NEXT STOP: SAINT-LAURENT

Exploring High-Speed Rail in the Borough of Saint-Laurent

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URBP 624 - Studio 3
Prepared for the Borough of Saint-Laurent
By Shadé Chrun-Tremblay, Kennedy Magee, Sara Poppel, Yao Fu

>ector

Vector works on the traditional and unceded territory of the Kanien'kehá:ka (Mohawk) Nation. Tiohtiá:ke (Montreal) has long served as a meeting place for many First Nations, including the Anishinaabe and Huron-Wendat peoples. We acknowledge the Kanien'kehá:ka as the traditional stewards of the lands and waters on which we live and work. The proposed high-speed rail corridor spans a vast area from Quebec City to Toronto, crossing the traditional territories of many Indigenous Nations on both Treaty and non-Treaty lands. Access to these lands is only possible through the ongoing processes of colonization. We recognize that transportation infrastructure, by its very nature of connecting distant places, intersects with multiple Indigenous territories and governance systems. Urban and transportation planning has historically played a key role in colonial processes and continues to shape relationships to land, power, and access across these interconnected territories today. This acknowledgment is offered as a reminder of the broader contexts in which our work takes place.

EXECUTIVE SUMMARY

As Canada's largest infrastructure project in recent history, **Alto's high-speed rail (HSR)** project has the potential to transform land-use, travel behaviour, and economic development along its 1,000km corridor. Given the proposal of a station on the Island of Montréal, Vector has explored the feasibility and desirability of HSR infrastructure development within the Borough of Saint-Laurent, including what economic, social, and environmental impacts would be generated.

This report determines that a feasible corridor and station (see Figure 1) could either connect to a secondary station in Laval (Scenario A), or in downtown (Scenario B). Scenario A has also been explored more in-depth in this report given time constraints of the project. No other secondary station locations have been evaluated, but could be in a future phase of work.

Regardless of the station location, Saint-Laurent is a strong contender for a HSR station given its proximity to the airport and its position as Montréal's second-largest employment centre. Regional economic advancement is likely when considering both HSR access to the Technoparc and the airport.

It should be noted that while it is possible that the Borough could experience economic development and growth from the presence of a station, this is not a guarantee as transportation infrastructure alone does not always stimulate economic growth. Coordinated strategies to boost existing assets will need to be implemented as a means to generate and capture economic benefits from the project.

Additionally, negative externalities generated during construction and operations (noise, vibration, traffic, pollution) will need to be thoughtfully considered and mitigated through various mechanisms, especially in nearby protected environmental areas.

While this report provides a preliminary analysis of the feasibility and desirability of HSR infrastructure in Saint-Laurent, a more thorough assessment of this proposal should be undertaken. In particular, several formal individual assessments must be completed for project success. These further steps are detailed in the final section of this report.

EXECUTIVE SUMMARY

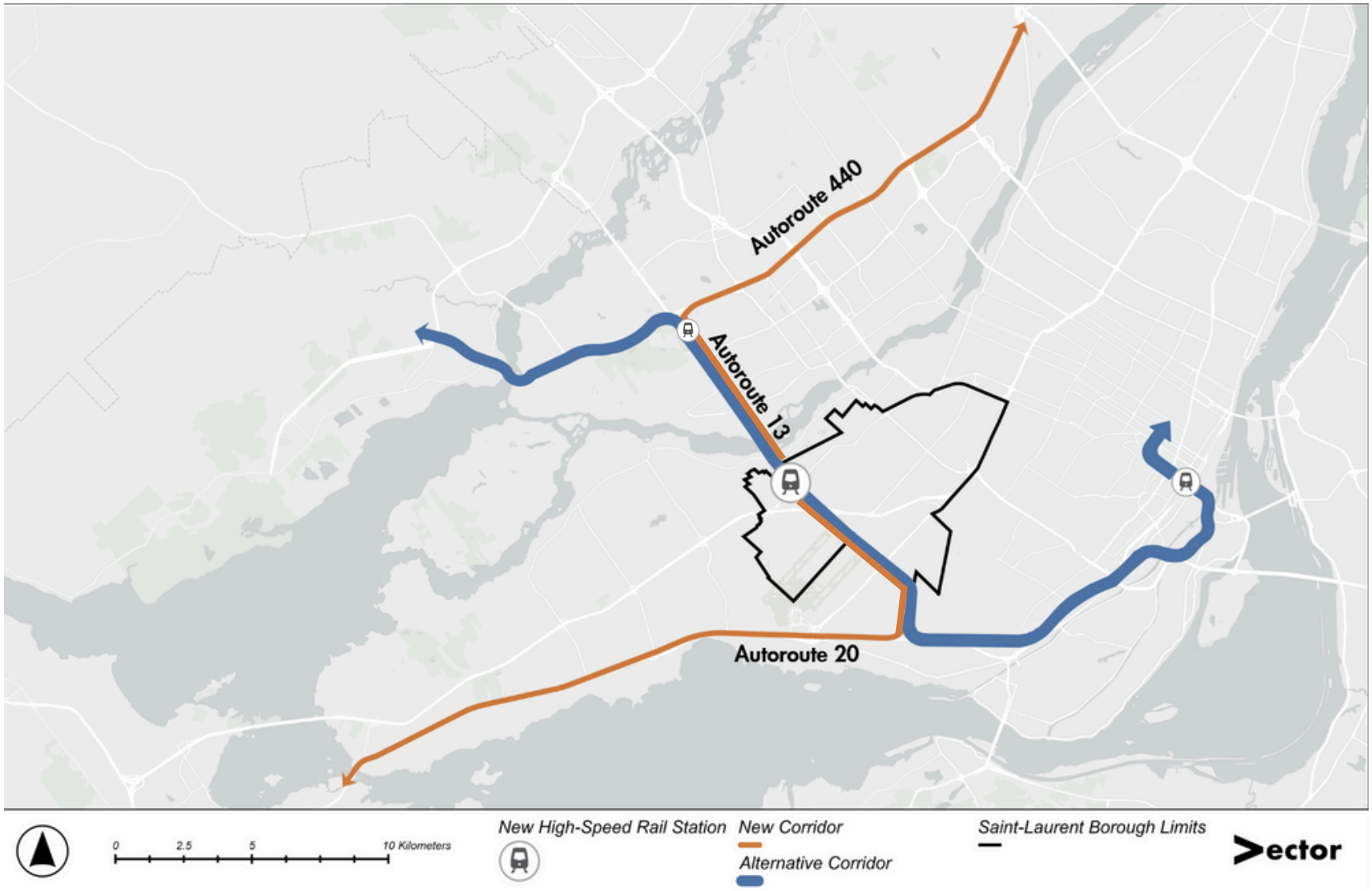

Figure 1. *Proposed station location in Saint-Laurent with Scenario A (orange) and Scenario B (blue) corridors*

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1. CONTEXT

1.1 Mandate

This study has been commissioned to evaluate the feasibility, desirability, and potential implications of high-speed rail infrastructure within the Borough of Saint-Laurent as part of the ongoing planning process for Alto's proposed corridor. To support this objective, the Vector team has assessed the effects of high-speed rail infrastructure in Saint-Laurent by conducting thorough research (case studies, precedents, and best practices) on high-speed rail, and used relevant findings to complete a multiple accounts analysis on a specific high-speed rail station location and corridor alignment within the borough. While the approach weighted transportation and economic considerations more significantly, environmental, and social impacts were also considered.

1.2 Scope

This project considers a two-station best-case scenario for high-speed rail development within Saint-Laurent boundaries assuming a second station in either Laval (Scenario A), or in downtown (Scenario B). As the mandate evolved from originally only considering Scenario A to also assessing Scenario B late in the project timeline, analysis of a Saint-Laurent and Downtown location scenario is comparatively limited in this report given time constraints. Proposed findings have also not been evaluated against any other potential station or corridor locations in Montréal.

1.3 Alto High-Speed Rail

In February 2025, the Government of Canada announced plans for the development of ≈1,000km high-speed rail network along the Toronto-Québec City corridor. Being developed through a public-private partnership between Alto, a Crown Corporation, and the Cadence Consortium, the high-speed rail corridor, officially named "Alto," has seven planned stops in Toronto, Peterborough, Ottawa, Montréal, Laval, Trois-Rivières, and Québec City. The high-speed rail corridor has the potential to induce a wide range of benefits including job creation, economic growth, greenhouse gas emission reductions, tourism revenue growth, decreased congestion, and travel time savings. With dedicated passenger tracks and estimated speeds of up to 300 km/h, the system will offer shorter travel times, more predictable journeys, and less delays caused by freight traffic, ultimately reducing current travel times along the corridor.

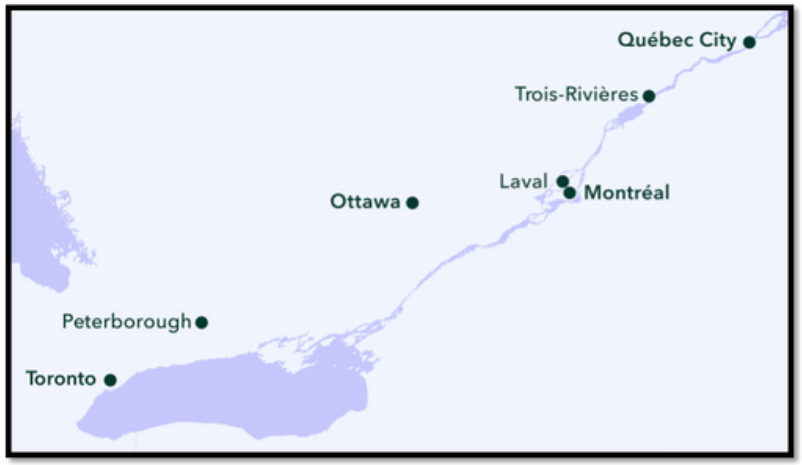

Figure 2. Proposed station cities (Alto, 2025)

2. STAKEHOLDERS

2.1 Alto and Cadence Consortium

Alto is the Project and Contracting Authority responsible for leading the development, implementation, and oversight of Canada's high-speed rail network on behalf of the Government of Canada. The project is being advanced through a Public-Private Partnership (P3) model which involves close collaboration with Cadence (the selected private-sector partner) throughout the already initiated Co-Development Phase. As of early 2025, "no specific alignment is secured, and the project scope remains to be defined" (Alto). The Request for Expression of Interest (RFEOI) issued by the federal government emphasized the use of existing rail corridors and improved multimodal connectivity.

According to the RFEOI, Cadence has flexibility in defining the alignment of the future HSR corridor including opportunities to use existing rights-of-way (industrial corridor, road/rail, or hydro. Canada is currently consulting with stakeholders (such as host railways, utilities, municipalities and other groups) to refine several potential alignment options. As described further in this report, the proposed high-speed rail station location and corridor alignment in the Borough of Saint-Laurent align with the Government of Canada's objectives to use existing right-of-way passages, including road and rail corridors.

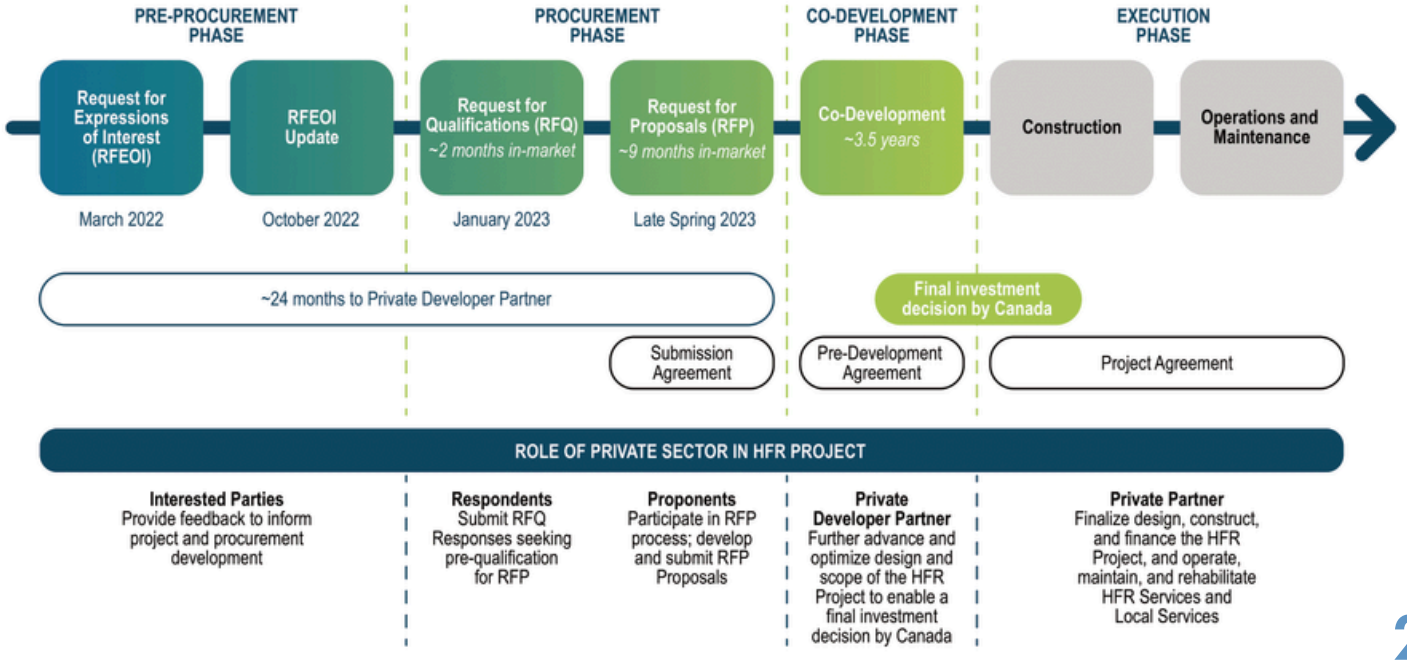

Figure 3. Public-Private Partnership Relationship Timeline (Alto, 2025)

2.2 Saint-Laurent

Saint-Laurent's Plan stratégique 2026–2029 is guided by three core values: sustainability, innovation, and collaboration. These values shape the borough's objectives, which include expanding public and active transportation, strengthening Saint-Laurent's role as an attractive employment centre, and fostering innovation within the local economy. These objectives must also align with the City of Montréal's 2050 Land Use and Mobility Plan (Plan d'urbanisme et de mobilité 2050, or PUM 2050) and the CMM's Plan métropolitain d'aménagement et de développement (PMAD).

In anticipation of several new REM stations, the borough has prepared two Plans particuliers d'urbanisme (PPUs) grounded in transit-oriented development (TOD) principles: the Technoparc Montréal PPU, which aims to revitalize the area around the new Marie-Curie REM station, and the Bois-Franc PPU, which focuses on the area surrounding the new Bois-Franc REM station. The vision for the Technoparc PPU is to transform the space into a compact, mixed-use, and environmentally sustainable innovation district while the Bois-Franc PPU highlights a desire to create a vibrant, mixed-use district that supports higher-density housing and commercial activity.

Figure 4. Technoparc Montreal.
Source: https://www.businesselitecanada.com/infrastructure/technoparc-montreal/

The Hodge-Lebeau sector near the REM station Côte-de-Liesse is also positioned for significant transformation and is envisioned as an innovation and technology hub capable of competing on both national and international scales. As one of the last urban manufacturing clusters in central Montréal, it plays a key role in the island's western economic pole. With the arrival of the REM and the potential for a high-speed rail station, Hodge-Lebeau presents strong opportunities for densification, modernization, and economic diversification. The borough's vision, expressed through the concept of the Quartier intelligent du manufacturer innovant (QIMI), emphasizes innovation, connectivity, and resilience.

The principles outlined in these PPUs have directly informed our selection of the high-speed rail corridor and proposed station location in Saint-Laurent. By prioritizing multimodality, accessibility, and integration with existing rail and highway networks, the high-speed rail supports the borough's broader objective of concentrating development around major transit nodes. More importantly, it aligns with Saint-Laurent's long-term ambition to modernize and diversify its economic base by fostering a competitive innovation and technology hub. In this sense, the high-speed rail becomes not only a transportation asset but also a catalyst for the borough's vision of a sustainable, connected, and knowledge-driven urban environment.

Figure 5. Bois Franc TOD.
Source: https://provencherroy.ca/en/projects/aire-todd-bois-francs/

Figure 6. Bois Franc and Marie-Curie REM stations. Base map source: Réseau express métropolitain

3. METHODOLOGY

3.1 Phase 1: Contextual Research

Contextual research on high-speed rail station and corridors was conducted. This stage of the project was split into three subcategories of research including:

1) Stakeholder alignment: Important stakeholders at the federal, regional, and local level were researched to ensure that several proposed high-speed rail station locations were aligned with policy objectives, and situated within the relevant economic, environmental, land-use, and social context

2) Impacts of high-speed rail: Literature on the primary impacts (economic, transportation, environmental) of high-speed rail were examined at the regional, borough, and local scale. Technical considerations (including track design, aerodynamics, braking systems, safety, power supply, and electrification), and analysis of best practices for station location and integration (centrally, peripherally, and related development) were identified.

3) Collected research was used to identify three potential high-speed rail corridors and four station locations within Saint-Laurent which were based off precedents of high-speed rail infrastructure and development around the world.

3.2 Phase 2: Charette

The second phase of this project was an interactive charette carried out over the course of an afternoon between representatives from the Borough of Saint-Laurent and the Vector team. Findings from Phase 1: Contextual Research were presented along with the proposed station locations and corridors. At the end of the charette, a final station location and corridor was identified (i.e. Scenario A: Saint-Laurent and Laval) to be explored in the following phase.

3.3 Phase 3: Impact Analysis

The final phase of this project was an impact analysis on the station location and corridor identified at the end of the Charette. This third phase builds much of the following report, including detailed information on the chosen corridor and station location, their associated strengths, weaknesses, opportunities, and finally individual transportation, economic, environmental, and social impacts. A holistic analysis of the identified impacts was completed through a Multiple Accounts Analysis to identify the significance and relevance of high-speed rail development within the borough as well as associated regional benefits. As previously stated, a shorter analysis has also been added for Scenario B which considers a station location in Saint-Laurent and a station in downtown Montréal.

4. TECHNICAL CONSIDERATIONS

4.1 Track bed width

High-speed rail corridors require a substantial track bed to accommodate dual tracks, safety buffers, and supporting infrastructure. Measurements taken using Google Earth along established high-speed rail lines in France and China show that corridor widths typically range between 15 and 20 metres. This span generally includes the two mainline tracks and lateral safety clearances. Although exact dimensions can vary based on local engineering standards and terrain conditions, the 15–20 metre range provides a useful reference point for preliminary planning and right-of-way assessments.

4.2 Ruling Gradient

The ruling gradient for high-speed rail corridors typically falls between 1% and 3.5%, consistent with established French TGV design standards (Middleton, 2005). These limits balance construction feasibility with operational performance: gentler grades around 1% are preferred to maintain high cruising speeds and energy efficiency, while steeper segments up to 3.5% are used only when necessary to navigate challenging terrain without excessive earthworks. The French high-speed rail network, one of the most mature in the world, shows that keeping gradients within this range supports reliable operations, reduces traction power demands, and helps limit long-term maintenance costs.

4.3 Curve Radius

The minimum horizontal curve radius for modern high-speed rail lines is typically around 6000 meters, following French TGV standards for high-speed lines constructed in the 21st century (Middleton, 2005). A radius of this magnitude allows trains to maintain very high operating speeds while ensuring passenger comfort and reducing lateral forces on track infrastructure. French practice shows that adopting a minimum of 6000 meters provides an effective balance between geometric constraints and performance requirements, limiting the need for speed restrictions and helping to maintain smooth, reliable service across the network.

HSR Engineering:

- **Track bed width:** 15m – 20m
- **Ruling Gradient:** 1% – 3.5%
- **Curve radius:** 6000m minimum
- **Tunnel depth:** *
  - Cut-and-Cover: 8m – 20m
  - Deep Bore: >20m
- **Urban travel speed:** 175 km/h – 200 km/h

**Trains reduce in speed when entering and departing urban areas meaning that narrower radii are possible, but lead to slower travel times*

4.4 Tunnel Depth

Typical tunnel design for high-speed rail follows general engineering standards that distinguish between cut-and-cover and deep bore construction. Cut-and-cover tunnels usually range from 8 to 20 meters in depth, making them suitable for shallow alignments where surface disruption is manageable. Deep bore tunnels are used for depths greater than 20 meters, allowing the alignment to pass beneath dense urban areas, major infrastructure, or challenging terrain while minimizing impacts at the surface. These depth ranges help guide decisions about construction methods, costs, geological feasibility, and long-term operational reliability.

4.5 Urban Travel Speed

High-speed trains enter and leave large stations at slower speeds but typically operate between 175 to 200 km/h as soon as possible, reflecting the need to balance performance with safety, noise, and integration into complex metropolitan areas. This speed range allows trains to maintain efficient travel times while accommodating tighter geometric constraints, more frequent junctions, and proximity to existing infrastructure and development. It also supports smoother acceleration and braking profiles as trains transition between dense urban sections and higher-speed intercity segments.

Figure 7. HSR Tunnel (Source Centralny Port Komunikacyjny))

5. PLANNING PRECEDENTS

5.1 Physical & Spatial Best Practices

High-speed rail stations perform best when they are centrally located within major employment and commercial clusters. These locations maximize ridership and economic return by placing the station close to financial districts, major institutions, and cultural destinations.

Successful stations also demonstrate:

- Strong integration with surrounding neighbourhoods, minimizing barrier effects through at-grade connections, bridges, and permeable design.
- Densification of land uses around the station, ensuring a sufficient concentration of residents, workers, and visitors to support commercial vitality.
- A mix of retail, commercial, and cultural amenities positioned to activate the public realm and extend the station's economic influence.
- High-quality public spaces and plazas that function as gathering areas and contribute to a positive civic identity.
- Distributed parking structures and ample bicycle parking, avoiding large monolithic garages and supporting sustainable access modes.
- Distinctive architecture and strong station frontages, reinforcing a sense of place and improving neighbourhood fit.

5.2 Operational & Multimodal Considerations

Across precedents, rail stations succeed when they function as intermodal hubs rather than standalone assets. This includes:

- Strong connections between high-speed rail, local transit, buses, and regional mobility networks.
- High levels of pedestrian access, with continuous, safe, and direct walking routes.
- Protected, high-quality bicycle connections that converge at the station.

5.3 Planning Policy & Governance Factors

International examples show that governance and public-sector leadership are decisive factors in whether communities capture the benefits of high-speed rail investment.

Effective station projects typically involve:

- Active municipal and regional involvement to champion and coordinate planning.
- Public-private partnerships (PPPs) to deliver station-adjacent development.
- Zoning reforms and up-zoning to enable higher-density, mixed-use redevelopment.
- Land assembly and land banking to guide growth and shape future opportunities.
- Value capture mechanisms allowing municipalities to reinvest economic uplift.
- Planning that reflects both local and regional objectives, ensuring complementarity rather than competition with surrounding municipalities.

Physical/Spatial	Operational/Transportation	Planning Policy and Governance
• Central station location • Integration with surrounding area • Minimization of barrier effect • Densification of land uses • Concentration of retail, commercial & cultural amenities • Public places and plazas • Scattering of parking structures • Bicycle parking • Distinctive architecture	• Intermodal choices and connections • High levels of service • Pedestrian access • Bicycle access	• Significant public sector involvement • Political leadership • Local champion • Public-private partnership • Coordination of different actors • Consideration of local and regional context • Multiphase planning • Land assembly / banking • Value capture

Figure 8. High Speed Rail Station Planning Principles (Loukaitou-Sideris, et al., 2017)

6. SCENARIO A: SAINT-LAURENT AND LAVAL STATIONS

6.0.1 Corridor Description

Our proposed corridor would enter the Island of Montreal from the south-west, following autoroute 20 and the Vaudreuil rail alignment through the West Island before reaching the intersection with Autoroute 13. The corridor would then jump to the Autoroute 13 alignment. A short tunnel would be necessary due to the way the YUL runways overhang the highway corridor, which also requires Autoroute 13 to enter a tunnel. After emerging from the tunnel, the corridor would continue to follow Autoroute 13, reaching the high-speed rail station location around Henri-Bourassa Blvd before continuing along the same alignment onto the Island of Laval where it would meet the Autoroute 440 alignment to take it towards Trois Rivieres. This highway alignment means that the high-speed rail will not be creating any new fragmentation or barriers but does present technical challenges relating to curve radii on turns.

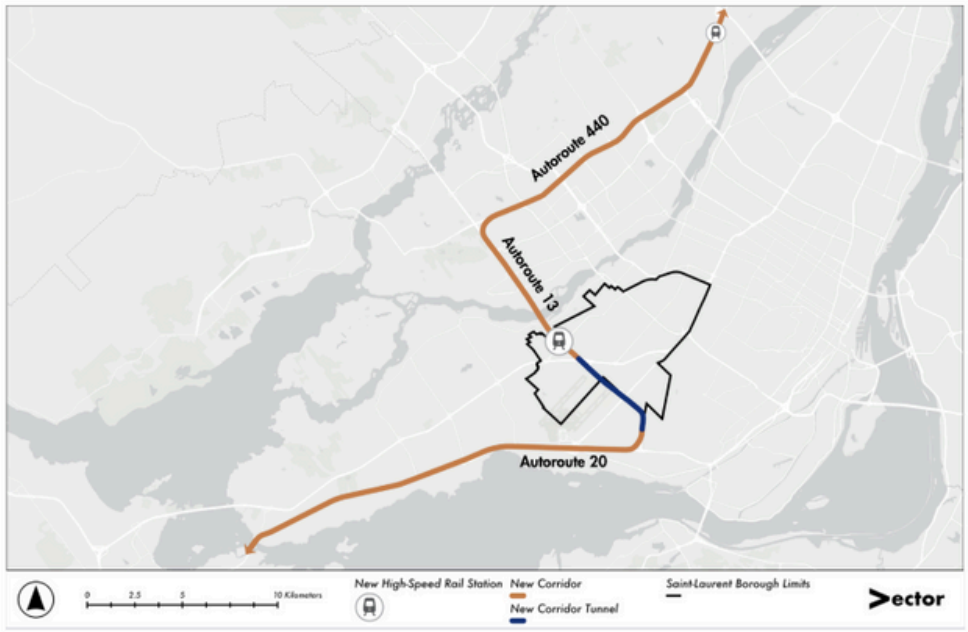

Figure 9. *Map of Laval-Saint-Laurent HSR corridor*

6.0.2 Previously Proposed REM Station: Autoroute 13

During the initial development phase of the REM, a station along Autoroute 13 was proposed to allow Laval residents to access the REM and reach downtown within 20 minutes. However, with an anticipated ridership of fewer than 1,000 commuters per day, CDPQ Infra determined that the cost-benefit of constructing the station did not justify its development (Pellus, 2018). However, much of the initial impact assessment done on the abandoned REM station was used to inform this report.

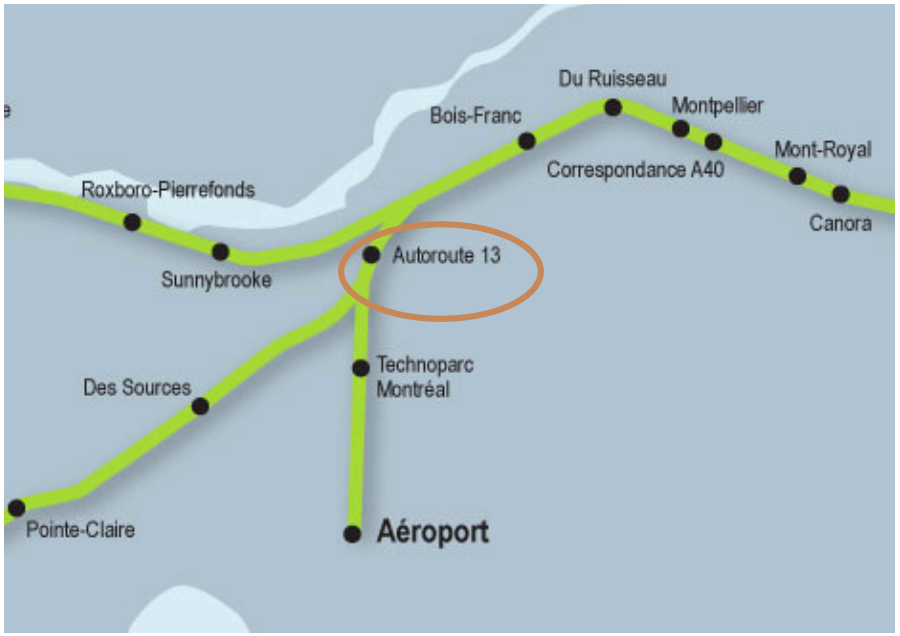

Figure 10. *Previously proposed REM network*
Source: https://rem.info/fr/actualites/5-ans-en-5-cartes

Figure 11. *Previously proposed REM Autoroute 13 station location.*

6.0.3 Station Location

Gare de Saint-Laurent is located on approximately 97 acres of primarily industrial and commercial land between Autoroute 13 and the S-bend of the REM corridor where the network's two branches divide. The station footprint straddles Boulevard Henri-Bourassa and occupies a portion of the previously planned Autoroute 13 REM station site and is based on international precedents for total development area surrounding HSR stations (see Figure 13) . The surrounding built form consists of large commercial and light-industrial buildings, several of which would need to be removed or reconfigured to accommodate the high-speed rail station and its associated infrastructure.

Regional vehicular access to the site is provided by Autoroute 13, Autoroute 40, and Boulevard Henri-Bourassa. Local access is limited, as many of the surrounding streets have incomplete sidewalk coverage, minimal cycling infrastructure, and constrained pedestrian connections due to nearby highway corridors. The site is directly adjacent to Parc-nature du Bois-de-Liesse and several protected green spaces.

During its initial development phase, the old Autoroute 13 REM station was planned to include a 500-space parking lot for Laval residents to park and take the REM to Downtown (Pellus, 2018) and anticipated five bus connections to the station (Steer Davies Gleave, 2016).

The urban integration design of the station also included bike and pedestrian paths, facilitating access to the REM through active transportation (Pellus, 2016). Although these urban design features were initially conceived for the abandoned REM project near Autoroute 13, they could be reimagined to accommodate the demand and capacity requirements of both a high-speed rail and a REM.

Figure 12. *Map showing total station development area*

6.4 Footprint and Parking

High-speed rail stations attract long-distance intercity travelers from a wide geographic catchment area, potentially generating different traffic patterns and higher proportions of park-and-ride, kiss-and-ride, and taxi/rideshare trips compared to REM or LRT projections. Therefore, a balanced parking strategy is necessary to accommodate intercity travelers while preventing excessive car dependence. Drawing on precedents such as Stratford International's 850-space parking facility (a non-centrally located high-speed rail station in London near the airport) and the REM's previous 500-space design near Autoroute 13, a new station parking capacity of roughly 700–900 spaces could be imagined along Kieran Street, between Douglas Floreani and the station. However, this infrastructure must be complemented by robust multimodal connections, including bus stops, bike lanes, and pedestrian pathways that integrate with surrounding streets.

As demonstrated by previous cases, the success of high-speed rail stations depends heavily on well-designed intermodal systems that not only increase ridership but also support surrounding developments (Mohino et al., 2014). Structured or underground parking, if pursued, should minimize surface footprint and land-use should be reserved for higher-value mixed-use and employment functions near the station.

Figure 12 references the *total* station development area which includes the station (≈15-20 acres), track, transit-oriented development potential, parking and street redesign to accommodate traffic.

High-speed rail Stations	Development Area (acres)	Distance from downtown (km)	Land Use
San Jose, USA	250	1.1	Office/commercial, mixed use, retail, entertainment
Part Dieu, FR	332	1.9	Office, commercial, retail
St. Charles, FR	740	0.8	Mixed use, commercial, hotel, restaurant, institutional
Amsterdam, NL	670	4.8	Mixed use, office, retail, convention facilities
Euralille, FR	250-300	within	Retail, office, hotel, residential, government offices
Rotterdam, NL	50	within	Commercial, office, civic
Utrecht, NL	225	within	Retail, restaurants, hotel, civic
Turin, IT	500	within	Mixed use institutional

Figure 13. Station Development Area. (Loukaitou-Sideris et al., 2017)

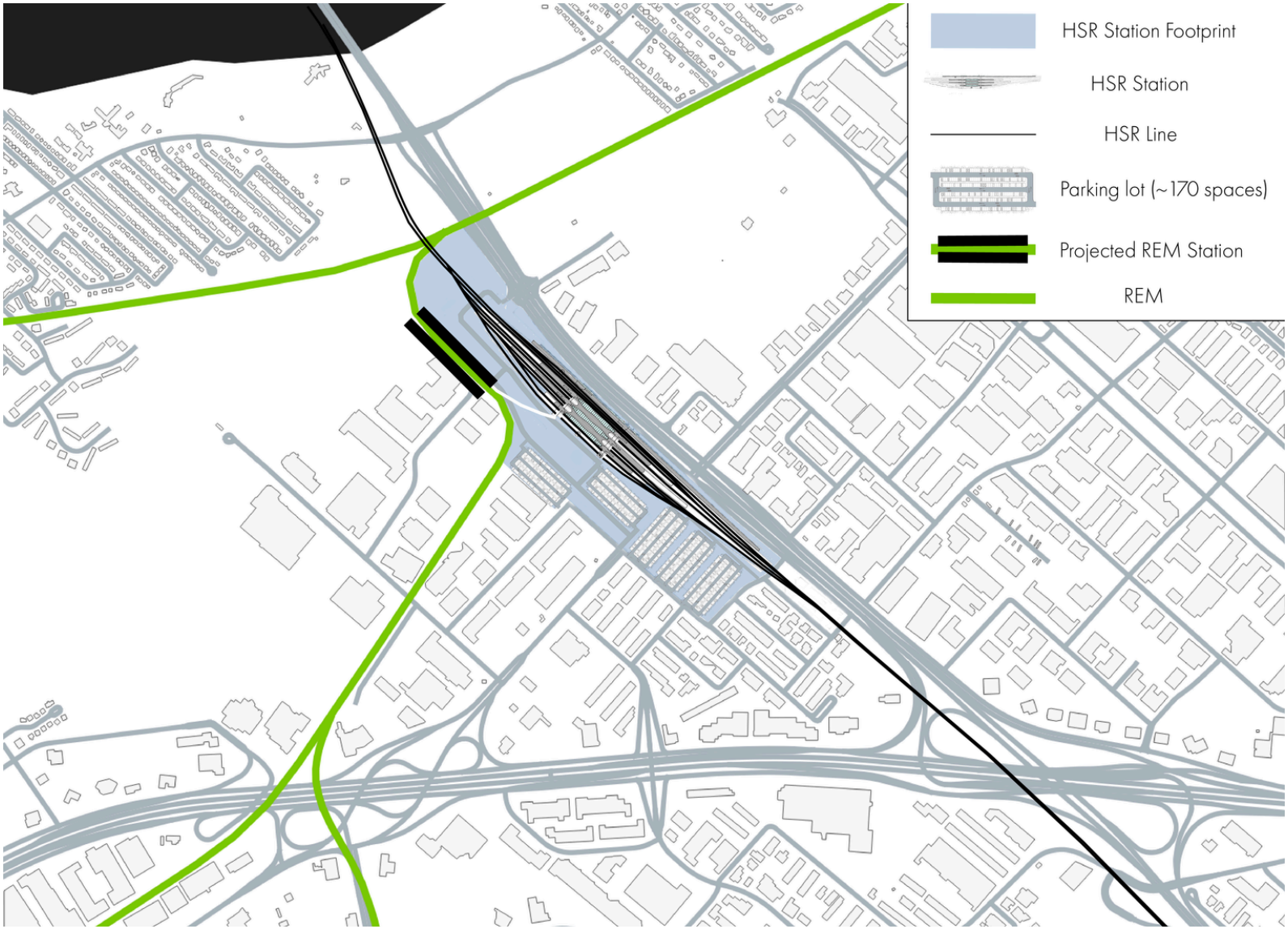

Figure 14. *Floor plan map of HSR station*

6.1 IMPACTS ON SAINT-LAURENT

6.1.1 SWOT

Figure 12 describes the strengths, weaknesses, opportunities, and threats of having a high-speed rail station in Saint-Laurent compared to the assumption from the Alto plans that the station will be located downtown Montreal.

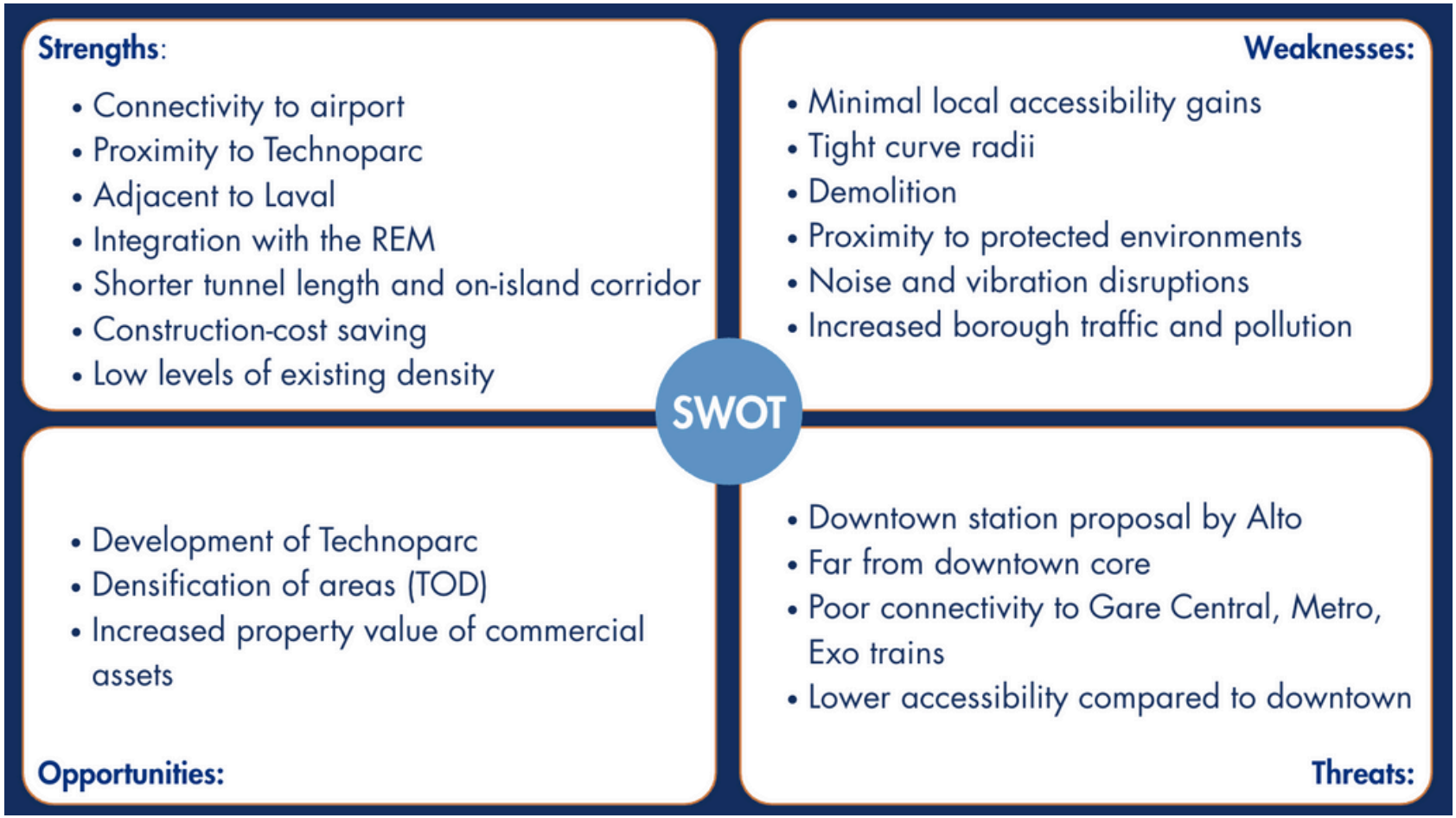

Figure 15. *Strengths, weaknesses, opportunities and threats of HSR in Saint-Laurent*

6.2 TRANSPORTATION IMPACTS

6.2.1 Airport

Montréal-Pierre Elliott Trudeau International Airport is Quebec's largest airport and Canada's third busiest, serving approximately 58,000 passengers daily and 21 million annually. Passenger volumes have surpassed pre-pandemic levels and are projected to grow to 25 million by 2028 before reaching 30-35 million in 2035. To meet upcoming demand, the airport is heavily investing in its infrastructure with the "Aéroports de Montréal Flight Plan 2028-2035," a $10B, 10-year capital improvement plan. Planned investments include the reconfiguration of airport access roads, the construction of new parking areas and pick-up and drop-off points, and a new building to connect the future YUL-Montréal-Trudeau Airport REM station to the terminal. The proposed rail and REM station would integrate with the upcoming YUL-REM connection and benefit from the multimodal infrastructure improvements.

Benefits from HSR-Airport Integration:

A strong HSR connection to YUL creates mutual benefits for both transportation systems. First, HSR ridership increases when passengers can easily transfer to flights at a major airport hub. Research shows that for travel distances under 800km, a direct or rapid connection between a high-speed rail station and airport is crucial for intermodal integration and maximizing ridership (Yang et al., 2018). The Highway 13 station would provide a seamless connection to YUL in under 15 minutes via REM, following the precedent of major hub airports like Paris Charles de Gaulle, Frankfurt, Amsterdam Schiphol, and Shanghai Hongqiao.

Second, YUL benefits economically from HSR connectivity by expanding its catchment area beyond the Montreal region. An HSR connection allows the airport to draw passengers more easily from Québec City, Ottawa, and beyond—particularly for long-haul international flights. Rather than relying solely on local passengers or those willing to drive long distances, YUL can position itself as the primary international gateway for the entire HSR corridor, increasing passenger volumes and supporting the airport's growth projections.

Third, HSR can reduce demand for short-haul flights by substituting train journeys for regional air routes. For travel distances between 300-700km, high-speed rail is particularly competitive and often the dominant transport mode (Zhang et al., 2019). Montréal short-haul routes most likely to experience mode shift from air to rail include:

- Montréal to Ottawa: 200km
- Montréal to Québec City: 250km
- Montréal to Toronto: 540km

These routes currently account for a significant portion of domestic air traffic at YUL. By capturing this traffic, HSR would allow YUL to reallocate airport capacity toward more profitable long-haul international routes while reducing congestion and environmental impacts from short-haul flights.

Without seamless connections, passengers may opt for other modes or choose to fly rather than take high-speed rail for the entire journey. However, international examples show that connections in the 10–20-minute range, such as Amsterdam Schiphol (15-17 minutes) and Madrid-Barajas (19-33 minutes), can successfully facilitate intermodal integration when supported by clear wayfinding, integrated ticketing, and coordinated schedules.

6.2.2 Accessibility

High-speed rail primarily improves inter-regional accessibility, enabling residents in station cities to reach a far wider range of opportunities across the national corridor. However, unlike local transit investments, high-speed rail typically does not generate significant local accessibility gains for nearby residents, given its limited stop spacing and low trip frequency for daily use (Levinson, 2012). Its accessibility effects are therefore felt more broadly at the metropolitan scale rather than at the neighbourhood level.

Local Accessibility Gains: Since the proposed Saint-Laurent high-speed rail station would be located adjacent to the REM corridor, we anticipate that an additional REM station could be added to facilitate transfers. To evaluate the potential accessibility gains for the borough of Saint-Laurent because of this complementary investment, we first assessed how the added REM station would influence residents' access to jobs within 60 minutes. Using employment as a proxy for overall opportunity access, we found no change in the number of reachable jobs for any census tract. This is likely due to a lack of continuous pedestrian and cycling infrastructure and an absence of feeder bus routes that would normally accompany a new REM stop.

Regional Accessibility Gains: When considering the impacts of the proposed REM station on the region as a whole we evaluated accessibility to the high-speed rail station itself, comparing travel times before and after the introduction of the proposed REM station (Figure 16). In this case, we found modest but meaningful improvements: several additional census tracts gain the ability to reach the high-speed rail station within 90 minutes. Although no inter-city accessibility analysis was conducted, the HSR line is expected to dramatically increase inter-regional accessibility which will provide commuting and travel opportunities that don't currently exist.

While these gains are limited in spatial extent, they indicate that strategic integration with the REM network can increase regional access to high-speed rail, even if broader job accessibility impacts remain minimal under current site conditions.

6.2.3 Drivability

A 2016 traffic impact study for a proposed Réseau express métropolitain (REM) station was completed by Hatch near this location. While the study focused on a REM station, the findings are considered relevant for the proposed high-speed rail station given the similarity in station location. Key findings included:

The proposed station is located near three major traffic arteries: Highway 13, Gouin Boulevard, and Henri-Bourassa Boulevard. The traffic study area extended north to Gouin Boulevard, south to Henri-Bourassa Boulevard, east to Valiquette Street, and west to Douglas B. Floreani Street.

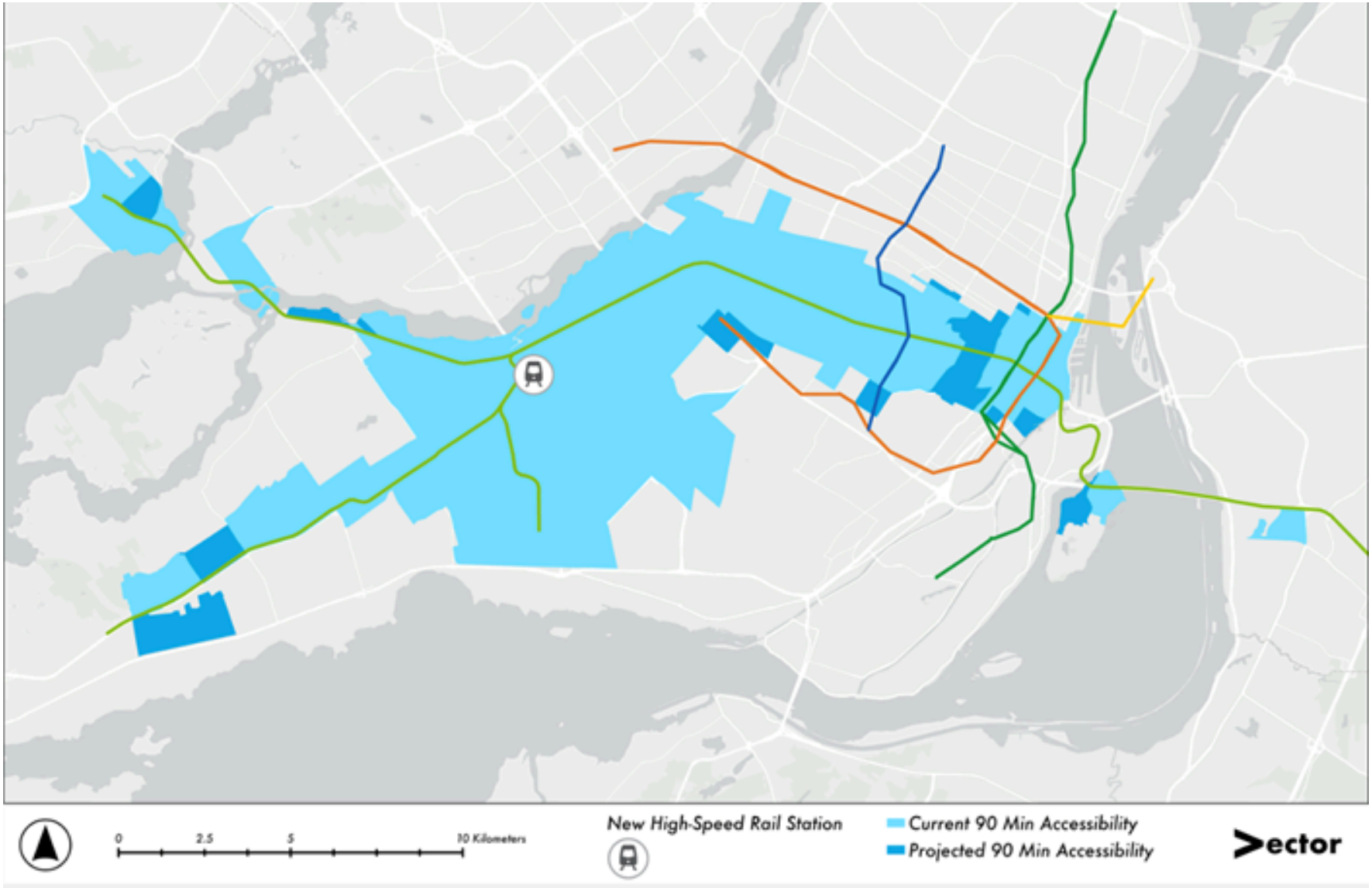

Figure 16. *Census tracts that can reach the HSR station in 90 minutes by public transit*

The study found that while the station location provides excellent accessibility, the relatively enclosed location significantly limits station access, which depends on the available capacity of Highway 13, Pitfield Boulevard (southbound during AM hours and northbound during PM hours), and Henri-Bourassa Boulevard between Valiquette Street and Douglas-Floreani Street.

Other traffic challenges in the area were identified as well. The station location is near the second largest employment hub in the greater metropolitan area after downtown, which generates substantial traffic volumes. Commuters coming from the North Shore will encounter already congested roads during peak hours, with recurring congestion on Highway 13 being particularly critical as it severely limits access capacity from Laval. Highway A-13 and Pitfield Boulevard experience long periods of congestion during peak hours, while major capacity issues also exist on Pitfield Boulevard. Left turns on Henri-Bourassa Boulevard are problematic, and the boulevard offers only limited capacity reserve during peak periods.

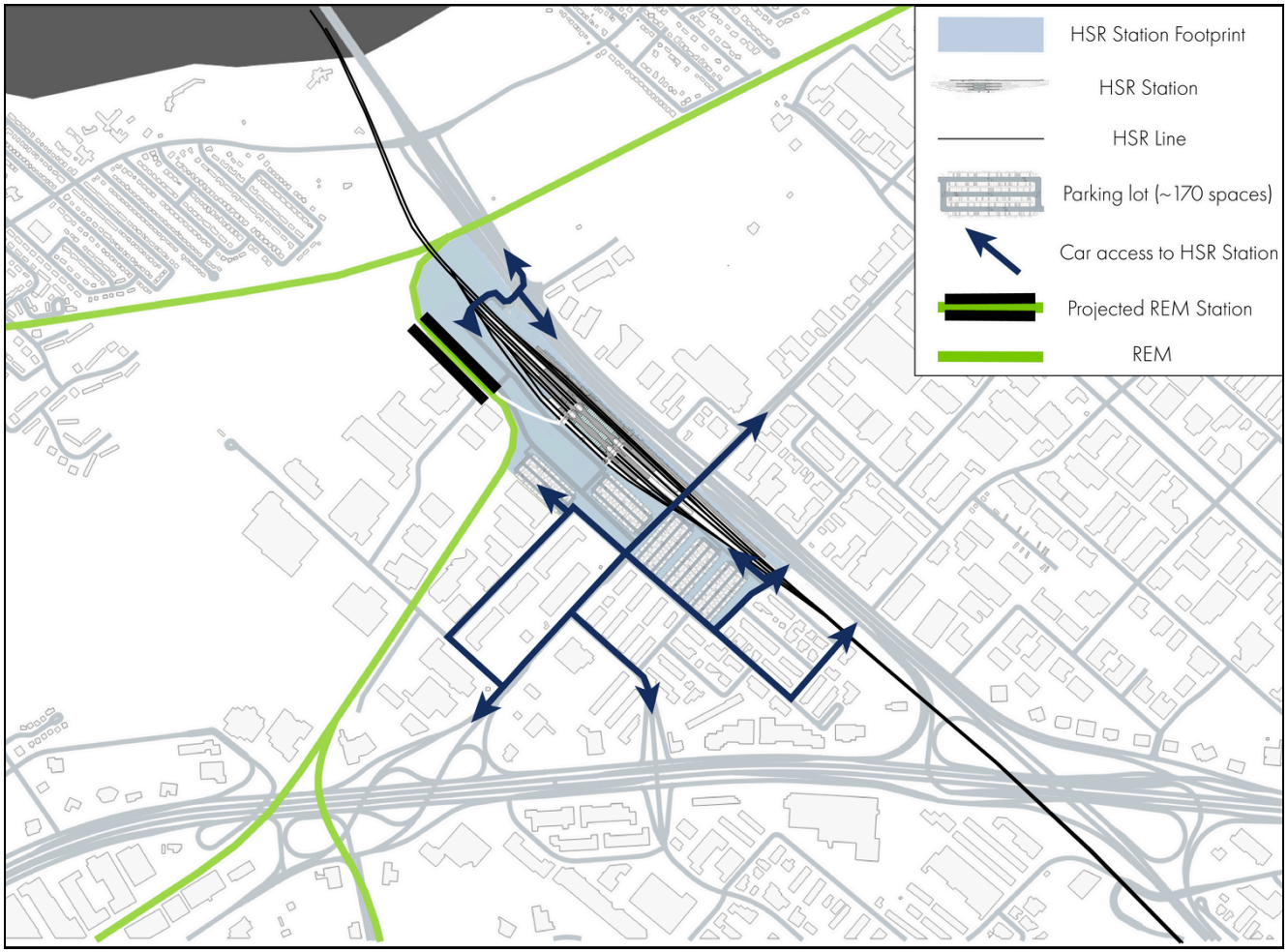

Figure 17. *Traffic flows around proposed HSR station*

Challenge	Cause	Impact
Peak AM Period		
Traffic congestion on the A-13 Southbound highway	Lack of capacity compared to demand	Major delays for cars coming from Laval to the future station
Intersection at the A-13 South exit on Pitfield Boulevard South, north of the intersection with De Salaberry Street	Insufficient distance between the highway exit and the intersection (in relation to traffic flow)	Limited capacity on the exit ramp, limited capacity at the intersection with De Salaberry Street, risk of accidents
Traffic congestion on the northern approach to the Pitfield/De Salaberry intersection	Intersection at the exit of the slip road, lack of capacity	Significant delays for arrivals at the future station
Difficult merging onto Pitfield Boulevard South on a left turn from Gouin Boulevard West	Lack of available slots in the Gouin East movement	Accessibility restrictions from Gouin Boulevard West
Difficult conditions for most left turns at intersections along Henri-Bourassa Boulevard.	Lack of capacity compared to demand	Limited capacity to attract customers to the new station
Peak PM Period		
Traffic congestion on the A-13 North highway	Lack of capacity compared to demand	Major limitation for travel to Laval (return home for future users of the park-and-ride lot)
Heavy congestion at the Pitfield North/Thimens intersection (queues > 500 m)	Insufficient capacity at the intersection, insufficient access to the A-13 North ramp.	Significant delays for departures from the area towards Lava
Common Challenges		
Limited accessibility for the areas south of the Rivière des Prairies (Sunnybrooke, Saraguay, Westwood)	Congestion at the intersection of Pitfield, De Salaberry, and Thimens; hemmed in by highways and the nature park	Deterioration of service levels at already problematic intersections

Figure 18. *Table of identified traffic problems for the proposed Autoroute 13 REM station*

6.2.4 Multimodality

There are two sides to the multimodality story. The first relates to infrastructure. While the new high-speed rail line is planned to run alongside existing railways such as the REM, VIA, EXO, CN, and CPKC corridors, there is little possibility of true interlining between modes on the high-speed sections. This is because high-speed rail relies on distinct technical systems, including in-cab computerized signalling and much higher operating speeds. On lower speed "classic" lines, however, opportunities for interlining do exist, as seen in many European cities where high-speed services share access to historic central stations.

The second side of the multimodality story concerns how passengers actually move through the transportation network. In practice, high-speed rail travel almost always involves multiple modes. A rider may begin their trip on the REM, take a local or regional bus to the station, or arrive by car before boarding the train. In many areas, bus services significantly extend the station's catchment, linking surrounding neighbourhoods, employment areas, and nearby municipalities. Equally important is walkability: safe, direct, and well-designed pedestrian routes allow travellers to comfortably reach the station on foot, especially in dense urban environments. Together, these elements create a multimodal ecosystem that integrates high-speed rail into the broader patterns of everyday mobility.

6.2.5 Mode Shift

Evidence from international high-speed rail systems consistently shows that introducing high-speed rail reshapes regional travel patterns by diverting passengers from air, road, and conventional rail while also generating new trips.

Diversion factors vary by corridor, but the overall trend is clear. After the opening of the Paris–Lyon TGV line, 40 percent of high-speed rail riders previously used conventional rail, 20 percent shifted from air, and 11 percent shifted from road, while about 29 percent represented induced demand (see Table 1). Similar patterns appear in Spain. The Madrid–Seville corridor saw 50 percent of riders newly induced by high-speed rail, while 24 percent came from air travel and 20 percent came from conventional rail. In the Madrid–Barcelona corridor, where air travel had dominated before high-speed rail, approximately 60 percent of high-speed rail traffic came from diverted airline passengers (see Table 1). International services such as Thalys and Eurostar exhibit a comparable structure, with notable diversion from conventional rail along with meaningful shifts from road and air.

Airport connected stations further reinforce multimodal transfer patterns. At Roissy–Charles-de-Gaulle TGV, ridership increased from 2.4 million in 2004 to 4 million in 2011. Seventy percent of these passengers made high-speed rail to air connections, 10 percent transferred between high-speed rail services, and only about 3 percent came from the surrounding population because of limited local connectivity to nearby towns and employment areas (Mohino et al. 2014, 322–323). This example illustrates that without strong regional transit integration, station usage by local residents remains low even when the station functions as a major long-distance hub.

The United Kingdom's HS2 demand forecasts show a similar diversion pattern. Approximately 57 percent of riders are expected to shift from classic rail, 8 percent from air, and 8 percent from car, while 27 percent represent induced demand (HS2 UK). This pattern indicates that high-speed rail competes most strongly with conventional rail on medium-distance corridors, although it still captures a meaningful share of passengers from aviation and private vehicles.

In the Saint-Laurent context, these precedents suggest several likely outcomes. A high-speed rail station would attract travelers who currently use VIA Rail or other regional rail services, as well as some proportion of air passengers on routes such as Ottawa to Montréal and Québec City to Montréal.

Improved regional accessibility may also generate new trips that would not otherwise occur. Local transit conditions may shift as well. Some riders travelling between Laval or Downtown and Saint-Laurent may switch from bus to high-speed rail for longer regional journeys, and others destined for areas near Autoroute 13 may prefer the REM for faster and more integrated travel. These changes highlight the importance of designing strong multimodal connections, particularly local bus service, REM access, and walkability, to ensure that the station functions not only as a long-distance travel node but also as an integrated element of the regional transportation network.

Route	Paris–Lyons[1] 430 km	Madrid–Seville[2] 471 km	Madrid–Barc'a[3] 630 km	Thalys[4]	Eurostar[4]
% HST traffic generated from	1980 to 1985	1991 to 1996 forecast	Before HSR' to 'After HSR'	Range not given	Range not given
Induced	29	50	20	11	20
Road	11	6	10	34	19
Conventional rail	40	20	10	47	12
Air	20	24	60	8	49

Table 19. *Diversion factors resulting from introduction of HSR (Preston, 2018)*

6.3 ECONOMIC IMPACTS

6.3.1 Business Development

Physical proximity to the station also influences how these benefits materialize. A study of Chinese cities found significant increases in both the Business–Commercial Agglomeration Index (BCAI) and the Commercial Agglomeration Index (CAI) within 1,500–3,000 metres of high-speed rail stations, with effects accelerating roughly four years after implementation (Liang et al., 2022).

Research from the Netherlands found that high-speed rail stations create attractive environments for office development, particularly within a 10–15-minute walk, indicating opportunities for targeted commercial intensification within walking distance of a high-speed rail station (Willigers & Van Wee, 2011).

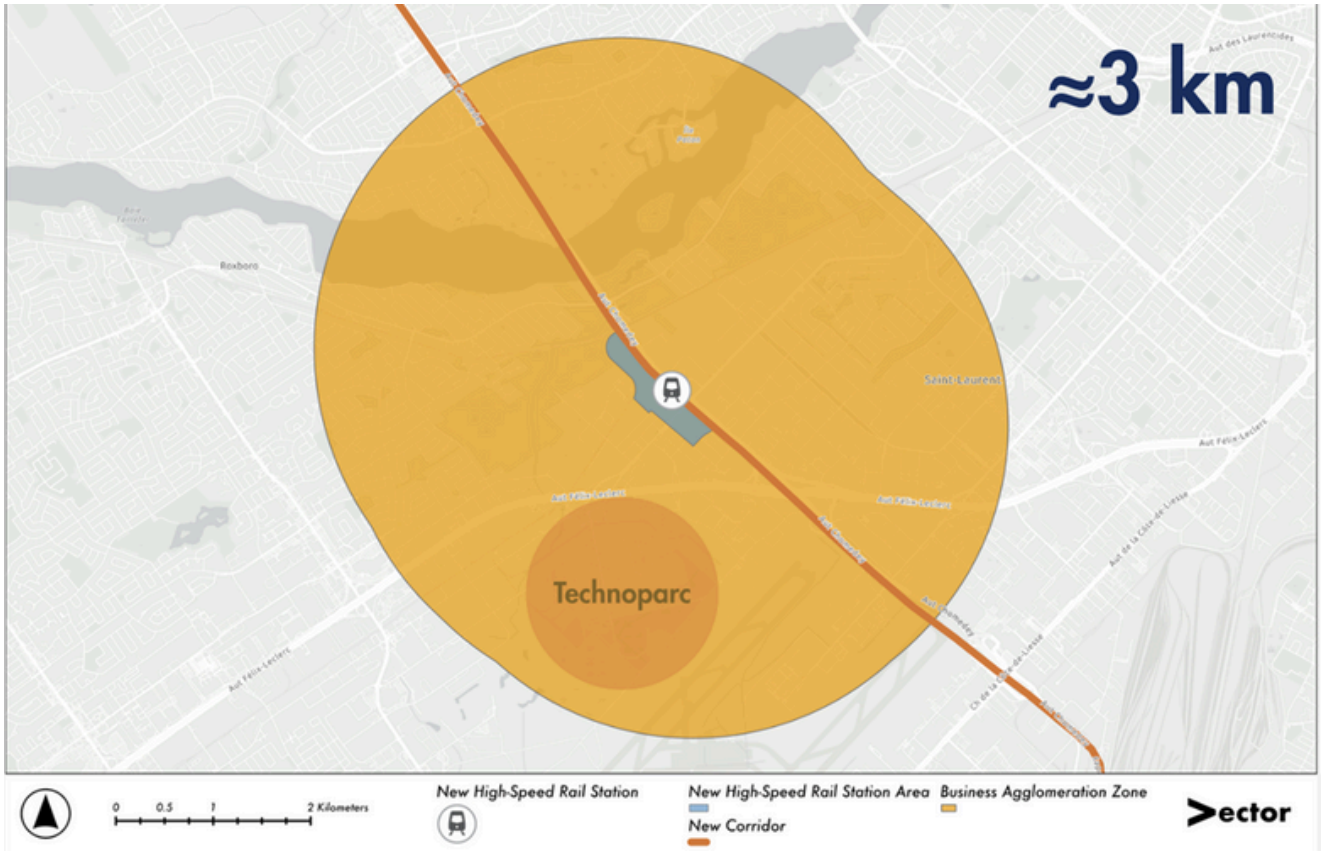

Figure 20. *Map showing 3km buffer of suggested business/commercial agglomeration affects around proposed HSR station*

These benefits are felt more strongly with stations that have international high-speed rail access, a distinction that may limit the office-related development potential for Saint-Laurent's station compared to international hubs like London St. Pancras. The proposed station location includes easy access to Montreal's highway network and room for growth for companies looking to upzone low-volume manufacturing lots to productive office space.

However, the current active infrastructure limits connections from surrounding neighbourhoods. Industrial streets surrounding the proposed station are wide and often lack supporting infrastructure like sidewalks, signaled crossings, and bike lanes. The two residential neighbourhoods along Rivieres des Prairies are designed as circuitous suburban neighbourhoods and lack sufficient connectivity to the proposed site. Thankfully, the geography and existing built environment do not restrict the creation of such connections, but the borough would need to take concrete steps towards addressing this issue.

External investment represents another important channel through which high-speed rail can influence local economies. In the United Kingdom, areas within one hour of central London saw notable increases in French company registrations, particularly in the banking, finance, and insurance sectors (STEER, 2019). The same report attributed approximately £480 million in exports and £1.35 billion in imports to the HS1 corridor. Although Canada's future high-speed rail system will not connect to an established international network as the UK's does, improved accessibility between Canadian metropolitan areas could still encourage both domestic and international investment. For Saint-Laurent, the most promising opportunities lie in sectors already aligned with its industrial base, including advanced research and development, organization, and business services to support gains in inter-regional trade.

Over time, sustained productivity gains could intensify demand for employment land, encourage redevelopment near the Technoparc and other commercial corridors, and reinforce Saint-Laurent's identity as one of Montréal's key innovation and industrial hubs. Saint-Laurent could become a slightly more attractive location for academic and professional conferences/conventions, though this attractiveness is far more likely to be experienced by downtown Montreal which already has convention centers and adequate hotel room capacity.

Nonetheless, as with many of high-speed rail's economic impacts, the extent to which these benefits accrue specifically to the borough rather than the wider metropolitan region remains uncertain and is further dependent on the supporting connective and transit infrastructure built alongside the station

Key Business Development Takeaways:

- Business agglomeration and office space development is most pronounced within a **short walking distance** from HSR stations
- Current infrastructure **limits pedestrian connections**
- HSR provides opportunities for **external investment**, Saint-Laurent industry provides the medium
- **Demand for re-development** could soar and increase Saint-Laurent's attractiveness for knowledge sharing events

6.3.2 Firm Productivity

One of the most significant advantages of high-speed rail lies in the time savings it promises to business travelers. A study on the economic impacts of the HS2 project in the United Kingdom found that although only 30% of passengers travelled for business purposes, 61% of total user benefits accrued to business users (Preston, 2018). These gains highlight the broader economic implications of faster intercity travel, including enhanced firm productivity, reduced travel inefficiencies, and expanded opportunities for inter-firm collaboration. In the Canadian context, a high-speed connection between Montréal, Québec, Ottawa, and Toronto could similarly strengthen business networks, support agglomeration economies, and improve regional market competitiveness.

International evidence further supports the link between high-speed rail access and improved firm performance. Japanese firms have achieved significant reductions in buyer–seller search costs, allowing companies along high-speed rail routes to match with a larger pool of high-quality suppliers (Bernard et al., 2019). Spanish studies report similar outcomes, including higher firm productivity and an overall increase in firm formation (Carbo et al., 2019, Matas et al., 2020). However, the biggest cities tend to accrue these benefits at the expense of smaller cities (Matas et a., 2020) In the United Kingdom, high-speed rail corridors tend to experience greater growth in Gross Value Added (GVA) than non-high-speed rail regions, with stations outperforming national averages in commercial property development (Preston, 2018). Collectively, these studies suggest that the productivity and business development effects of high-speed rail can be localized and produce significant growth. This bodes well for Saint-Laurent if the borough hopes to leverage a high-speed rail station for commercial growth.

The placement of high-speed rail stations plays a decisive role in realizing these benefits. Stations integrated within or adjacent to major employment hubs tend to generate stronger productivity gains than those serving primarily residential areas. As Hall and Chan (2015) observe, the expansion of European high-speed rail networks coincided with the transformation of several industrial cities toward knowledge-based economies.

Although Montréal is a large metropolitan area, Saint-Laurent could capture part of this transition given the established presence of the Technoparc and its concentration of innovation-oriented firms. Supporting this, high-speed rail has been associated with increased knowledge transfer and research productivity among individuals and institutions requiring frequent intercity travel (Dong et al., 2018). Together, these findings suggest that enhanced intercity accessibility could help reinforce Saint-Laurent's role as a hub for high-value, knowledge-intensive employment.

Not all research agrees on the mechanisms driving productivity gains. Beckerich (2016) argues that improvements in firm performance may stem less from structural economic change and more from enhanced employee comfort during business travel, or the ability to attend conferences and networking events more efficiently. This interpretation suggests that productivity effects may be more behavioural than transformative, reinforcing the notion that outcomes will depend heavily on how firms and employees use the new accessibility advantages provided by high-speed

rail. The location behaviour of individual firms not only around the Saint-Laurent high-speed rail station, but around other regional stations will determine the ability of the high-speed rail to provide productivity benefits.
If firms within the borough experience productivity improvements as a result of these changes, Saint-Laurent could also benefit indirectly through local spillovers. Increased firm efficiency can strengthen employment stability, generate higher business tax revenues, and boost local spending on goods and services. Finally, Saint-Laurent firms would experience gains in their intercity market reach, enabling easier access to potential clients and partners.

Key Firm Productivity Takeaways:

- Most productivity benefits occur due to **business/academic travel**
- **Buyer-seller search costs** reduced for highly specialized inputs
- Potential for increased **firm creation**
- **Increased reach** to intercity markets

6.3.3 Employment

All infrastructure projects involve some level of short-term employment during the construction phase of the project. However, these impacts might not be felt by Saint-Laurent, since Canada has not built high-speed rail before, ALTO will likely rely on specialized external contractors with experience building rail which will create short term employment opportunities, just not necessarily for Saint-Laurent.

While there is no guarantee that high-speed rail investment will directly boost local employment, evidence suggests it can reshape the geography of labour markets and firm productivity. A report on the UK's HS1 corridor found that London gained access to approximately 63,000 new highly skilled workers once the line became operational (STEER, 2019). Since Montréal is a large metropolitan area, similar access benefits could meaningfully expand the region's talent pool, particularly for specialized clusters like the Saint-Laurent Technoparc. As a district that depends on research and innovation, improved intercity connectivity could allow firms to draw from a broader pool of skilled labour; expanding the recruitment pool, enhancing competitiveness, potentially attracting external investment, and/or stimulating spatial expansion of the Technoparc into surrounding areas.

At the same time, the broader literature cautions that these employment gains are not uniform. Preston (2018) found that total workplace employment in the HS1 corridor performed worse than in comparable UK regions, suggesting that high-speed rail can redistribute employment rather than create it. This aligns with the agglomeration effect identified in several studies, where large metropolitan areas capture disproportionate benefits while intermediate cities experience stagnation or loss (Ahlfeldt & Feddersen, 2018). In practice, this implies that the Island of Montréal would be one of the agglomerating regions experiencing the largest employment gains, potentially at the expense of smaller centres along the line such as Peterborough or Trois-Rivières. As one of Montréal's most significant employment hubs, Saint-Laurent, with a prospective high-speed

rail station and the growing Technoparc, would be especially well positioned to capture the agglomeration benefits associated with high-speed rail.

Sectoral evidence supports this uneven pattern. Chinese cities connected by high-speed rail experienced increases in retail, wholesale, and hospitality employment concentrated in larger urban centres, often at the expense of smaller municipalities (Dong, 2018). Spanish research echoes these findings, showing substantial growth in service-sector jobs but declines in manufacturing employment (Zhang & Xu, 2023). For Saint-Laurent, whose economic base includes both advanced manufacturing and business services, this suggests that a high-speed rail station could reinforce the borough's service-oriented growth trajectory while posing adjustment pressures for lower-value industrial firms.

However, a potentially significant segment of high-speed rail ridership is composed of financial and business service professionals. This group has been one of the primary user bases for high-speed rail in other countries, reflecting the mode's ability to facilitate rapid intercity business travel. Since Montréal's financial core is already concentrated in the downtown area and is directly connected to Saint-Laurent via the REM, the borough is unlikely to capture substantial benefits from this sector. Many of the commuting or business travel gains associated with the financial industry would likely bypass Saint-Laurent altogether, with passengers continuing through to downtown Montréal.

Enhanced connectivity could enable residents to access advanced career opportunities in Toronto and Ottawa–Gatineau while continuing to live in Saint-Laurent. Over time, this increased accessibility could enhance the borough's attractiveness as a residential location for highly skilled workers, strengthening its role within the Montreal housing and labour market and encouraging further infrastructure and quality-of-life investments by the City of Montreal.

However, studies show that the use of the high-speed rail station by the surrounding population remains very low (Mohino et al., 2014). Overall, while high-speed rail can strengthen employment in travel-related and service sectors, the evidence indicates that its effects are largely redistributive. Saint-Laurent's highly skilled labour force and strategic industrial clusters position it to benefit indirectly through enhanced regional connectivity and knowledge exchange, provided that strong local transit links effectively integrate the borough into the wider high-speed rail network. Station-area intensification could also generate modest levels of induced employment in business-related retail and hospitality uses that typically cluster around major intercity terminals. Large-scale infrastructure projects can prompt local and federal governments to promote worker skill-development programs and training partnerships with local institutions, strengthening Saint-Laurent's employment base. Saint-Laurent is well positioned to experience the positive impacts of a high-speed rail station, even if the extent of those impacts is unknown.

The research shows that there is no guarantee that local employment will be boosted by high-speed rail provision. However, as previously mentioned London saw gains to its talent pool due to increased regional

accessibility. London is obviously a much larger city than Montreal, but the **effect on the talent pool** could be significant. This is especially important for areas like the Technoparc which, due to its innovative nature, rely on highly skilled workers for growth and advancement within the various industries it supports.

However, some conflicting research showed that total workplace employment fared the worst in the HS1 corridor in an analysis of 3 UK corridors (Preston, 2018). There is, however, evidence to support the **agglomeration effect** of high-speed rail in which factors like employment increase proportionately more for larger cities than intermediate cities. Research from Germany showed decreases in employment in intermediate cities combined with **increased employment in larger cities** (Koster et al., 2022). All of this is very high-level, however, and may not be experienced by the borough of Saint-Laurent if high-speed rail is implemented. Although the borough does have advantages, its large proportion of employers and advanced industry mean that it would be easy for people to commute to and from Saint-Laurent via the high-speed rail if sufficient transit links support the station.

Key Employment Takeaways:

- **Short-term construction employment** may not come to Saint-Laurent
- Saint-Laurent will have access to more **highly-skilled workers**
- Likely to see **re distributive gains in local employment**
- **Unlikely to capture** business/finance jobs
- **Enhanced career opportunities** for residents in other cities
- **Gains** in service, business services, knowledge intensive industries
- **Potential losses** in manufacturing industries

6.3.4 Technoparc

Located north of the Montréal-Trudeau Airport along the western edge of Saint-Laurent, Technoparc Montréal is Quebec's largest science and technology centre, spanning more than 21 million square feet. The Technoparc has over 110 firms and employs approximately 7,000 workers, primarily in the aerospace, health sciences, and technology sectors, supporting both research and commercial development.

As the largest science centre in Canada outside of university campuses, the Technoparc is a significant contributor to the regional and provincial economy and is expected to expand to 15,000 workers by 2030. Recent investments include Boeing's $415 million commitment to create the Espace Aéro aerospace innovation zone, which is focused on sustainable aviation and advanced air mobility, and nearly $200 million from the Government of Quebec for industrial laboratories and aerospace sector growth. Additionally, the Marie-Curie REM station, in the centre of the Technoparc, will be operational by 2027, increasing accessibility to and from the area from important nodes like the airport (2 minutes) and downtown (21 minutes).

International precedents show that high-speed rail stations located near research, technology, and commercial parks, similar to Technoparc Montréal, have the potential to generate economic benefits when properly integrated. Relevant examples include:

- **Lille, France–Lille-Europe Station:** Near EuraTechnologies start-up incubator.
- **Lyon, France---Part-Dieu Station:** Near La Part-Dieu science and technology centre.
- **Munich, Germany - Hauptbahnhof Station:** Near the Munich Technology Centre, several aerospace companies, and the city's major innovation centre
- **Seville, Spain - Santa Justa Station:** Well-connected to Cartuja Science and Technology Park
- **Shanghai, China - Hongqiao Station:** Connected directly to Zhangjiang Hi-Tech Park and the International Medical Zone.
- **South Korea - Daejeon Station:** Near Daedeok Innopolis science park, one of Asia's largest technology research and development centres.

Given that significant investment is already underway for Technoparc Montréal and the Highway 13 high-speed rail station would connect to the existing REM network, this report finds that the Technoparc would likely experience growth from the development of the high-speed rail station in the proposed location, ultimately benefitting the regional and provincial economy. It should be noted that the Technoparc could likely reap the same economic benefits from Alto's high-speed rail development wherever the station is located on the Island of Montréal if there is adequate connectivity between the high-speed rail station and the REM given the Marie-Curie location.

Key Technoparc Takeaways:
- Technoparc **likely to experience growth** from HSR given planned investments and proposed REM station
- **Ample precedent** exists for HSR stations locating near research and technology parks
- **Benefits likely seen with any HSR station location** as long as there is a sufficient REM connection

4.2.2.5. Real Estate and Land Value

While high-speed rail station development can significantly impact surrounding real estate and land prices, the degree of impact depends on several factor: station geography, accessibility to other transport modes, local economic conditions, market dynamics, commuter behaviour, and the timing between station construction and operational service.

Property value increases have been found to occur in suburban and exurban locations where high-speed rail establishes new connectivity to regional job centers. These areas, which often have initially low transit accessibility, experience the greatest relative improvement in connectivity. The resulting increases in commercial activity and development interest drive property appreciation, particularly when transit-oriented development (TOD) policies are in place to guide and incentivize growth around the station.

The **type of property** and **distance** also matter:

- **Commercial properties** tend to experience greater value appreciation than residential properties due to their sensitivity to accessibility improvements and ability to capture business activity generated by high-speed rail connectivity
- Property value increases are most noticeable between **500m – 1,000m** of the station location and are rare more than 5km away

Conversely, high-speed rail development can have negligible or negative impacts in built-out urban cores and large metropolitan cities where property values and transit connectivity are already high. In these contexts, the marginal improvement from high-speed rail may be limited, while potential negative externalities such as noise, construction disruptions, and visual impacts may offset any accessibility benefits.

Given this context, commercial properties in Saint Laurent, like the Technoparc, would likely experience increases in property value following the development of the Highway 13 high-speed rail station because it would 1) be situated in a suburban centre with high development potential rather than a densely built-out area, 2) offer REM connectivity providing easy access to both downtown Montreal and the airport, 3) be in an area that has already been identified for its TOD potential, and 4) establish high-quality links for workers in cities along the high-speed rail corridor (i.e. Toronto, Québec City etc.). It is difficult to determine whether residential properties within the Borough would experience any significant impact from a high-speed rail station.

6.3.5 Strategies to Capture Economic Benefits

Researched precedents demonstrate that successful high-speed rail projects are often accompanied by coordinated urban redevelopment strategies. Studies show that although transportation benefits by themselves may be insufficient to justify high-speed rail investments, the broader economic mpacts can significantly outweigh infrastructure costs when accompanied by strategic development planning (Mascoop, 2016).

In France, the development of the Roissy-Charles de Gaulle Airport TGV station was closely tied to the expansion of hotels, business parks, and the Aéroville commercial centre constructed around the station to capture spillover effects. Similarly, Stratford International Station in London shows how a comprehensive redevelopment plan can transform a previously brownfield area of underutilized railway tracks, warehouses, and vacant land into a vibrant mixed-use hub. Built as part of the 2012 Olympic redevelopment in proximity to Heathrow Airport, the Stratford site integrated new housing, commercial areas, and cultural spaces around the high-speed rail and regional rail infrastructure, reinforcing connectivity and creating a new metropolitan subcentre.

Saint-Laurent's existing urban context shares comparable characteristics with these cases. The borough's industrial base, proximity to Montréal–Trudeau International Airport, and the Technoparc's innovation ecosystem provide fertile ground for a high-speed rail-linked redevelopment initiative. The arrival of a high-speed rail station in the borough could serve as an opportunity to reimagine underutilized or low-density industrial areas into a more diversified and transit-oriented urban district. Strategic redevelopment could stimulate the conversion of aging industrial lots into high-value, mixed-use employment and residential zones while enhancing connectivity between Saint-Laurent's existing economic clusters and the airport corridor.

To capture economic benefits:

- **Integrated development plans** are crucial for capturing spillover economic effects
- **TODs** are needed to create productive and attractive spaces for development
- **Transportation benefits along rarely justify high-speed rail investments,** but when paired with strategic development planning, wider economic gains can outweigh the infrastructure costs

6.3.6 Zoning, Land-Use, and Transit Oriented Development Planning

The arrival of a high-speed rail station would likely require Saint-Laurent to revisit its zoning and long-term land use plans. Currently, the surrounding area is characterized by industrial and low-intensity employment uses, but high-speed rail has the potential to trigger a shift toward higher-density, mixed-use development. Integrating the station into the borough's long-term planning vision would therefore involve designating new mixed-use zones, updating building height and density limits, and encouraging flexible land use to accommodate housing, office, and commercial spaces. Ensuring transit-supportive densities and mixed uses will be key to maximizing accessibility benefits and minimizing urban sprawl. '

Over time, the station could be integrated into the Technoparc's TOD PPU ecosystem, leveraging its existing plan to create a cohesive, transit-oriented urban environment. Beyond connectivity, the high-speed rail station offers an opportunity to establish a high-quality, attractive urban place where people want to meet, work, and linger. By combining well-designed public spaces, pedestrian-friendly streets, and distinctive architecture, this area could evolve into a vibrant, livable employment zone that complements the Technoparc. Such a development can generate a positive feedback loop, attracting multinational firms, supporting local businesses, and encouraging additional development directly adjacent to the station. While most economic spillover effects occur at the city scale, carefully planned TODs can capture local benefits by creating functional and appealing spaces. If executed thoughtfully, the station could reinforce Saint-Laurent's role as a western gateway to Montreal's metropolitan economy while enhancing the borough's identity and attractiveness as a place to live, work, and connect.

6.4 ENVIRONMENTAL IMPACTS

6.4.1 Noise

Noise from high-speed rail systems comes from several sources and rises sharply with speed, making it one of the main environmental concerns of high-speed rail infrastructure. At moderate speeds below about 200 to 250 km/h, wheel–rail interaction and mechanical equipment are the dominant noise sources. Once the speed exceeds 250 km/h, aerodynamic noise becomes the major contributor, increasing with the logarithm of speed. Studies by Hanson (Transportation Research Record) and by Wayson and Bowlby (ASCE 1989) show that aerodynamic noise grows at about 60 log v, while rolling noise follows about 30 log v, where v is the train's speed. The "log" represents the base-10 logarithm of speed, meaning the relationship is exponential rather than linear. If the speed of a train doubles, the noise level rises by 9 decibels (dB) for rolling noise or about 18 dB for aerodynamic noise.

Noise is measured in decibels (dB), a logarithmic unit that expresses sound intensity relative to a standard reference level (the quietest sound the average human ear can detect). Because it is logarithmic, every 10 dB increase represents a tenfold increase in sound energy, though it is perceived by humans as roughly twice as loud.

Recent studies (Sheng et al., 2023; Ivanov et al., 2017) report that high-speed train pass-by noise typically ranges from 85 to 95 dB(A) at 25 m from the track for trains operating between 250 and 350 km/h. At these speeds, the loudest aerodynamic sources are the pantograph, train nose, undercar flow, and inter-car gaps, while wheel–rail rolling noise remains significant at higher frequencies. Aerodynamic noise arises from pressure

Figure 21. Sound mitigation

fluctuations and turbulent airflow around the body and exposed components such as bogies and roof equipment.

Mitigation measures target both the train and its surroundings. Effective methods include streamlining the nose and roof, enclosing, or shielding pantographs, smoothing car body surfaces, covering the undercar space with fairings or absorbing panels, and adding small roof-mounted noise barriers. These can reduce total sound levels by 3 to 10 dB(A), depending on the design. Along the track, full-height or partial barriers remain essential to protect nearby residential areas.

In summary, high-speed rail noise shifts from wheel–rail dominated at low speeds to aerodynamically dominated at high speeds. Controlling it requires coordinated vehicle and infrastructure design using smoother shapes, quieter bogies and pantographs, resilient track systems, and well-designed noise barriers to limit impacts on surrounding communities.

6.4.2 Vibration

High-speed rail generates ground-borne vibrations that can affect surrounding buildings and infrastructure, especially at close distances and under certain soil and construction conditions. Vibration impacts are measured in velocity (mm/s or cm/s) and velocity decibels (VdB), with standards and best practices in place to protect occupants and structures from disruption or damage.

- **0-25m:** HSR typically slows down through urban areas, travelling between 60–170 km/h; vibration levels typically fall in the range of 0.08–0.23 mm/s or 48 dB (Guo et al., 2025).
- **25-50 meters:** Vibration velocities range from 0.08 to 0.23 mm/s for trains traveling between 100 to 300 km/h. Sensitive individuals may perceive discomfort at levels exceeding 0.01–0.02 m/s^2 (Guo et al., 2025).
- **>60 meters:** Vibration is rarely perceptible to residents, and levels typically fall below thresholds that would cause annoyance, discomfort, or structural concern with modern mitigation measures (Rafidah et al., 2025).
- **0-200 meters:** Vibration generally remains under 1 mm/s (Rafidah et al., 2025).
- **>200 meters:** Vibration is generally considered negligible with modern track and mitigation design (Rafidah et al., 2025).

Many other countries (Germany, Belgium, Greece, China, United States etc.) that have high-speed rail have implemented measures to mitigate the impacts of ground-borne high-speed rail vibrations; it is assumed that Alto will implement similar measures.

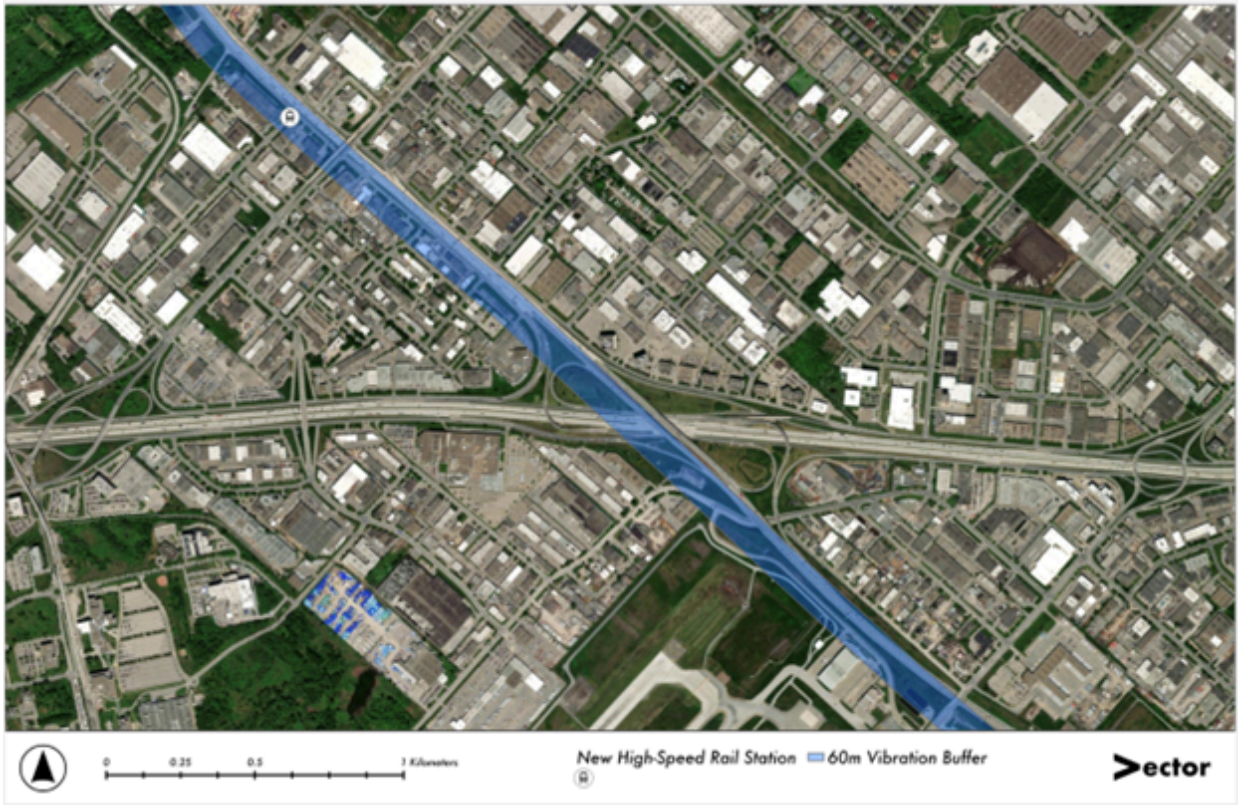

Figure 22. *Map showing 60m buffer needed for HSR vibration mitigation*

6.4.3 Protected Lands

High-speed rail and other large infrastructure projects can significantly affect wetlands, as shown in the following studies. Wetlands provide essential ecosystem services such as flood control, water purification, biodiversity support, and carbon storage, but they are especially vulnerable to construction activities.

According to Mitra and Bezbaruah (2014), the construction of a railroad through the Deepor Beel Ramsar wetland in India caused severe ecological fragmentation by dividing the wetland into two parts and disrupting its hydrological connection to nearby forests. This led to habitat degradation, sediment buildup, and eutrophication, reducing the wetland's suitability for endangered species such as the Asiatic elephant. Their modelling showed that wetland habitat quality declined by over 50 percent within 50 years due to the rail line's physical and hydrological impacts.

In a broader context, Asumadu et al. (2023) identified several major risks from construction in wetland environments, including changes to water flow, pollution, and the loss of biological resources. These risks undermine wetlands' natural functions, such as flood regulation, water filtration, and carbon storage. The most severe effects were the destruction of aquatic and terrestrial life, the loss of flood control capacity, and the decline of water quality.

Similarly, Wakhungu (2013) found that unplanned urban development in Bungoma, Kenya led to drainage, sediment deposition, and toxic runoff, which reduced wetland biodiversity and flood storage capacity. These changes increased the frequency of flash floods and demonstrated how urban expansion directly harms wetland ecosystems.

Senduran et al. (2018) also showed that transportation infrastructure can cause chemical pollution in wetlands. Their case study from Sapanca Lake, Türkiye revealed that runoff from railways and highways contained elevated levels of heavy metals such as zinc, cadmium, and lead. However, "pocket wetland" treatment systems were able to reduce pollutants, removing up to 63 percent of total phosphorus and 55 percent of zinc under favourable conditions.

Overall, these studies indicate that high-speed rail projects can negatively affect wetlands by:

- Altering hydrology and fragmenting ecosystems
- Increasing sedimentation and nutrient loading
- Introducing heavy metals and other pollutants
- Reducing the quality of habitats for aquatic and terrestrial species

To limit these impacts, mitigation strategies such as ecological corridors, runoff treatment wetlands, and careful alignment to avoid sensitive wetland zones are essential.

These findings are highly relevant to the Borough of Saint-Laurent in Montréal, where plans for a potential high-speed rail corridor and station could intersect with areas containing protected wetlands and riparian zones. Saint-Laurent includes portions of the Bois-de-Liesse and Technoparc Montréal sectors, both of which contain ecologically sensitive wetland habitats that support migratory birds, amphibians, and native vegetation. As the studies show, linear infrastructure such as railways can alter hydrology, fragment wildlife corridors, and degrade water quality if not carefully designed.

For Saint-Laurent, this means that any high-speed rail alignment or station development would need to consider wetland buffers, stormwater management systems, and biodiversity protection measures. Constructed wetlands or runoff filtration systems could help offset potential pollution from rail operations, while elevated tracks or rerouted alignments could minimize physical disturbance. Integrating these mitigation strategies early in the planning process would be essential to balance transportation efficiency with the borough's environmental and climate resilience goals.

6.4.4 Carbon Emissions

Research on the environmental performance of high-speed rail shows that while high-speed rail offers several non-carbon benefits, its direct impact on national carbon reduction is modest. Wider economic gains account for the largest share of quantified benefits. Agglomeration effects and improved business efficiency are estimated at £3.6 billion, while smaller improvements in road safety, air quality and noise contribute less than £100 million (Preston 2010, 9). These findings demonstrate that although environmental quality improves slightly with high-speed rail, the major benefits arise from economic restructuring rather than from environmental outcomes alone.

Carbon emissions associated with construction represent a relatively small portion of total carbon costs. HS2 analyses estimate that construction accounts for only 6 percent of lifetime carbon emissions, which is considerably lower than earlier estimates of 26 percent by Booz Allen and Hamilton (2007) and 18 percent by Network Rail (2009) (Preston 2010, 14). Even so, overall reductions in national transport emissions remain limited. HS2's mean carbon output is estimated at 19.7 million tons of CO_2, compared to 139 million tons produced annually by the entire UK transport sector (Preston 2010, 14). This comparison indicates that although high-speed rail is a lower-carbon mode during operation, its contribution to national decarbonization goals is relatively small when viewed at the system scale.

The most significant carbon savings are expected to come from mode to shift, particularly from air to high-speed rail. Estimated reductions include 0.9 million tons of CO_2 from classic rail, 0.2 million tons from car travel and 23.2 million tons from aviation (Preston 2010, 14). This pattern demonstrates that the environmental effectiveness of high-speed rail depends heavily on capturing long-distance travelers, especially those who would otherwise fly.

High-speed rail planning studies also illustrate how environmental impacts can be identified and mitigated. The HS2 project found that noise and vibration would affect several thousand dwellings, including 350 homes experiencing high noise levels and 9,400 homes above tunnel sections exposed to potential vibration (Preston 2010, 15). Mitigation measures are built into the project budget, with £215 million allocated primarily for environmental protection, which represents about 1.3 percent of total project costs. Other studies suggest that up to 10 percent of construction costs may relate to environmental mitigation. The route was deliberately chosen to limit ecological disruption, yet impacts landscape, biodiversity and watercourses remain.

Examples include tunnelling under 37 percent of the route through the Chilterns, diversions of multiple rivers, and localized effects on aquifers and flood-prone zones. Although these impacts are significant, they were assessed as not large enough to change the conclusion that HS2 would deliver high value for money.

Overall, the research indicates that while high-speed rail contributes to carbon reduction primarily through mode shift from air travel, its broader environmental footprint is shaped by construction emissions, landscape impacts, and the need for extensive mitigation. Carbon benefits alone do not justify high-speed rail, but when combined with economic, accessibility and safety gains, environmental performance forms an important part of the overall case for investment.

6.4.5 Impacts of Wildlife

High-speed rail systems can have a range of direct and indirect impacts on wildlife. According to Railway Ecology (Borda-de-Água et al., 2017), the main ecological effects include wildlife mortality, habitat loss, barrier effects, and the spread of invasive species. One of the most visible impacts is wildlife-train collisions (WTCs), which can cause substantial population losses, particularly among large mammals such as ungulates and bears. For instance, studies in Sweden report around 5,000 collisions per year involving moose, deer, and other ungulates, leading to both ecological and economic costs (Seiler and Olsson, 2017, in Railway Ecology). These collisions often go unnoticed by the public because railway corridors are less accessible, and animals struck by trains are rarely observed (Santos et al., 2017, in Railway Ecology).

Railways can also act as physical and behavioural barriers that fragment wildlife habitats and restrict movement. This is especially pronounced in fenced or high-speed corridors where crossings are impossible. Barrientos and Borda-de-Água (2017, in Railway Ecology) explain that such barriers can isolate populations and reduce genetic diversity. A striking example comes from Mongolia, where fencing along the Ulaanbaatar-Beijing railway has prevented migratory ungulates from reaching seasonal feeding areas, leading to habitat fragmentation and population decline (Ito et al., 2017, in Railway Ecology). Similar effects have been observed in other large species that depend on wide-ranging movement patterns, such as elephants and gazelles (Van der Ree et al., 2015, in Handbook of Road Ecology).

In addition, the noise, vibration, and lighting produced by high-speed rail operations can alter animal behaviour and stress responses. Birds and mammals may avoid areas near the railway, effectively reducing available habitat, while species adapted to disturbed environments may be attracted to railway verges, increasing their risk of collisions (Lucas et al., 2017, in Railway Ecology). Over time, this behavioural avoidance can contribute to habitat exclusion and reduced ecosystem connectivity (Parris, 2015, in Handbook of Road Ecology).

Mitigation strategies have been proposed to reduce these impacts. These include the construction of wildlife crossings, strategic fencing to guide animals toward safe passages, and deterrent systems that alert wildlife to approaching trains (Seiler and Olsson, 2017, in Railway Ecology). Other measures, such as restoring vegetation along railway verges and maintaining natural corridors, can enhance connectivity and provide refuge for smaller species (Vandevelde and Penone, 2017, in Railway Ecology). As high-speed rail networks continue to expand, incorporating ecological design principles and long-term monitoring into infrastructure planning is essential for balancing transportation development with biodiversity conservation.

In the context of Ville Saint-Laurent, these types of impacts could have meaningful consequences for local wildlife. The borough contains some of the last significant wetlands and woodlands on the Island of Montréal, including the Technoparc wetlands and the Parc Marcel-Laurin forest. Species such as the Great Blue Heron (Ardea herodias), Red-winged Blackbird (Agelaius phoeniceus), DeKay's brown snake (Storeria dekayi), and Northern Leopard Frog (Lithobates pipiens) depend on these habitats for breeding, feeding, and migration.

Construction of a high-speed rail corridor could fragment these ecosystems, reduce breeding success, and disrupt seasonal movements, particularly amphibians that rely on connected wetland networks. Increased noise and vibration could also disturb sensitive bird species; while fencing and embankments might limit movement for small mammals such as voles and cottontail rabbits. As Saint-Laurent's remaining green spaces serve as ecological steppingstones within an urbanized landscape, maintaining habitat connectivity and minimizing disturbance will be critical if high-speed rail infrastructure is introduced.

6.4.6. Green Space

Green space is one of the defining features of the Technoparc area, providing ecological, recreational, and visual benefits within an otherwise highly urbanized employment district. The surrounding landscape includes a mix of programmed and unprogrammed open spaces, ranging from golf courses and community parks to sensitive nature preserves. These assets play an important role in maintaining local biodiversity, offering habitat for migratory birds and small mammals, and supporting wetland ecosystems that contribute to stormwater management. The presence of large, contiguous green areas, including the Technoparc's natural corridors, also enhances the daily experience of workers and visitors by creating opportunities for walking, cycling, and passive recreation. As regional mobility infrastructure evolves, preserving and integrating these green spaces becomes essential not only to safeguard ecological functions but also to reinforce the Technoparc's identity as a unique, campus-like employment hub within Montréal's broader metropolitan fabric.

6.5 SOCIAL IMPACTS

6.5.1 Neighbourhood Disruptions

While the high-speed rail station and corridor will be primarily located in industrial areas, there will still be some social impacts on nearby residential communities. The construction and operation of high-speed rail infrastructure may create short- and long-term disruptions. As discussed in previous sections, noise, vibration, and traffic from the high-speed rail could affect adjacent neighbourhoods. The residential areas most likely to experience these impacts are in Pierrefonds-Roxboro and Cartierville, located approximately 350 and 500 metres from the rail corridor (Figure 25).

Construction activities may temporarily alter traffic patterns, increase noise levels, and affect local business operations. In some cases, land acquisition or redevelopment could require the relocation of existing businesses or residents, although Saint-Laurent's predominantly industrial land use reduces the likelihood of large-scale displacement. Surrounding boroughs such as Pierrefonds-Roxboro, Ahuntsic-Cartierville, and Laval could also experience shifts in commuter flows, parking demand, and transit connectivity, which may create secondary neighbourhood impacts.

Finally, the high-speed rail corridor would introduce an additional physical barrier in a borough already shaped by major linear infrastructures such as highways, the REM, and existing rail lines. This could further fragment local connectivity. To ensure that the project supports the borough's active transportation and mobility goals, mitigation measures such as underpasses or crossings should be incorporated so the corridor remains permeable for pedestrians, cyclists, and drivers.

Figure 23. *Map showing distance from corridor to residential properties*

6.5.2 Vulnerable Populations and Gentrification

Although the high-speed rail station will be located in an industrial area not in proximity to vulnerable or lower-income communities, Saint-Laurent and adjacent boroughs may face indirect social impacts, including rising property values, increased rents, or changes in local services that could affect affordability and access. This could lead to gentrification as lower-income residents can no longer afford to live in Saint-Laurent. However, the implementation of a high-speed rail has been found to affect more commercial property values than residential ones. Nonetheless, effective planning and community engagement will be essential to ensure that the benefits of high-speed rail-related development are inclusive and to mitigate potential displacement of long-standing residents.

Overall, the social impacts of the high-speed rail in Saint-Laurent remain very low but may lead to increased regional accessibility, improved mobility, and localized economic opportunities, alongside potential challenges related to affordability, displacement, and neighbourhood disruption. Proactive planning, inclusive policies, and community consultation will be key to ensuring that the social benefits of the high-speed rail are maximized while mitigating potential negative effects for vulnerable populations.

6.5.3 Holistic Social Impacts

High-speed rail services primarily benefit long-distance intercity travelers, with studies showing that business users often capture the largest share of time savings and transport-related advantages (Preston, 2010). Residents living in close proximity to the station could also benefit from improved regional accessibility, enhanced mobility options, and potential increases in local services and amenities resulting from associated economic development; however, studies show that the use of the high-speed rail station by the surrounding population remains very low (Mohino et al., 2014).

While high-speed rail can drive economic growth and urban regeneration, these benefits may not be equally distributed. Although the Autoroute 13 station is located in an industrial area not in proximity to vulnerable or lower-income communities, Saint-Laurent and adjacent boroughs may face indirect social impacts, including rising property values, increased rents, or changes in local services that could affect affordability and access. Effective planning and community engagement will be essential.

The construction and operation of HSR infrastructure may also generate short- and long-term disruptions. Construction activities could temporarily affect traffic patterns, noise levels, and local business operations. In some areas, land acquisition or redevelopment projects may necessitate the relocation of existing businesses or residents, although Saint-Laurent's largely industrial land use may minimize large-scale residential displacement. Surrounding boroughs such as Pierrefonds-Roxboro, Ahuntsic-Cartierville, and Laval could also experience changes in commuter flows, parking demand, and transit connectivity, which may have secondary effects on neighbourhood dynamics.

6.6 HOLISTIC ANALYSIS

6.6.1 Multiple Accounts Analysis

To provide a concise overview of all high-speed rail-related impacts on Saint-Laurent, we compiled our full impact analysis into a chart and ranked each element according to its impact score, its effect on the borough (positive or negative), and its relevancy to Saint-Laurent. The impact score was calculated using a Likert scale from 1 to 5 (from very insignificant to very significant; see chart below). Relevancy was assessed based on the perceived importance of each element in relation to the borough's priorities and objectives. This analysis is subjective and reflects our interpretation of the potential impacts and their significance for the borough.

Our findings indicate that the high-speed rail would have an overall positive and significant effect on Saint-Laurent. Most benefits would be economic and concentrated around the Technoparc, where opportunities for business development near the future high-speed rail station are expected to be particularly strong. Other more moderate economic impacts include increases in real estate values, job creation, and higher firm productivity within the borough. While the high-speed rail is expected to influence airport activity and although connecting the airport to the high-speed rail is essential, these airport-related impacts are unlikely to translate into major effects on the borough itself.

Transportation impacts constitute the second largest category of effects. Saint-Laurent and Montreal residents would benefit from more efficient access to city-stations such as Québec, Toronto, and Ottawa, along with improved connections to Montréal's multimodal transportation network thanks to a REM-connected high-speed rail. However, one of the most significant transportation challenges for the borough may be the increased traffic generated by travellers driving to and from the high-speed rail station, which could create notable congestion.

Environmental and social impacts are also expected to be mostly negative. high-speed rail construction and operations may disrupt wildlife and affect neighbouring residential areas. Mitigation strategies will therefore need to be implemented to address these concerns.

Category	Type	Impact Location	Impact Source	Impact Recipients	Impact Score (Likert Scale)	Impact on VSL +/-	Relevancy to Saint-Laurent
Economic	Employment	Regional	Operations	Workers in the borough	3	Positive	Medium
	Firm Productivity	Regional	Operations	Firms in the borough	3	Positive	Medium
	Business development	<3km	Operations and land use development plans	Local economy	4	Positive	**High**
	Impact on Technoparc	Technoparc	Operations and land use development plans	Technoparc firms	4	Positive	**High**
	Impact on Airport	Airport	Operations	Montréal-Pierre Elliott Trudeau International Airport	2	Neutral	Low
	Real Estate and Land Value	Properties near the station	Operations and land use development plans	Property owners	3	Positive	Medium
Overall	**Mostly positives**						
Transportation	Accessibility	Borough	Operations	Local residents	1	Neutral	Low
		HSR Station Cities	Operations	Passengers	5	Positive	Medium
	Mode Shift	Airport, VIA Rail and HSR	Operations	Commuters	2	Neutral	Low
	Traffic Impacts	Highways and roads	Road usage from passengers	Commuters and local residents	4	Negative	**High**
	Multimodality (HSR-REM-EXO-Airport)	Borough	Transit network	Regional transit users	2	Positive	Medium
Overall	**Mixed**						

Impact Score Likert Scale:
5 Very significant
4 Significant
3 Moderate
2 Insignificant
1 Very insignificant

Figure 24. *Multiple accounts analysis detailed spreadsheet (Economic and Transportation)*

Overall	**Mixed**						
Environmental	Vibration	<60m of HSR	Operations	Nearby commercial and industrial buildings	2	Negative	Low
	Noise	<500m of HSR	Operations	Nearby persons and wildlife	4	Negative	Medium
	Impacts on wildlife	Ruisseau Bertrand and Bois-de-Liesse Nature Park	Construction and Operations	Local ecosystems	4	Negative	Medium
	Carbon Emissions	Not exclusive to VSL	Mode shift	Everyone	1	Positive	Low
		Station Location	Construction	Nerby persons and wildlife	2	Negative	Medium
		Neighbourhoods surrounding major highways	Traffic	Borough residents	4	Negative	Medium
Overall	**All negatives**						
Social	Neighbourhood fragmentation	Borough	Alignment	Borough residents	1	Negative	Low
	Vulnerable Populations	Area immediately surrounding corridor	Alignment and operations	Borough residents	1	Negative	Low
	Gentrification	Borough	Accompanying land use plans and development	Borough residents	3	Negative	Medium
Overall	**All negatives**						

Impact Score Likert Scale:
5 Very significant
4 Significant
3 Moderate
2 Insignificant
1 Very insignificant

Figure 25. *Multiple accounts analysis detailed spreadsheet* (Environmental and Social)

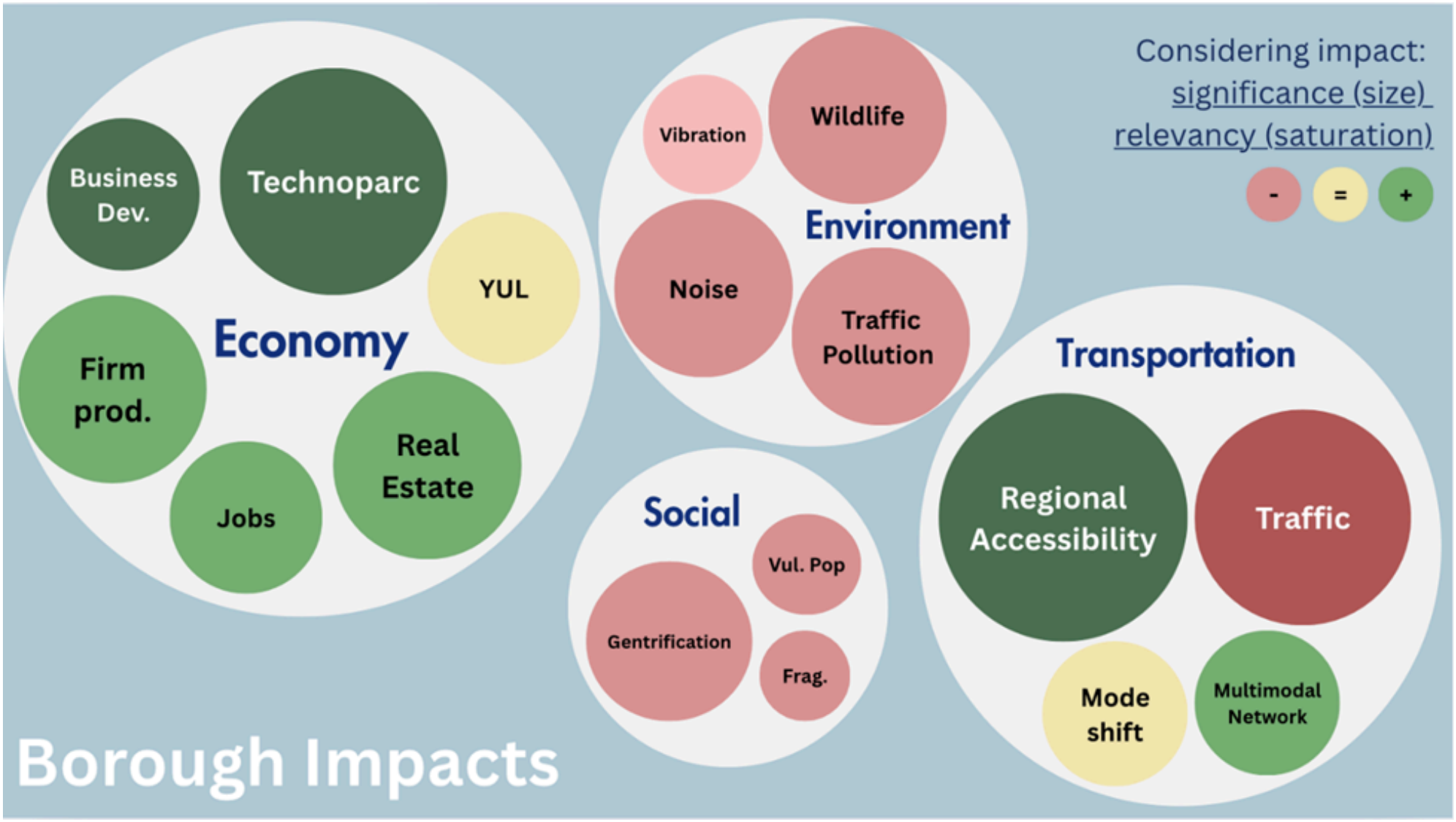

Figure 26. *Multiple accounts analysis visualization*

6.6.2 Regional Benefits

Although this report provides an analysis of local impacts, both positive and negative, from the presence of high-speed rail infrastructure within the Borough of Saint-Laurent, a wider perspective must be considered to determine how this station location affects the wider region, and Alto project. Alto must ultimately choose station locations along the corridor that benefit not only local Borough's, but the most amount of people possible. We believe that the following regional benefits are the strongest arguments to be made to support the presence of a high-speed rail station in Saint-Laurent and in Laval (Scenario A):

- **Airport:** The strongest argument for a station location in our proposed location is the proximity to the Montréal-Pierre Elliott Trudeau International Airport. As described in section 2.2.1, having a REM connection from the proposed high-speed rail station to the airport would provide travellers a connection in under 15 minutes, following the precedent of other major hub airports like Paris Charles de Gaulle, Frankfurt, Amsterdam Schiphol, and Shanghai Hongquai. Without the airport connection, Alto's high-speed rail may be less competitive as poor connectivity can result in lower ridership and reduced economic benefits.
- **Technoparc:** As detailed in section 2.3.4, proximity to the Technoparc is a strong argument for the proposed station location given its potential to generate immense economic growth. Additionally, there any several international precedents that support having high-speed rail stations beside research, technology, and commercial parks (Lille, Lyon, Munich, Seville, Shanghai, and Daejeon).
- **Downtown connection:** The proposed REM connection allows travellers to access Montréal's downtown core in under 20 minutes from the Saint-Laurent high-speed rail station which aligns with best-practices for high-speed rail development given that the majority of stations are in city centres.
- **Laval Connection:** Given that Alto is currently planning to have a station in Laval, the proposed station location in Saint-Laurent would allow for a comparatively easy connection between these two given their proximity. This proximity will save billions of dollars in construction costs and travel time when the high-speed rail is operational as the stations would only be a few kilometers apart.
- **Traffic:** Having a station in Saint-Laurent instead of downtown would prevent traffic from entering Montréal's core, which is already congested and difficult to navigate during peak travel times for drivers. The traffic generated from the high-speed rail will be significant and Saint-Laurent's land use is more likely to be able to accommodate the increase in vehicular traffic compared to downtown.

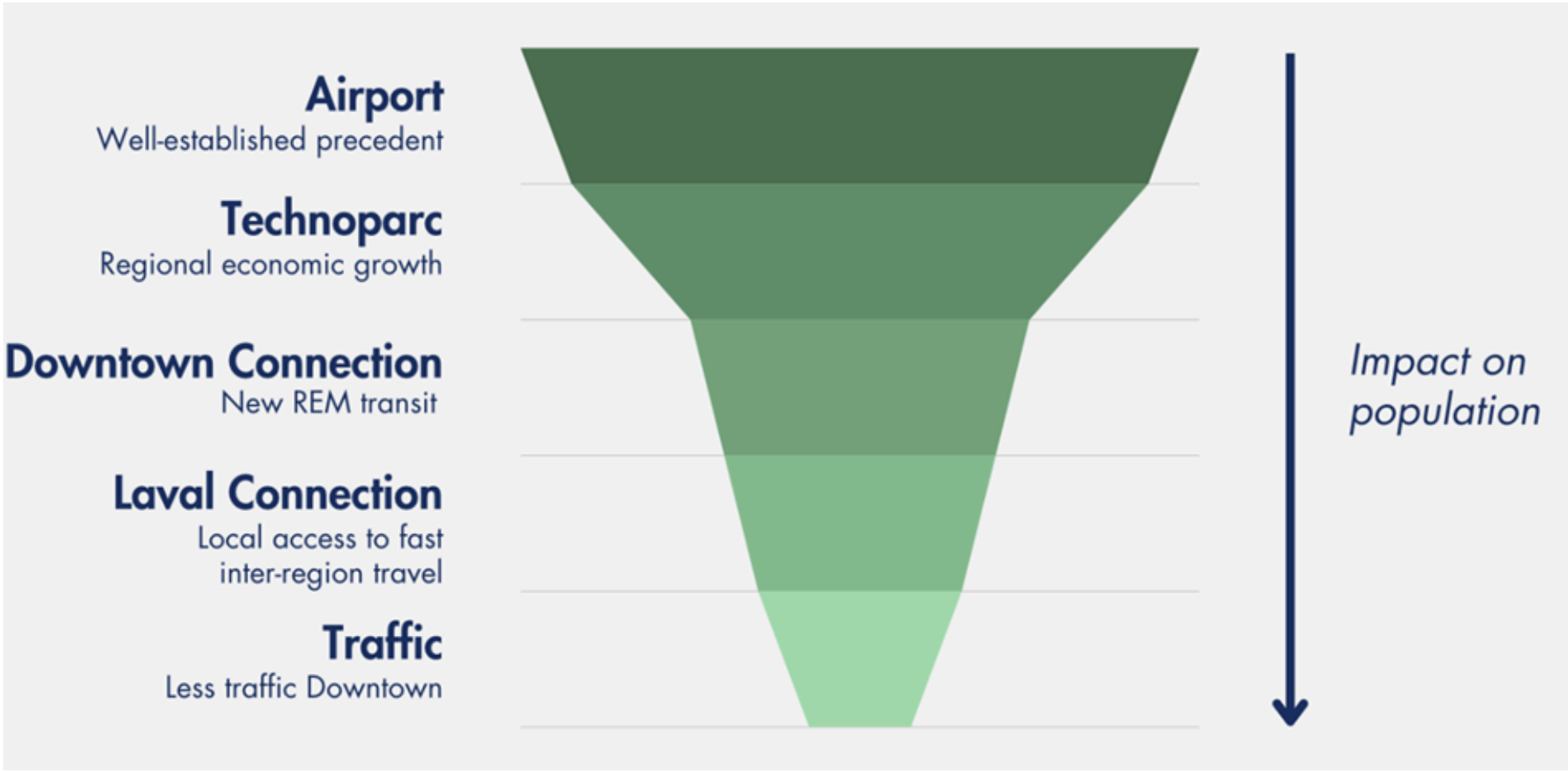

Figure 27. *Regional impacts of Scenario A: Saint - Laurent and Laval stations*

7. SCENARIO B: SAINT-LAURENT AND DOWNTOWN STATIONS

7.1 High-speed rail Corridor

Our revised downtown corridor would have trains coming from Ottawa-Gatineau enter the Island of Montreal from Laval on autoroute 13, again stopping at the same station location, continuing under a short tunnel, and connecting to autoroute 20 in Dorval. From there, the VIA Rail alignment would be followed until the train reaches Gare Centrale.

To exit the island towards Trois-Rivières, the train would enter the Ville-Marie tunnel, which is slated to be renovated, and follow the Ville-Marie Expressway onto Rue Notre-Dame. The train would follow the Notre Dame alignment until it reaches autoroute 25 which it would follow to exit the island. Like the previous corridor, this corridor follows existing highway alignments which may create technical challenges surrounding curve radii, but that could be mitigated with self-tilting trainsets.

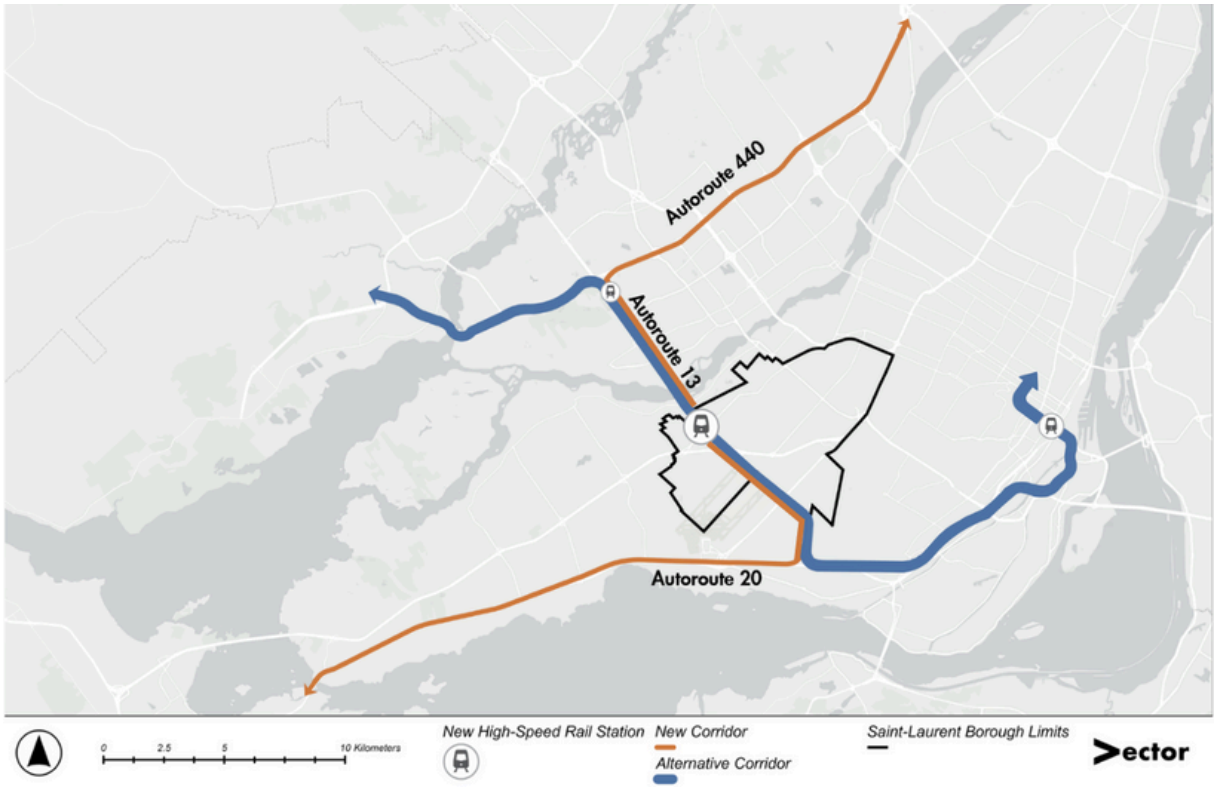

Figure 28. *Proposed Scenario A (orange) and Scenario B (blue) corridors*

7.2 Borough Impacts

With a Downtown and Saint-Laurent station, the borough would experience smaller impacts than in the previous scenario given that the main station would now be located Downtown. Saint-Laurent would operate more as a secondary station and likely have smaller local economic opportunities. Business travellers would likely prefer to access the high-speed rail from Downtown, and gains to the borough's employment base would be reduced, although still possible if carefully planned. The new REM station proposed along Autoroute 13 would be maintained, but traffic impacts may shift due to different patterns of station use.

Comparing the two options, both would bring similar regional benefits. In each scenario, the high-speed rail would remain connected to the airport, the REM, and the Technoparc. Economic development would still occur around the station areas, and construction and operations would still create negative traffic and environmental disruptions.

Although the Saint-Laurent and Laval option is more advantageous for the borough, the Saint-Laurent and Downtown option offers greater benefits to the region. It should be noted that regardless of the second station location, Saint-Laurent provides a major regional advantage through its connection to the airport, enabling seamless transfers between HSR and air travel for passengers across the corridor.

	1: Saint-Laurent & Laval	2: Saint-Laurent & Downtown
Common regional benefits	Proximity to Airport	
	Proximity to Technoparc	
	Additional REM station and integration	
	Economic development around stations	
Common regional weaknesses	Noise and vibration disruption	
	Traffic	
Differences	More benefits to the borough	More benefits to Montreal
	Largest impact on Saint-Laurent	Largest impact on Downtown
	Desirable	Most likely
	Saint-Laurent is main station	Saint-Laurent is shoulder station

Figure 29. *Regional impact comparison between Scenarios A & B*

7.3 Regional Benefits

We believe that the following regional benefits are the strongest arguments to be made to support the presence of a high-speed rail station in Saint-Laurent and in Downtown (Scenario B):

- **Downtown precedent:** There is a strong precedent for centrally located high-speed rail stations, especially in Western Europe and Asia, where high-speed rail uses legacy tracks and tunnels to reach historic main stations in urban cores. This is especially true in European cities, where the majority of high-speed rail infrastructure leads to central business districts and are integrated near primary cores (Loo & Huang, 2023)
- **Airport:** The airport argument made in Scenario A (section 3.6.2) remains valid when considering downtown and Saint-Laurent station locations
- **Downtown revitalization:** As noted in section 2.3.1, high-speed rail infrastructure has the potential to increase firm productivity, business development, employment, and land value. Given that downtown Montréal is currently facing economic challenges including high office vacancy rates, reduced metro ridership from pre-pandemic levels, and low retail leasing activity, a centrally located high-speed rail station could boost downtown economic growth and revitalize Montreal's economy
- **Laval connection:** Given the proximity of Laval to Saint-Laurent, high-speed rail travellers coming or going to the North Shore will still be able to seamlessly access high-speed rail services by driving to the Saint-Laurent station, just a few kilometers away from Laval

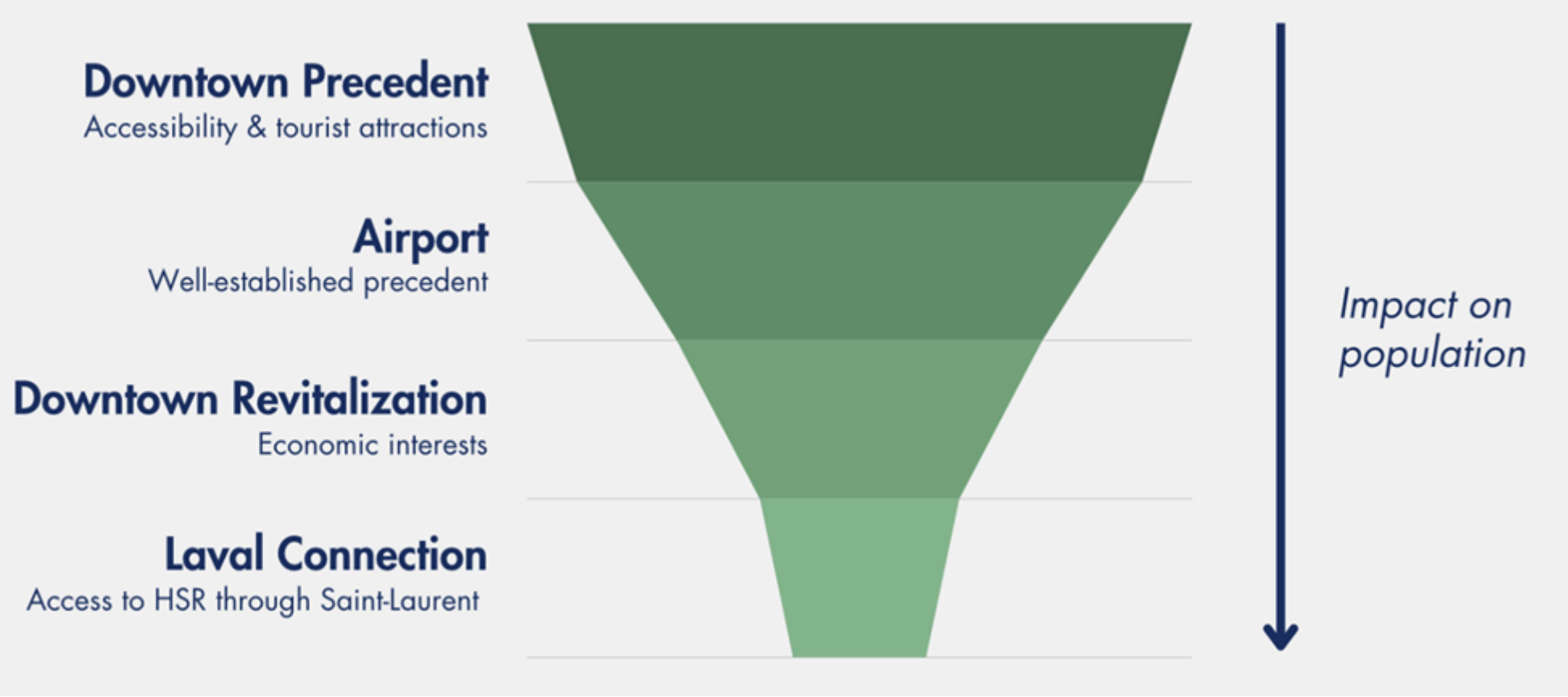

Figure 30. *Regional impacts of Scenario B: Saint - Laurent and downtown stations*

8. CONCLUSION

8.1 Final Recommendations

This report has gone into great detail about our research regarding a proposed high-speed rail station in Saint-Laurent connecting to either a secondary station in Laval or downtown. It must be stressed that while this service has the potential to benefit the borough of Saint-Laurent, this is not a guarantee. Any high-speed rail development requires significant effort to integrate the service within the existing urban fabric, economy, and transportation network. Transportation infrastructure alone does not always stimulate economic growth, but coordinated strategies to boost existing assets with the development of new transportation infrastructure can.

For this proposal to be effective, an understanding of potential regional benefits from a Saint-Laurent high-speed rail station must be made. This report shows that the two strongest arguments for a station in Saint-Laurent are the proximity to the airport and the Technoparc. Regarding the airport, a high-speed rail station in our proposed location would significantly expand YUL's catchment area. The proposed REM connection would also improve local accessibility, enabling seamless transfers between high-speed rail, the airport, and downtown Montréal in under 20 minutes. As for the Technoparc, the addition of high-speed rail connectivity would likely multiply the impact of currently planned investments in the business park. A high-speed rail station would make the Technoparc far more attractive to knowledge-intensive firms, research institutions, and international businesses seeking both airport proximity and fast connections to other major cities. Given the Technoparc's strategic importance to the province's innovation economy, what is good for the Technoparc is good for the region as a whole. We believe that these two arguments should be strongly emphasized going forwards when proposing high-speed rail infrastructure within the Borough of Saint-Laurent.

8. CONCLUSION

8.2 Next Steps

This report should be considered a preliminary analysis of the feasibility and desirability of high-speed rail infrastructure in Saint-Laurent. It focuses on a station located at the previously explored REM station site along Highway 13, with corridor routing from Laval to Montréal, passing over the Bois-de-Liesse Nature Park and past the Montréal Trudeau Airport via tunnel before connecting with the existing VIA rail corridor along Autoroute 20.

The next steps should compare this station location and corridor to other potential alignments on the island of Montréal. Additionally, there should be consideration given to how the high-speed rail could be integrated with Borough development plans. The following assessments are inspired by other infrastructure projects. Although many of them will be carried out by Alto, it is important that the Borough consider them, as they must be completed before any high-speed rail infrastructure will be built. Next steps include:

Next steps include:

- Transportation and mobility
- Land-use and economic impact studies
- Sound assessment
- Vibration assessment
- Terrestrial and avian ecology assessment
- Hydrogeology report
- Air quality assessment
- Environmental & climate resilience plan
- High-speed rail technology and suitability report
- Economic impact study
- Community impact study
- Preliminarily public consultation plan
- Permits and approvals
- Construction staging

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