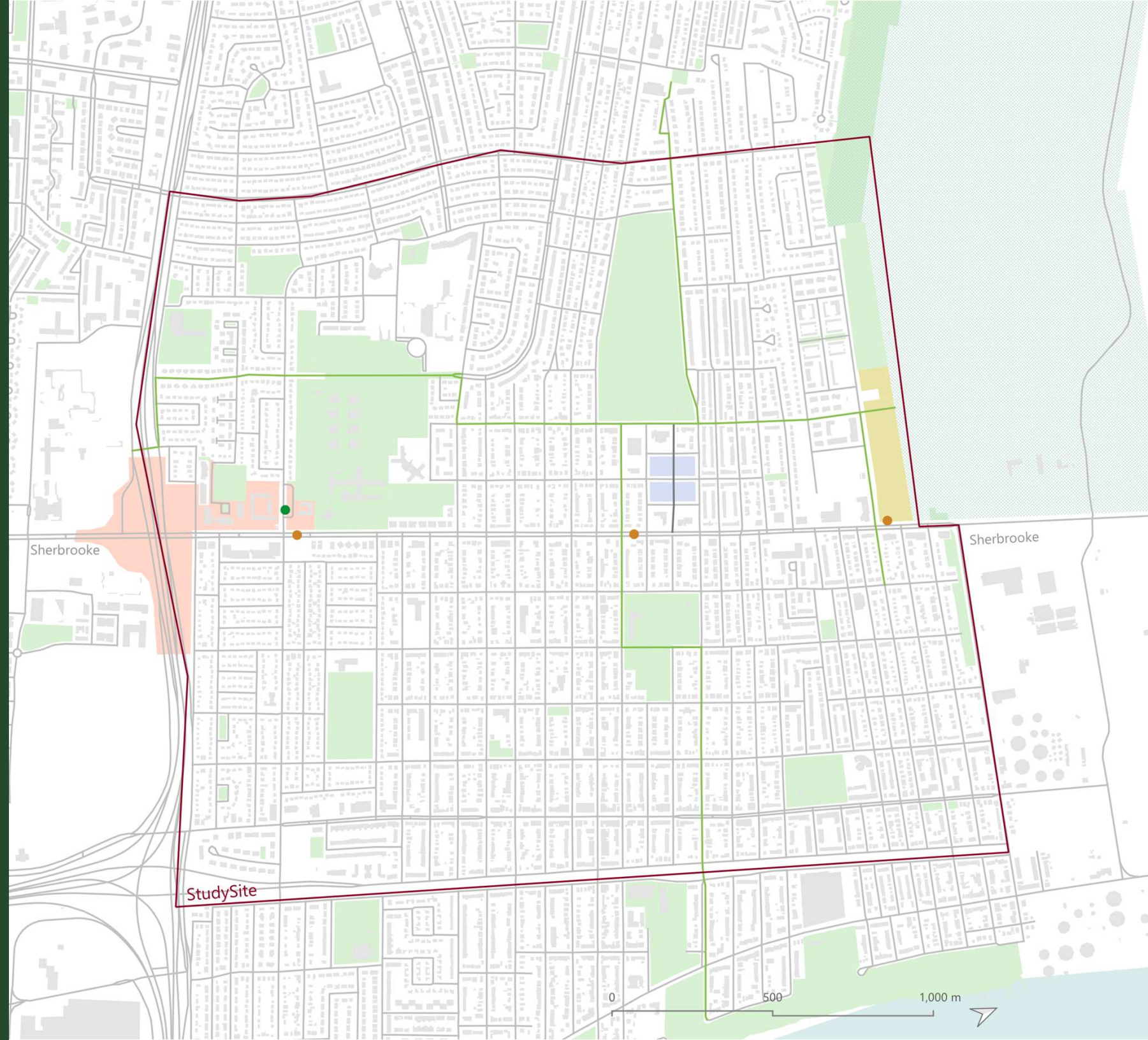


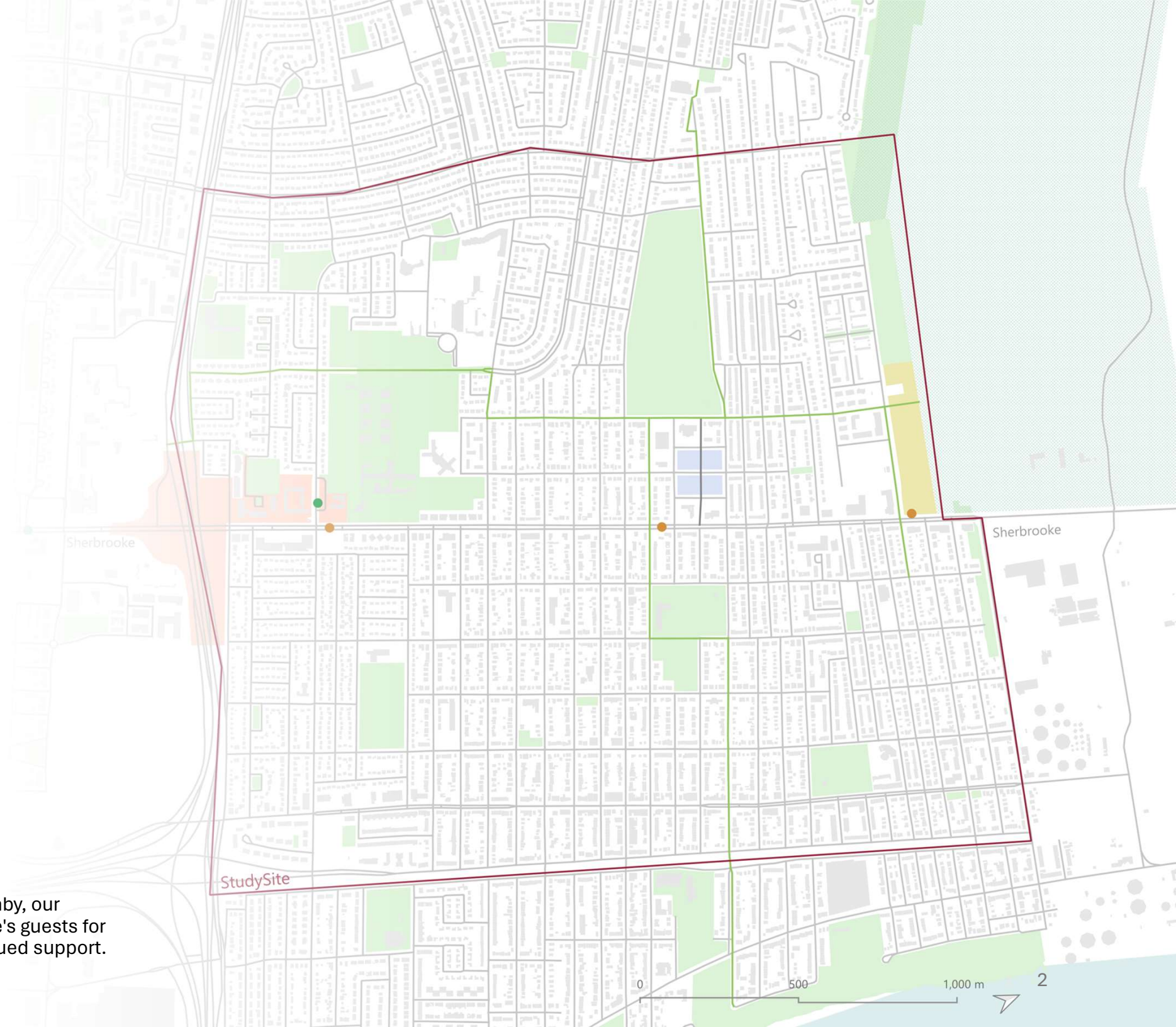
URBS 433: Advanced Urban Laboratory

Design Brief

Planning Report Conducted on
Mercier-Est

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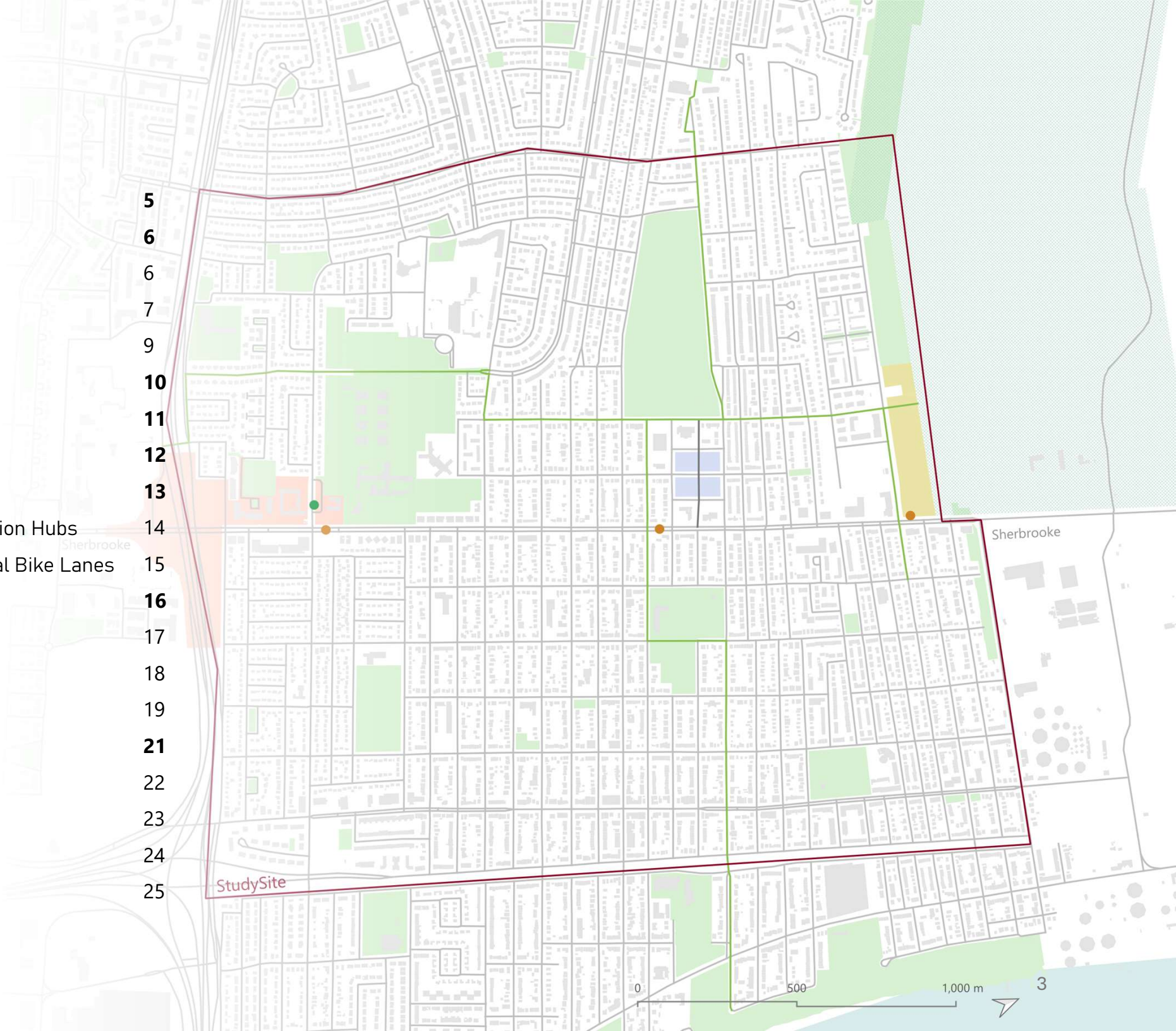




We would like to thank Dr. Pierre Gauthier, Jacob Baby, our colleagues from URBS 433, and our design charette's guests for their invaluable contribution, feedback, and continued support.

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Introduction



Situated in Mercier-Hochelaga-Maisonneuve, the study site has been subject to strict analysis over the last 8 month of class effort. This design brief is the published conclusion.

The site (see Figure 1.1) is bordered' by Highway 25, an important *liaison* between the North Shore, the Island and the South Shore. To the east of the site, Montréal-Est hosts its sprawled petroleum industries. The study site is cut in the south by Souigny and the rail freight corridor. This study site is distanced from the city center. It is vulnerable to suburban sprawl; however, recent actions have demonstrated the cities interest in densification.

This report highlights three sites of interest poised for transformative urban interventions, each dedicated to fostering sustainable development and enriching community well-being within Mercier-Hochelaga-Maisonneuve. The first site, dedicated to establishing a green corridor linking the area's parks, aims to enhance pedestrian connectivity and safety while rejuvenating social housing. The second site tackles the intersection of Autoroute 25 and Sherbrooke, aiming to enhance accessibility for pedestrians, cyclists, and transit users, while also implementing traffic calming measures to reduce the speed of automobiles. Lastly, the third site, positioned at the junction between the Lafarge quarry and a contemporary high-density development, serves as a pivotal hub intended to attract movement and circulation throughout Mercier-Est.

Figure 1.1: Map showing the Island of Montréal, with Mercier-Est highlighted in red (Authors, 2024)

Context

Socio-Demographic

The Mercier-Est neighbourhood exudes a distinctive cultural identity, defined by its predominantly francophone community and residents deeply rooted in the area. Here, the demographic landscape reflects a community with a larger proportion of seniors and fewer adults, lending a sense of generational continuity and stability to Mercier-Est's social fabric. More than one in five residents (22%) are 65 and older, which is higher than the Montreal average (17%).

When it comes to language diversity, Mercier-Est stands out from the broader Montreal landscape. Only 2.5% of residents exclusively speak English, significantly lower than Montreal's average of 13.1%. In contrast, French proficiency is much higher among Mercier-Est residents, with 45.2% of the population speaking only French, compared to the city's average of 24.3%.

General Demographics

21% Seniors	Fewer adults, more seniors The distribution of adults (15-64) is 4.1% lower (62.9% vs 67%) and the distribution of seniors (65+) is 3.4% higher (20.9% vs 17.5%)
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45% Francophone	Predominantly francophone Knowledge of only English is 10.6% lower (2.5% vs 13.1%) and knowledge of only French 20.9% higher (45.2% vs 24.3%)
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66% Non-Immigrants	Fewer minorities and immigrants The distribution of visible minority populations is 5.5% lower (31.3% vs 36.8%), the distribution of non-immigrants is 7.3% higher (65.6% vs 58.3%), and the distribution of immigrants is 5.4% lower (27.2% vs 32.6%)
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Table 2.1 : General Demographics (Authors, 2024)

In the neighborhood, numerous community groups are active, notably Ligue 33 and Solidarité Mercier-Est. These organizations are dedicated to strengthening social ties and fostering a sense of community belonging. Ligue 33 hosts various events, such as BBQs and community dinners, aiming to unite residents and alleviate social isolation. Similarly, Solidarité Mercier-Est focuses on combating isolation by establishing support networks and cultivating an inclusive community environment. The neighborhood benefits from the presence of significant community forums like Solidarité Mercier-Est, which play a pivotal role in addressing local concerns and amplifying residents' voices in civic matters. Through these forums, diverse stakeholders come together to address a wide range of socio-urban challenges, including housing affordability and social isolation.

Mercier-Est Related Organizations

Frigo de l'Est	Solidarité Mericer-Est	Almage Senior Community Centre
Chez-nous de Mercier-Est	Maison des familles de Mercier-Est	Antre-Jeunes de Mercier-Est

Context

Environment

The study area is comprised of six borough parks, and are in proximity to the Promenade Bellerive, a larger park managed by the City of Montreal. These six borough parks are dispersed nearly equidistantly and offer various services. Pierre-Bernard, Liébert, Saint-Victor, Depéré and Chenier borough parks offer recreational services and are all located next to primary and secondary schools., who primarily use them during the academic year. Thomas Chapais Park, located on the conventional north-east of the site is the largest park in the area, comprised of protected woodlands that offers leisure services such as trails and picnic areas.

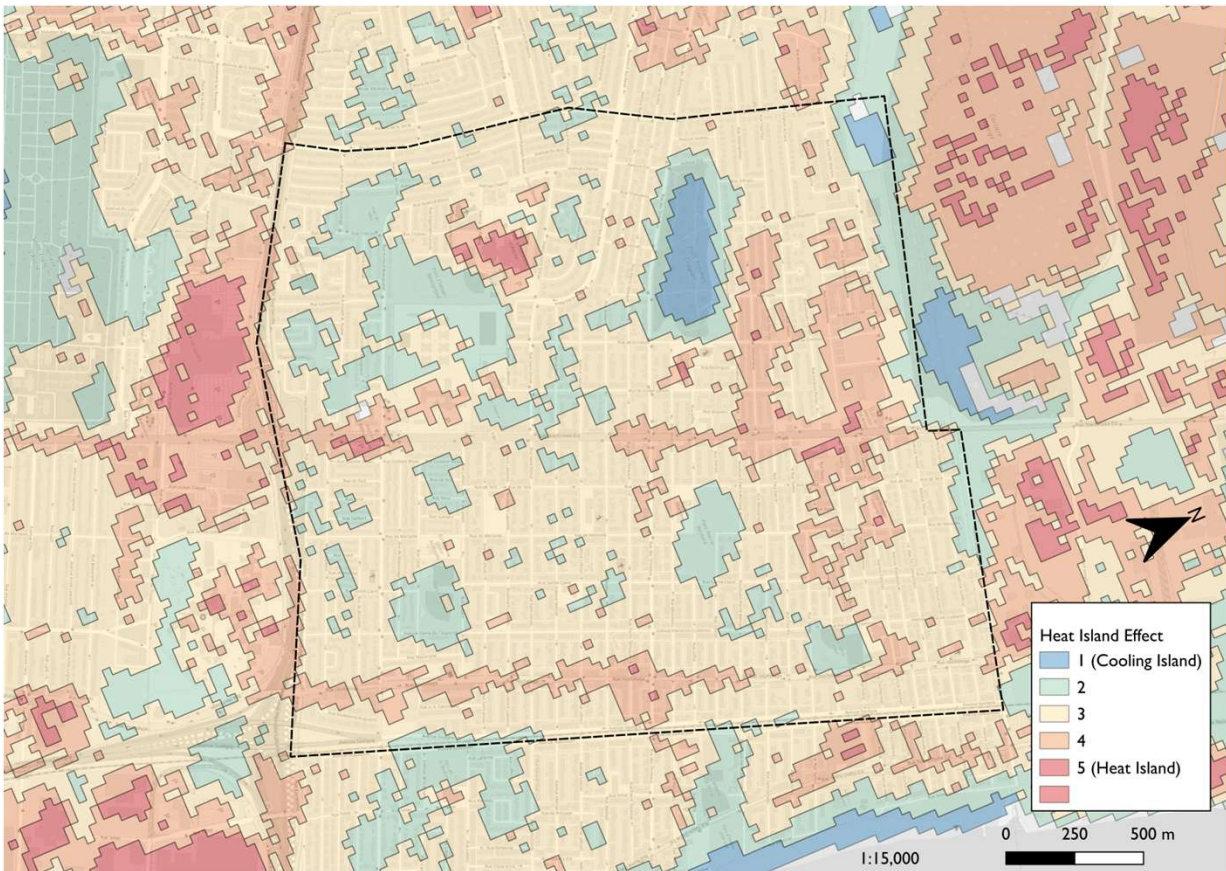


Figure 2.2: Urban heat island effect analysis of study area (INSPQ, 2023)

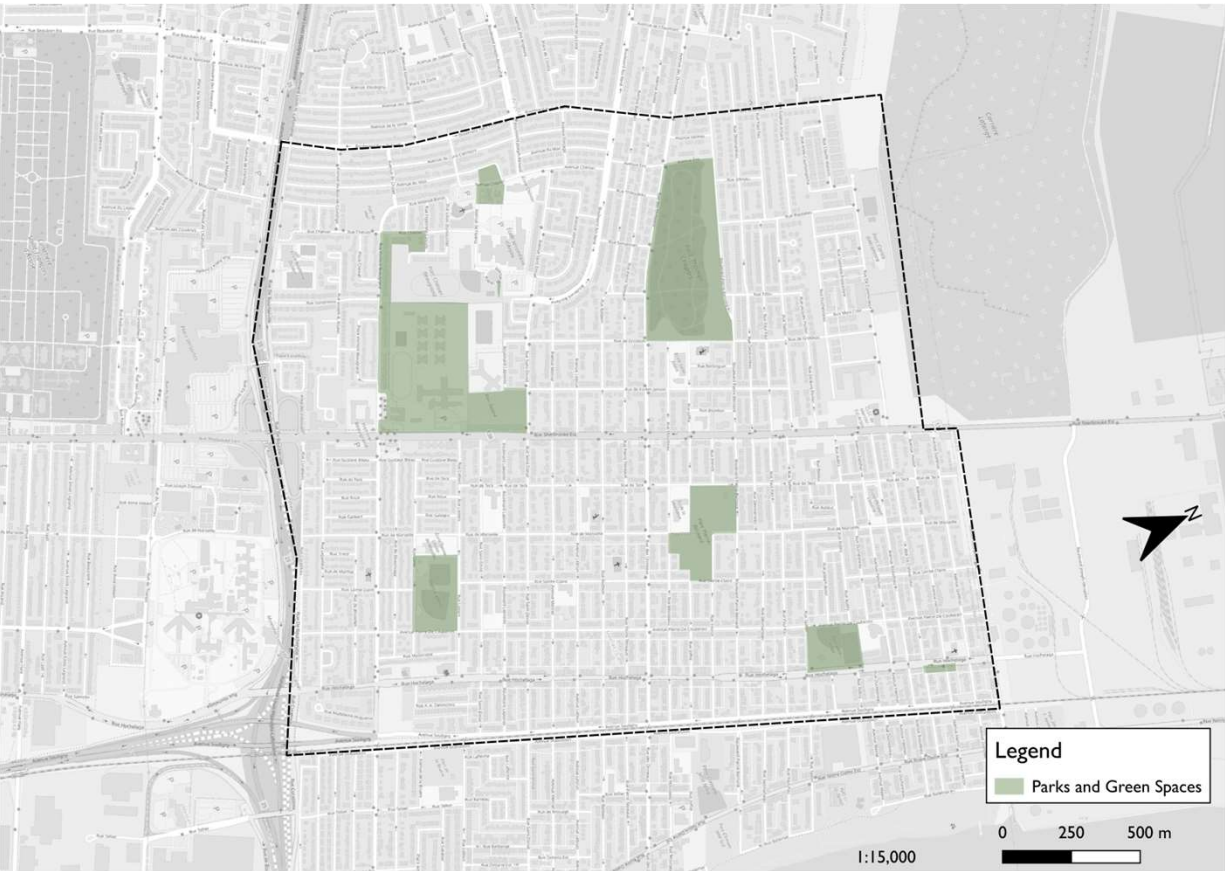


Figure 2.1: Borough parks and green spaces (Ville of Montréal, 2019)

A thermal comfort analysis by the City of Montreal in Figure 2.2 illustrates the heating and cooling islands of the study area. It is noticeable that the cooling effects occur almost exclusively in the park areas, with the largest effect occurring in Thomas Chapais park, which is forested. On the east, there is evident 4–5-degree heat island effects caused by the Lafarge Quarry. On the west, the largest heat island is at the parking lot of the Place Versailles mall. It is evident that the more trees present, the larger the cooling effect, especially in comparisons of borough parks that are dominated by large open fields, that despite being cooler than the residential areas, do not offer as many substantial thermal comfort compared to forested areas. Lastly, Sherbrooke St and Hochelaga St. demonstrate noticeable heating effects as they are dominated by automobile traffic as they are primary car traffic thoroughfares in the study area.

Context

Physical & Transportation Infrastructure

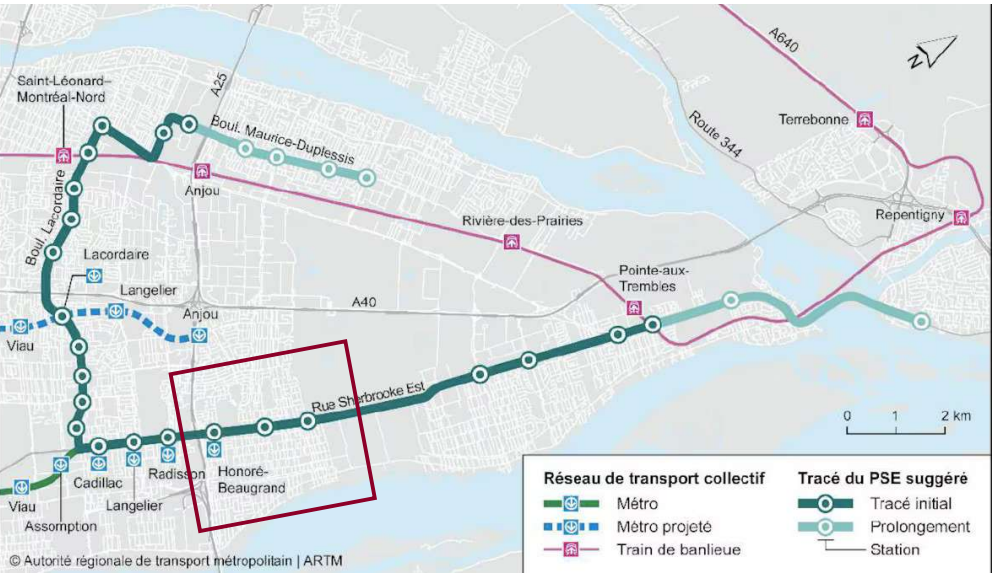


Figure 2.3: Proposed Tram-Train line in the study area (Post, 2024)

Following upheaval on the *REM de L'Ouest's* proposed route, municipal authorities returned to their teams requesting an alternative to the project. In February 2024, the ARTM published an alternative to the REM de L'Ouest: a tram-train connecting Montreal-Nord, the green line (metro) and East-end boroughs. The three proposed stations in the study site (see Figure 2.3) are integrated.

Figure 2.4 highlight current transit networks and light intersection dispersion in the study site. While the cycling network is impressive, many of these are not protected. Two roads are used for East-west bus lines: Hochelaga and Sherbrooke. Bus line service is axed towards commuters going to Honoré-Beaugrand and Radisson.



Figure 2.4: Mapped active and public transportation networks in the study site (Authors, 2023)

Context

Physical & Transportation Infrastructure

The deeper analysis of Sherbrooke was conducted between Saint-Donat and Boulevard Pierre Bernard (see figure 2.5). Bus stations and formal pedestrian crossings were identified. There are a total of 6 lanes: the edge lanes are reserved for buses during weekdays. Outside the designated bus exclusive times, this space is used as street parking. The four inner lanes have a steady flow of cars and semi-trailers (Figure 2.6). Traffic is submitted to a traffic light at irregular intervals. Bus lines branch out of Sherbrooke at some of these lights, like at Saint-Donat and des Ormeaux. At rue Joffre, commuters accessing the bus stops are enticed to unsafely cross the 6-lane road instead of walking two blocks

looking at figure 2.7: *Cross section of Sherbrooke Street* we can see the proportions of Sherbrooke. Commercial and residential activities have an important setback from the loud street. Commercial activities have fully paved the setback area to provide parking; this contributes to the urban heat island and storm water runoff. As seen in figure 2.7 and the cross section, there is a distinct lack of urban greenery, Sherbrooke divides ecosystems services and active modes of transportation.



Figure 2.5: Closer analysis of current Sherbrooke street segment (Authors, 2023)

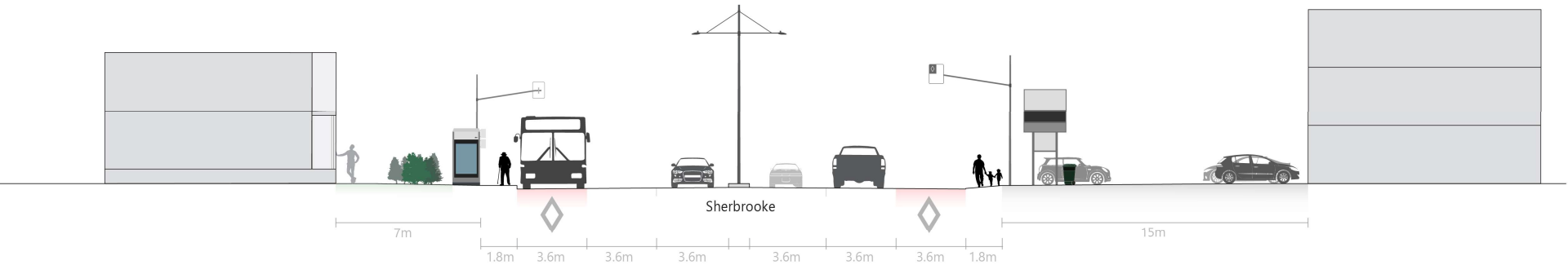


Figure 2.7: Cross section of Sherbrooke street (Authors, 2023)



Figure 2.6: Picture of Sherbrooke street (Authors, 2023)

SWOC Analysis

Tables

Strength	Weakness
Highway 25 (Larger scale – Economic, Connectivity)	Highway 25 (Small scale – barrier and health)
Average neighborhood density (High)	Traffic congestion
Parks & Greenspace Distribution	Lack of distinguishable nodes & imageability
Accessible Transportation	Safety concerns: pedestrian & cyclist
Current school modularity (predisposed for active transportation modes)	Secluded social services & community spaces
Walkable & high connectivity fabrics	Lack of thermal comfort
Automobile accessibility	Car dependency

Table 3.1 : Revised strengths and weaknesses (Authors, 2024)

Opportunities	Constraints
Large residential roads	Presence of important barriers (Highway 25 & Sherbrooke)
Vacant spaces & underdeveloped lots	Noise pollution on major thoroughfares and Highway 25
Lafarge quarry’s end of productive life	Presence of semi-trailers on Sherbrooke
Limited tree canopy	Significant soil contamination from previous land-uses
Zones lacking rapid transportation	Limited building setbacks in some areas
Existing underused pedestrian space (alleyways)	Variability in block pattern causes east-west disconnect
Implementing the Tram-Train stations in the existing fabric	Outlying neighborhood (Long commute times)

Table 3.2 : Revised Opportunities and Constraints (Authors, 2024)

Aims and Objectives

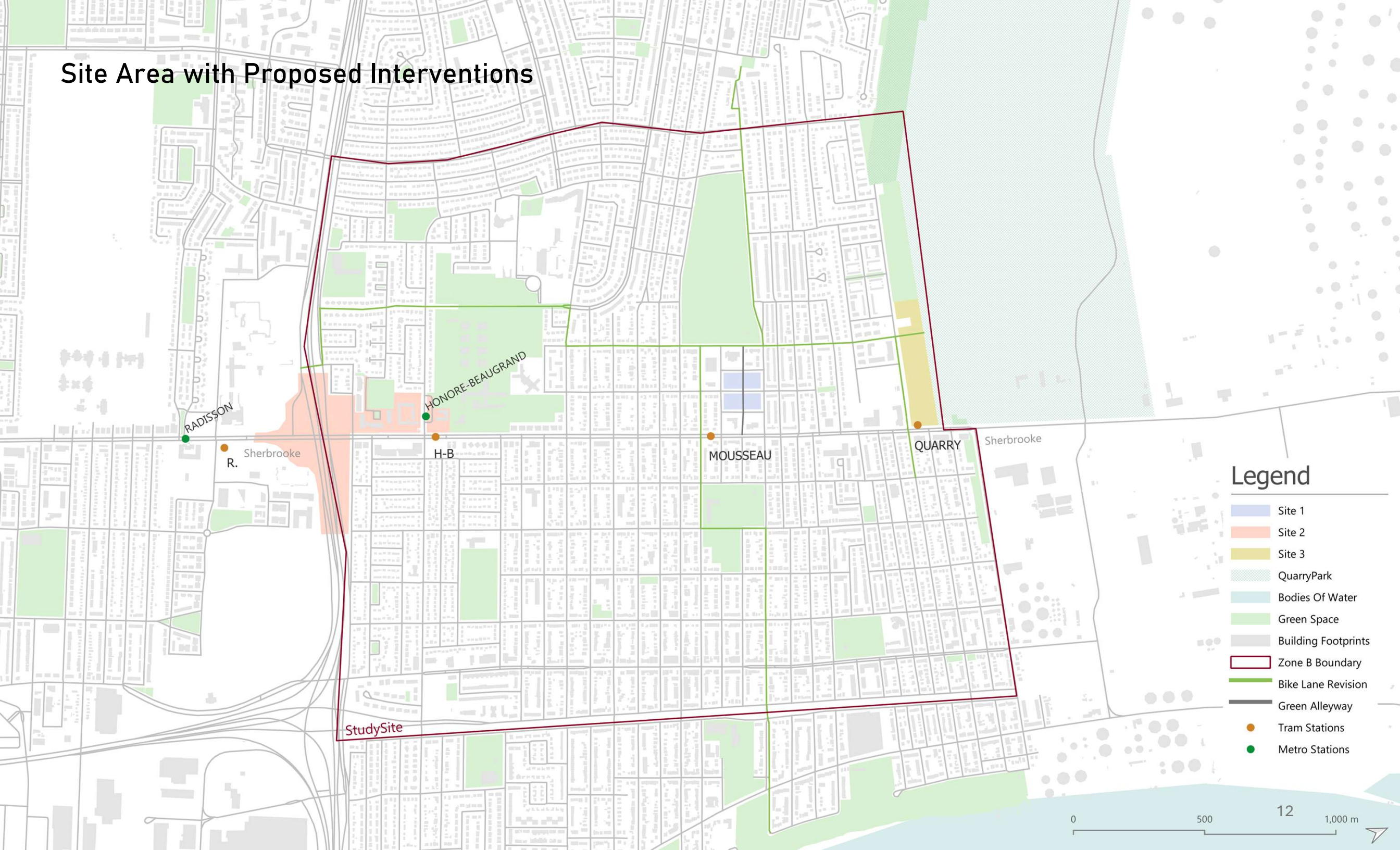
Table

Aims: Broader in their scope
Objectives: Specific orientations

Aims	Foster active transportation	Create neighborhood imageability and identity	Enhance permeability	Generate magnetism
Objectives	Mitigate environmental impacts of Highway 25 and thoroughfares	Cater spaces for social reproduction and community	Establish links between key parks (each hosting different activities)	Incorporate tram-train into existing urban fabric
	Remediate the impacts of autocentric design	Increase <i>Grand Parc</i> accessibility	Create new relevant links	Create multifunctional spaces around nodes
	Increase pedestrian and cycling safety in the design of corridors	-	Integrate enclaves	Dedicate spaces for commerce and institutional bodies
	Reroute nonessential traffic	-	-	Address service needs in the periphery
	Integrate multimodality	-	-	-

Table 4.1: *Aims* and *Objective* for the study site (Authors, 2024)

Site Area with Proposed Interventions



Legend

- Site 1
- Site 2
- Site 3
- QuarryPark
- Bodies Of Water
- Green Space
- Building Footprints
- Zone B Boundary
- Bike Lane Revision
- Green Alleyway
- Tram Stations
- Metro Stations

Site 1: Safety and Recreation

Improving Safety, Ecological, and Social Condition

At the heart of the site, the several green spaces and parks serve the community through recreational and leisure use. During the summer months, several children's day camps regularly use the park services and community centres between Anjou, Thomas Chapais Park, Pierre-Bernard Park and to the larger Bellerive Promenade Park at the South. Every green space offers different degrees of recreation and leisure. Currently, the connection between these frequented spaces is decreased by fast-moving car traffic on Sherbrooke St, the Souigny freight corridor, Notre-Dame and the lack of safe infrastructure. This section attempts to ensure a safe connection between these parks for pedestrians while also creating infrastructure for cyclists to encourage a mode-shift.

Site 1, illustrated in blue, is a four-block social housing complex that will be re-developed with a pedestrian access alley connecting Thomas Chapais Park with Pierre-Bernard Park. By investing in the quality of the social housing, we can also develop a better solution for underused spaces and increase the quality of life of vulnerable community members. The tram-train station on Sherbrooke St., located just a few steps away from the alley, will allow for frequent, rapid, and safe travel in and outside of the neighbourhood.

StudySite

Sherbrooke

Site 1: Safety and Recreation

Integrating Residential and Transportation Hubs

Facilitating connections within the entire neighbourhood requires examining the hyper-local scale. Currently, the housing built between Berlinguet St. and Bisailon St. needs to get rebuilt. Benny Farm in the west end of Montreal (see Figure 5.3), is a great example of successful social housing investment in the city. Much like benny farm, our proposal pictured in *Figure 5.1*, would offer residents a human-scaled experience away from the automobile infrastructure as the bocks face Allée Dumont, a pedestrian alleyway (see figure 5.2). This planted corridor would lead pedestrians towards the tram-train station on Joffre St/Sherbrooke St. This not only offers a connection between two green spaces, but with the new bike paths, will foster a shift towards safer, active transportation rather than the historic reliance on the automobile. Moreover, the inclusion of the tram-train station will slow down automobile traffic between the parks and create a safer pedestrian crossing on Sherbrooke.

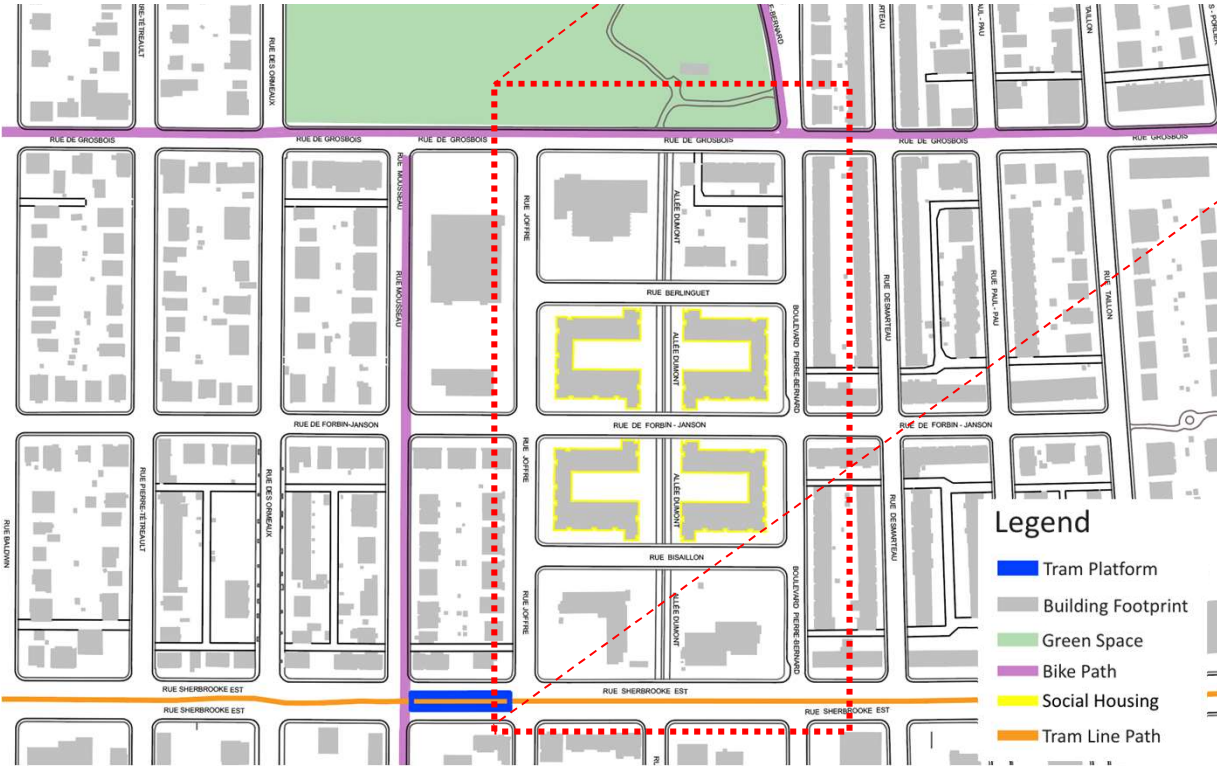


Figure 5.1: Closer view of proposed social housing redevelopment with new bike lines and tram-train line

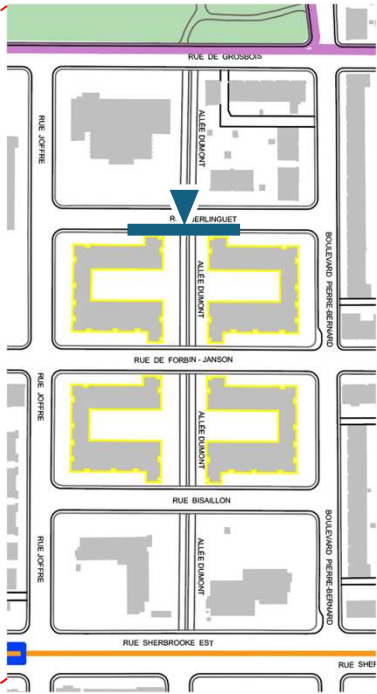


Figure 5.2: Cross-section of pedestrian alleyway in new social housing redevelopment



Figure 5.3: Benny Farm, Montreal

Site 1: Safety and Recreation

Increasing Accessibility through Arterial Bike Lanes

Ensuring safe and fluid movement within the neighbourhood for multiple modes of transport is crucial for resident mobility. It is important to understand how people move in the study site, determine where people are going, and where they're travelling from.

All bike lanes in the study site (see *Figure 5.4*) are single lane and unprotected from vehicular traffic. Cyclists are at risk of getting hit by car doors and moving traffic, especially when sharing major intersection lanes with vehicles. To improve connectivity, we intend to encourage cyclists and other forms of active transportation: selected bike lanes will be revised (see *Figure 5.4*). These run parallel to major streets such as Sherbrooke and Des Ormeaux, ensuring relevancy and less car traffic. This revision intends to impose a two-way bike lane with a concrete median of 1m. In some cases, parking would be eliminated on one side of the road.

These revised lanes are also part of a greater intention to connect borough parks. Not only does this connect the study area's parks in the east-west and north-south, but it will offer points connection to the tram-train line, offering even more connectivity to the rest of the island and harbour multimodality. The main axis of this bike line runs east-west on De Grosbois, and will connect the proposed Quarry Park, Parc Thomas Chapais, and Place Versailles. This link offers a safe crossing point over Autoroute 25, the largest barrier for cyclists and pedestrians. The north-south link will connect Anjou directly to the Saint-Lawrence River, running alongside Thomas Chapais Park on the east, down Joffre St, through Pierre-Bernard Park and crossing the Souigny freight corridor until the Bellerive Promenade Park.

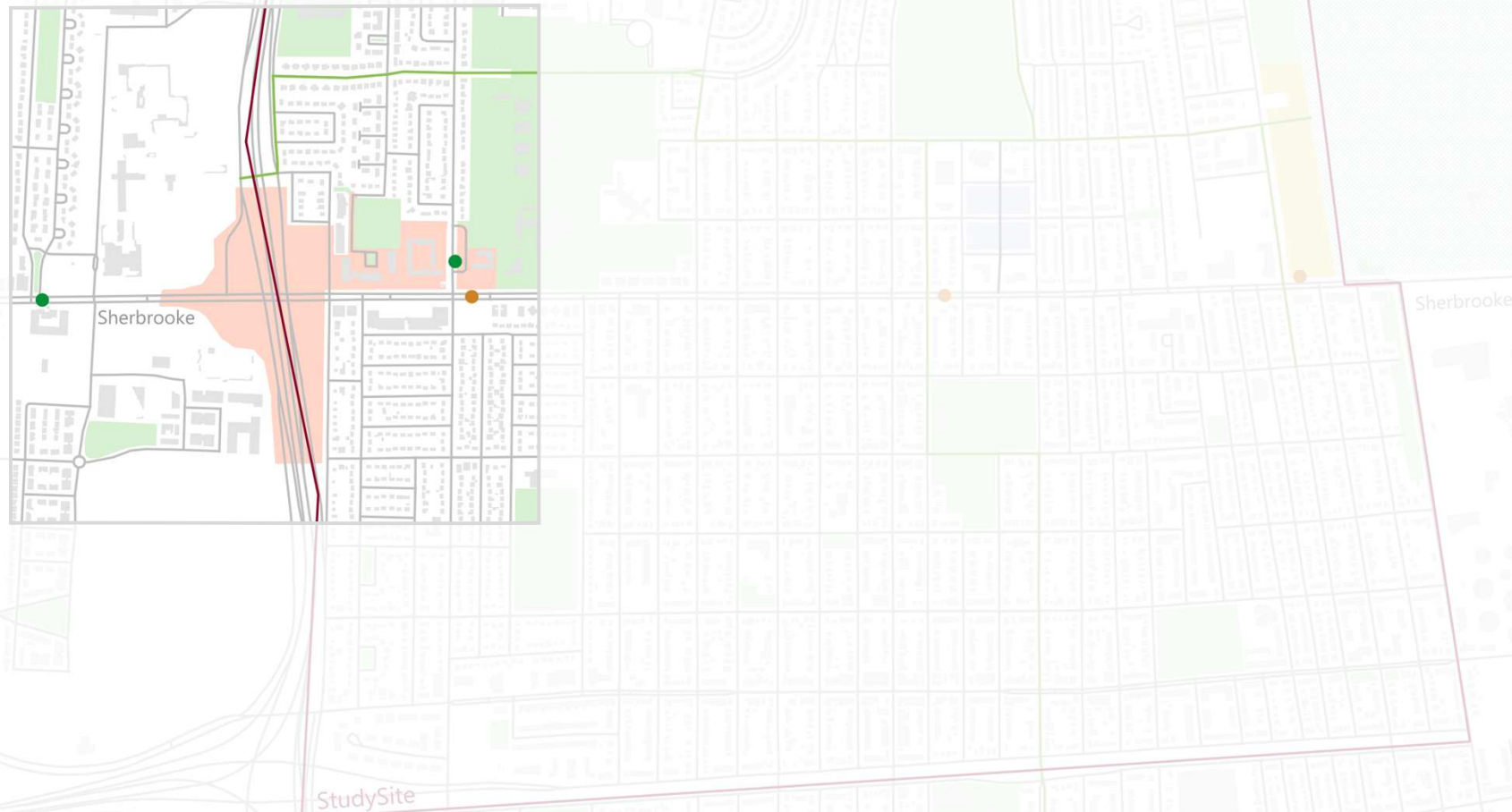


Figure 5.4: New and old bike lines in study area

Site 2: Autoroute 25 to Sherbrooke

Transforming the Gateway

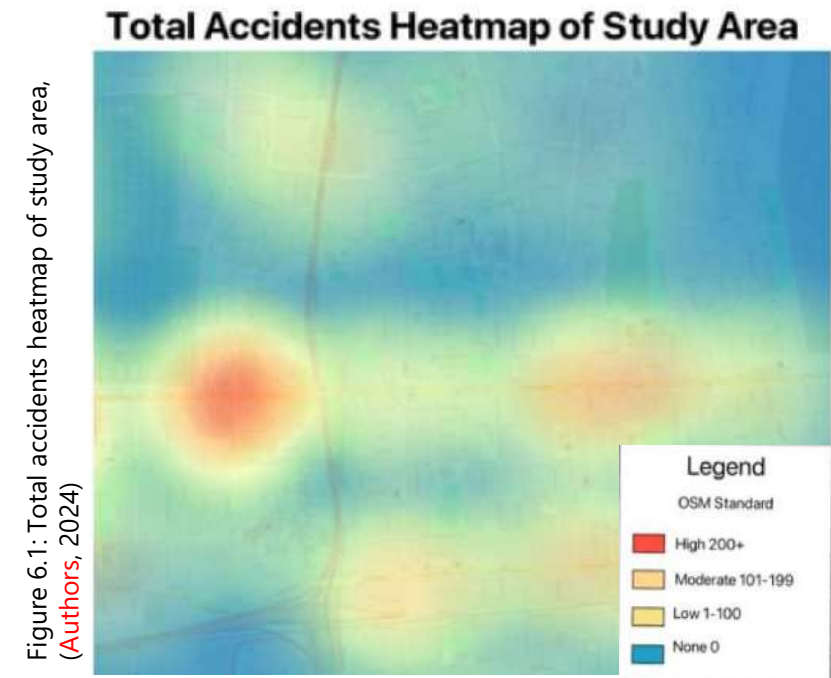
The intersection of Autoroute 25 and Sherbrooke stands as both a crucial juncture and a significant challenge within Mercier-Est. The merging of highway access with local streets presents a dichotomy: it serves as a gateway to the neighborhood while also acting as a barrier to its cohesion and livability.



Site 2: Autoroute 25 to Sherbrooke

The Case for Removing Off-Ramps

While examining the intersection of Autoroute 25 and Sherbrooke, it becomes apparent that it poses both a challenge and a barrier as the highway intersects with the local streets. These challenges manifest in various forms, ranging from noise pollution to safety concerns and associated health risks. The influx of trucks entering the neighborhood using the highway's off-ramps, often at high speeds, demand drivers to perform abrupt acceleration and deceleration maneuvers when navigating merging lanes, signage, and other road features. These circumstances contribute to heightened volatility among drivers, escalating the likelihood of accidents in these areas. The intersection of Autoroute 25 and Sherbrooke has been identified as an area of concern due to its notable frequency of accidents involving pedestrians, cyclists, and motor vehicles. For non-automobile users, it poses significant challenges, with insufficient pedestrian crossings and a bike path that forces cyclists into an uncovered lane wedged between two lanes of automobile traffic.



With the aim of enhancing Mercier-Est's appeal and accessibility for pedestrians and alternative transportation methods, the removal of the off-ramps at the intersection of Autoroute 25 and Sherbrooke is proposed. This strategic move is intended to redirect traffic flow, easing congestion and paving the way for transformative green initiatives. By reclaiming the space previously occupied by off-ramps, we aim to weave a tapestry of greenery throughout the area, fostering a more harmonious and sustainable urban landscape. Specifically, eliminating the eastbound off-ramps into the neighborhood not only frees up space for additional greenery but also facilitates connectivity across the site, enhancing the overall cohesion and livability of Mercier-Est.

Site 2: Autoroute 25 to Sherbrooke

Mitigating Noise Pollution from Autoroute 25

Since the completion of Autoroute 25, Mercier-Est has experienced a notable increase in air pollution attributed to heightened traffic within the borough. This surge in vehicular activity, facilitated by the highway's role in the TransCanada corridor, has led to a rise in harmful pollutants such as Nitrogen Oxides (NOx), fine Particulate Matter (PM2.5), Volatile Organic Compounds (VOCs), Carbon Monoxide (CO), and Sulphur Dioxide (SO2). To address these environmental concerns, transforming the current concrete sound walls into living walls presents a viable solution.

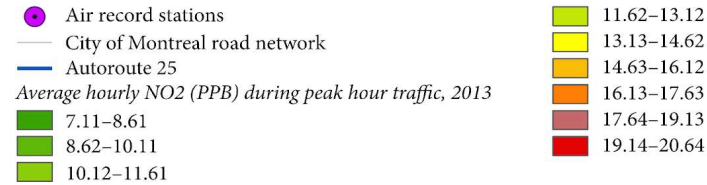
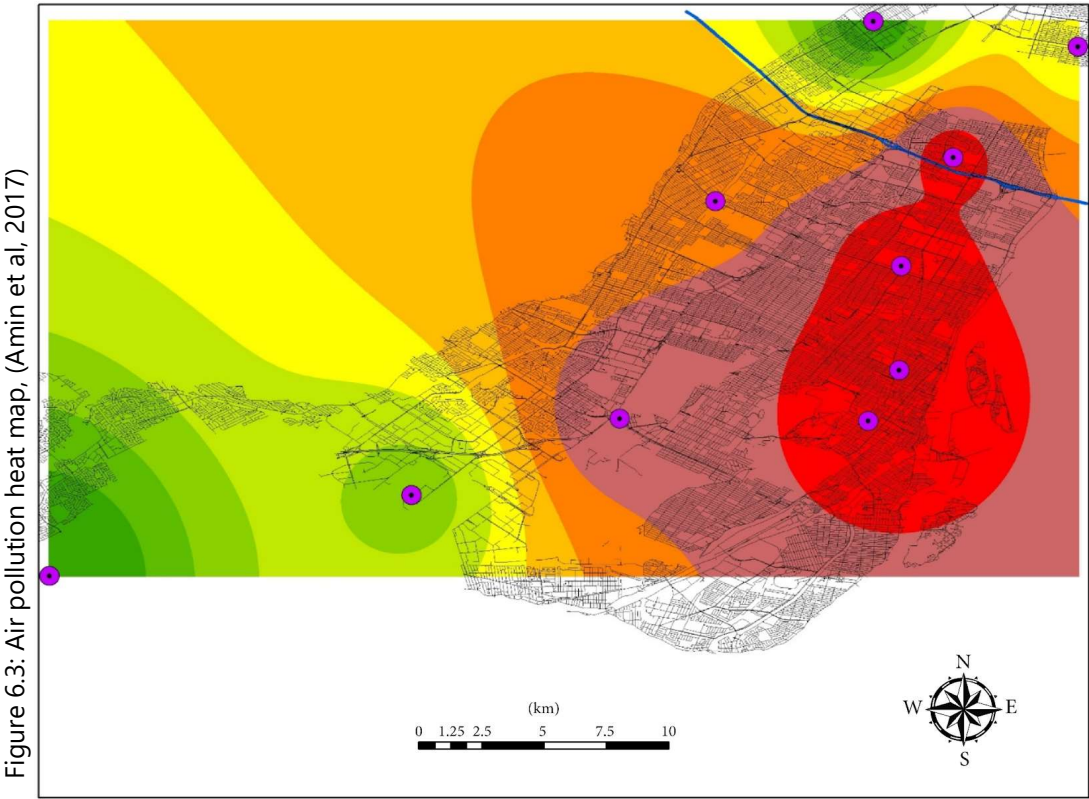
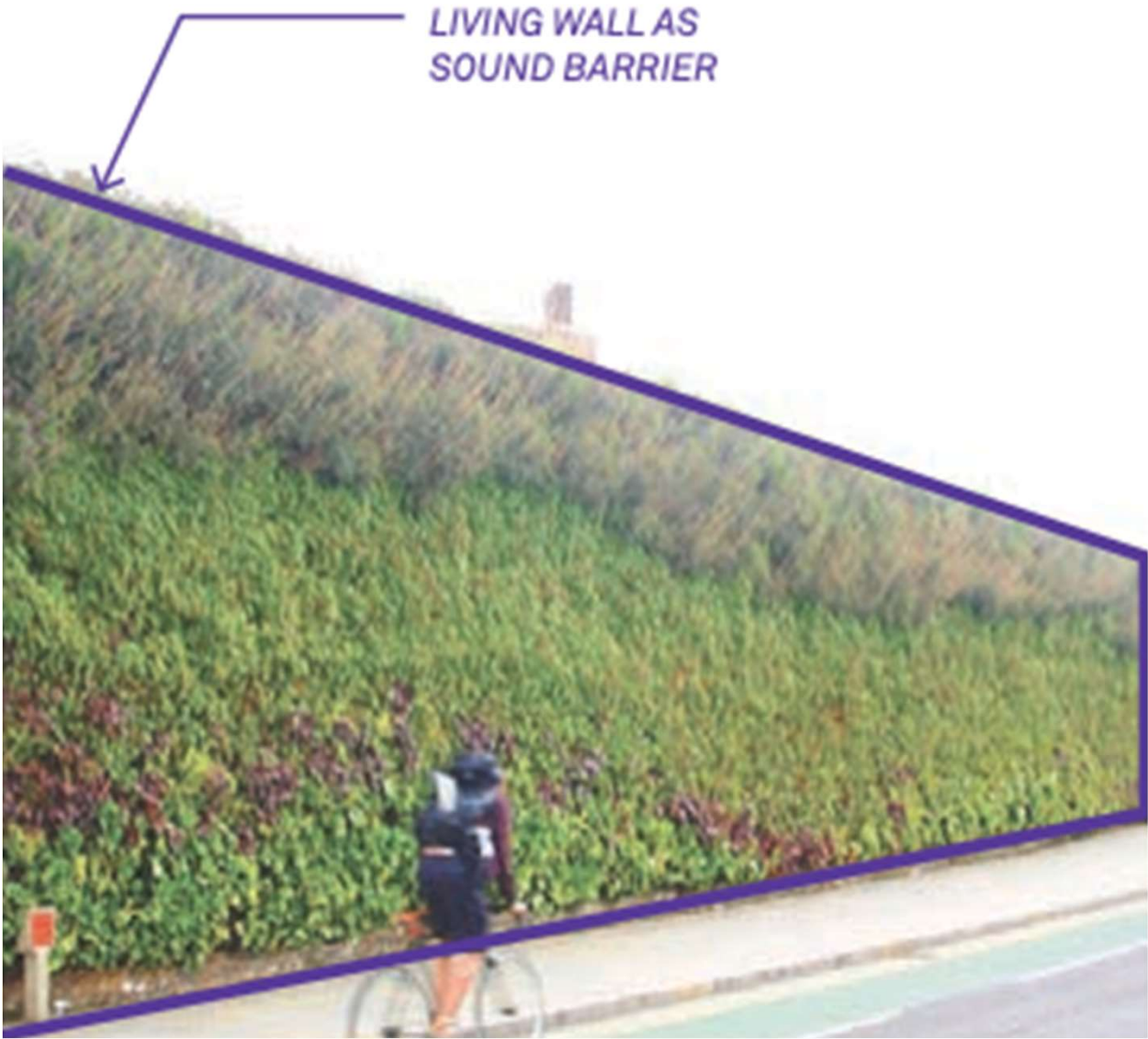


Figure 6.4: King’s Cross living wall, (Biotecture, 2011)



Considering the proximity of housing to the expressway, sound barriers are necessary to mitigate noise pollution. By transforming the current concrete sound walls into living walls, we can mitigate air and noise pollution while enhancing the aesthetic appeal of the area. While conventional concrete sound walls currently serve this purpose, transforming them into living walls presents an opportunity to address both environmental and aesthetic concerns effectively. By implementing living walls, we can create a healthier and more visually appealing environment for residents while mitigating the impacts of air and noise pollution.

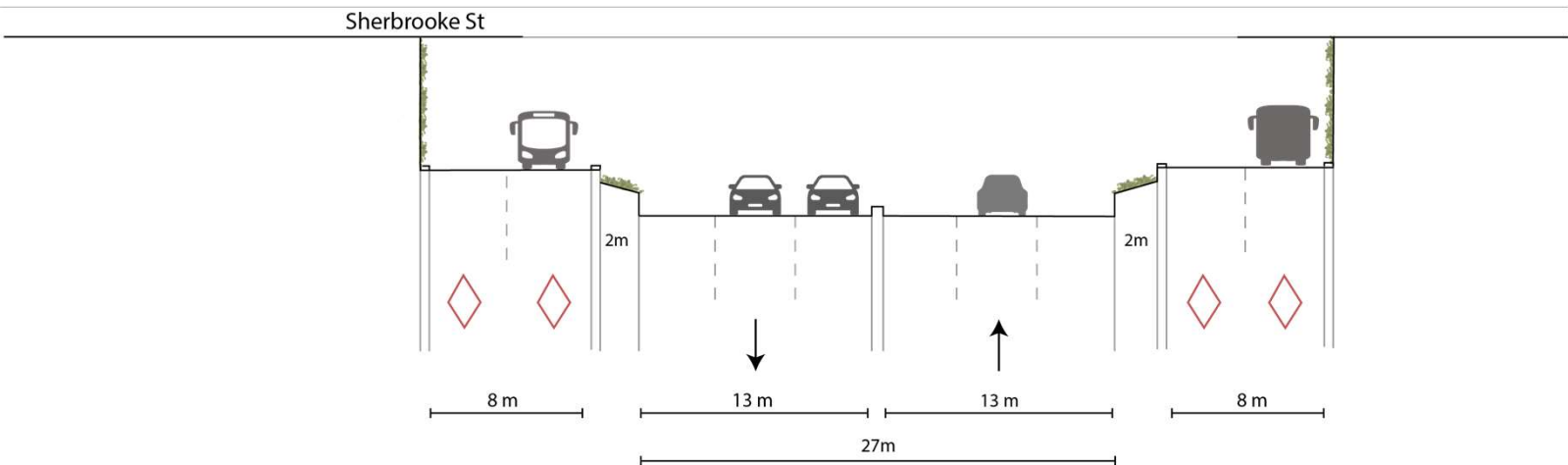
Site 2: Autoroute 25 to Sherbrooke

Dedicated Rapid Bus Lanes

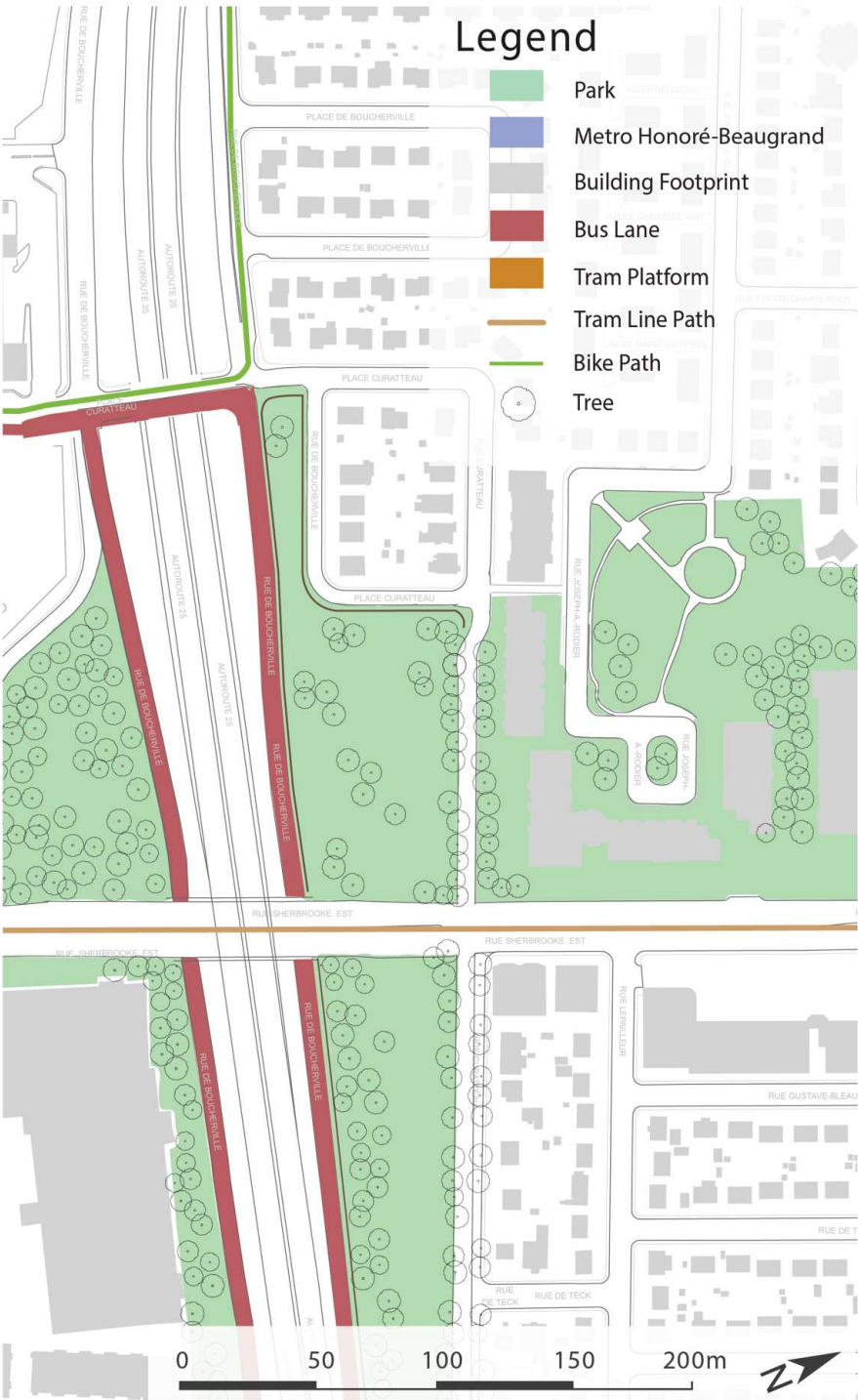
At the core of our vision to revitalize Mercier Est as a focal point for alternative transportation and to enhance connectivity throughout the area and its surrounding regions, we propose a fundamental change: the conversion of current service roads, Rue De Boucherville, into dedicated bus lanes. These lanes will not only expedite transit connections but also prioritize mass transit options over individual car usage. By advocating for these dedicated bus lanes, our project aims to facilitate transit connections that link Mercier Est with the Southshore of Montreal and downtown areas.

As part of this effort, we too are dedicated to improving pedestrian safety. Our proposal includes extending Rue Curatteau through the space formerly occupied by a highway off-ramp, connecting it to Place Curatteau. This extension serves multiple purposes: it offers an exit route for residents near Place Curatteau via Rue Curatteau and introduces an intersection at Rue Curatteau and Sherbrooke. By adding this intersection, we introduce a traffic-calming measure that encourages vehicles to reduce speed when entering eastward onto Sherbrooke through the site. Reducing the speed of traffic not only enhances pedestrian safety but also improves the overall quality of life and peacefulness in the neighborhood.

In conjunction with prioritizing mass transit services and improving cycling infrastructure, our objective is to offer viable alternatives to the car, thus reducing traffic congestion and promoting sustainable transportation methods. Through these initiatives, our project strives to cultivate a more livable and inclusive neighborhood, where residents benefit from enhanced mobility options and a strengthened, sense of community well-being.



6.5 Autoroute 25 cross section, (Authors, 2024)

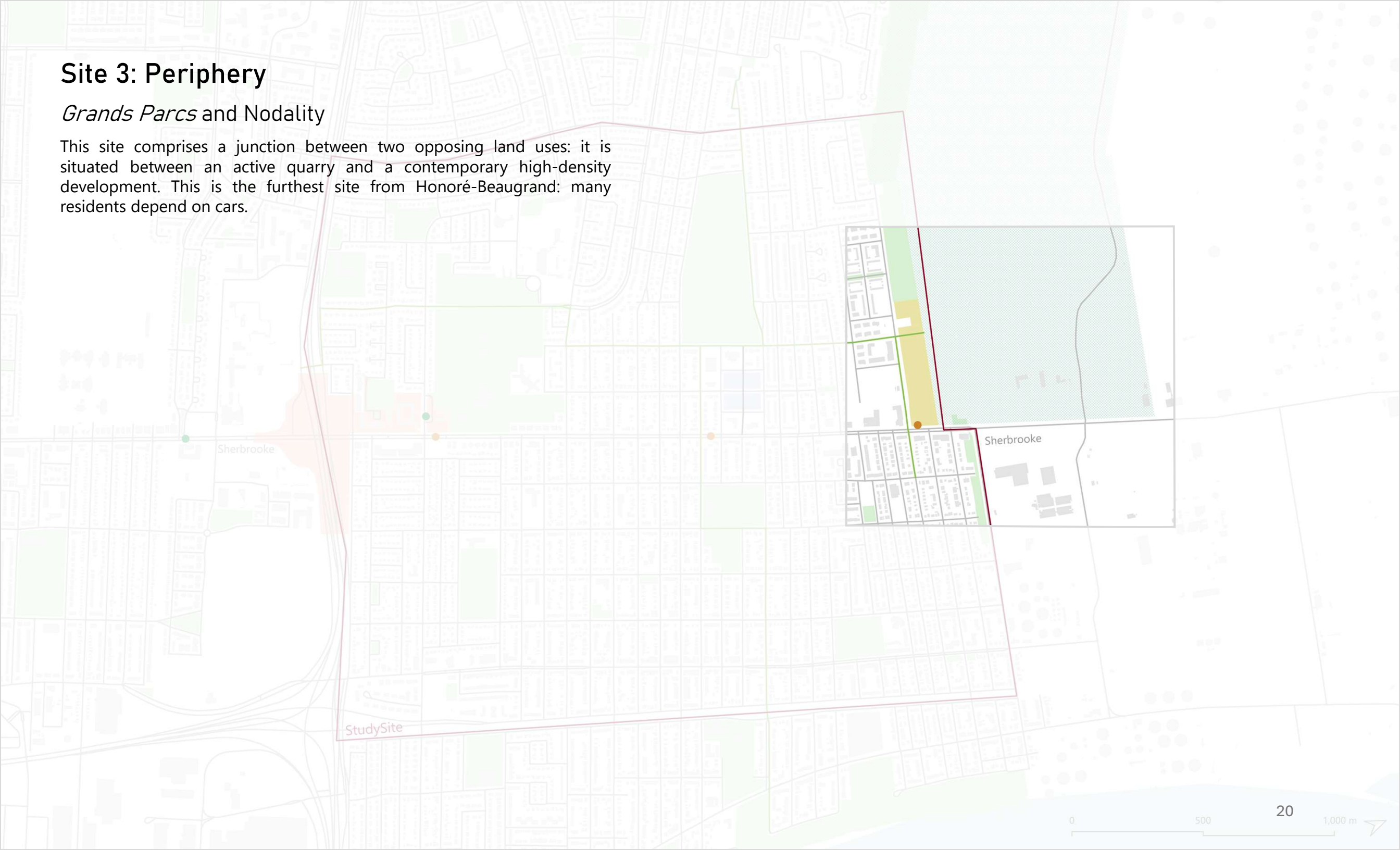


6.6 Autoroute 25 to Sherbrooke rapid bus lane proposal, (Authors, 2024)

Site 3: Periphery

Grands Parcs and Nodality

This site comprises a junction between two opposing land uses: it is situated between an active quarry and a contemporary high-density development. This is the furthest site from Honoré-Beaugrand: many residents depend on cars.



Site 3: Periphery

Quarry Park Analysis

This agglomeration analysis compiles current *Grands Parcs* (GP) and other green spaces. The city of Montreal manages over 15 GP : some span multiple municipalities like the Grand Parc de l'Ouest.

In our plan, we anticipate the future conversion and integration of Lafarge quarry into a GP. Its size and placement on the island fills a noticeable gap (See figure 7.1). With this new park, residents can expect a new buffer between their houses and the industrial petrol activities of Montreal Est.

With Montreal's 400th anniversary in 18 years (2042), we anticipate the Quarry to reach the end of its productive lifespan. The new century mark would be a perfect opportunity to invest in the remediation of an abandoned quarry and the creation of a new significant civic space. Coupled with a new tram-train, the park is accessible to other neighbourhoods.



Figure 7.1 : Agglomeration analysis of current large parks and proposed quarry park (Authors, 2024)

Site 3: Periphery

Quarry Park Design

All mining operations have a limited time span. While Lafarge quarry was distant from urbanized regions in the past, it is flanked by dense residential development to the west. To the east, old petroleum reservoirs are being removed.

While this quarry park seems bold, the city is already in the process of remediating Park Frédéric-Back (see Figure 7.3). Moreover, the Lafarge quarry has an area of 153 hectares: this is well within the range of GPs in the city. Combined, Park Maisonneuve and the Jardin Botanique serve as a good example of partial institutional occupancy (see Figure 7.2). Ultimately these parks demonstrate the city’s capacity to normalize these green spaces. Pedestrians do traverse these large parks and use the space for leisure.

The proposed quarry park is expected to have a 5km cycling and pedestrian path on the land surrounding the quarry: 1h walk or 25min cycling (see Figure 7.4). Beyond leisure, this circuit serves to connect the suburban cul-de-sacs and schools along the west flank.

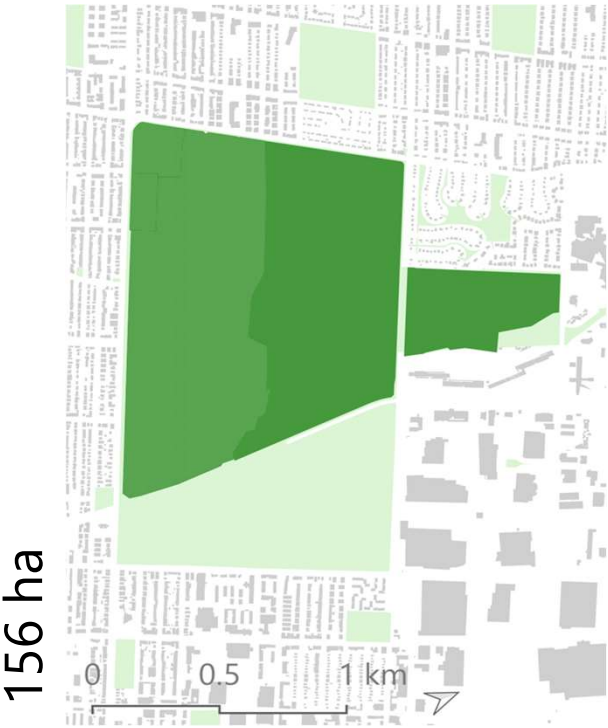


Figure 7.2: Parc Maisonneuve and Jardin Botanique (Authors, 2024)

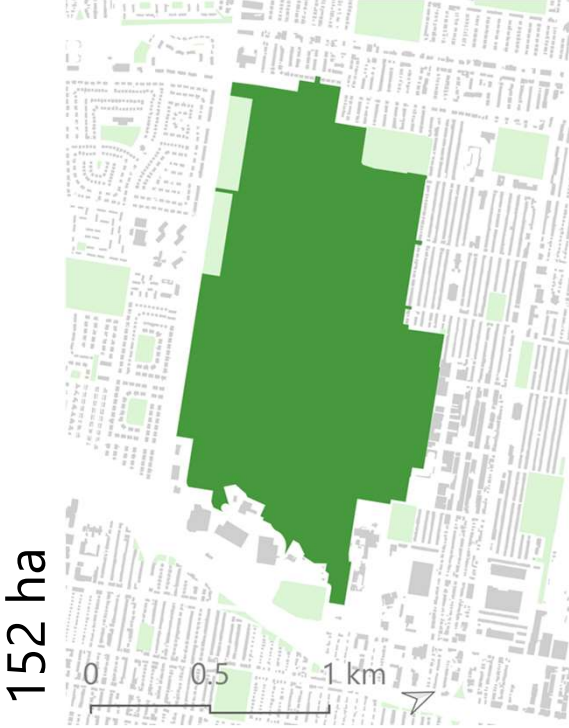


Figure 7.3: Parc Frédéric-Back (Authors, 2024)



Figure 7.4: Aerial view of remediated Lafarge quarry into a large urban park (Authors, 2024)

Site 3: Periphery

Multimodal Node

At the intersection of Sherbrooke and De Contrecoeur, there is a large vacant lot. (see Figure 7.5)

The bike lanes directly connect to schools, tram stop and GP. There is ample space for a two-story primary school north of the current CPE. The tram should cross the intersection every 4min or less. This would allow the tram to run calmly on the Park side of Sherbrooke, creating a gradient between the semi-trailers on Sherbrooke and the quarry Park.

The mixed-use buildings facing the park assume 8 stories to maximize the view without casting large shadows. Buildings facing Rue De Contrcoeur reflect the 7 stories already present (see Figures 7.6 and 7.7). This mixed-use designation prioritizes residential uses for upper floors. We identified an important lack of service provision like groceries, and *dépanneurs* in the periphery: this mixed use is expected to supply the demand with first-floor commercial activities. Residential-only towers to the south of Sherbrooke can assume a height of 12 stories since there are no neighbours.

The service provision, rapid transportation network and GP are intended to absorb the needs of a high-density neighbourhood and ensure the long-term sustainability.



Figure 7.5: Proposal for vacant lots adjacent to quarry park (Authors, 2024)



Figure 7.6: 2030 Rue De Contrecoeur (Fusion Verte, 2024)



Figure 7.7: 9500 Rue Myra-Cree (Remax, 2024)

Land Use	Area (m ²)	Number of Units
Commercial	10297	NA
Residential in mixed use	81780	681
Residential only towers	47520	396
Childcare	5978	NA

Table 7.1: Calculated area of land uses (Authors, 2024)

Site 3: Periphery

Multimodal Node

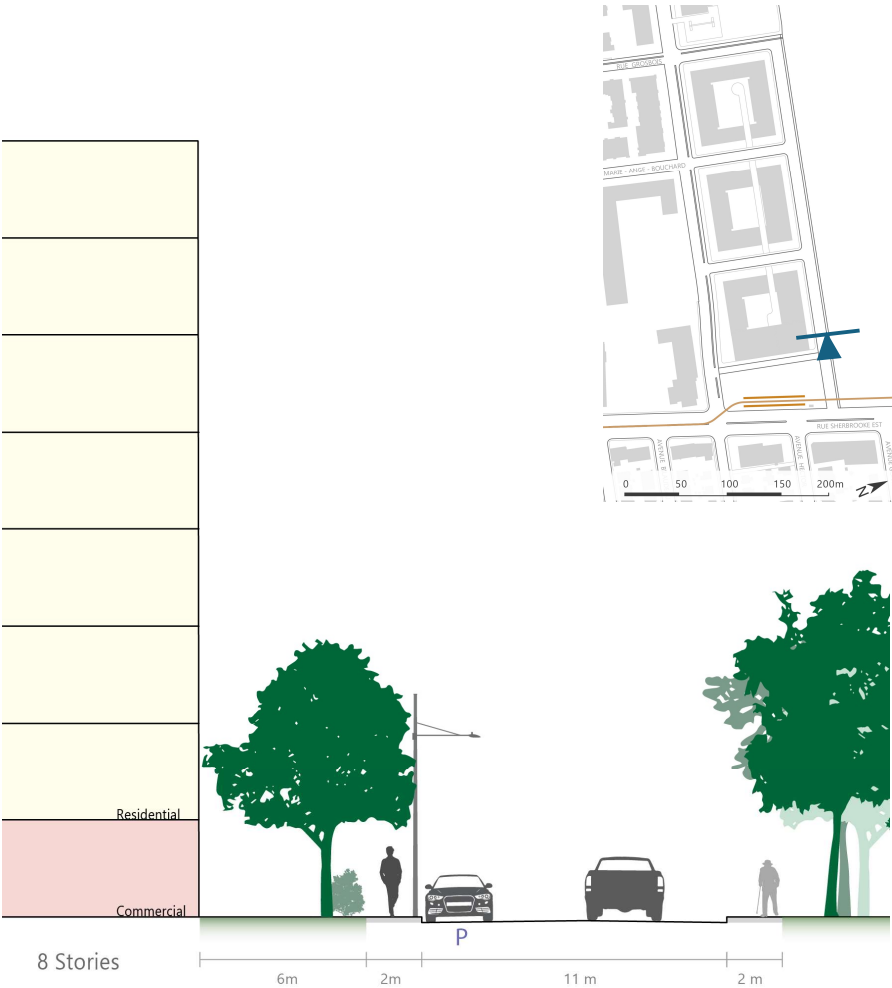


Figure 7.8: Cross section quarry-park facing blocks (Authors, 2024)

Park facing blocks are expected to be 8 stories, enabling the community to enjoy the sunrise and overview of the park. The first floor can be dedicated to commercial activates but also required community halls for senior or youth activities. Institutional land uses (Figure 7.8).



Figure 7.9: Contrada analysis of new blocks (Authors, 2024)

Looking at the tram platform, we can see that commuters are required to traverse a tree-lined plaza. The trees are lined to guide the eye towards the quarry park; however, services are still visible through the tree trunks. This area also intends to be a cooling island adjacent to the tram station (see Figure 7.9).

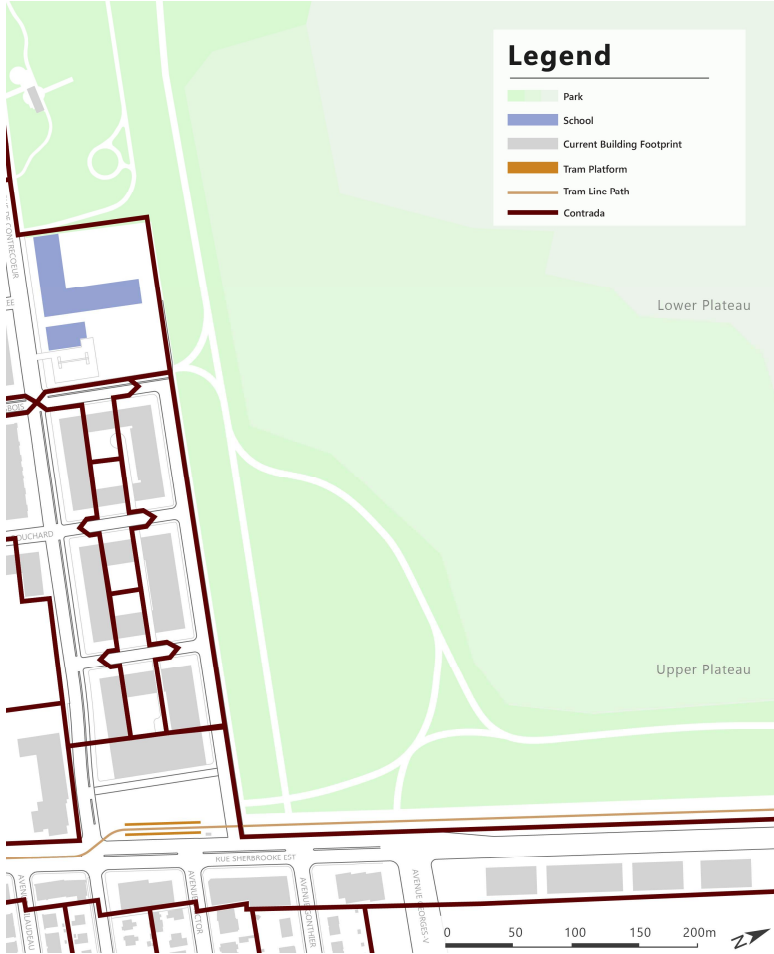


Figure 7.10: Tree canopy projection (Authors, 2024)

While technical, the *contrada* is an analytical lens used to understand where building entrances are found, and highlight entrances that oppose each other. In this case, these circled blocks help indicate what roads residents are expected to use to get into the physical building (see figure 7.10).

Site 3: Periphery

Plaza

By integrating the tram station into the plaza, you may attach meaning to the station: giving a distinct and recognizable imagery to the station (see Figure 1.13). Place Des Quiconces in Bordeaux France is an important case study (see Figure 7.12). It is partially used for city center parking, as a tram interchange and a pedestrian plaza: the tall tree-lined corridors are immediately recognizable and offer important shade in the summer. Lincon Centre’s North Plaza also successfully created a cooling island, harnessing ecosystemic services (see Figure 7.11).

While the plaza is a small greenspace in the amended vacant lot, it is in essential in the design as it harbors the nodality. The plaza lies between hundreds of housing units’, crucial service provision, the quarry parc, safe cycling infrastructure and rapid transportation. Its essential to design the plaza for heavy foot-traffic and thermal comfort. The *New Street* is flush with the pedestrian walkways: this intends to provide space for service vehicles without cutting the pedestrian’s seniority over the space.



Figure 7.13: Cross section of plaza with tram station (Authors, 2024)



Figure 7.11: Lincoln Centre North Plaza (MNLA, 2011)

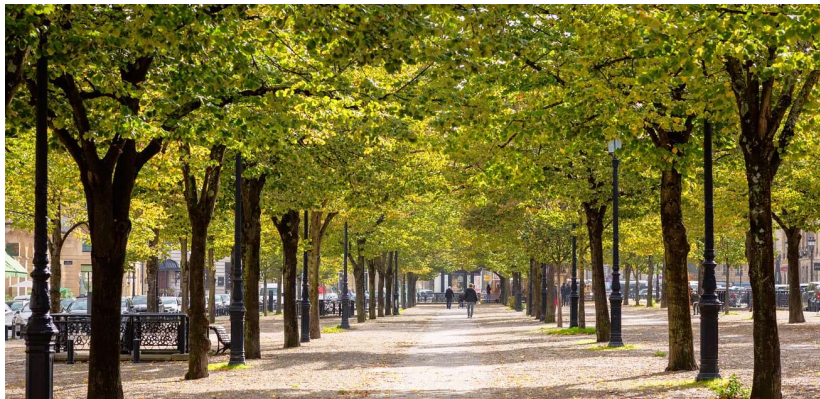
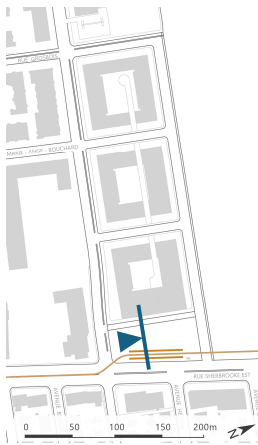


Figure 7.12: Place Des Quinconces, Bordeaux (Chaillou, 2020)



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