RAIL SAFETY FIRST
COMMUNITIES FOR SAFE, TRANSPARENT + ACCOUNTABLE RAIL.

September 26, 2017

Mr. Richard Paton
Chair - Railway Safety Act Review
255 Albert Street, Suite 702
Ottawa ON K1P 6A9

Ladies and Gentlemen:

Re: Railway Safety Act Review 2017 – 2018
September 18, 2017 Roundtable
Proximity

Thank you for including Rail Safety First in the Railway Safety Act Review Proximity Roundtable.

Rail Safety First is a coalition of resident and business improvement associations in Toronto formed in the aftermath of the Lac-Mégantic derailment.[1] We advocate for safe, transparent and accountable rail.

In keeping with the theme of the Roundtable, we restrict our comments to proximity related issues. We will make a separate submission addressing a broader range of rail safety issues shortly. We note here, as we will in our subsequent submission, that the scope of the Railway Safety Act Review does not include the transportation of dangerous goods. While recognizing that the latter is govern by the *Transportation of Dangerous Goods Act*, and not by the *Railway Safety Act*, any conversation regarding rail safety in the context of proximity, without including dangerous goods, will be incomplete. The transportation of dangerous goods by rail is the elephant in the room. We believe that this submission illustrates this point.

Our remarks focus on Canadian Pacific's North Toronto Subdivision[2] for two reasons. Firstly, we are familiar with this rail corridor as many of our coalition members abut the corridor. Secondly, the north side of Dupont Street, which parallels the corridor to the south, is subject to intense pressure to convert employment lands to non-employment uses, i.e. condominiums. We believe that examining this corridor at a granular level will serve to inform the uneasy interface between railway operations and urban growth.

In the Beginning

There was time in this fair land when the railroad did not run
When the wild majestic mountains stood alone against the sun
Long before the white man and long before the wheel
When the green dark forest were too silent to be real.[3]

That was then. This is now

Urban growth is relentless. It has impinged on rail infrastructure and will continue to do so. This is in part a result of organic growth but is also a result of provincial land use policies mandating intensification/densification which in turn require municipalities to include intensification/densification in their official plans. Ontario's population is projected to grow by 30.3 per cent, or more than 4.2 million, over the next 25 years, from an estimated 14.0 million on July 1, 2016 to more than 18.2 million by July 1, 2041. The Greater Toronto Area (GTA) is projected to be the fastest growing region of the province, with its population increasing by almost 2.9 million, or 42.3 per cent, to reach 9.6 million by 2041.[4]

Meanwhile, freight rail traffic is increasing with longer, heavier and faster trains.

Dupont Street Regeneration

Dupont Street in Toronto illustrates this issue. It parallels CP's North Toronto Subdivision which lies immediately to the north. These are employment lands that developers have applied to convert to non-employment use i.e. more condos.

There are at least 9 development proposals along a short stretch of Dupont from Spadina Road to Ossington. They are identified in paragraph 2.1 at page 2 of the Hatch Mott MacDonald North Toronto Subdivision Rail Corridor Risk Assessment and Management Study Final Report dated May 15, 2014 to the City of Toronto ("**HMM Report**")[5] to which we refer below.

Development applications are site specific, without regard to the broader urban context. To bring some discipline to the process and to look at the bigger picture, the City commissioned the Dupont Street Regeneration Study ("**Dupont Study**")[6]. Given the proximity of the proposed developments to the rail corridor, the City also engaged the engineering firm Hatch Mott MacDonald to conduct a risk assessment and management study in connection with the Dupont Study. Many community meetings were held. The slide deck from the May 14, 2014 meeting is a good example of the issues that arise from the intersection of urban development and rail infrastructure.[7]

The HMM Report provides a comprehensive discussion of the risks touched on in the slide deck and recommends mitigations strategies. It is a must read when it comes to the issue of proximity.

While explained in much greater details therein, the HMM Report addresses the noise and vibration risk as well as the derailment risk. It summarizes the latter at paragraph 7.2 "Train Incident Risk Assessment" at page 39 as follows:

> Typically, a Risk Assessment identifies, analyses and ranks potential risks based on their probability and consequence. Given the focus of this study on the potential re-development of lands between the rail corridor and Dupont Street, the risk assessment is focused on the relative amount of potential risk to life and property of the study area lands.
>
> There are two main types of train incident risks that could impact lands beyond the rail corridor:

1. Physical train derailment.

2. Release of material (e.g., a leak or spill of train cargo).

Not to diminish it in any way, the noise and vibration risk can be seen as a quality of life issue. Derailment on the other hand, is an existential risk.

Noise and Vibration

Each application for development within 300 metres of a rail corridor must be accompanied by a noise and vibration study. The applications for development along the CP rail corridor include the required studies. Links to studies for some of the proposed developments are set out below.[8] These studies estimate that noise and vibration emanating from rail operations along the corridor will substantially exceed benchmark levels. Various mitigation strategies regarding construction are proposed. More to the point, each study recommends disclosure to purchasers of the noise and vibration risk and the obtaining of waivers of liability form purchasers.

The Federation of Canadian Municipality and the Railway Association of Canada developed guidelines in this regard ("**Guidelines**").[9] Note that the Guidelines were published in May 2013, 6 weeks before the July 6, 2013 disaster in Lac-Mégantic.

The Guidelines, the Dupont Study and the HMM Report all recommend a 30 metre setback and berm.

What is apparent is that the Guidelines and the noise and vibration studies required by the City are directed as much to mitigating the risk to railways from claims by purchasers of condominiums for nuisance arising from railway operations and to municipalities for failing to protect these purchasers through land use control mechanism as to rail safety.

Of the proposed developments, all but one reached a settlement agreement with residents and the City that include the 20 metre setback from the rail corridor and a berm. One developer could not accommodate the setback due to the shape of the lot and pursued its application based on a 2 metre setback and deflection wall. That application was rejected by the City and the developer appealed to the Ontario Municipal Board with a decision pending.[10]

However, development is relentless. Even the City is inconsistent in this regard as evidenced by its granting of permission for a townhouse development adjacent to Metrolinx's Willowbrook Yard. Metrolinx is the province of Ontario's regional transportation agencyfor the Greater Toronto and Hamilton Area, similar to Translink in Vancouver and RTM in Montreal. It operates Go Transit. The Willowbrook Yard is a 24/7 operation that is critical not only to the current operation of Go Transit but also to implementing Metrolinx' regional express rail (all-day 2-way express rail service ("**RER**")[11] and the City's own SmartTrack plan which piggy backs on the Go Transit rail infrastructure. Metrolinx has appealed the City's decision to the Ontario Municipal Board.

When rail operations affect existing properties, residents have recourse to the Canadian Transportation Agency under section 95.1 of the *Canada Transportation Act* to pursue noise and vibration complaints.[12] Their success rate is low, despite the increase noise and vibration that accompanies longer, heavier and faster trains. Existing residents feel abandoned by the process,

their interests subordinated to rail operations. That apart, the Agency's mandate does not include rail safety.

Derailment

Setbacks and berms address physical impingement.

Examples of impingement are the derailment of an Ontario Northland freight train in North Bay on August 4, 2016.[13] 25 tank cars that had been used to transport sulfuric acid derailed and toppled down an embankment from the elevated rail corridor. One of the toppled cars was stopped just feet from a home by the trunk of a dead maple tree, not a recognized risk mitigation technology. No TSB investigation was conducted.

Another example is the August 26, 2012 derailment of a VIA passenger train in Burlington. In that instance the locomotive slid down an embankment and struck the foundation of a building adjacent to the track. The cab roof collapsed resulting in extensive damage to the cab interior and fatal injuries to the 3 operating crew members.[14]

However, as noted above, neither the Guidelines nor the risk mitigation strategies recommended in the HMM Report address the risk attendant on the release of materials such as chlorine, propane and flammable liquids as a result of a derailment.

History of North Toronto Subdivision

The North Toronto Subdivision is part of CP's main freight line. It is on that line that a CP train derailed, exploded and burned for several days in Mississauga on November 10, 1979. This resulted in the largest peace time evacuation in North America prior to Hurricane Katrina in 2005.

In his December 1980 ("**Grange Report**")[15] on the derailment, Mr. Justice Grange noted that more catastrophic consequences were avoided due to good luck and because there was not much development at the site of the derailment, something that could not be said today. Again, good luck is not a known technology.

Mr. Justice Grange described the derailment and at page 3 of his report as follows:

> The eventual resting place of the 24 cars is shown on the attached Appendix 2 reduced from Exhibit 14 at the Inquiry. I will deal later with the properties of the commodities involved and the remedial action taken. It is sufficient now to repeat again that 3 of the cars exploded within one-half hour of the derailment and as a result of these explosions 3 great fire balls were sent into the sky and the larger parts of the bodies of Cars 8, 12 and 13 were sent flying 145 feet east, 440 feet southeast, and 2222 feet (sometimes stated to be 2214 feet) northeast respectively with other parts sent in varying distances in all directions. These explosions are known (not always accurately) as BLEVE's-an acronym for Boiling Liquid Expanding Vapour Explosion-to indicate that the pressure within the tank induced by the boiling liquid has expanded as it vapourized to the point where the tank could no longer resist the pressure. The main property damage was inflicted by the explosion of Car 12 in a south- easterly direction **but not as much damage was**

> **done as might have been expected and miraculously no casualties were suffered. The reason is simple and most fortunate; notwithstanding that the train had entered one of the most concentrated population centres in the country, at the precise point of the derailment, there was to the immediate south only industrial property, and to the north and northeast, except on the strip of Mavis Road itself, there existed one of the few large areas of undeveloped land remaining in the greater Toronto Region.**
>
> [**emphasis added**]

While not a recommendation of his Report, Mr. Justice Grange did address the merits of relocating the rail corridor at pages 173 – 175 of his Report on the following terms

> f) RE-ROUTING
>
> I have much the same reaction to re-routing.
>
> The major proposal to that end came in a comprehensive brief from the Municipality of Metropolitan Toronto. That brief points out that the CP Rail track from southwestern Ontario travels through the heart of Metropolitan Toronto to reach the yards at Agincourt where much of it is then dispatched to western Canada and much of the traffic from western Canada follows the same route in reverse. This brief suggests that all dangerous commodity trains of CP Rail be re-routed either along the present CN freight line, or along a new CP line both to the north of Metropolitan Toronto through such municipalities as Brampton, Vaughan and Markham, much of which route in either case would be in the Province of Ontario's transportation/communication/ utility corridor.
>
> I need hardly state that the proposal was not endorsed enthusiastically by Brampton, Vaughan and Markham, but I do not wish to appear to dismiss the proposal as frivolous. **Certainly re-routing is possible and certainly it can have advantages in safety. So long as we have derailments of dangerous commodity trains it is better that they take place in sparsely populated areas.** But the magnitude of re-routing track outside populated areas is staggering. It also does nothing at all for the delivery of dangerous commodities to populated areas. The subject should, of course, be studied (or perhaps should continue to be studied-it has from Mr. Gray's evidence already been considered for 2 years) **and where it can be done it should be. I need hardly point out that there is no merit in re-routing if the municipal authorities in an expanding area permit (as they have in the greater Toronto area) building, both commercial and residential, up to the edge of the right-of-way.**
>
> **Re-routing, like marshalling, can be of assistance and should always be considered in long-term planning**. But neither re-routing nor marshalling is the answer we seek now. That answer, in my view, lies in safer trains.
>
> **[emphasis added]**

By way of context, in 20 minutes, that train would have been on the North Toronto Subdivision in the heart of Toronto.

Mr. Justice Grange's observations prompted a consideration of the relocation of the CP mainline resulting in The Toronto Area Rail Transportation of Dangerous Goods Task Force Final Report in July 1988 ("**TART Report**").[16] That report examined the relocation issue from a short term perspective (technological and operational improvements – such as the migration from friction bearings to roller bearings and the use of hot box detectors as advocated in the Grange Report) and a long term perspective (relocation).

The relocation discussion identified that North Toronto Subdivision as high risk. To adopt the modern parlance of the US Pipeline and Hazard Materials Safety Administration, a High Threat Urban Area through what pass High Hazard Flammable Trains.

The TART Report considered setbacks and states in paragraph 3.12 states:

> We studied various buffering measures, from open space "setbacks" to physical barriers such as walls, berms and ditches. We also looked at the use of lands between the railways and more sensitive land uses, such as hospital, schools, senior citizen accommodation and high density establishments.
>
> Sterile land setback, of an appropriate width, would be prohibitively expensive and therefore impractical. **Our study show that walls, berms and ditches were not affective against clouds of toxic gases or BLEVEs (Boiling Liquid Evaporating Vapour Explosion).** However we are convinced that setback lands could be developed for compatible uses, such as industry, agriculture, parks and the likes"…
>
> **[emphasis added]**

The TART Report considered the historical context of the proximity issue in the following terms in paragraphs 1.2.A and 1.2.B at page 1.12:

> The 1979 Mississauga derailment of a train carrying propane and chlorine, which caused the evacuation of almost a quarter million people, is one reason for this concern, but it is not the only one. Other rail accidents, the Bhopal chemical accident in India, and the Chernobyl nuclear accident In the U.S.S.R. have all heightened public awareness of the risk involved with dangerous substances.
>
> The following discussion outlines the historical background to the transportation of dangerous goods by rail, and some of the contextual issues affecting such transportation In the Greater Toronto Area.
>
> In the late 1800s and early 1900s, the rail system consisted of small freight cars, travelling short distances at slow speeds, using a relatively simple infrastructure of signals and trackage. **People living near rail lines had little concern about what goods the trains were carrying.**

Today, trains are heavier, and travel farther at high speeds. Rail technology is highly sophisticated. And those cargoes designated as dangerous goods can - if derailed and released - affect large populations living near the rail lines.

Although there were no fatalities, the hazards involved with such cargos were highlighted by the 1979 derailment in Mississauga. In 1981 the *Transportation of Dangerous Goods Act* was passed into law. Under this Act and Regulations, and under the regulations set by the Canadian Transportation Commission, shippers, carriers and receivers of dangerous goods are required to identify and classify these goods, and ensure that persons handling them are aware of the hazards involved. The Regulations set out the training required for handling dangerous goods, and mandate that appropriate actions be taken in the event of an emergency.

The federally-regulated railways are also governed by the *Railway Act,* soon to be replaced by the *Railway Safety Act*. The latter will govern the requirements for the railways' infrastructure, equipment, train operations and speed. The *Transportation of Dangerous Goods Act* governs product handling.

[emphasis added]

The TART Report concluded that on balance there was insufficient justification to warrant relocation for risk reduction reasons alone, but could be justified where economic benefits along with risk reductions can be achieved though railway rationalization in the Greater Toronto Area (through this finding was not unanimous) in the flowing terms in paragraph 3.14 at page 3.79:

3.14 Long Term Conclusions

Rerouting and relocating the rail flow of dangerous go in the Greater Toronto Area is feasible from an engineering an operational point of view. However, considering the costs involved, any such rerouting or relocation should be justified as part of rail rationalization in the Greater Toronto Area.

On a more general level, we have determined that:

- **The risk from the existing system is relatively low compared to other risks encountered on an everyday basis but that an individual rail accident can be of significance (i.e. a low probability, but high consequence type of accident)**;

- On balance, insufficient justification exists to warrant the rail flow of dangerous goods being relocated for risk reduction reasons alone, **but justification may exist where economic benefits along with risk reductions can be achieved through railway rationalization in the Greater Toronto Area and through the use of some of the alternatives we have studied.** (As stated previously, one member of the Task Force does

> not concur with the statement that risk reduction alone does not justify relocation)…"
>
> [**emphasis added**]

By way of context, the train that derailed in Lac-Mégantic on July 6, 2013 passed through Toronto on route to Saint John two days prior to derailment.

The North Toronto Subdivision, while only 5.9 miles long, has experienced a number of derailments. The exact number is unclear as only the one which occurred on August 21, 2016 near Howland Avenue has been a subject of a TSB Report.[17&18] The HMM Report refers to derailments in 1994 and 2006. We have no record of these. On April 18, 1996 a west bound CP locomotive collided with a stopped 89 car train just east of Mount Pleasant Road along Summerhill Avenue resulting in the derailment of several cars. On April 24, 2017, one year and 3 days after the Howland derailment, a westbound CP train derailed just blocks from the site of the Howland derailment.[19] So along what is arguably the highest risk rail corridor in Canada there have been five derailments in the space of a little over 20 years.

The absence of transparent data on the occurrence of derailments serves only to heighten the public's perception that the broader public interest is not being protected. The public, particularly those who live in proximity to the rail corridor, want to know what happened, why it happened and what is being done to prevent future occurrences. Not a big ask.

Corridor Risk Assessment

On May 1, 2015, both Transport Canada and the U.S. Department of Transportation announced a major initiative to improve the safety of tank cars carrying flammable liquids in urban areas.[20] The US action included enhanced tank car standards, speed restrictions and a more robust corridor risk assessment based on 27 safety and security factors. Canada followed suit with respect to speed and corridor risk assessment in the February 2016 Rules Respecting Key Trains and Key Routes, ("**Key Rules**").[21] Corridor risk assessments can be a powerful tool in identifying proximity risks. The factors to be considered in a corridor risk assessment include proximity to iconic targets and natural hazards; environmentally sensitive areas; population density along the route; areas of high consequence along the route and significant railway operational changes.

However, the value of the corridor risk assessment is open to question. Railways have abandoned alternative routes such as the Ottawa Valley Railway, leaving few alternatives to existing corridors. They take a liberal view of what constitutes a change in railway operations. For example, the TSB Reports on the February 15, 2015 and March 7, 2015 derailments at Gogama noted below, indicate that an increase in petroleum crude oil carloads from 62 to 75 186 between 2010 and 2014 was not identified as a change in railway operations and did not result in a change to CN's corridor risk assessment.

Corridor risk assessments were considered in the TSB reports on the fiery derailments of a CN bitumen unit train on March 7, 2015 at Gogama also on the Ruel Subdivisions[22] and on February 15, 2015 at Gladwick, not far from Gogama, also on the Ruel Subdivision.[23] A third derailment of a CN mix manifest train on March 5, 2015 near Minnipuka on the Ruel Subdivision was not the subject of a TSB report.[24] The TSB also reported on a fiery derailment of a CN bitumen train at

Plaster Rock NB on January 7, 2015.[25] In the case of the two Gogama and the Plaster Rock derailments, the cargo was left to burn itself out.

TSB Report on the Howland derailment notes that following the derailment the speed of trains along a section of the North Toronto Subdivision was reduced by CP from 40 mph to 30 mph.

The TSB reports on the two Gogama derailments address the issue of corridor risk assessment, the operational pressure to sacrifice inspection and repairs to keep trains moving using largely the same language. They identify proximity to urban areas as well as to sensitive environmental areas.

The March 7, 2015 TSB Report states as follows:

> 1.18 Track maintenance challenges on the Ruel Subdivision
>
> CN identified train velocity as an issue having significant influence on the use of assets and cost control, which are 2 of CN's 5 strategic business pillars. All engineering employees understood the sense of urgency to move trains as quickly and as safely as possible.
>
> Train delays that affect velocity can create inter-functional pressures within the company. **These pressures can sometimes create conflict between track maintenance decisions and train operations**. Because of the importance of keeping trains moving, it can be challenging for track maintenance personnel to obtain adequate track time to conduct the required track inspection, maintenance, and repairs, particularly in a remote territory with limited road access.
>
> Train velocity is the ability to move trains to destination as quickly and safely as possible. (Source: Canadian National Railway Company, How We Work and Why.)
>
> **[emphasis added]**
>
> 1.20 Transport Canada regulatory track inspections
>
> TC railway engineering inspectors are tasked with conducting railway infrastructure inspections across Canada. Railway subdivisions are not necessarily subject to regular TC inspections. Instead, TC uses a risk-based approach that considers various factors to identify specific subdivisions or areas of subdivisions that require targeted inspection. TC prioritizes inspections by considering different operational factors, including but not limited to rail and geometry defects, number of passenger trains, operating speeds, and traffic tonnage.
>
> **Between 2013 and the date of the occurrence, TC did not perform any track inspections on the Ruel Subdivision because geometry defects appeared to be declining**. Following the accident, between 15 March 2015 and 19 March 2015, TC inspected the entire Ruel Subdivision and identified 67 non-compliant conditions that required remedial action and 59 other concerns and observations. These conditions had likely evolved since the last TC regulatory inspection (in

2012) and had existed before the accident, yet went undetected despite regular railway inspection.

[emphasis added]

1.35 Census Metropolitan Area

A census metropolitan area (CMA) as defined by Statistics Canada, is an area of one or more neighbouring municipalities situated around a core. A CMA has a total population of at least 100,000 of which 50,000 or more live in the core. A census agglomeration (secondary core) has a population of at least 10,000. **Most CMAs are geographically located on a major rail line.**

According to Statistics Canada

- The population of Canada was about 36 286 400 as of 2016
- The town of Lac-Mégantic had a population of 5 932 people (2011 Census)
- The town of Gogama had a population of 277 people (2011 Census).
- In 2016 there were 33 cities that met the criteria of a CMA with a combined total population of 25 164 200. **This represents about 69% of the Canadian population.**

1.36 Rules Respecting Key Trains and Key Routes

In response to TSB recommendation R14-02, in April 2014 TC issued MO 14-01 which defined criteria used for identifying key routes and key trains and required railways to:

- formulate rules respecting the safe and secure operation of trains carrying certain dangerous goods and flammable liquids;
- govern the route and speed of any key train to 50 mph or lower, including but not limited to further speed reductions to 40 mph or lower for any key train transporting one or more class 111 loaded tank cars containing a number of selected DGs which included petroleum crude oil and petroleum distillates, in areas identified as higher risk through a risk assessment process; and
- conduct risk assessments and periodic updates based on significant changes to determine the level of risk then with each key route over which a key train is operating.
- with respect to the speed restrictions of 40 mph for a unit train hauling class 3 flammable liquids, **no detailed engineering analysis had been**

performed to assess the effect of the speed reduction on the severity of the derailment.

1.37 Canadian National Railway Company Corridor Risk Assessment

On June 20, in compliance with MO 14-01 CN submitted a risk assessment to TC for the transport of DGs on the Winnipeg-Toronto key route. The risk assessment evaluated each subdivision on the territory to assess areas of vulnerability in terms of:

- preventing an occurrence (ie. coverage of wayside inspection systems);
- the potential consequences associated with an occurrence (i.e. proximity to population centres and environmentally sensitive areas); and
- the ability to respond to an occurrence (i.e. locations of personal and materials to respond to a spill).

With respect to the Ruel Subdivision, **most of the required mitigations identified by corridor risk assessment were related to the ability to respond to an emergency involving DGs, such as the need for caches of response equipment on the territory and the need to evaluate the contractor coverage for emergency response…**

The risk assessment process for the corridor assessment did not take current or projected future track conditions into consideration. The risk assessment did not also anticipate the increase of crude oil or the impact of the increased tonnage on the ability to maintain adequate infrastructure safety margins.

[emphasis added]

2.10 Key Train Speed

Kinetic energy is a function of mass times speed squared. During a derailment, a train loses kinetic energy as the energy is consumed by the forces involved in the derailment and as the train comes to a stop. In comparison to a lighter train, heavier trains (e.g., crude oil, unit trains) has a greater momentum and requires more energy and distance to stop. **It is well understood in the industry that, when trains speed is increased, more cars will derail when the train is involved in a derailment**.

While train speed is a primary factor in the severity of an outcome of a derailment, the weight of the cars involved also plays a role, as heavier cars will gain more momentum when train speed increases and will take more effort to stop. When heavier tank cars are loaded with DGs, the risk of a release and the potential consequences resulting from a derailment are also elevated. For example, in the Gladwick occurrence (R15H0013), the train was traveling at 38 mph and 29 cars derailed. In this occurrence (R15H0021), the train was traveling at 43 mph and 39

cars derailed. In both cases, the trains involved were crude oil unit trains and were operating in a similar manner on tangent track when the derailments occurred.

Regulators have recognised the role that that speed plays in the severity of outcomes during a derailment and have put measures in place to limit the speed of key trains under certain conditions. Following the Lac-Mégantic occurrence, on 23 April 2014, TC issued Ministerial Order (MO), 14-01 requiring railways to limit key train speed to 40 mph through a census metropolitan area (CMA) and perform risk assessments on key routes. The MO continued to be reissued until February 2016 when the TC approved Rules Respecting Key Trains and Key Routes came into force.

The Rules Respecting Key Trains and Key Routes require railways to restrict key trains to a maximum speed of 50 mph and further restrict key trains to a maximum of 40 mph within a core or secondary core of a CMA. In addition, the rules require railways to restrict key trains transporting DOT-111 loaded tank cars containing a number of class 3 flammable liquids to a speed of 40 mph in areas identified as higher risk through the risk assessment process also required by the rules. DOT-111 tank cars also include those that were constructed to the CPC-1232 specification, such as those transported by the occurrence train. **Despite the CMA speed reduction of 40 mph for unit trains hauling class 3 flammable liquids, no detailed engineering analysis has been performed to assess the effect of the speed reduction on this severity of a derailment**.

The occurrence train was designated as a key train and was operating on a key route. The accident occurred at 43 mph, which was lower than both the authorized track speed of 50 mph and the maximum speed of 50 mph permitted by the MO in place at the time of the accident and by the present Rules Respecting Key Trains and Key Routes. **The speed of the petroleum crude oil train increased the severity of the outcome**…

In the Gogama occurrence (R15H0021) 33 of the 39 derailed tank cars (85%) were breached, and released about 2.6 million litres of petroleum crude (UN 1267) to atmosphere, water or surface. Nineteen (19) of the 33 breached tank cars (58%) lost their entire load due to fire / spillage. The released product ignited, caused explosions, resulting in a large pool fire and **contaminated the nearby Makami River**. The product ignited and the fires burned for 3 days. Although the accident occurred near the town of Gogama and there were no injuries, the accident impacted the environment and required significant post-accident restoration work. **Had the accident occurred within a town, city or metropolitan area, the outcome could have been more severe. The severity of the outcome of 43 mph suggests that speed restrictions of 50 mph which were in place that the time of the accident, would not reduce the severity of an impact and were not sufficient for unit trains transporting class 3 flammable liquids**.

General merchandise trains, which often transport DG tank cars disbursed through the train, are generally exposed to less risk in a derailment because the derailment

> can occur in an area of the train that is transporting few or no DG tank cars. Unit trains of DG tank cars transporting class 3 flammable liquids meanwhile, have a different risk profile. When a derailment occurs at or near track speed and involves a unit train transporting class 3 flammable liquids, the risk of release and adverse consequences is high no matter where the derailment occurs within the train because all of the cars are carrying class 3 flammable liquids. **If train speed is not adequately restricted for a unit train transporting class 3 flammable liquids, there is an increased risk of product release and adverse consequences when the train is involved in a derailment**.
>
> **[emphasis added]**
>
> 2.10.1 Key train speed through Census Metropolitan Area
>
> A CMA, as defined by Statistics Canada is an area of one or more neighbouring municipalities situated around a core. A CMA has a total population of at least 100,000, of which 50,000 or more live in the core. A census agglomeration (the secondary core) has a population of at least 10,000.
>
> **Most CMA's are geographically located on a major rail line**. In 2016, there were 33 cities that met the criteria of a CMA, with a combined population of 25 164 200 (i.e. about 69% of the Canadian population). The Rules Respecting Key Trains and Key Routes require railways to restrict key trains to a maximum speed of 50 mph, and to further restrict key trains to a maximum of 40 mph within a core of secondary core of a CMA. This means that train speeds would be restricted through areas that contain about 69% of the Canadian population. **However, the majority of towns located along a rail line do not meet the criteria of a CMA and therefore the 40 mph speed restriction of the rules respecting key trains and key routes does not apply.**
>
> **[emphasis added]**

Corridor risk assessments are provided by railways to Transport Canada. They are confidential. CN offered to provide its corridor risk assessment to the clerk of the House Standing Committee on Transportation, Infrastructure and Communities. The then Minister of Transportation determined not to permit release of corridor risk assessments, citing security concerns. As evidenced by the TSB Reports on the Gogama derailment, in the minds of the public, the efficacy of corridor risk assessments to mitigate risk is open to question.

Environmental

The TSB Report on the March 7, 2015 Gogama derailment and its Report on the July 6, 2013 Lac-Mégantic derailment underscore the significant risk to the environment. In both instances, product was released into watercourses. In the case of Gogama, remediation is still not complete. The Mattagami First National commenced legal proceedings in August alleging $30 million in damages.[26] In the case of Lac-Mégantic, 52.4% of the funds available to settle claims were allocated to government, 94% of which was to the Province of Quebec which bore the bulk of the costs of environmental remediation. Wrongful Death Claims, Moral Damages Claims and

Property and Economic Damages Claims constituted 24.1%, 10.4% and 9.0% of funds allocated to settle claims.[27]

Groundhog Day

In February 2016 David Emerson submitted his report Pathways: Connecting Canada's Transportation System to the World to the Minister of Transportation[28] in connection with the review of the *Canada Transportation Act*.

Mr. Emerson specifically address the relocation issues as follows at pages 141-143:

> Providing more separation between railway traffic and communities.
>
> The fact that many rail lines continue into the centres of towns and cities is in some respects, a relic of days gone by. Passenger travel by train has been overtaken by roadway travel across most of the country. In its place, however, freight rail traffic has intensified. **Trains, particularly those of Class 1 operators, have also gotten longer and heavier in a drive to lower unit costs and increase the productive capacity of inputs and their networks. Up until the 1990s, for example, train lengths were on average around 5,000 feet; now they stretch up to 12,000 feet or more**.
>
> **Although longer trains provide benefits for railways and their customers, there are disadvantages for communities when longer trains translate into longer wait times at level crossings**. The City of Saskatoon, for example, has been documenting railway-crossing delays at three locations around the city and has found 300 instances of delays lasting more than five minutes over a three - month span (September to November 2014). The longest delay lasted 42 minutes. The City is now working with both CP and CN to try to find solution s to the problem.
>
> Railway construction and operations also give rise to concerns about noise and vibration in neighbouring areas. Since 2007, the Canadian Transportation Agency has authority to resolve related complaints associated with federally regulated railways and has established a process to do so. The process recognizes distinct responsibilities for both railways and municipalities, and that planning and communications can help to assess and mitigate impacts before they become issues requiring Agency proceedings. While some complaints arise in established neighbourhoods relative to existing railway properties, the development of new residential areas, including through the conversion of industrial or commercial property, also gives rise to potential proximity issues. The Federation of Canadian Municipalities and the Railway Association of Canada have established guidelines to help their members work through issues arising in the latter case. Eight cities have either incorporated the guidelines into their Land Use Plans or are working to do so now.
>
> **Several cities (including Red Deer, Lethbridge, Regina, and Calgary) have worked with railway companies and the federal government to relocate rail operations to sites on the periphery of urban centres**. Doing so helps moderate

proximity issues like those noted above, along with risks associated with dangerous goods transport, and creates new options for the introduction or expansion of passenger or commuter rail, or urban transit.· It also offers potential performance improvements for railways, as lower operating speeds within a city may lower average train velocity (velocity is a source of growing productive capacity).

Short of relocating whole sections of track, efforts have also been undertaken over the last decade to separate rail and roadway traffic. The Roberts Bank Rail Corridor project in British Columbia's lower mainland involved nine road-rail improvement projects over a 70 km stretch of track that connects Canada's largest marine container terminal and a major coal terminal with the continental rail network. The project included 12 funding partners, including railways, the province, and municipalities, and is helping to moderate safety and environmental impacts on local communities (including a reduced need for train whistling), while also providing operational flexibility for railways.

In addition to railway safety and the transportation of dangerous goods regulations, the options highlighted above would also help to address safety and well-being concerns of communities related to rail transportation. In its decisions since 2007, the Agency has confirmed that the parties involved - particularly railways and municipalities - both have clear responsibilities to implement solutions as they arise.

The Review recognizes that in amending the Act, the federal government has provided the Agency with a clear mandate to address noise and vibration complaints in a way that tries to balance the needs of railways and their customers with those of the communities through which railways pass. The forecasted growth of freight rail volumes, along with densification of urban centres, both argue in favour of an additional role for the federal government, outside of the Act, to support the construction of infrastructure or implementation of technologies that could provide a more permanent solution for railways and communities alike.

11. **The Review recommends that in order to support the long term health of Canadian urban municipalities and reduce the risks associated with public and freight rail interactions, the federal government used infrastructure funding leverage to:**

a. **support the relocation of rail infrastructure outside of dense urban centres, and implementation of technologies or infrastructure aimed at improving the safety of rail/urban interface, with safer alternatives including road/rail grade separations, tunnels, and robust noise/visual barriers;**

b. **encourage municipal governments to establish a buffer zone around new rail developments in order to provide separation from residential development and mitigate concerns over rail and logistics operation**s.

[emphasis added]

A lot of crude has gone under the bridge since the Grange Report. The risk profile that was considered in the TART Report has changed dramatically. The cooperation between the federal, provincial and municipal governments concerning development in proximity to rail infrastructure, to which reference is made in the Grange Report and the TART Report, has not materialized. A classic example of shared legislative authority with no one jurisdiction taking a leadership role.

Based on the projections contained in the Province of Ontario's Growth Plan 2016, the increased intensity of freight rail and the competition for track space with commuter/passenger rail, the situation will only get more dire.

The risk mitigation strategies falling in the category of "Short Term" that have been implemented are welcome and have improved public safety, though often and unfortunately, in a reflexive manner in response to a tragedy. These mitigation efforts should continue to be pursued aggressively, particularly as relate to reducing train speed.

However, the "Long Term" strategies have been deferred for decades. The long term is today. As recommended by the Emerson Report, the time has come to address relocation of rail infrastructure. Such relocation can be justified for safety reasons alone. However, when coupled with the economic benefits to commuter/passenger rail and to the increased fluidity of continental rail corridors, the case is overwhelming.

Doing the same thing over and over again, but expecting a difference result was Albert Einstein's definition of insanity. We should address this issue rationally.

The legislative framework to implement relocations already exists in the form of the *Railway Relocation and Crossing Act*.[29]

Yours truly,

Claire Kilgour Hervey Henry Wiercinski

Attachments: Grange Report; Toronto Area Rail Transpiration of Dangerous Goods Task Force Final Report

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[1]TSB Report R13D0054 derailment July 6, 2013 Lac Mégantic Quebec http://www.tsb.gc.ca/eng/rapports-reports/rail/2013/r13d0054/r13d0054.pdf

[2] CPs North Toronto Subdivision is 5.9 miles long running from CPs Leaside Yard near Millwood Road and Laird Drive in the east to the West Toronto Diamond near Dupont Street and Dundas Street West in the west. It connects with CPs Belleville Subdivision in the east and its Galt Subdivision in the west. The corridor is double track with sidings, is elevated in parts and runs east-west along the north side of Dupont Street. The North side of Dupont Street is zoned employment lands while the south side is zoned residential and commercial with predominantly two story residential buildings

[3] Gordon Lightfoot, Canadian Railroad Trilogy 1966

[4] Places to Grow Act https://www.ontario.ca/laws/statute/05p13;

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[8] Noise & Vibration Studies 328 Dupont, 275 Albany, 500 Dupont, 740 Dupont, 840 Dupont and 1190 Yonge Street
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[9] Federation of Canadian Municipalities/Railway Association of Canada Guidelines for New development in Proximity to Railway Operations May 2013
http://www.proximityissues.ca/asset/image/reference/guidelines/2013_05_29_Guidelines_NewDevelopment_E.pdf

[10] What do two derailments a year apart mean for development along the Dupont rail corridor Post City Toronto Adam Steinberg September 11, 2017

http://www.postcity.com/Eat-Shop-Do/Do/September-2017/What-do-two-derailments-a-year-apart-mean-for-development-along-the-Dupont-rail-corridor/

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[16] The Toronto Area Rail Transportation of Dangerous Goods Task Force Final Report July 1988 [HARD COPY ATTACHED]

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