

**TECHNICAL ANALYSIS**

**Fire Suppression, Wildfire Response, and Road Severance on the ALTO HSR Southern Corridor**

*Southern Corridor – Eastern Ontario*

<b>Prepared by</b>	ALTO HSR Citizens Research Initiative
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**KEY FINDINGS**

- South Frontenac Fire and Rescue responded to 42 wildfires in the 2025 fire season, the worst in Fire Chief Blakney’s five-year tenure, with fire bans in effect from July 23 to October 31, 2025.
- During the 2025 drought, Stone Mills Township Fire Captain Quincy Emmons reported that all national wildfire resources were at Level 5, triggering the regional mutual aid system.
- Canada’s 2025 wildfire season burned approximately 8.8 million hectares nationally, more than double the 10-year average, making it the second-worst on record.
- A fenced, grade-separated HSR corridor creates a linear firebreak that emergency apparatus cannot cross except at designated grade separations. On a concession road grid with crossings every 1–2 km, consolidating crossings to every 4–8 km adds 3–10 minutes to apparatus travel time on every affected response route.
- ALTO’s VP of Systems Engineering confirmed on record at Kingston City Council (February 17, 2026) that the project’s explicit goal is to “limit the number of overpasses.” No fire suppression access analysis has been published.
- UN Environment Programme projects a global increase in extreme wildfires of up to 30% by 2050 and 50% by 2100; the corridor will be operational across this entire trajectory.

ALTO’s CEO confirmed on CBC Ottawa Morning (March 25, 2026) that the corridor will be “completely fenced” with “nothing” able to cross except at strategic overpasses and underpasses. He also confirmed that wildlife field surveys were just beginning “this week” and that concerns about wildlife “we’re not aware of” were still being identified. Fire suppression access planning, ecological baseline assessment, and crossing spacing decisions are therefore all concurrent activities, not sequential ones.

**Section 1 — The 2025 Eastern Ontario Fire Season: Context and Precedent**

The 2025 fire season produced conditions that fire chiefs in the ALTO southern corridor study area described as unprecedented. Parts of Eastern Ontario received less than 40% of their normal July rainfall: Agriculture Canada recorded only 18.7 mm of rain in the Kingston area in July 2025, against a 25-year historical average of 72.2 mm. Canada’s 2025 wildfire season burned approximately 8.8 million hectares nationally, more than double the 10-year average of 4,077,877 ha and the second-worst season on record, exceeded only by 2023. Environment and Climate Change Canada identified Eastern Ontario among the regions experiencing severe to exceptional moisture deficits.

### **ON RECORD — CHIEF DELBERT BLAKNEY, SOUTH FRONTENAC FIRE AND RESCUE**

"All our fire indices are in the extreme, so we're at a very high risk of fire, and in the last two weeks we've had 14 wildfires we've attended." — *Chief Blakney, August 2025 (his fifth year leading South Frontenac Fire and Rescue).*

South Frontenac, which sits directly within the ALTO southern corridor study area and has formally opposed the southern alignment, saw its Fire Chief declare a Level One Fire Ban on July 23, 2025, escalate to a Total Fire Ban on August 1, and maintain some level of ban until October 31, 2025. By season's end, South Frontenac Fire and Rescue had responded to 42 wildfires and 20 burn complaints.

### **ON RECORD — CAPTAIN QUINCY EMMONS, STONE MILLS TOWNSHIP FIRE AND RESCUE**

"Across Canada, we are at a level 5, meaning all resources are in use and we are at our limit to deal with wildfires. Local fire departments will be initiating our mutual aid systems, so in the event of a fire, multiple departments will respond to send water tankers and spread the burden of water resources." — *Captain Quincy Emmons, Stone Mills Township Fire and Rescue, August 2025.*

## **Section 2 — The Corridor as a Barrier: Road Severance and Fire Apparatus**

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### **2.1 How volunteer fire departments depend on the concession road grid**

Rural fire departments in Eastern Ontario are predominantly volunteer services operating from a small number of stations spread across large geographic areas. Coverage is achieved through rapid response along the concession road grid, which in the ALTO southern corridor study area spaces roads approximately 2 km apart. This grid is not simply convenient infrastructure: it is the spatial logic on which station locations, coverage zones, and mutual aid agreements have been built over decades. A fenced, grade-separated HSR right-of-way severs this grid. Where a crossing is closed rather than replaced with a bridge, the nearest crossing point may be 4–8 km away. For fire apparatus travelling at rural road speeds of 70–80 km/h, a 5 km detour adds 3.75 to 4.5 minutes to every response that requires crossing the corridor. This detour applies permanently to every call.

### **2.2 Multi-directional approach and tactical flexibility**

Structure fire operations in rural settings depend on the ability to approach a scene from multiple directions: to position apparatus for water supply, access ventilation points, establish suppression lines, and ensure personnel egress routes are independent of any single road. This tactical flexibility is specifically compromised by a linear barrier. At a farm property straddling the corridor, or immediately adjacent to it, a structure fire or machinery fire could leave one entire access side of the property unreachable by road. The August 10, 2025 hay baler fire on Perth Road, South Frontenac illustrates this directly: the incident required road closures on Perth Rd and Rutledge Rd and the assistance of Kingston Fire, Stone Mills Township, and Loyalist Township Emergency Services — a multi-department mutual aid response. On an incident where the rail corridor crossed the access roads to that scene, the arrival of mutual aid departments from the far side would have been subject to mandatory detour.

### **2.3 Tanker shuttles and water supply**

Most rural properties along the ALTO southern corridor have no access to municipal water supply or fire hydrants. Suppression depends entirely on tanker shuttle which is a relay system in which tanker trucks continuously cycle between a water source and the fire scene to maintain uninterrupted flow at the nozzle. Ontario's Superior Tanker Shuttle Accreditation program requires uninterrupted flow of over 400 gallons per minute at the five-minute mark. A road severance that forces tanker trucks onto a 4–8 km detour extends the relay cycle time and reduces the sustainable flow rate. For a structure fire where initial water application within the first 10–15 minutes is decisive for containment, a reduced effective flow rate can be the difference between a contained room fire and total structural loss. The mutual aid response described by Captain Emmons in August 2025 with multiple departments sending water tankers to spread the water supply burden, explicitly depends on tankers being able to travel efficiently between coverage zones. A linear barrier with limited crossings concentrates all tanker traffic through the same crossing points, creating both congestion and longer relay distances simultaneously.

## **Section 3 – The Corridor as a Barrier: Wildfire-Specific Risks**

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### **3.1 How the corridor changes wildfire behaviour**

A fenced HSR corridor alters the landscape in ways that affect wildfire behaviour and suppression access simultaneously. In dry conditions such as those of 2025, the cleared right-of-way, a 60-metre-wide strip of managed vegetation running through the landscape, can function as a continuous dry fuel strip. More critically: a wildfire burning north of the corridor and driven south by prevailing winds cannot be managed from the south side until it crosses at a grade separation. Fire lines, the tactical suppression perimeter that crews establish to contain wildfire spread, require crews to work on both sides of the advancing fire front. A fenced, impassable corridor prevents this on any section between grade separations.

### **3.2 The 2025 season as a stress test**

Under conditions comparable to those of August 2025, 14 wildfires in two weeks, all national resources at capacity, a wildfire burning on one side of the HSR corridor with inadequate crossing infrastructure would face the following constraints: apparatus from stations on the far side would be subject to mandatory detour, potentially adding 5–15 minutes to initial attack response; evacuation of residents would be channeled through the same limited crossing points, creating competing traffic between emergency apparatus moving toward the fire and civilians moving away; mutual aid tanker traffic would be concentrated at crossing points, reducing relay efficiency precisely when demand peaks. None of these constraints are insurmountable if adequate grade-separated crossings are provided at appropriate intervals. ALTO's VP of Systems Engineering confirmed on record at Kingston City Council on February 17, 2026 that the organisation's explicit goal is to "limit the number of overpasses." The fire suppression implications of crossing spacing decisions have not been analysed or disclosed by ALTO.

### **3.3 The right-of-way as an ignition source**

Rail operations generate documented ignition risks. Rail-friction sparks from braking and acceleration can project beyond the right-of-way in dry and windy conditions. HSR electrification introduces additional ignition risk from overhead catenary arcing. A 100-year HSR corridor running through a region with confirmed extreme drought and wildfire conditions in 2025, and with climate projections indicating increasing fire weather frequency and severity, represents a recurring ignition source permanently installed in a high fire-risk landscape. This impact category has not appeared in any ALTO project documentation.

### CEO Confirms on Public Record — CBC Ottawa Morning, March 25, 2026

Imbleau confirmed on national radio that full fencing is non-negotiable: “Nothing can cross it. If at 330 kilometres you cross a deer, it’s a huge incident... overpass and underpass will have to be strategically positioned.” He further confirmed that environmental field assessments — including wildlife surveys — were just beginning “this week,” stating: “We intend to file the initiation of the [environmental assessment] process later this year. So we need to look at and to have some sampling in dangerous species. Are there any concerns on the wildlife that we’re not aware of?”

The CEO’s admission that wildlife concerns along the corridor are still being identified, one month before the consultation closed, means the fire-access, species-at-risk, and crossing-spacing analyses are running concurrently rather than sequentially. Crossing infrastructure decisions directly affecting fire suppression access routes are being made in the absence of completed ecological baseline data. This is precisely the scenario that produces irreversible harm: a crossing spacing decision made without knowledge of fire response requirements, species corridors, or wetland drainage patterns cannot be undone after construction.

*Source: CBC Ottawa Morning, March 25, 2026. [cbc.ca/listen/live-radio/1-100-ottawa-morning/clip/16205093](https://cbc.ca/listen/live-radio/1-100-ottawa-morning/clip/16205093)*

## Section 4 — Climate Projections: Fire Risk Over the Corridor’s Operational Life

The ALTO HSR infrastructure would operate for a century or more. The fire conditions of 2025 are not the stable baseline: they are an early data point on a worsening trajectory. Ontario’s provincial projections indicate temperatures warming +2.3°C by 2050 and up to +6.3°C by 2100 (higher emissions scenario), with more frequent hot, dry spells and extended summer drought. World Weather Attribution found that peak fire weather is at least twice as likely due to human-induced climate change than in a pre-industrial climate. The UN Environment Programme (2022) projects a global increase in extreme wildfires of +14% by 2030, +30% by 2050, and +50% by the end of the century.

Period	Fire Weather Projection	Ontario Temp Change	HSR Infrastructure Status
<b>2026–2035 (construction)</b>	Conditions comparable to or worse than 2025; fire season already lengthening	+0.5–1.0°C ongoing	Active construction; road disruption; elevated ignition risk
<b>2036–2050 (early operations)</b>	Extreme fire weather 2× more likely than pre-industrial baseline; fire season 3+ weeks longer	+2.3°C projected mean	Infrastructure in full operation; crossing decisions locked in
<b>2050–2100 (mid-to-late operations)</b>	Extreme fires +30–50% more frequent globally; fire weather days up 26–200%	+3.0–6.3°C depending on emissions	Corridor operational; fire risk landscape materially worse than at construction

Crossing spacing decisions made during route selection cannot easily be reversed after construction. If the corridor is built with crossing spacing adequate for 2026 fire risk, it may be significantly inadequate for 2050 fire risk. This argues for designing fire suppression access requirements into the corridor from the outset.

## Section 5 — What ALTO Has Not Disclosed

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As of March 2026, ALTO has not published any analysis addressing:

- The number, type, or spacing of proposed grade-separated crossings on either corridor option, including crossings on established fire apparatus response routes
- A fire suppression access plan identifying how rural volunteer fire departments would maintain coverage on both sides of the corridor
- A tanker shuttle routing analysis examining how road severance would affect water supply operations in areas without hydrants
- Any analysis of the corridor right-of-way as a wildfire ignition source or fire behaviour modifier
- Any engagement with local fire chiefs, fire marshals, or the Ontario Association of Fire Chiefs regarding suppression access requirements

Communities and fire services are being asked to evaluate a project whose most direct fire suppression implications cannot be assessed because the design decisions that determine them have not been made.

## Section 6 — Formal Requests

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1	<p><b>Publish a fire suppression access assessment before consultation closes</b></p> <p>ALTO must publish a preliminary fire suppression access assessment identifying: the number and location of proposed grade-separated crossings on each corridor option; which crossings are on established fire department response routes; and what criteria will be used to determine crossing spacing. This information is essential to any meaningful community assessment of the project's impacts.</p>
2	<p><b>Engage fire chiefs in corridor design</b></p> <p>The Ontario Association of Fire Chiefs, local fire departments in South Frontenac, Stone Mills, Loyalist, Rideau Lakes, and other affected townships, and the Office of the Fire Marshal must be formally engaged in corridor design. Fire suppression access requirements should be treated as non-negotiable infrastructure constraints, not value-engineering variables.</p>
3	<p><b>Apply climate-adjusted fire risk standards to crossing decisions</b></p> <p>Crossing infrastructure decisions must be assessed against projected conditions for the mid-point and end-point of the infrastructure's operational life, not 2026 baseline conditions. Ontario's own climate change projections for wildfire frequency and fire season length must be explicitly referenced.</p>
4	<p><b>Require a construction-phase fire safety plan</b></p> <p>ALTO and the Cadence consortium must develop and maintain, in partnership with local fire departments and the Ontario Forest Fire Management program, a construction-phase fire safety plan addressing vegetation clearing protocols, equipment ignition risk management, and maintenance of fire apparatus access through all active work zones.</p>
5	<p><b>Commission an independent wildfire corridor risk assessment</b></p> <p>As a mandatory component of the federal Impact Assessment, an independent wildfire corridor risk assessment must model wildfire scenarios on both corridor options under current and projected climate conditions, evaluate the adequacy of crossing infrastructure for fire suppression access, and assess the ignition risk profile of the right-of-way.</p>

## Key Sources

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Agriculture Canada. July 2025 drought assessment for Eastern Ontario. Kingston July 2025 actual: 18.7 mm vs 25-year average of 72.2 mm.

Environment and Climate Change Canada. Canada's top 10 weather stories of 2025.

South Frontenac Fire and Rescue. 2025 season statistics: 42 wildfires, 20 burn complaints. southfrontenac.net

CFRC News. "Failing fields, dry wells: Eastern Ontario's summer of drought." August 2025. (Captain Emmons Level 5 national resources quote.)

CBC News. "Much of eastern Ontario under fire bans." August 12, 2025. (Chief Blakney quote.)

UN Environment Programme and GRID-Arendal. (2022). Spreading like Wildfire: The Rising Threat of Extraordinary Landscape Fires.

World Weather Attribution. "Climate change more than doubled the likelihood of extreme fire weather conditions in Eastern Canada."

Ontario government climate projections: +2.3°C by 2050, +6.3°C by 2100 (RCP8.5).

David Cook, VP Systems Engineering and Interface, ALTO. Kingston City Council, February 17, 2026. ("limit the number of overpasses".)

NFPA 1142, Standard on Water Supplies for Suburban and Rural Fire Fighting.

Transport Canada. TRAN Committee Appearance Binder — Item 15: High Frequency Rail, March 7, 2023.

Ontario Association of Fire Chiefs: 437 fire departments in Ontario; 18,281 volunteer firefighters