest of our customers and the environment.

SERVICE CATEGORY #3: ENVIRONMENTAL STEWARDSHIP

The following policies and actions support the Infrastructure and Environment Policies in the OCP and contribute to the Community Priority to “Promote Conservation, Stewardship and Environmental Sustainability”.

Water is a precious resource that is often taken for granted. Regina’s source water is drawn from Buffalo Pound Lake, which receives water from Lake Diefenbaker via the Upper Qu’Appelle River system. The City, along with all communities within these watersheds, has a role to play in the conservation of water, protection of our source water and stewardship of water resources in the region.

It takes energy to supply and distribute water to customers. Through ongoing infrastructure maintenance and renewal and by complying with regulatory requirement, water service operations are becoming more energy efficient to reduce GHG emissions and support improved environmental stewardship.

The policies within “Environmental Stewardship” promote water and energy efficiency as well as best practices for environmental design to preserve water as earth’s most precious resource.

Goal 4: Enhance water efficiency.

Rationale

Efficient use of water and energy reduces water waste and GHG emissions, and supports improved water resource management.

Goal 5: Support environmental conservation and sustainable water management.

Rationale

Conservation of water contributes to improved environmental management. Incorporating environmental design standards into water projects and operations supports environmental sustainability for future generations. Continued collaboration between the City and watershed groups supports sound water management and source water protection practices.



Service Delivery Support focuses on providing a prompt response to customer service appointments while minimizing the length of any service disruptions.

SERVICE CATEGORY #4: SERVICE DELIVERY SUPPORT

The following policies and actions support the Financial and Infrastructure Policies in the OCP and contribute to the Community Priority to “Achieve Long Term Financial Viability”.

Effective and efficient customer support is important for continued delivery of water to our customers, particularly when there is a disruption to service. The City is committed to fostering customers’ trust and confidence in water service delivery by ensuring the resources are available to meet customers’ needs for timely and responsive service delivery.

The policies within “Customer Service Delivery” support effective and efficient service related interactions with customers and timely return to service when disruption occurs.

Goal 6: Be responsive to service requests.

Rationale

Being responsive to service appointments with customers is central to providing good service to our water customers.

Goal 7: Minimize length of service disruption.

Rationale

Being responsive to service disruptions through timely restoration of water service is key to providing good service delivery to our water customers.



Customer Service fosters communication to customer inquiries and collecting on utility billings in an efficient, accurate and timely manner.

SERVICE CATEGORY #5: CUSTOMER SERVICE

The following policies and actions support the Financial Policies in the OCP and contribute to the Community Priority to “Achieve Long Term Financial Viability”.

Good customer service is central to the delivery of water to our customers. The City is committed to delivering consistent customer service and fostering positive relationships with Utility customers by providing timely response to inquiries and efficient, accurate billing services. In line with the benefits model referred to in *Design Regina*, customers pay for water service through user fees.

The policies within “Customer Service” support good customer communication and service experiences as well as reliable Utility billing services.

Goal 8: Be responsive to customer inquiries and needs.

Rationale

Being responsive to Utility customer inquiries is important to providing good customer service.

Goal 9: Produce and collect on utility billings in an efficient, accurate and timely manner.

Rationale

Reliable, accurate utility billing services will encourage customer’s awareness of their water use and fees for the water services. In addition, ensuring revenues are collected to fund ongoing water service planning and operation.



Servicing Development focuses on providing access to service when and where it's needed.

SERVICE CATEGORY #6: SERVICING DEVELOPMENT

The following policies and actions support the Growth Plan, Financial Policies and Infrastructure Policies in the OCP and contribute to the Community Priority to “Achieve Long-Term Financial Viability”.

Water service and infrastructure are required in growth areas to provide a fundamental core service to Regina’s new neighbourhoods. The majority of this infrastructure is funded and built by the development community with some system-wide assets built by the city. Taking a long-term view, there is a need to plan water infrastructure for growth considering the interaction with the existing system. The benefit of optimizing use of the existing infrastructure must be balanced with the requirements and impacts on existing service delivery. Taking an integrated approach when planning water infrastructure balances the requirements for growth with the impact on existing areas.

The policies within “Servicing Development” address accessibility of the water service for growth areas in a safe and effective way while considering the entire system, current design standards and future costs.

Goal 10: Accommodate growth and redevelopment within planning policy by providing water service.

Rationale

Expansion of the water system will be needed to service new neighbourhoods as well as upgrades to the existing system to manage the increased water demand from new customers. The future operating costs of new infrastructure will be considered as well as potential to optimize use of existing infrastructure to decrease the overall cost of ownership.



Financial Sustainability aims to recover the full cost of service delivery.

SERVICE CATEGORY #7: FINANCIAL SUSTAINABILITY

The following policies and actions support the Financial Policies in the OCP and contribute to the Community Priority to “Achieve Long Term Financial Viability”.

The financial sustainability of the water service is about making sure the City collects sufficient Utility revenues from water user fees to recover the full costs of providing water infrastructure and service that achieve the service goals and future demand requirements as described in the preceding six Service Categories. Utility rates will be established considering revenue requirements over the 25-year planning horizon, affordability and inter-generational equity. In addition, water rates and structure can encourage conservation of water as a precious resource. The City is committed to ensuring the water service is financially sustainable now and in the future and that customers pay for water service through user fees in accordance with the benefits model referred to in the OCP.

The policies within “Financial Sustainability” support the full cost recovery, user-pay basis to providing water service to customers.

Goal 11: Ensure water service is financially sustainable.

Rationale

Provide water service to residential and business customers on a full-cost recovery, user-pay basis in line with the financial principles outlined in the OCP. Future rate recommendations will be sustainable and move towards achieving inter-generational equity.

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Implementation Plan

To move the City towards achieving the goals and policies of this plan, the following section outlines the strategy to guide implementation over time and ultimately realize the plan. More detailed strategies will be developed to advance specific elements of the plan based on the timing and context detailed in this section.

Master Plan Ownership

Delivery of water service to customers requires collaboration across and within various teams, both internal and external, involved in planning, constructing, operating and maintaining the water system and associated service activities. Collectively, these teams are responsible for implementing the plan.

Water Works led the development of the WMP and will continue to lead the implementation of many of the plan policies and actions. The Planning & Development Division manages new growth areas and will lead the implementation of policies and actions to service development.



Water Works also leads the development of the Utility capital investment planning process to prioritize investment in water, wastewater and drainage services. The capital planning process with financial analysis which includes using the 25-year Utility model, forms the basis of budget recommendations to Council. Water Works will continue to lead this work. The WMP and the Utility capital investment plan are not a commitment for future investment. This policy direction will help inform decisions that are made by Council as part of the defined budget process and over the course of their ongoing deliberations.

Investments will be reviewed each year through the City's annual budget process where Administration's proposed budgets are vetted through a public consultation process. Only when Council adopts the budget will investments be approved.

Implementation Phasing

The WMP goals are intended to be realized over the next 25 years through staged implementation of the policies and actions outlined in this document; however, the WMP is not a commitment for future investment. It is also important to note that several factors, including changing operating conditions, risks, financial capacity, and the pace of growth, will influence the implementation of planned actions and capital investments. Planned actions will require further development through the implementation phases and capital investment forecasts will continue to be adjusted annually through the Utility investment planning process to reflect additional information on risks, LOS and cost. The planned actions, timeframes and investment to maintain current LOS and address future demand are identified in Appendix A and summarized below.

Planned Actions, Timeframe and Resources

The planned actions help the City make informed decisions about the water system and infrastructure that support service delivery to customers. Efforts that support maintaining current LOS include ongoing operating and infrastructure renewal works. Operational procedures provide for the routine monitoring, operating and maintenance needs to keep delivering reliable water service to customers on a daily basis. Infrastructure renewal involves the repair, replacement and improvement of assets to support ongoing reliable water service delivery to customers over time.

Most operational activities will be maintained at current levels in the short term but may be refined as a result of continuous improvement efforts. Water infrastructure renewal work that supports maintaining the current LOS includes:

- proactive monitoring
- assessment and renewal of critical system assets such as supply mains, pump stations and reservoirs
- renewal of distribution watermains, hydrants, valves, service connections and water meters

Also included are renewal of emergency and control systems, as well as operations and customer billing systems and equipment. Maintaining the current LOS also involves system upgrades, including projects and programs such as reservoir aeration, flow meter chambers, leak detection, and hydrant nozzle replacement (see Appendix B for a more detailed project list from the Proposed Water Capital Plan 2019-2023).

Efforts that address future demand include system infrastructure upgrades to support growth, new regulatory requirements, greater environmental protection and improved LOS. In general, satisfying increased demand requires additional operating efforts going forward.

Projects to support growth include planning and building additional system infrastructure to provide adequate water pressure, quantity and quality to new development areas in the near term. Proposed projects include the Eastern Pressure Solution and several distribution trunk mains. Also included are works to support improved system resilience and to reduce vulnerabilities due in part to climate change impacts. Proposed projects include additional groundwater capacity and the fire and security vulnerability upgrades. Environmental stewardship is also enhanced through projects that support maintaining current LOS including ongoing infrastructure renewal and replacement, as well as those needed to meet regulatory requirements.

Implementation Investment Summary

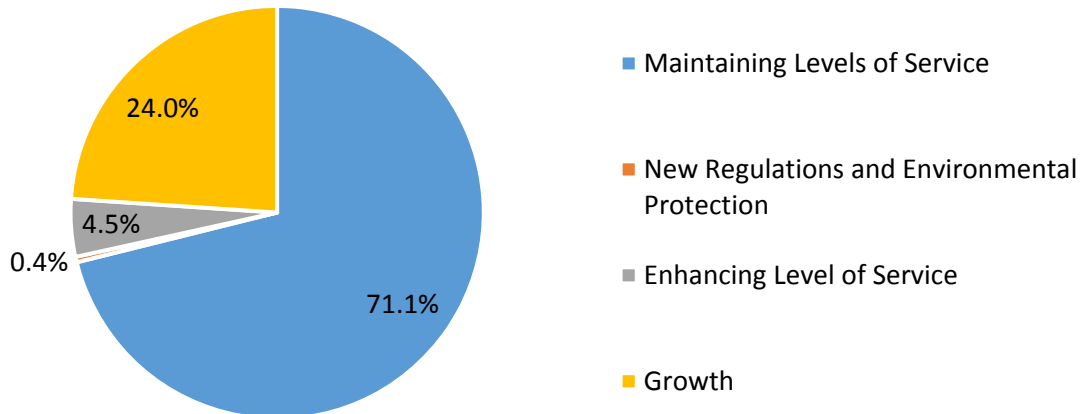
The investment strategy for the water service is developed in the Utility investment planning process. The approach starts with the development of business cases to describe service needs and propose solutions, including those identified in the WMP. The submissions are reviewed and evaluated consistently to identify the benefits of investment and to prioritize projects and programs within the 10-year plan that

support water, wastewater and stormwater service goals, aligned with corporate and LOS objectives. Investments in the remainder of 25-year plan are less defined; however, it is expected that the majority of the need is defined through long-term planning and asset renewal. Preliminary funding constraints are applied to the proposed plan and the residual risk of unfunded or deferred projects and programs are assessed. Scenarios are also developed to finance the plan with varying rates, debt issuance and reserve balances using the 25-year Utility Model. Together, the prioritized plan and financing scenarios form the recommended investment plan and budget to Council.

The WMP sets out the capital investment needed to meet LOS that reflect regulatory, operational and economic outcomes, reduce risk and accommodate growth to achieve the vision of the OCP. Financing scenarios with a mix of rate increases and debt were evaluated with the Utility Model to assess financial sustainability in line with the WMP goals and principles. As identified in Appendix C, financial analysis of the proposed 25-year water capital plan using the Utility Model, indicates that low to moderate rate increases along with some debt issuance will be needed to fund the full plan. In general, operating expenditures are expected to increase, primarily due to new infrastructure added to the system. The WMP outlines the water capital investment plan; however, it is not a commitment for future investment and is subject to annual budget deliberations by Council.

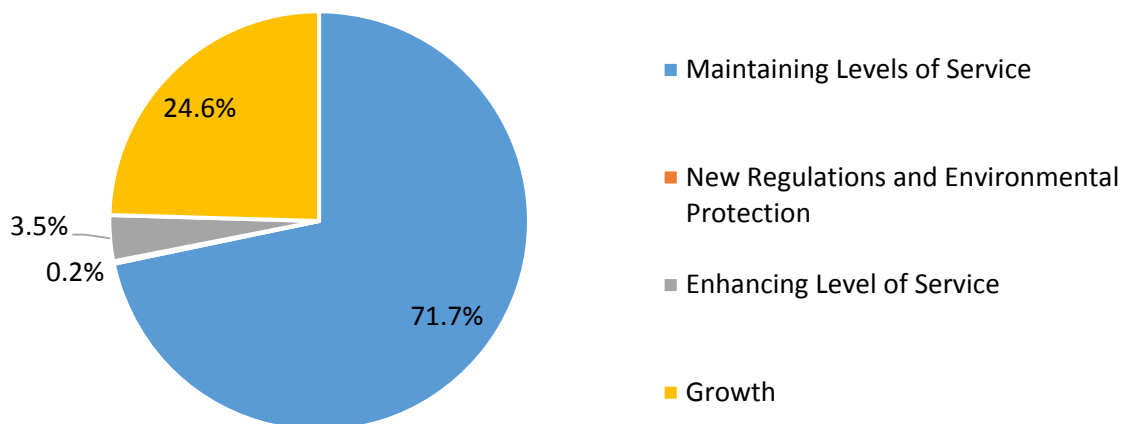
The following charts show the proposed 10-year (short to mid-term) and total 25-year (long-term) capital investment profile, illustrating that the majority of investment is focused on maintaining LOS through renewal, replacement and upgrade of infrastructure that supports current service delivery to customers. Of the total investment needed to maintain LOS, approximately five per cent provides for water meters and consumption reading infrastructure that supports billing for water and wastewater services. Capital and operating expenditures to maintain current LOS and increased demand are provided by water user fees, with the exception of most growth-related capital investment which is funded by external sources through SAF.

10 Year Water Capital Investment Plan



Note: The majority of overall capital investment is funded by water rates with most growth-related projects funded by SAFs.

25 Year Water Capital Investment Plan



Note: The majority of overall capital investment is funded by water rates with most growth-related projects funded by SAFs.

Monitoring and Evaluation

Water service delivery is dynamic by nature and subject to changing conditions. The WMP will continue to be reviewed and updated on a regular basis as follows:

- Review and progress reporting to Public Works & Infrastructure Committee on the status of implementing planned actions and strategies.
- Full review of the WMP every five years to Council to ensure it is effective at meeting LOS, reducing risk and accommodating growth.

An important part of plan implementation is to monitor and report progress on the effectiveness of policies and actions to achieve goals. Tracking key performance measures and trends over time will inform updates to the strategies and actions of the plan. The performance measures should be reviewed every five years during the full WMP review.

Some measures will require additional data collection and some may be adjusted based on resource availability and data management requirements. The following table sets out the measures in line with the defined Service Categories.

Reliable Service <ul style="list-style-type: none">• Number of logged aesthetic quality inquiries• Number of logged low pressure inquiries• Days of service restriction• Number of unplanned service outages• Number of days water is out of service due to hydrant repairs
Regulatory Compliance <ul style="list-style-type: none">• Number of non-compliance events that result in abatement actions from the Regulator
Environmental Stewardship <ul style="list-style-type: none">• Per cent of water lost in the system (non-revenue water)• Per capita consumption of water• Electricity consumed to treat and deliver water• Number of active water management installations, incorporating conscious environmentally-friendly design

Service Delivery Support <ul style="list-style-type: none"> • Per cent of customer appointments attended on time • Average length of service disruptions
Customer Service <ul style="list-style-type: none"> • Per cent compliance with the Corporate Customer Service Standards providing contact to those who request it within 48 hours • Number of properties with at least one estimated meter read within the year • Number of properties (accounts) with at least one billing adjustment within the year • Customer debt outstanding to Utility
Servicing Development <ul style="list-style-type: none"> • Number of properties (development requests) rejected for utility water servicing
Financial Sustainability <ul style="list-style-type: none"> • Per cent of capital investment funding shortfall over 10 years • Per cent water charge of household income

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Appendix A:

Planned Actions, Timeframes and Resources

Planned Actions, Timeframes and Resources

The following symbols are used to outline the resources required.

Capital:

\$ <\$500 000

\$ \$ \$500 001 to \$2 000 000

\$ \$ \$ >\$2 000 000

Operating:

\$ <\$100 000

\$ \$ \$100 001 to \$500 000

\$ \$ \$ >\$500 000

Int Internal costs only

Policies and Recommended Actions		Timeframe	Initial Resources (subsequent annual maintenance costs are not reflected)		
			Level of Effort	Capital	Operating
Service Category #1: Reliable Service					
Goal 1: Provide water at adequate pressure and in sufficient quality and quantity to satisfy the requirements for domestic and commercial use and for fire protection.					
Rationale: Focusing on maintaining satisfactory pressure, quantity and quality of drinking water to customers while enhancing service delivery as needed will be important for the City to continue providing reliable water service to customers.					
Risk of not doing: LOS for water quality and capacity will not be met.					
1.1	Adopt the revised evaluation criteria (including LOS and design criteria) for Regina's water supply and distribution system.	Short			
1.1.1	Continue to define and collect data to build out the evaluation criteria (including LOS) related to water system performance and objectives, as well as develop and refine associated systems and processes for data collection as required, to better understand current performance and inform decision making.	Short, Medium	Med	Int	Int
1.1.2	Continue to collect data and undertake analyses (including water system modeling and monitoring) related to water system performance (pressure, fire	Short, Medium, Long	Low	Int	Int

	flow, quality of water), to inform decisions on the timing and prioritization of system improvements.				
1.1.3	Provide revised design criteria as input for update to the City of Regina's Development Standards Manual (2010).	Short	Low	Int	Int
1.1.4	Review and update evaluation criteria at least every five years to reflect changing conditions and identify any required adjustments to the planned system improvements.	Medium, Long	Low	\$, Int	Int
1.2	Implement and monitor the recommended water infrastructure plan, including new infrastructure for growth areas where synergies can be realized, required to meet LOS and reduce risks related to service delivery (See Goal 10).	Short, Medium, Long			
1.2.1	Continue to develop and implement an asset management strategy for water infrastructure and service using a risk-based approach as part of continuous improvement.	Short, Medium	Low	\$	Int
1.2.1.1	Continue to invest in the effective and efficient preservation and improvement of Regina's water supply and distribution system.	Short, Medium, Long	Med	\$\$\$	Int
1.2.1.2	Continue to review and refine operational and maintenance procedures in line with best practices as part of continuous improvement.	Short, Medium, Long	Low	Int	Int
1.2.1.3	Continue to develop a risk assessment and management strategy for supporting water service delivery, including strategic risks and those associated with assets, particularly critical infrastructure, in the existing system.	Short, Medium, Long	Med	\$	Int
1.2.1.4	Continue to assess the performance of assets to support water service delivery to maintain LOS and develop performance forecasts.	Short, Medium, Long	Med	\$\$	Int
1.2.1.5	Develop a life cycle management strategy for system assets that support water service delivery.	Short	Low	Int	Int
1.2.1.5.1	Develop and apply a whole life cost approach to ensure the full costs of the assets from acquisition to disposal are included and service is provided at the lowest overall cost of ownership (See Goal 10).	Short	Low	\$, Int	Int
1.2.1.6	Assess new and innovative technology and methods for constructing and renewing water infrastructure (See Goal 5).	Short, Medium, Long	Low	\$, Int	Int
1.2.1.7	Identify opportunities to coordinate water projects with other infrastructure projects, including those required to support growth areas where synergies can be realized.	Short, Medium, Long	Med	Int	Int
1.2.1.8	Continue to explore opportunities to optimize use of the system taking into account system-wide effects by assessing residual capacity and use of existing infrastructure (See Goal 10).	Short, Medium, Long	Med	\$, Int	Int
Service Category #2: Reliable Service					
Goal 2: Ensure water will be available with only minimal local disruptions for system maintenance and rare large-scale disruptions due to unforeseen catastrophe.					

Rationale: It is important to develop a strategy to maintain system infrastructure and build resilience in service delivery that will ensure water is available to customers and for fire protection, including during emergency events.					
Risk of not doing: Water system is more vulnerable and water may not be as available for use.					
2.1	Implement and monitor the recommended water infrastructure plan, including code and condition assessments and new infrastructure for growth areas where synergies can be realized, required to strengthen system resilience and ensure water is available for use with limited disruption (See Goals 1 and 10).	Short, Medium, Long			
2.1.1	Implement the strategy for emergency water supply.	Short, Medium	Med	\$\$\$	Int
2.1.1.1	Maintain existing groundwater well fields as emergency water source to provide limited supplemental water to the system.	Short	Low	\$\$	Int
2.1.1.2	Plan and implement expansion of the groundwater well fields as the City grows to provide additional emergency water supply up to the maximum groundwater allocation set out in the Water Rights Licenses (issued and maintained by the WSA).	Medium, Long	Med	\$\$\$	Int
2.2	Continue to review and refine the Water Quality and Supply Emergency Plan in line with industry emergency response planning standards and best practices as part of continuous improvement.	Short, Medium, Long	Low	Int	Int
Service Category #2: Regulatory Compliance					
Goal 3: Provide water that meets Provincial water quality standards and objectives.					
Rationale: Complying with Regina's Permit to Operate will ensure only safe clean drinking water is supplied to customers. Securing Permits for Construction will ensure water supply is available and allocated.					
Risk of not doing: Water service is not meeting regulatory requirements; may lead to fines or other action.					
3.1	Ensure design, construction and operation of Regina's water supply and distribution system complies with relevant legislative and regulatory requirements.	Short, Medium, Long			
3.1.1	Obtain all necessary permits and ensure adherence to conditions.	Short, Medium, Long	Med	Int	Int
3.1.2	Continue to work with the WSA to ensure operating permit requirements are met, including addressing additional monitoring, reporting and water quality requirements when the groundwater well fields are used as an emergency water source.	Short, Medium, Long	Low	Int	Int
3.1.3	Work with the WSA to monitor potential changes in water quality regulations in the future.	Short, Medium, Long	Low	Int	Int
Service Category #3: Environmental Stewardship					
Goal 4: Enhance water efficiency.					
Rationale: Efficient use of water and energy reduces water waste and GHG emissions, and supports improved water resource management.					

Risk of Not Doing: Water continues to be lost in the system and targeted energy efficiency improvements will not advance.					
4.1	Monitor and evaluate the efficiency of water and energy use including reductions realized through implementing the water infrastructure plan, including water infrastructure renewal, replacement and upgrade.	Short, Medium, Long			
4.1.1	Evaluate the feasibility of developing and implementing a water loss management program.	Short	Low	\$	Int
4.1.1.1	Evaluate consumption patterns, high water users and water lost in the system.	Short, Medium, Long	Low	\$	Int
4.1.2	Continue to evaluate current energy consumption and examine opportunities to conserve energy and reduce GHG emissions from water operations.	Short, Medium, Long	Low	\$	Int
Service Category #3: Environmental Stewardship					
Goal 5: Support environmental conservation and sustainable water management.					
Rationale: Conservation of water contributes to improved environmental management. Incorporating environmental design standards into water projects and operations supports environmental sustainability for future generations. Continued collaboration between the City and watershed groups supports sound water management and source water protection practices.					
Risk of Not Doing: Water conservation by users may be limited and targeted enhancement of environmental protection through design will be limited.					
5.1	Develop and implement a new water conservation program and bylaws in consultation with stakeholders.	Short, Medium, Long			
5.1.1	Evaluate current water conservation practices and update water conservation targets. Review revenue impact and adjust rate policy as needed.	Short, Medium, Long	Low	Int	Int
5.1.2	Review and implement a water conservation awareness campaign.	Medium	Low	Int	Int
5.1.2.1	Update and enhance water conservation information available to the public.	Short, Medium, Long	Low	Int	Int
5.1.2.2	Work with schools and local landscaping businesses to support water conservation awareness and education.	Medium	Low	Int	Int
5.1.2.3	Investigate usage of low flow fixtures and evaluate the need for further promotion to the public.	Medium	Low	Int	Int
5.1.2.4	Encourage customers to investigate for water leaks around their home.	Short, Medium, Long	Low	Int	Int
5.1.3	Explore the development and implementation of water restriction tiers to ban non-essential usage during a water shortage or emergency.	Medium	Low	Int	Int
5.1.4	Explore the adoption of a mandatory outdoor watering schedule into bylaw.	Medium	Low	Int	Int
5.2	Implement the application of environmental design standards and best practices into water projects and operations, where feasible (See Goal 1).	Short, Medium, Long	Low	\$	Int

5.3	Continue to collaborate with the province and watershed associations to support source water protection.	Short, Medium, Long			
5.3.1	Continue City participation in the Wascana Upper Qu'Appelle Watersheds Association Taking Responsibility (WUQWATR) to support source water protection including watershed and aquifer planning implementation as appropriate.	Short, Medium, Long	Low	Int	Int
5.3.2	Continue to support the implementation of key priority action items in the local watersheds Source Water Protection Plan.	Short, Medium, Long	Low	Int	Int
Service Category #4: Service Delivery Support					
Goal 6: Be responsive to service requests.					
Rationale: Being responsive to service appointments with customers is central to providing good service to our water customers.					
Risk of Not Doing: Customer service appointments will be ad hoc.					
6.1	Continue to develop and maintain systems and processes as well as explore new technology to support effective, efficient and responsive customer service practices.	Short, Medium, Long			
6.1.1	Continue to implement upgrades to customer information systems used for service bookings to support reliability of service bookings with customers.	Short, Medium, Long	Low	\$	Int
6.1.2	Continue to review and refine customer service procedures in line with best practices as part of continuous improvement.	Short, Medium, Long	Low	Int	Int
Service Category #4: Service Delivery Support					
Goal 7: Minimize length of service disruption.					
Rationale: Being responsive to service disruptions through timely restoration of water service is key to providing good service delivery to our water customers.					
Risk of Not Doing: Customer communications during service disruption will be ad hoc.					
7.1	Develop and maintain systems and processes to support effective and efficient customer service and communications, internally and externally, during water service disruptions.	Short, Medium, Long			
7.1.1	Continue to review and refine service request processes and systems used for identifying water service outages.	Short	Low	Int	Int
7.1.2	Develop and implement process to track and report response times to service disruption.	Short	Low	Int	Int
Service Category #5: Customer Service					
Goal 8: Be responsive to customer inquiries and needs.					
Rationale: Being responsive to Utility customer inquiries is important to providing good customer service.					
Risk of Not Doing: Customer service and satisfaction are low.					
8.1	Continue to ensure Corporate Customer Service Standards are maintained to promote good customer service interactions.	Short, Medium, Long			

8.1.1	Continue to review and refine customer service procedures in line with best practices as part of continuous improvement.	Short, Medium, Long	Low	Int	Int
Service Category #5: Customer Service					
Goal 9: Produce and collect on utility billings in an efficient, accurate and timely manner.					
Rationale: Reliable, accurate utility billing services will encourage customer's awareness of their water use and fees for the water services. In addition ensuring revenues are collected to fund ongoing water service planning and operation.					
Risk of Not Doing: Utility billings and revenue collection will be less reliable.					
9.1	Continue to develop and maintain systems and processes to charge for and collect on billings to Utility customers for the water services provided, as well as explore new technology to support effective, efficient and responsive customer service practices.	Short, Medium, Long			
9.1.1	Continue to evaluate the feasibility and timing of the Water Meters and AMR Replacement project and investigate new technology such as Advanced Metering Infrastructure (AMI) to improve system operation and customer service, as well as water conservation and data analytics.	Short, Medium	High	\$\$\$	\$
9.1.2	Continue to implement upgrades to customer information systems used for generating utility bills to customers.	Short, Medium, Long	Low	\$	Int
9.1.3	Continue to review and refine customer service and operational procedures in line with best practices as part of continuous improvement.	Short, Medium, Long	Low	Int	Int
Service Category #6: Servicing Development					
Goal 10: Accommodate growth and redevelopment within planning policy by providing water service.					
Rationale: Expansion of the water system will be needed to service new neighbourhoods as well as upgrades to the existing system to manage the increased water demand from new customers. The future operating costs of new infrastructure will be considered as well as the potential to optimize use of existing infrastructure to decrease the overall cost of ownership.					
Risk of not doing: Water system capacity will not meet increased demand.					
10.1	Implement and monitor the recommended water infrastructure plan, including improvements to the existing system where synergies can be realized, required to support growth areas (See Goal 1).	Short, Medium, Long			
10.1.1	Undertake preliminary study for the design and construction of system infrastructure to provide sufficient water supply, pressure and fire flow to new development areas and address the impacts on the existing system.	Short, Medium	High	\$\$\$	\$\$
10.1.1.1	Support potential access to water service by regional communities through strategically locating water infrastructure, where feasible and aligned with the OCP.	Short, Medium	Low	Int	Int
10.1.2	Initiate review of water supply pumping capacity at BPWTP.	Medium	Low	\$\$\$	Int.
10.1.3	Develop and apply a whole life cost approach to ensure the full costs of the assets from acquisition to	Short	Low	\$, Int	Int

	disposal are included and service is provided at the lowest overall cost of ownership.				
10.1.4	Continue to explore opportunities to optimize use of the system taking into account system-wide effects by assessing residual capacity and use of existing infrastructure (See Goal 1).	Short, Medium, Long	Med	\$, Int	Int
Service Category #7: Financial Sustainability					
Goal 11: Ensure water service is financially sustainable.					
Rationale: Provide water service to residential and business customers on a full-cost recovery, user-pay basis in line with the financial principles outlined in Design Regina. Future rate recommendations will be sustainable and move towards achieving inter-generational equity.					
Risk of Not Doing: Water service is insufficiently financed and customers pay less than it costs to provide the water service.					
11.1	Continue to undertake capital investment planning and financial analysis for the water service and develop holistic service-based costing to better understand the full cost of providing the Water Service.	Short, Medium, Long			
11.1.1	Develop and implement systems and processes to track cost of service (including operating costs) aligned with LOS, to ensure water service is provided on a full-cost recovery basis.	Short, Medium	Low	\$, Int	Int
11.1.2	Continue to improve the Utility investment planning and financial analysis in line with best practices as part of continuous improvement.	Short, Medium, Long	Low	Int	Int
11.1.3	Adopt the principle of inter-generational equity to establish future rate increases for users who benefit from the capital improvements.	Short	Low	Int	Int

* All proposed actions will require staff time and resources

Appendix B:

City of Regina Proposed Water Capital Plan 2019-2023

Proposed Water Capital Plan

Project Program Name	2019	2020	2021	2022	2023	Total
Corporate ITS Infrastructure – Utility Portion	325	325	325	325	325	1625
Trench Settlement Remediation	300	300	300	300	300	1500
Chlorine Booster Stations	2000	2000	0	0	0	4000
Variable Frequency Drive Installation for Buffalo Pound WTP Pumps	0	200	1300	0	0	1500
Hydrant Nozzle Replacement	120	120	120	120	120	600
Reservoir Aeration	0	0	0	0	0	0
Fire and Security Vulnerability Upgrade - Monitoring	400	400	400	0	0	1200
Supply Line Assessment and Rehabilitation	500	500	500	950	950	3400
Transfer Pumping and Capacity Review	0	0	0	0	0	0
Water Meter Installations	500	500	500	500	500	2500
Water Control System Upgrades	64	0	0	0	0	64
Water Pumping Stations Upgrades and Equipment Replacement	1000	200	250	1625	1625	4700
Lead Service Connection Management Program - Corrosion Control	125	405	305	0	0	835
Leak Detection Program	100	100	100	100	100	500
Capacity Increase for North East Pumping Station	0	0	0	0	4000	4000
Reservoir Radio Upgrade	15	0	0	0	0	15
Water Meters and AMR Replacement	1300	11800	18900	9700	0	41700
Reservoir Assessment and Rehabilitation	250	2500	250	2500	250	5750
Flow Meter Chambers for Transmission Piping	1500	1500	0	0	0	3000
Large Diameter Assessment and Rehabilitation	2800	2800	2800	2800	2800	14000
Utility Billing System Upgrade and Maintenance	150	240	100	240	100	830
Additional Ground Water Capacity	0	0	200	500	4800	5500
Utility Billing Equipment Replacement Program	40	20	20	40	20	140
Future Equipment Purchase	0	250	250	250	250	1000
Additional Supply Line Assessment and Rehabilitation	0	5000	5000	5000	5000	20000
Water Infrastructure Renewal	16235	16235	16235	16235	16235	81175
Total	27724	45395	47855	41185	37375	199534

Excludes SAF funded projects

Appendix C:

City of Regina Preliminary 25-year Water Capital Plan

City of Regina Preliminary 25-year Water Capital Plan

Investment Driver	2019-2023	2024-2028	2029-2033	2034-2038	2039-2043
Maintaining LOS Projects and programs include: - Water Infrastructure Renewal -Supply Line Assessment and Rehabilitation	\$184M	\$147M	\$131M	\$134M	\$149M
New Regulations and Environmental Protection Projects and programs include: - Chlorine Booster Stations	\$2M	0	0	0	0
Enhancing LOS Projects and programs include: - Additional Ground Water Capacity	\$11M	\$10M	\$5M	\$5M	\$5M
Growth Projects and programs include: - Eastern Pressure Solution	\$60M	\$53M	\$3M	\$30M	\$110M
Total	\$257M	\$210M	\$139M	\$169M	\$264M

Includes SAF funded projects