



CITY OF  
*Lethbridge*

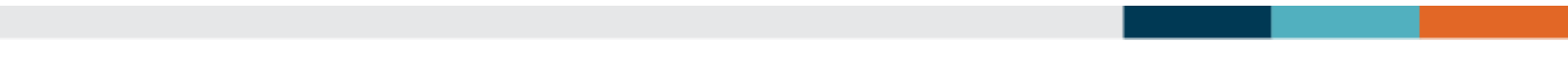


# Snow and Ice Control Information Package



CITY OF LETHBRIDGE

VERSION #1  
January 2021



# Historical Context

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Snow and ice control (SNIC) in the City of Lethbridge is managed through the cumulative effort of city forces, contractors and the public maintaining properties, roads, pathways and sidewalks. Transportation Operations manages public roads with a combination of permanent/temporary staff supplemented with contracted equipment and personnel. Parks Operations staff are involved in snow and ice control on city controlled sidewalks and most pathways, both along roadways and in park areas. Transportation Operations staff and contractors are generally expected to be available to work 24 hours a day/7 days a week, between November 1 to April 30, as required.

The general purpose of the Lethbridge SNIC program “is to minimize the economic loss to the community, reduce the inconvenience and hazards of winter conditions for motorists and pedestrians and facilitate the operation of Transit and Emergency Service vehicles.” Lethbridge does this by creating, “acceptable winter driving conditions for vehicles that are properly equipped for winter driving and are operated in a manner consistent with good winter driving habits.”

Council Policy CC34 – Snow and Ice Control Policy was last updated in 2009. The policy is an update on the previous SNIC policy/program and established the basis of our current plowing, snow removal and ice control priority systems utilized today.

## KPMG Report Validation

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The KPMG report recommended two ideas for implementation:

### **Recommendation #1**

The City should consider further analysis into clearing methodologies and associated service levels, as prioritizing the removal of snow, instead of clearing coverage and response time, appears to differ from the practices seen in other cities.”

### **Recommendation #2**

Consider commissioning a winter maintenance program review, including a review of leading practices and technologies used in other cities, a study of existing service level, thresholds, route methodologies, and cost effectiveness.

Administration generally agrees with both of these recommendations as they align with regular feedback received from the public and staff. Recommendation #1 in particular is a commonly requested service level adjustment, particularly after medium to large snow storms. Lethbridge clears less roads than most other municipalities due to the prioritization/preference of snow removal. There is nothing inherently wrong with the current level of service and operational practices in Lethbridge but adjusting them may result in better meeting the needs and expectations of the public.

Fundamental changes to snow plowing and snow removal practices would have substantial cascading impacts on other portions of the SNIC program. Even more importantly, there would likely be an adjustment period for the public and operational practices which would result in iterative improvements and community

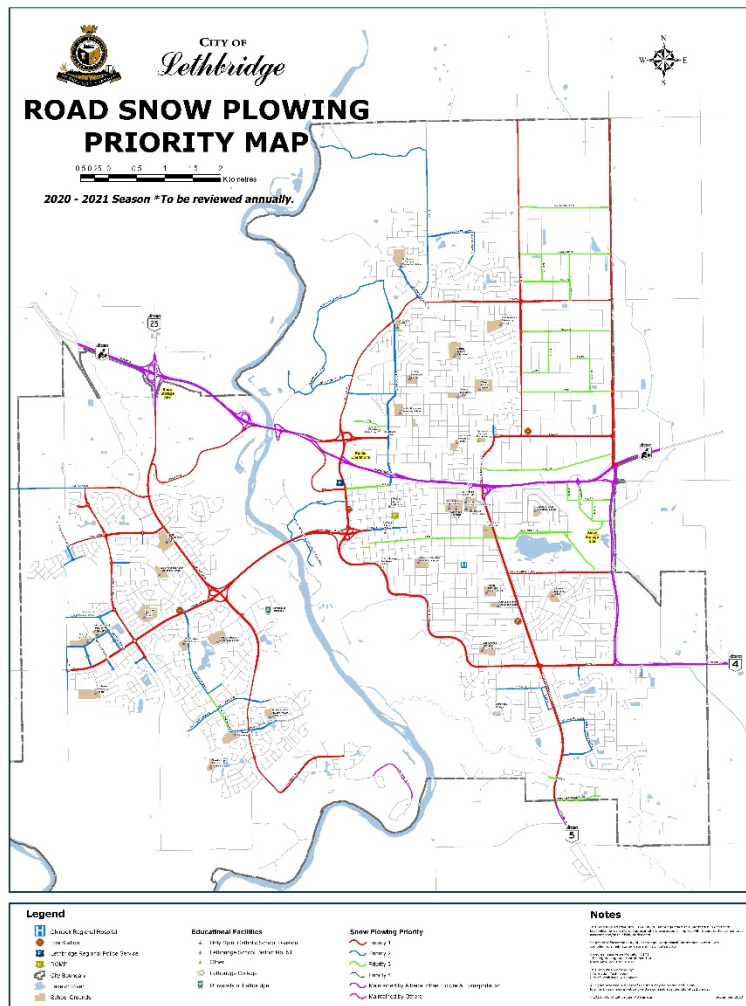
buy-in of adjusted service levels. For this reason, the scope of the operational efficiencies will focus on opportunities directly related to snow plowing versus snow removal.

Once direction on snow plowing and snow removal has been achieved, a more holistic winter maintenance program review can better begin. The scope of that review will depend on the will of council but typically includes; traction and ice control material usage, accessibility issues, equipment and workforce reviews, pathway and sidewalk management, snow storage facilities, emergency management, IT systems, etc..

# Current Service Levels

## Snow Plowing

Lethbridge uses a priority plowing system which was approved by council in 2009. The maps are reviewed annually by administration to determine if any updates are required based on changes in the Transportation network.



## Timeframes

Priority 1 (70km): Complete ice control and snow plowing within 24 hours of snowfall ending

Priority 2 (35 km): Complete ice control and snow plowing within 24 hours of Priority 1 completion

Priority 3 (25 km): complete ice control and snow plowing within 24 hours of Priority 2 completion

Priority 4 (405 km): to ensure that they are passable to emergency services and general public, as necessary upon completion of Priorities 1 through 3

In general, Transportation Operations staff have all of the Priority 1, 2 and 3 routes completed 24-36 hours after the end of an average snow storm provided there is no drifting. At that point, staff will move onto other priorities but most likely residential sanding if no snow removal is planned.

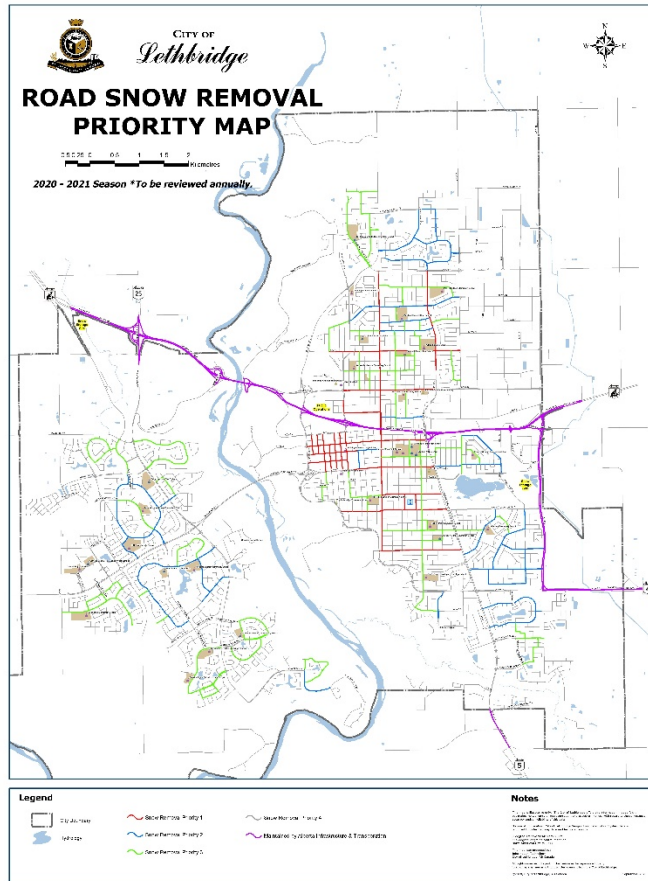
The established priority routes all generally have three things in common:

- There is no on-street parking
- High traffic volumes (collector or arterial roads)
- There is snow storage in a boulevard

As KPMG noted, Lethbridge does not plow as many roads as other municipalities because few roads in town meet the above criteria. Some roads have been added to plow routes despite their non-conformance but often require special equipment and/or different practices to clear. Most major roads that are not on a plow route are on a snow removal route instead. This system generally works because Lethbridge does not receive a large amount of snow annually. Chinook winds will typically melt some or all of what is on the road which lessens the magnitude of impact to the public.

## Snow Removal

"Snow removal is commenced when required due to heavy accumulation of snow to allow vehicle passage and parking. Removed snow is trucked to a designated snow storage facility approved by Alberta Environment. Snow removal (and loadout) is done on a priority basis with three priorities identified for snow removal during normal winter conditions as shown on the Removal Priority map." (CC34) Once snow is loaded into a truck it must be considered a hazardous waste and must be treated accordingly.



The Lethbridge priority snow removal system was developed in 2009 after a large winter event 2008//9 and formalized in the current SNIC policy. The priority routes set forth a system by which roads would have snow removed in the event of another large snow storm. In several years these other priority removal routes are not enacted with the exception of Priority 1 routes, however in some years, all priority routes, including Priority 4 roads were cleared under emergency snow removal measures. Priority 1 routes are actioned 2-4 times/year and may or may not include the entirety of the identified routes based on the observed local road conditions. Generally, this starts with the downtown roadways and extends along other Priority 1 routes, including the hospital area.

It typically takes a snowfall, or multiple snowfalls, totaling 15-20cm or greater to qualify as a "heavy accumulation," under the existing policy. By the time Priority 1 snow removal is completed, the remaining priority routes have typically developed ruts and/or melted to an acceptable level. It is during this time window, or in situations where the road doesn't melt/large ruts form, that residents are the unhappiest with the service levels.

## Drift Response

Lethbridge is prone to drifting due to persistent westerly winds which often come after a snow storm. After a snowfall, strong winds may create drifting hazards across the City. This is managed in CC34 by stating "there may be extreme winter conditions that create impassible conditions on other roadways. If this occurs, all remaining roadways and laneways would be cleared on a case by case, area by area basis under Priority 4 (Emergency Snow Removal)."

There is no direct service level in the current council policy that addresses this topic. To help combat the issue, Lethbridge annually installs roughly 10km of fence in 62 different locations. Staff have identified an additional 91 areas which are prone to drifting. During a moderate snow event like the snow storm in November, 2020, Transportation Operations had over 200 requests to clear drifts. Staff can spend a great deal of time repeatedly plowing the priority routes such as Metis Trail, University Dr, Scenic Dr and Whoop Up Dr to ensure they remain passable.

During a moderate sized snow storm (15-20cm)/drifting event, it will take roughly 7 days to clear all of the drifting requests reported to the City. The requests are triaged by the foreman in a manner they see fit based on the information they have at the time. Contracted equipment (loaders) is often brought in to help remove drifts.

## Efficiency Opportunities

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Based on the KPMG report efficiency opportunities, Transportation Operations administration reviewed internal practices and researched publically available information for numerous municipalities across Alberta, British Columbia and Saskatchewan. The information gathered was paired with common resident feedback received by operations to create the following efficiency opportunities. The efficiencies identified may not directly result in costs savings, but they would potentially better align plowing and snow removal practices to the expectations of the tax payer.

### Snow Plowing

Municipalities in Alberta typically plow more roads than Lethbridge. This is accomplished by plowing the snow from the road surface either to the edge of, or into the parking lane/boulevard. Generally speaking, this practice would be utilized on collector roads and bus routes and potentially be reinforced, as needed, by some form of parking ban. There is no reason that every road can't be plowed however it is typically not completed/cost effective in municipalities that don't have persistent snow accumulation or pack.

Lethbridge has dedicated snow routes implemented when CC34 was last approved. They are defined as, "areas designated by the City for designated "No Parking" routes for snow plowing of the roadway into the parking lane." The snow route was envisioned to allow the parking lane be utilized as temporary storage while operations staff and contractors remove snow. The snow on any particular snow route would eventually be removed once the snow removal crew made it to that area.

The primary difference in the Lethbridge system is that municipalities typically leave the snow in, or up to, the parking lane. When possible, the snow can be pushed into a boulevard to ensure parking is accessible. All of this is normally enforced by a parking ban so that plows and graders can efficiently complete the work. The snow which is pushed into driveways and boulevards is generally the responsibility of the property owner to clear or manage. To help manage the snow in the parking lane (windrows), various clearing priorities, size thresholds and winter parking zones would be established based on the values of the municipality.

The following are considerations if snow is pushed off the driving lanes into the parking areas:

**Parking:** Leaving a windrow next to car or in a parking lane may impede parking or access to parking. This may be a short or long term issue depending on the amount of snowfall and temperatures. There are numerous parking considerations and strategies other municipalities have developed to help mitigate this impact.

**Driveway Access:** Leaving a windrow across a driveway may impede access to the property. The property owner is typically charged with removing the windrow but some municipalities clear them afterwards. Some municipalities offer clearing services to individuals with accessibility issues.

**Parking Bans:** To effectively plow a road to the curb or over the curb, all vehicles need to be off the street. A parking ban may or may not include ticketing. Parking bans can be seasonal or “called,” by the municipality based on the weather conditions.

**Drainage:** When the stored snow begins to melt, the nearest catchbasin may be blocked resulting in a pool of water and possible ice formation.

**Accessibility:** Some people would not be able to navigate the City if challenged by windrows for a variety of reasons. Additional consideration must be given to these individuals and systems developed to help make the system equitable.

Options
#1 Maintain current practice
#2 Plow selected collector roads/bus routes
#3 Plow all or the majority of streets

## Snow Removal

Municipalities generally utilize the same operational process to remove snow but may utilize different priorities on where to focus their attention. Lethbridge is very unique in that it has developed extensive removal priorities maps, most municipalities focus their snow removal efforts on clearing parking areas, selected zones and downtown.

It should be noted that any changes to the current plow system could have impacts on the current snow removal system. The current removal system is designed to not utilize, or temporarily utilize, the parking lanes and boulevards for snow storage. Many of the existing priority removal areas would not be needed or treated differently if that was not the case.

For example, 13th St from 26th Ave N to 16th Avenue S would typically be a plow route in most municipalities. The snow would eventually be plowed into the parking lane or boulevard and then removed if necessary.

Some alternatives utilized in other municipalities include:

**Windrow Free Zones:** Certain areas are removed as per municipal priorities. This could be implemented in certain areas or as a standard practice across all impacted areas.

**Windrow Thresholds:** Once windrows have reached a certain size they are removed. Typically, this would be after very heavy/consistent snowfalls or in plow routes prone to drifting.

**Schools:** Areas around schools are cleared, especially right out front where kids are dropped off. This helps the kids navigate get to the school and reduces children from playing on or in the snow piles. This is common operational feedback on how we can improve our SNIC program.

**Remove everything:** Some municipalities plan to remove all of the snow from their roads. This is budgeted and executed after the snow pack reaches a certain level. This is a more common practice at higher latitudes in Canada.

**Remove nothing in residential:** Some municipalities state they will not remove snow in residential areas. This is typically a logistical and budget related issue but meant to prevent undertaking community wide snow removal. This is currently not practical as our policy states that snow is removed after it impacts a properly equipped winter vehicle, also emergency services and Lethbridge Transit (ie. becomes impassible).

Options
#1 Maintain current practice
#2 Remove snow from only downtown, select streets and the hospital
#3 Remove snow in front of schools
#4 No residential removal. Plow to right on emergency only.

## Drift Response

Most municipalities identify they will respond to roads which have become impassable and/or install snow fence but do not mention specific service levels. From an administrative perspective, improving drift response is the most commonly requested service enhancement.

The most common misunderstanding around drift management involves the use of snow fence. Snow fence is an important tool in drift management but it has the following limitations:

- If winter comes early, Operations staff may not be able to install all of the fence before it is needed
- Snow fence is generally installed seasonally by Operations staff resulting in less available capacity for other services
- Snow fence needs to be maintained through the winter, including garbage removal
- Snow fence needs to be removed in the spring to allow efficient parks grass cutting operations. This limits staff available for the Spring Sweeping cleanup and other asphalt maintenance operations
- Snow fence doesn't do anything, or is very poor value, if it doesn't snow or drifting conditions do not occur regularly
- During extreme winters and events, the snow fences "fill up," creating a situation where the roads require servicing anyways
- The fence should ideally be 25m back from the road to prevent drifting on the road
- During a snow storm, wind typically comes from the North. After the storm, the wind typically comes from the west resulting in situations where residents request protection from both directions

The following is a summary of common feedback:

**Drifting around parks:** Drifting frequently occurs around parks resulting in roads becoming impassable. Residents call in to request snow fence. Residents are generally not satisfied with Operations staff plowing snow back into a park after the road has drifted, or begun drifting in.

**Drifting around vacant properties:** Typically, the land is stripped and bare, which creates ideal drifting conditions depending on the surrounding terrain. Residents call in to request a snow fence on a private property.

**Drifting around new subdivisions:** Large areas will be stripped of vegetation and generally the new subdivision will have an exposed western front. Developers may install fence in obvious problem areas but much of the road network will remain unprotected.

**Response time:** A 7-day response time is not acceptable to some residents from an emergency service access perspective, nor is it acceptable to not install snow fence if known drifting conditions exist.

**Response Prioritization:** Customers routinely question drift response times or snow fence placement decisions. Drift response decisions are made with the best available information at the time utilizing available resources and may not be optimal or fair.

Options
#1 Maintain current practice
#2 No drift control (snow fence)
#3 Formalize a Drift Response Service Level/Plan