

1 Introduction

Calgary is a major transportation and logistics hub and is connected to the national rail network through the Canadian Pacific Railway and Canadian National Railway. With increasing volumes and types of goods being transported via freight railways there is an increased awareness across the country for the potential risks of accidents and the physical impacts of train derailments. A municipality should understand the context and risks for development next to a freight railway corridor when making planning decisions, and to ensure any required mitigation measures are incorporated at the time of a project's construction.

The most critical areas that need to be considered in terms of mitigating the risks of a derailment are the lands that are most likely to be physically impacted. The risk mitigation policies below are designed to enable appropriate development in these areas by applying a risk management approach. They provide clear guidance on the risk mitigation measures that will be required for certain uses or new developments directly adjacent to the freight railway.

When redevelopment occurs next to a freight railway the effects of noise on residents must also be considered. Clear guidance regarding the mitigation of noise is provided below. The Policy also acknowledges that vibration caused by rail operations can affect adjacent buildings and that mitigation should be considered for potential chemical releases due to accidents. Due to the complex nature of these issues, however, this Policy only provides advisory statements regarding vibration and chemical release.

Details on how to apply the policies and mitigate the risks are provided in the Implementation Guide.

2 Purpose and Objectives

The purpose of this Policy is to promote the vision of the Municipal Development Plan and local area plans to ensure that development and redevelopment reach their full potential near freight railways within acceptable risk levels.

This Policy supports the following objectives:

- a) Protection for building occupants and buildings;
- b) Mitigation of noise impacts from freight rail operations on residents in buildings near freight railways; and
- c) Provide the planning process and landowners with a clear understanding of the potential risks and by doing so remove the need for individual risk assessments for most developments.

3 Applicability of the Policy

This Policy addresses the very specific situation of new development next to freight rail corridors. It is supplemented by the Implementation Guide which provides further detailed guidance on implementing the policies.

- a) This Policy supplements other City plans and policies and is to be applied unless other statutory City policies prohibit new development adjacent to the freight railway corridors.

- b) This Policy only applies to lands that are at most risk of the physical impacts of train derailments. These lands have been identified as 30 metres on either side of a freight railway corridor in a zone referred to as the *Rail Proximity Envelope (Envelope)* and as described in the Implementation Guide.
- c) Land use districts vary along the freight railway corridors and allow for a wide range of potential uses. As not all uses have the same level of risk tolerance, this Policy only applies to high density residential and commercial uses (High Density Uses) and Sensitive Uses as identified in Table 1.
- d) It is important to not burden existing buildings and businesses along the corridors with requirements not originally considered in their design. Therefore, this Policy only applies to new developments and additions to existing developments as well as changes of use to High Density Uses and Sensitive Uses as identified in Table 1 within the 30-metre *Envelope*.
- e) The risks addressed in this policy are specific to freight rail operations. Other forms of rail transportation in Calgary include Light Rail Transit lines. As they do not pose the same risk, this Policy does not apply to development and lands solely adjacent to Light Rail Transit.

4 Risk Mitigation

Developments that are within the *Envelope* are exposed to varying levels of risk due to the potential physical impacts of a train derailment based on the physical relationship between each parcel and the rail. To enable appropriate and desired new development, The City must understand the potential risks and subsequent mitigation measures that may be required. With this understanding, The City will be able to provide a consistent basis for decision-making that will support landowners in the development of their lands.

Consultation with experts, analyses based on a nationally used risk standard and comparison of other risk tolerance levels have enabled Administration to recommend annual probabilities of a train derailment leading to a fatality of 0.0001% for High Density Uses and 0.00003% for sensitive uses as acceptable tolerances respectively.

These risk tolerances have been determined based on the following:

- The number of people exposed to the potential risk of a train derailment;
 - Ease of evacuation;
 - Duration of exposure to the potential risk; and
 - The occupants' ability to self-evacuate.
- a) The City should undertake an assessment of the risks to lands adjacent to the freight rail corridors and use this as a consistent basis with which to determine if mitigation measures are required.
 - b) The risks resulting from a train derailment depend on track and operational aspects as well as the size of planned buildings and the resulting likelihood that they would be impacted by a derailment. Mitigation measures should be required based on the risk tolerance established in The City's risk assessment as follows:

- i. Where the risk tolerance for a parcel is 0.00003% or less, no additional mitigation measures are required and development can proceed with standard planning review process;
 - ii. Where the risk tolerance for a parcel is greater than 0.0001% and the proposed development is for a High Density Use in a building that exceeds the *Maximum Building Width* as referenced in Table 1 of the Implementation Guide, a *Site-Specific Risk Assessment* is required;
 - iii. Where the risk tolerance for a parcel is greater than 0.00003% and the proposed development is for a Sensitive Use that exceeds the *Maximum Use Width* as referenced in Table 1 of the Implementation Guide, a *Site-Specific Risk Assessment* is required;
 - iv. Where the risk tolerance for a parcel is greater than 0.00003% and the proposed development is for a Sensitive Use in a building that exceeds the *Maximum Use Width* as referenced in Table 1 of the Implementation Guide, a *Train Impact Structural Review* is required.
- c) Fatalities also occur when people trespass across the freight rail corridor. To mitigate this risk, new developments adjacent to the freight railway should be physically separated from the corridor by a fence or similar barrier that meets the conditions established in the Implementation Guide.

5 Noise Mitigation

Railway operations by their nature are noisy. The goals of the Municipal Development Plan are to direct future growth of the city in a way that fosters a more compact, efficient use of land, creates complete communities, provides good quality of life for citizens, creates liveable places, and provides safe and healthy communities. In order to achieve these goals and enable development adjacent to the freight rail corridor, it is important to manage the impact of noise associated with freight rail operations as it relates to uses where people live. These uses are identified in Table 1 as Noise Susceptible Uses.

- a) Noise mitigation is only required for Noise Susceptible Uses that directly face the freight rail corridor and are located within the *Envelope*.
- b) When located within the *Envelope*, noise levels should not exceed 35 dBA in bedrooms and 40 dBA in all other living spaces.
- c) The noise standards can be achieved either through the completion of a noise study or by employing enhanced construction methods.

6 Mitigation Measures

Appropriate measures to mitigate safety and noise risks must be incorporated into new developments and as outlined in the Implementation Guide.

7 Vibration and Chemical Release (Advisory Statements)

Vibration caused by rail operations and potential chemical releases due to train accidents are also aspects that should be considered when developing adjacent to a freight railway corridor.

Due to the complex nature of these issues, however, this Policy only provides advisory statements regarding vibration and chemical release.

Vibration

People can be sensitive to vibration generated by freight rail operations. Vibration impacts can include interference with sleep and activities involving concentration, reading and quiet conversation. The impact and mitigation of vibration associated with freight rail operations should be considered when planning and designing developments.

Chemical Release

To further protect the buildings and the building occupants from a potential chemical release due to a rail incident, the incorporation of mitigation strategies into existing and new buildings within the *Envelope* is encouraged.

8 Access Strategy

In the event of an incident requiring emergency response, access to the accident site is critical.

- a) The design and use of public lands and new buildings should consider maintaining the ability to provide access points for emergency responders as well as access to water for firefighting purposes.
- b) Access points for emergency response in established and new communities should be facilitated through existing public lands, at-grade crossings, roadway openings or adjacent open spaces.
- c) Private land owners are not required to dedicate portions of their development parcel at the time of construction for the purpose of accessing the freight rail corridor.

9 Review and Monitoring

It is recommended that the Implementation Guide be maintained in consultation with industry stakeholders. It should be reviewed every ten years with annual monitoring to evaluate the risk associated with freight rail operations.

Table 1: High Density and Commercial Uses, Sensitive Uses and Noise Susceptible Uses

High Density and Commercial Uses	Sensitive Uses	Noise Susceptible Uses
Hotel	Addiction Treatment	Addiction Treatment
Live Work Unit	Assisted Living	Assisted Living
Multi-Residential Development	Child Care Service	Backyard Suites
Multi-Residential Development – Minor	Custodial Care	Child Care Service
Dwelling Unit	Emergency Shelter	Contextual Semi-detached Dwelling
Townhouse	Home Based Child Care – Class 2	Contextual Single Detached Dwelling
Office	Hospital	Cottage Housing Cluster
Instruction Facility	Jail	Custodial Care
Post-secondary Learning Institution	Residential Care	Duplex Dwelling
Health Service Laboratory – With Clients	School Authority – School	Dwelling Unit
Medical Clinic	School – Private	Emergency Shelter
Cannabis Counselling	Temporary Shelter	Home Based Child Care – Class 2
Dinner Theatre		Hospital
Drinking Establishment – Large		Hotel
Drinking Establishment – Medium		Jail
Drinking Establishment – Small		Live Work Unit
Night Club		Manufactured Home Park
Restaurant: Food Services Only – Large		Multi-Residential Development
Restaurant: Food Services Only – Medium		Multi-Residential Development – Minor
Restaurant: Food Services Only – Small		Residential Care
Restaurant: Licensed – Large		Rowhouse Building
Restaurant: Licensed – Medium		School Authority – School
Restaurant: Licensed – Small		School – Private
Restaurant: Neighbourhood		Semi-detached Dwelling
Artist's Studio		Single Detached Dwelling
		Townhouses