PROVINCE OF QUEBEC
TOWN OF KIRKLAND

BY-LAW NO : 90-54-11

BY-LAW NO. 90-54-11 ENTITLED : BY-LAW AMENDING THE MONTRÉAL URBAN PLAN NO. 04-047 IN ORDER TO ENSURE CONSISTENCY WITH THE MONTRÉAL AGGLOMERATION LAND USE AND DEVELOPMENT PLAN AND TO INTEGRATE A SPECIAL PLANNING PROGRAM

ADOPTION PROCEDURE

Notice of motion :	June 9, 2025
Adoption – Draft:	June 9, 2025
Publication :	June 11, 2025
Public consultation :	July 2, 2025
Adoption – second draft :	N/A
Publication :	N/A
Application request :	N/A
Registration procedure :	N/A
Adoption of by-law :	July 7, 2025
Certificate of compliance :	
Publication :	
Coming into force :	

WHEREAS in accordance with section 58 of the *Act respecting land use planning and development* (CQLR, c. A-19.1), the City of Kirkland must adopt a concordance by-law to ensure compliance with the new requirements of the Montréal Agglomeration Land Use and Development Plan;

WHEREAS a notice of motion concerning this by-law was duly given at the regular sitting of the municipal council held on June 9, 2025;

WHEREAS in accordance with section 356 of the *Cities and Towns Act* (CQLR, c. C-19), copies of the present draft by-law were made available to the public;

WHEREAS the preamble forms an integral part of this draft by-law;

ARTICLE 1

By-law No. 01-047 concerning the Urban Plan of the City of Montréal is amended, in Part II (Documents of the boroughs and reconstituted municipalities), by replacing the plan entitled "Land Use Designations," as illustrated in the plan dated June 23, 2025, attached hereto as Appendix A and forming an integral part of this by-law.

ARTICLE 2

By-law No. 01-047 concerning the Urban Plan of the City of Montréal is amended, in Part II (Documents of the boroughs and reconstituted municipalities), by replacing the plan entitled "Summary of the Town of Kirkland's Planning Orientations," as illustrated in the plan dated June 23, 2025, attached hereto as Appendix B and forming an integral part of this by-law.

ARTICLE 3

By-law No. 01-047 concerning the Urban Plan of the City of Montréal is amended, in Part II (Documents of the boroughs and reconstituted municipalities), by replacing the plan entitled "Ecologically Significant Areas," as illustrated in the plan dated May 14, 2025, attached hereto as Appendix C and forming an integral part of this by-law.

ARTICLE 4

By-law No. 01-047 concerning the Urban Plan of the City of Montréal is amended, in Part II (Documents of the boroughs and reconstituted municipalities), by inserting, after the plan entitled "Road Network," the plan entitled "Residential Density," as illustrated in the plan dated May 1, 2025, attached hereto as Appendix D and forming an integral part of this by-law.

ARTICLE 5

By-law No. 01-047 concerning the Urban Plan of the City of Montréal is amended, in Part IV (Special Planning Programs), by adding the Special Planning Program entitled "REM Station – Town of Kirkland," as attached hereto as Appendix E and forming an integral part of this by-law.

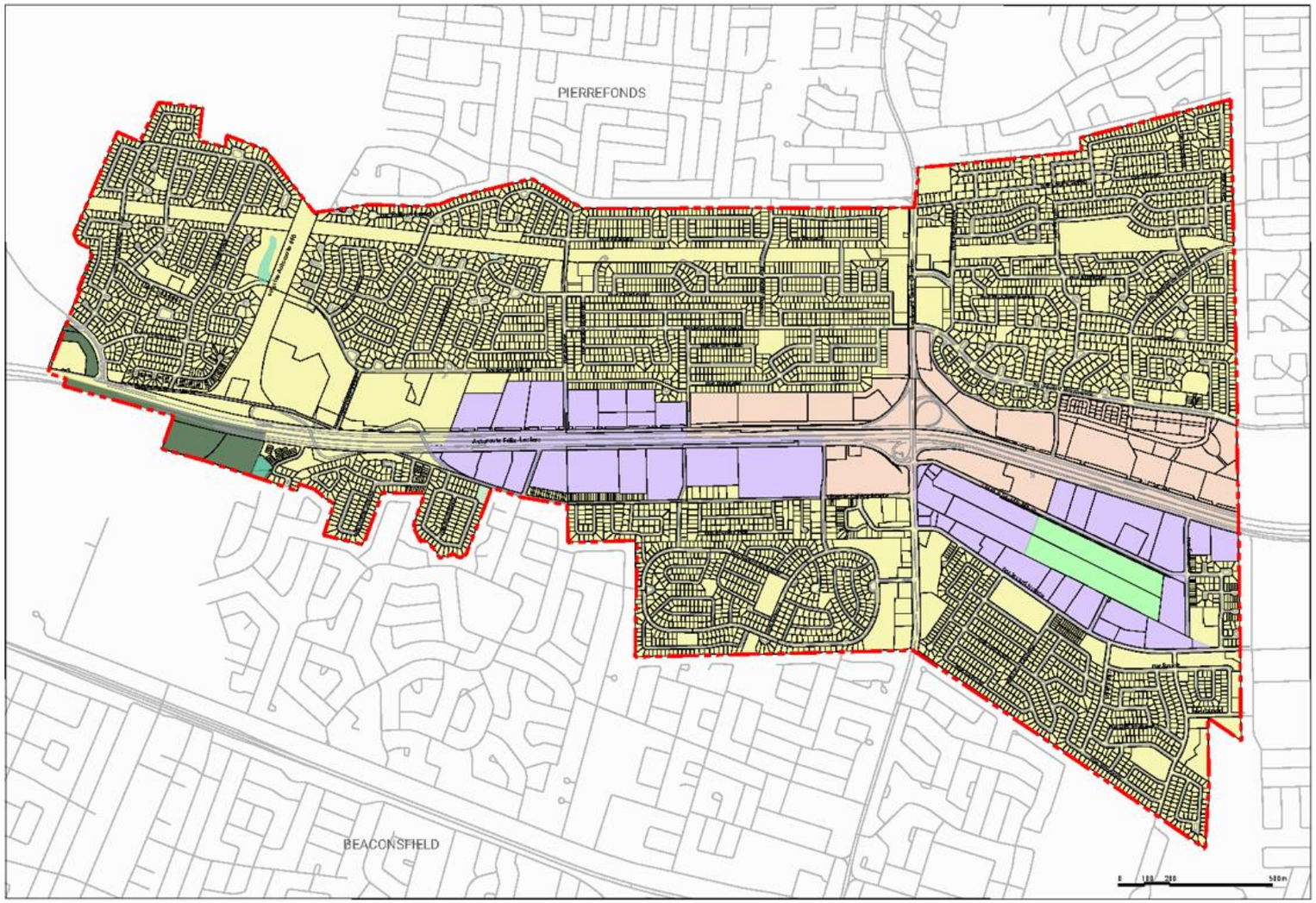
ARTICLE 6

This by-law shall come into force in accordance with the law.

(Michel Gibson)
Mayor

(Guy Maginzi)
Assistant Town Clerk

APPENDIX A



LEGEND

- Town Boundary
- Lot
- Road Network

LAND USE DESIGNATIONS

- Predominantly Residential
- Mixed-use Activity
- Industrial
- Major Green or Recreational Space
- Conservation area

Mapping References
Cadastre
Town of Kirkland

AMENDMENTS TO THE LAND USE DESIGNATIONS PLAN

By-law no.	Coming into force

KIRKLAND

LAND USE DESIGNATIONS

KIRKLAND

ÉCHELLE	1 : 15 000
FORMAT	11x17
DATE	2025.05.01
No PLAN	PR01
No PROJET	2502-031

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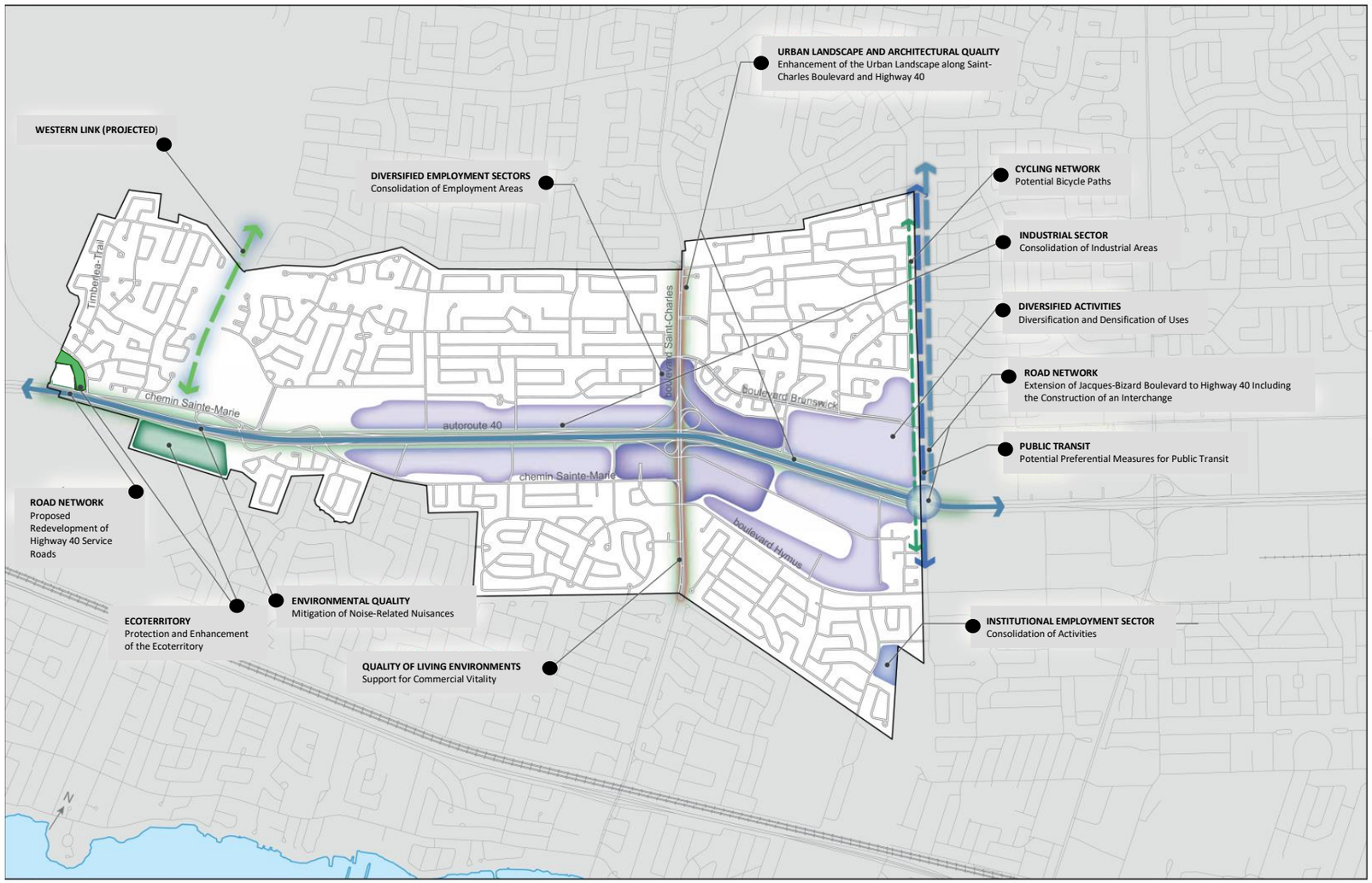
APPENDIX B



Mapping References
Cadastre
Town of Kirkland

MODIFICATIONS TO THE PLAN OF PLANNING ORIENTATIONS SUMMARY

By-law no.	Coming into force

KIRKLAND

SUMMARY OF THE TOWN OF KIRKLAND'S ORIENTATIONS

KIRKLAND

WORD

ÉCHELLE	1 : 15 000
FORMAT	11x17
DATE	2025.05.01
No PLAN	PR01
No PROJET	2502-031

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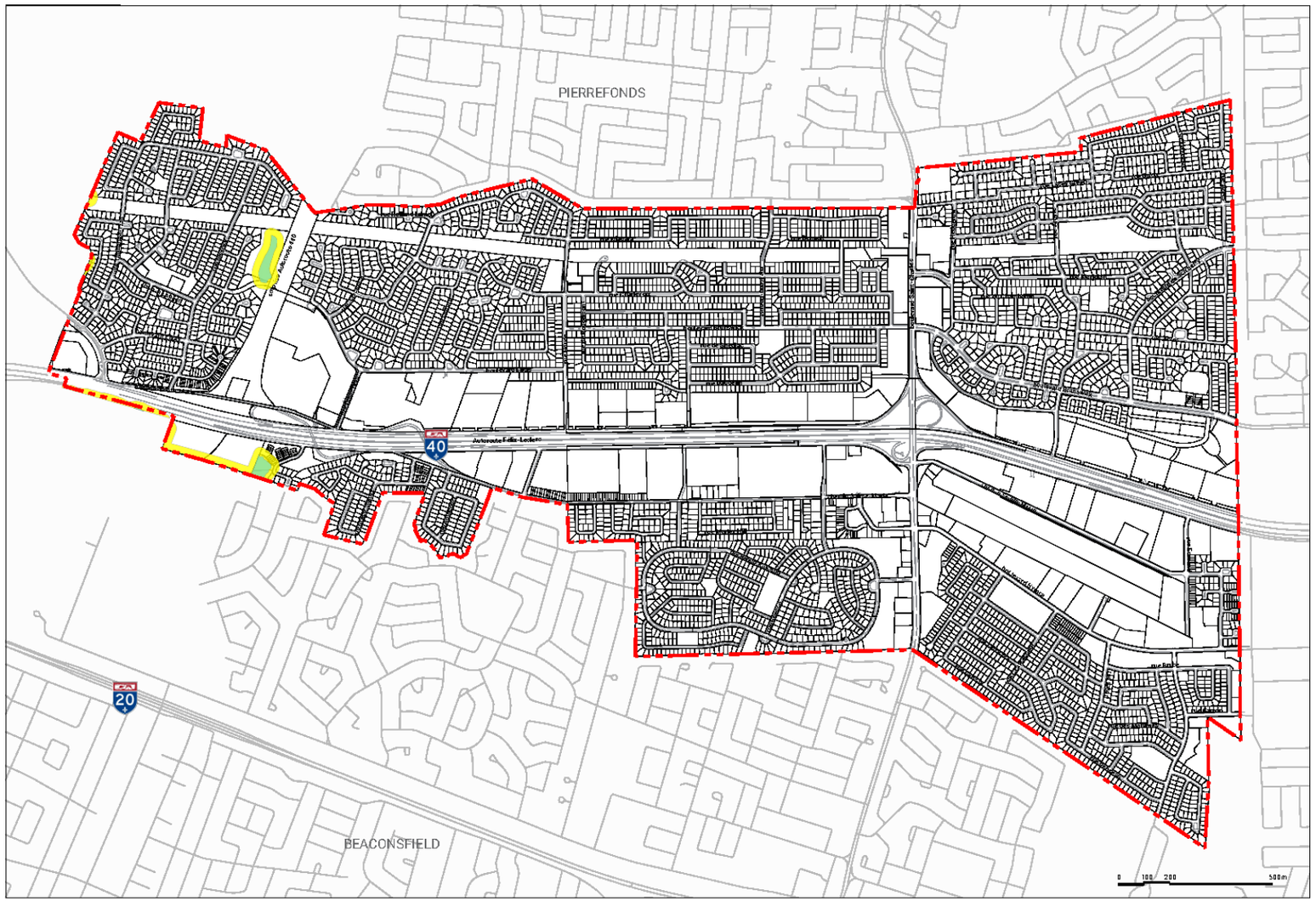
APPENDIX C



LEGEND

- Town Boundary
- Lot
- Road Network
- Wetland of Interest for Protection or Restoration
- Wetland Protection Area

Mapping References
Cadastre
Town of Kirkland

MODIFICATIONS TO THE PLAN OF WETLANDS OF INTEREST

By-law no.	Coming into force

KIRKLAND

ECOLOGICALLY SIGNIFICANT AREAS

KIRKLAND

ÉCHELLE	1 : 15 000
FORMAT	11x17
DATE	2025.05.14
No PLAN	PR01
No PROJET	2502-031

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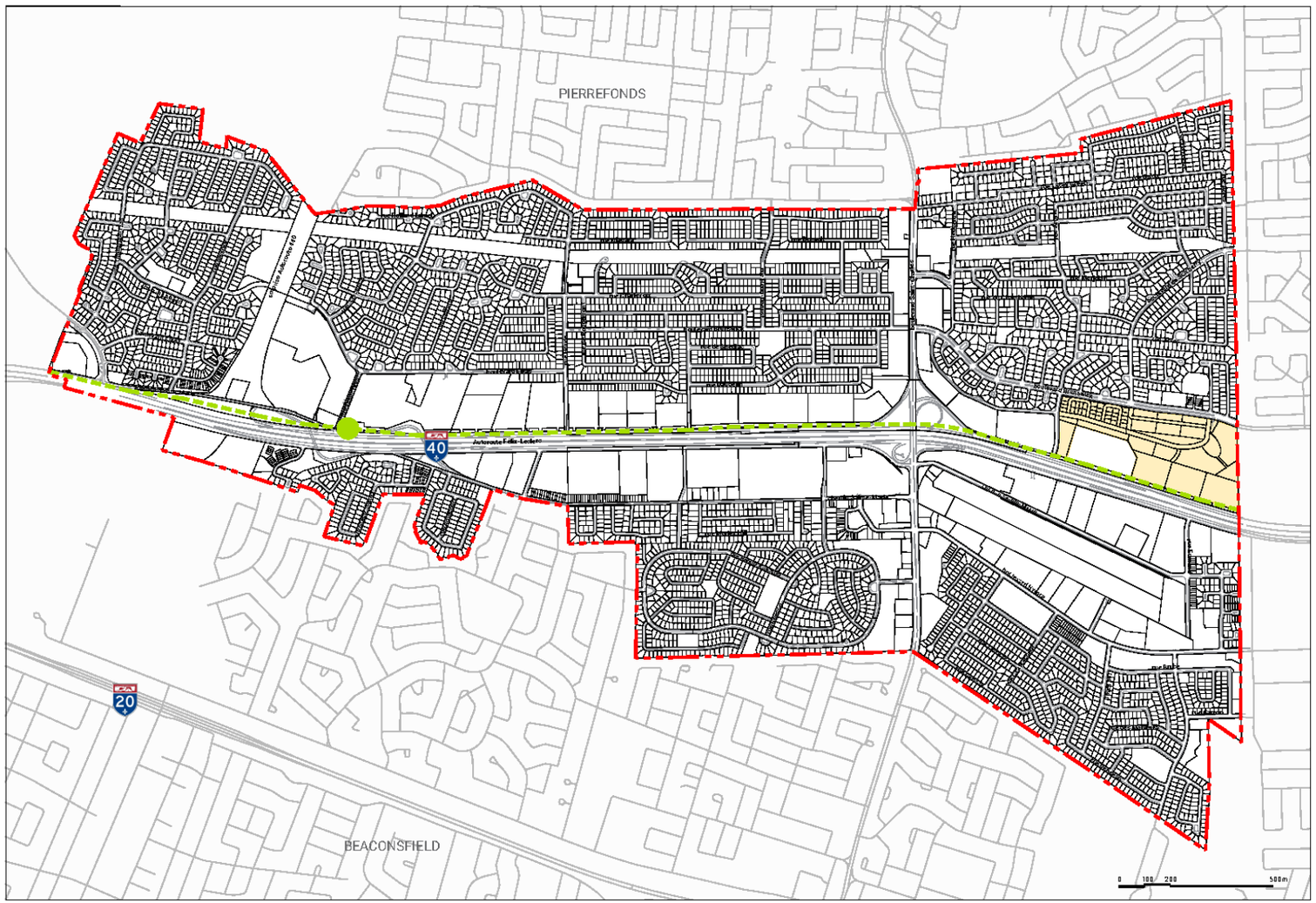
APPENDIX D



LEGEND

- Town Boundary
- Lot
- Road Network
- REM Route Alignment
- REM station

MINIMUM RESIDENTIAL DENSITY THRESHOLD
Applicable to Areas to Be Developed or Redeveloped

- 60 (dwelling units per gross hectare)

Mapping References
Cadastre
Town of Kirkland

MODIFICATIONS TO THE RESIDENTIAL DENSITY PLAN

By-law no.	Coming into force

KIRKLAND

RESIDENTIAL DENSITY

KIRKLAND

NORD

ÉCHELLE 1 : 15 000
FORMAT 11x17
DATE 2025.05.01
No PLAN PR01
No PROJET 2502-031

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APPENDIX E

Special Planning Program entitled “REM Station – Town of Kirkland »

SPECIAL PLANNING PROGRAM

REM STATION – TOWN OF KIRKLAND

JUNE 2025

KIRKLAND

TABLE OF CONTENTS

LIST OF FIGURES

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1. INTRODUCTION

The introduction outlines the main steps in the process of drafting the Special Planning Program (SPP) for the Kirkland station area. It introduces this process by explaining the planning context, especially for the Transit Oriented Development (TOD) zones, and summarizes the participatory planning approach that was applied during the detailed planning process.

PLANNING CONTEXT

This SPP is based on planning documents adopted in recent years by government, metropolitan and municipal bodies. These documents include the Metropolitan Land Use and Development Plan (PMAD) adopted in 2012 by the Montreal Metropolitan Community, the Montreal Urban Agglomeration Land Use and Development Plan (SAD) adopted in 2015. Various master plans and action plans were also used to determine the principles that need to be part of the territory's future development and to complete the planning and regulatory instruments already in effect.

Metropolitan Land Use and Development Plan (PMAD)

The Portrait of Greater Montreal produced not so long ago states that the region will need to tackle three major challenges in the coming years: land use, transportation and the environment. To succeed, the PMAD targets different transformative actions on a citywide level that can be summed up in three basic objectives:

1. A Greater Montreal with sustainable living environments;
2. A Greater Montreal with efficient, structural transportation networks;
3. A Greater Montreal with a protected, enhanced environment.

When broken down into specific objectives and criteria, the PMAD seeks, among other things, to direct 40% of household growth towards a structural metropolitan mass-transit network access, within a one-kilometre radius of current and proposed metro stations, commuter trains, light-rail transit (LRT or REM) and bus-rapid transit services.

To succeed, priority will be given to the development of TOD (Transit-Oriented Development) neighbourhoods. In that respect, the PMAD sets minimum residential density thresholds that apply to TOD areas. The threshold is set at 60 dwellings per hectare for the Kirkland REM station.

The PMAD also aims to increase the modal share of active transportation, such as by eventually establishing a total metropolitan bicycle network of 1,600 kilometres of bicycle paths that connect with other bicycle paths. In that regard, the bicycle path that crosses the Kirkland REM station's TOD zone located in the Hydro-Quebec right-of-way is a particularly strategic east-west route.

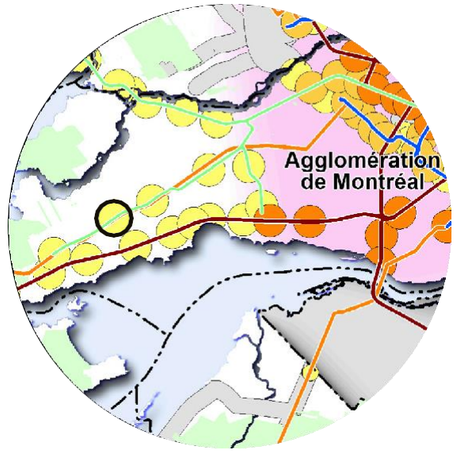


Fig.1. Map of the TOD zones and applicable minimum density thresholds
Source: Metropolitan Land Use and Development Plan of the Montreal Metropolitan Community

Fig.2. Course of route no. 42 (in red)
Source: Master Plan for the Metropolitan Cycling Network (REM) of the Montreal Metropolitan Community

PLANNING CONTEXT

Montreal Urban Agglomeration Land Use and Development Plan

In effect since April 1, 2015, the Land Use and Development Plan sets the guidelines for the next ten years. These guidelines aim to: promote an excellent living environment;

1. Promoting a high-quality living environment;
2. Support the dynamism of the conurbation and the center of the region;
3. Enhance areas of interest.

Using a firmly sustainable development-based approach, the plan's vision strives to keep neighbourhoods diverse and closely knit, with local services and jobs, maintain architectural quality, develop public areas, and promote public and active transportation in order to reduce travel.

West Island economic hub

Due to the presence of the RioCan commercial site, the SPP territory is partially located within the West Island employment hub. This employment hub runs along the Trans-Canada Highway (A-40) between its junctions with the Décarie (A-15) and Chomedey (A-13) highways. This is the second largest concentration of jobs on the Island of Montreal, after the downtown area. This area has a highly diverse range of employment sectors, although the aerospace, telecommunications, biotechnology and pharmaceutical sectors are heavily represented.

Major road project

The Quebec Ministry of Transportation (MTQ) right-of-way is located at the western edge of the SPP territory and was initially intended to be developed into an urban boulevard. However, this new route linking the northern and southern part of the West Island will be reserved for public and active transportation.

Territory of ecological interest

We should also point out its proximity to the Rivière à l'Orme. ecoforest corridor, a territory of ecological interest, Angell Woods and several uncultivated natural habitats, in the right-of-way of Highway 440, as well as woods and wetlands.

Main land uses

The SPP sector is located entirely within the "Dominantly residential" regional land use designation. The components authorized for residential use are housing, commercial, office and recreational, cultural or institutional facilities.

Safety, noise and vibrations

The SPP territory is subject to the provisions stated in the complementary document to the SAD, which regulate the occupancy of lands adjacent to the Trans- Canada Highway in order to reduce noise-related nuisances. More specifically, lands located less than 300 metres from the right-of-way of a highway cannot be occupied by a residential use or certain public facilities if the sound level, inside the building or the part of the building where the use is carried out, is higher than 40 dBA Leq (24 h). Likewise, a recreational space outside the building may not be developed if the sound level is higher than 55 Leq (24 h).

Fig.3. Map of the road network
Source: Schéma d'aménagement et de développement de l'Agglomération de Montréal

SPP area

Highway or expressway

Fig.4. Map of the agglomeration's main economic hubs
Source: Schéma d'aménagement et de développement de l'Agglomération de Montréal

Fig.6. Map of natural habitats
Source: Schéma d'aménagement et de développement de l'Agglomération de Montréal

SPP area

Wetland

Uncultivated land

Woods

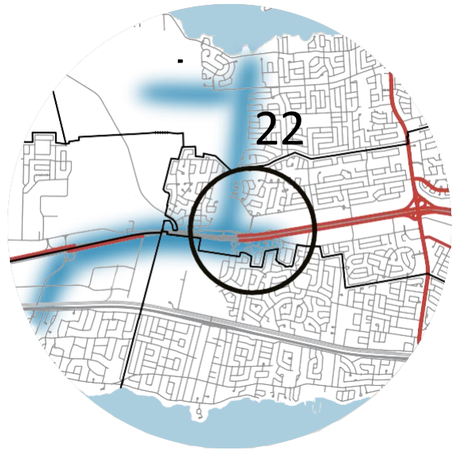


Fig.5. Map of major road network rehabilitation and construction projects
Source: Schéma d'aménagement et de développement de l'Agglomération de Montréal

Section to be built

Arterial network

N°22: Develop a boulevard in the A-440 right-of-way

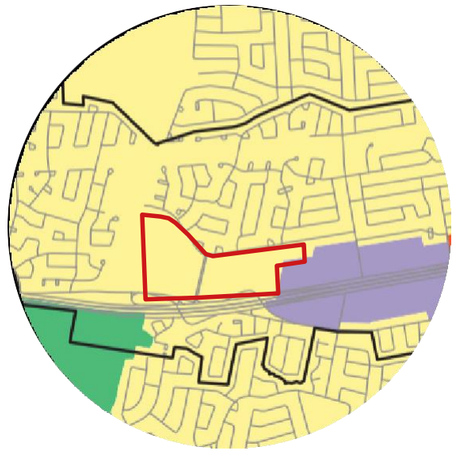


Fig.7. Map of predominant land uses in the territory
Source: Schéma d'aménagement et de développement de l'Agglomération de Montréal

SPP area

Residential

Industry

Conservation

PLANNING CONTEXT

Planning program of the Town of Kirkland

Over the years, the Town of Kirkland has adopted a number of sector-based policies that have an impact on land use.

Climate Change Adaptation Plan

Adopted in 2015, the purpose of the Climate Change Adaptation Plan is to implement measures and actions aimed at reducing and improving impact management for several climate-warming-related events, such as more frequent and intense heat waves and heavy rainfall in the summers, more frequent temperature rises and episodes of heavy winds, hail and freezing rain.

The adopted measures suggest principles for the maintenance, protection, awareness and ultimately resilience and adaptation of living environments.

Master Plan for Parks and Green Spaces

Adopted in 2015, the master plan for parks and green spaces takes an exhaustive inventory of these spaces, based on the typology of the parks, the type of recreational facilities present and their use.

It provides an analysis of several trends in land use and sports practices and converts them into land use objectives and recommendations for the entire park network, based on the type of activity and the desired contribution of parks in new real estate developments.

The inventory sheet for Des Bénévoles Park specifies that the objective for the park is unclear due to its size and the siting of high-calibre sports fields. It also states that the retention basin is not accessible even though it is an interesting natural habitat, etc. Furthermore, the inventory sheet for Smiley Park states that it is essentially a recreational sports field adjacent to Des Bénévoles Park, with a service lodge.

Sustainable Development Plan – Horizon 2020

The objective of Horizon 2020 is "to ensure that Kirkland's future economic development is efficient, socially equitable and ecologically sustainable" and it was developed following the principles of Sustainable Development Bill 118. Its six objectives are to:

1. improve air quality and reduce greenhouse gas emissions;
2. ensure the quality of residential living environments;
3. manage resources responsibly;
4. adopt sustainable development practices in industrial, commercial and institutional (ICI) establishments;
5. improve the protection of biodiversity, natural environments and green spaces;
6. promote social and cultural development.

The periodic review of the accomplishments specifies the actions that have been completed, are ongoing and have not yet been started. It also provides tracking indicators and the competent divisions within the municipal administration.

Urban forestry plan

Drafted in 2017, this plan provides a portrait of trees within the Town's territory, private properties and the forest canopy. It then goes into details on the potential for planting trees on a sector-by-sector basis. It also converts this information into a 12-year action plan, based on short-term, medium-term and long-term actions.

Action plan to promote the integration of handicapped persons

This action plan is updated annually and includes a review of activities completed the previous year. It lists the commitments made by the Town of Kirkland to integrate handicapped persons within its territory. For instance, one of the Town's commitments is to promote universal accessibility in its recreational and cultural programming, both for handicapped persons who are at home and in transit, and ultimately to adhere to the concept of an inclusive town.

TOD ZONE PLANNING

In 2012, the Montreal Metropolitan Community (CMM) adopted the Metropolitan Land Use and Development Plan (PMAD), a land use and development planning document that aims to make Greater Montreal more competitive and attractive.

By 2031, the CMM proposes to direct at least 60% of new households towards mass-transit infrastructures in Greater Montreal, through TOD development projects, and define a mass-transit network that makes it possible to structure urbanization.

The Transit-Oriented Development (TOD) concept

Accordingly, TOD zones are defined as spaces located within a one-kilometre radius of critical mass-transit hubs, such train stations, metro stations, REM stations, etc. Newly developed neighbourhoods based on these principles should create complete living environments where users can live, work, entertain themselves and meet their daily needs, by promoting active modes of transportation such as walking or cycling.

WHAT IS THE TRANSIT-ORIENTED DEVELOPMENT [TOD] APPROACH?

"TOD IS A MEDIUM TO HIGH DENSITY URBAN DEVELOPMENT STRUCTURED AROUND A MASS-TRANSIT STATION [...].

LOCATED WITHIN WALKING DISTANCE OF A MAJOR MASS-TRANSIT NETWORK ACCESS POINT, TOD OFFERS HOUSING, EMPLOYMENT AND COMMERCIAL OPPORTUNITIES [...] AND CAN BE A REDEVELOPMENT PROJECT DESIGNED TO FACILIATE THE USE OF [...] ACTIVE TRANSPORTATION."

[SOURCE: PMAD]

TOD principles

Many principles underlie the TOD development approach. They are stated as follows :

- User-friendly, accessible access points in mass transit and pedestrian networks;
- Mixed functions adapted to the environment;
- Residential and use density that promotes access to mass transit;
- Support for social balance;
- Permeable road network;
- Urban design, safety, quality developments and site identity;
- Diverse architecture and urban landscape identity;
- Reconceived supply of parking spaces;
- Sustainable urban development.

Fig.8. Transit Oriented Development (TOD) principles
Source:Luc Nadal, ITDO, 2017

TOD ZONE PLANNING

The Metropolitan Express Network (REM)

The development of this new mode of mass transit, i.e. a light rail transit system (100% electric and automatic), will substantially enhance service to and the potential accessibility of various key destinations in the region and provide a solution to the problem of constantly growing automobile traffic.

With a service frequency similar to Montreal's metro system, the REM will substantially boost the potential accessibility of various key destinations in the region.

The network will cross the Greater Montreal Region. Its central north-south route will be connected to the current metro and commuter train network through four intermodal stations (Côte-de-Liesse, Canora, McGill and Central Station). This axis will be subdivided into two lines toward the west. In total, twenty-six stations will be developed.

From the Kirkland station, users will be able to reach downtown Montreal in thirty minutes. Like many REM stations near to the Trans-Canada Highway (A-40), the Kirkland station will have an elevated structure and is scheduled to be commissioned by the end of 2025. The Kirkland REM station will be located at the intersection of Jean Yves Street and Sainte Marie Road, north of the Trans-Canada Highway (A-40) access road. The main entrance will be on the west side next to the bus platforms, and the second entrance will be located on the east side, near to the bicycle path that crosses Des Bénévoles Park.

We should mention that intermodality is also proposed because the layout of the station's periphery includes a drop-off zone for buses with platforms that are specially designed for specialized transportation, a drop-off zone, parking for Kirkland residents and bicycle racks.

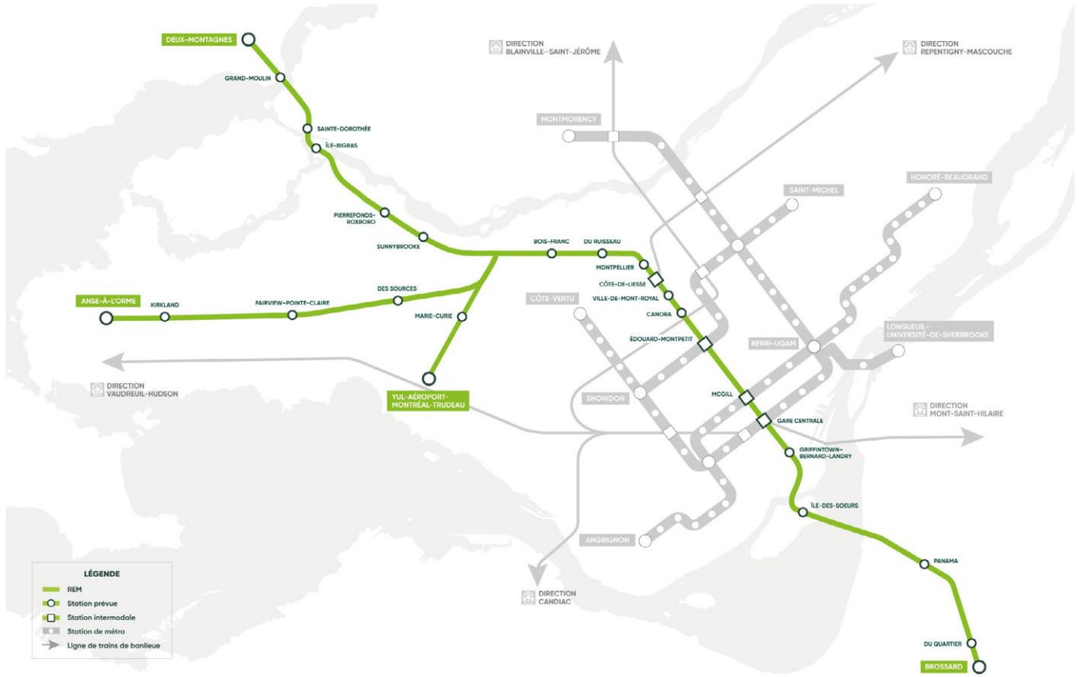


Fig.9. Map of the metropolitan express network
Source: CDPQ Infra

Fig.10. Preliminary layout map of the Kirkland station
Source: CDPQ Infra

Source: CPDQ Infra

Source: CPDQ Infra

Introduction

PARTICIPATORY APPROACH

The SPP planning process was accompanied by a public participation process. This process included three key activities and gave participants food for thought about the future of the sector.

↘ 2 KEY PARTICIPATION ACTIVITIES

May - June 2017

CITIZEN WORKSHOPS

- Information and discussion session on the arrival of the REM
- Consultation event for discussion groups on the development vision for the RioCan site

March 2023 to July 2024

PUBLIC CONSULTATION

- Presentation of the main lines of the project in a capsule on the Town of Kirkland website

SUMMER 2025

PUBLIC CONSULTATION

- Consultation session required under the Act respecting land use planning and development of Quebec

SPP

Workshop for citizens

Hired by the Town of Kirkland in 2017, Convercité organized and led a participatory planning process on the development vision desired for the area under study, in view of the imminent arrival of a Metropolitan Express Network (REM) station.

The workshop's objective was to come up with a collective vision for the site under study based on the aspirations of citizens, while taking into account the needs of future generations.

To guide the discussions, participants were asked two questions:

- What living environment do you see in the area under study?
- How can the area under study complement Kirkland? How could it improve Kirkland?

The main highlights that came out of the discussions on the living environment can be summarized as follows:

- Commercial use is desired on the site, but small-sized independent stores and businesses are preferred, especially food-related, rather than commercial chains;
- The site must mainly be dedicated to universally accessible active transportation;
- The presence of nature and greenery is important, and this is an opportunity to transform the area into a pleasant environment filled with trees and flowers, including community gardens and green roofs, for example;
- The site needs to have customer traffic throughout the year, both in the summer and the winter.
- Many participants would like to see a public square in the heart of the new neighbourhood;
- The arrival of the REM should promote the development of a human-scale, diverse and complete environment;
- Participants would like for esthetics to be a focus, in consideration of the existing interfaces, by proposing quality architecture.

More specifically and as an example, participants dreamt of a diverse yet complete environment, a place where people can come together throughout the year, a cultural and institutional environment, an inclusive and family environment, etc.

In terms of complementing the Town of Kirkland, participants mentioned that this is an opportunity to:

- have a true downtown in Kirkland that is connected to the various neighbourhoods;
- create a service centre that includes local food services and recreational community services;
- bring back community spirit, greenery and a friendlier environment;
- reduce the dependence on automobiles thanks to the presence of public transportation facilities and a complete network of bicycle paths;
- develop a residence for senior citizens to keep the seniors who already reside in Kirkland in their living environment;
- create a cultural hub and more jobs, etc.

Participants created an idea wall with individual Post-It notes that described the Town of Kirkland, as they see it today. All adjectives and sites mentioned were counted and analyzed to prepare the word cloud below.

PARTICIPATORY APPROACH

Information capsule (public consultation) - March 2023 to July 2024

This information capsule produced by the Town of Kirkland presented the planning process for the Kirkland REM station reception site. The presentation aimed to provide a summary of the work accomplished since the last consultation activities and, more specifically, of the strategic vision established for the site's redevelopment. This initiative reflected the commitment of the Kirkland Town Council to keep the public informed of developments in this important file, and to continue the dialogue with citizens.

Kirkland citizens were invited to submit questions, and the answers were posted in a special section of the website grouped under the following main themes: parking, requalification process and traffic.

A number of highly pertinent comments on the requalification project were received, and the City has taken them into account in drafting the Special Planning Program (SPP).

Public consultation - Summer 2025

The consultation session required under the Act respecting land use planning and development (Loi sur l'aménagement et l'urbanisme) for the adoption of the specific urban plan is set to take place in the summer of 2025.

Fig.11. Map of peripheral components
Source: Provencher_Roy

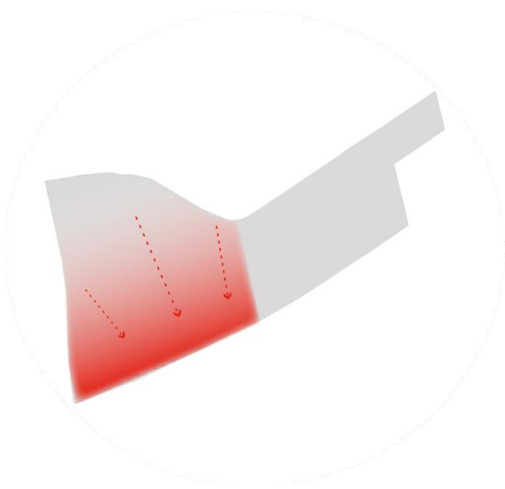


Fig.12. Map of the principle of gradation of density
Source: Provencher_Roy

- Natural habitat (Grand parc de l'Ouest and Angell Woods)
- Educational institution
- Des Bénévoles park
- Mobilty hub (REM station)
- Axe de mobilité durable structurant

2. PORTRAIT OF THE TERRITORY

This section discusses the general physical and spatial characteristics of the territory under study. The portrait describes all current territorial components and future projects in order to highlight the strengths, weaknesses, opportunities and challenges of the REM station area. Lastly, it provides a list of related issues.

LOCATION

The territory targeted for the Kirkland REM station area SPP is located along the Trans-Canada Highway (A-40) and the future REM right-of-way, which forms its southern border. The SPP includes the RioCan commercial complex, Des Bénévoles Park, Smiley Park and two schools located on Elkas Boulevard, Margaret-Manson Elementary School and the Marie Claire Academy. It should be noted that the two main entrances to the future REM station are located on the RioCan site and at the entrance to Des Bénévoles Park.

In addition, on its western border, the SPP territory is bounded by the Quebec Ministry of Transport (MTQ) right-of-way that was initially planned for the extension of Highway 440. Yet, in partnership with the City of Montreal, the MTQ will dedicate this corridor to active and public transportation, thanks to the development of the Western link connected to Antoine Faucon Street. The creation of this north-south route will partially open up areas in the north and improve the future REM station's accessibility. It will also reconnect the Grand parc de l'Ouest to Angell Woods, which is located south of the Trans-Canada Highway (A-40).

For the purposes of the urban analysis, the TOD zone of the Kirkland REM station was considered in its entirety in an effort to understand the context in which the REM station would be inserted as well as the key development issues for the SPP territory. Thus, the TOD zone overlaps the territories of the Town of Kirkland and Beaconsfield.

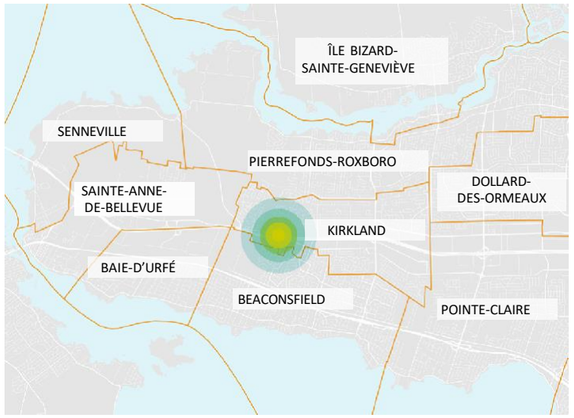


Fig.13. Location of the TOD zone in Montreal's West Island

Source: Données géoréférencées, CMM, 2020.

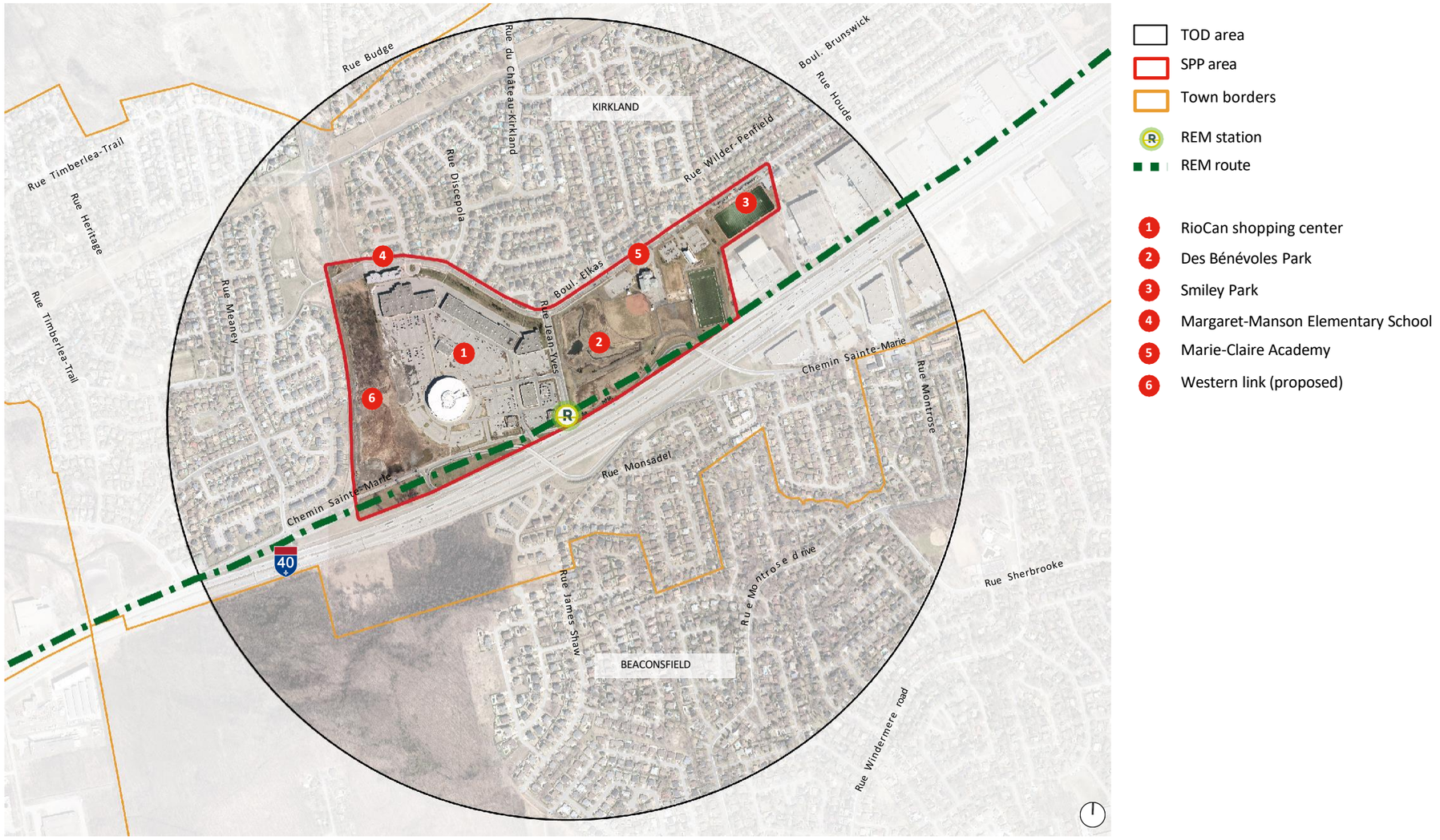


Fig.14. TOD zone of the Kirkland REM station

Source: Données géoréférencées, CMM et Agglomération de Montréal, 2020.

RioCan Shopping center

Source: Ville de Kirkland

Des Bénévoles Park

Source: Ville de Kirkland

Smiley Park

Source: Ville de Kirkland

Margaret Manson School

Source: Provencher_Roy

Marie Claire Academy

Source: D&C Express Immigration Consultation

A-440 Right-of-Way (Western link)

Source: Provencher_Roy

POSITIONING IN THE WEST ISLAND

The SPP area of the Kirkland REM station is strategically positioned due to its proximity to several major projects that are planned for Montreal's West Island.

The Anse-à-l'Orme branch of the Metropolitan Express Network (REM), which will run along the Trans-Canada Highway (A-40), will complement the Vaudreuil-Hudson commuter train line and provide a better level of service thanks to high-frequency service every 10 to 15 minutes. Although citizens of the West Island had not been privy to any announcements of major transportation projects for quite some time, they now know that they will enjoy a state-of-the-art structural mass-transit infrastructure. This major investment is also an indicator of the huge potential for developing and redeveloping the urban fabric in the vicinity of REM stations.

Located on either side of Kirkland station, Fairview-Pointe-Claire station and Anse-à-l'Orme station, which is the last station on the REM line, will have an impact on Kirkland station's positioning in the West Island.

The first of the two stations is located in the City of Pointe-Claire, approximately 4.5 kilometres from Kirkland station, close to a bus terminal serving residential neighbourhoods in the West Island. The second station is located two kilometres away in the neighbouring City of Sainte-Anne-de-Bellevue. It will attract users from the western part of metropolitan region, particularly from the Vaudreuil-Soulanges region.

Before the REM arrives, several areas will be subject to a considerable urban transformation. For example, a new high-density multifunctional neighbourhood will be built at the nearby supra-regional commercial hub in central Cadillac-Fairview. Also, Merck Frosst's former industrial lands in Kirkland were requalified and will become a residential neighbourhood with varying diversity and density.

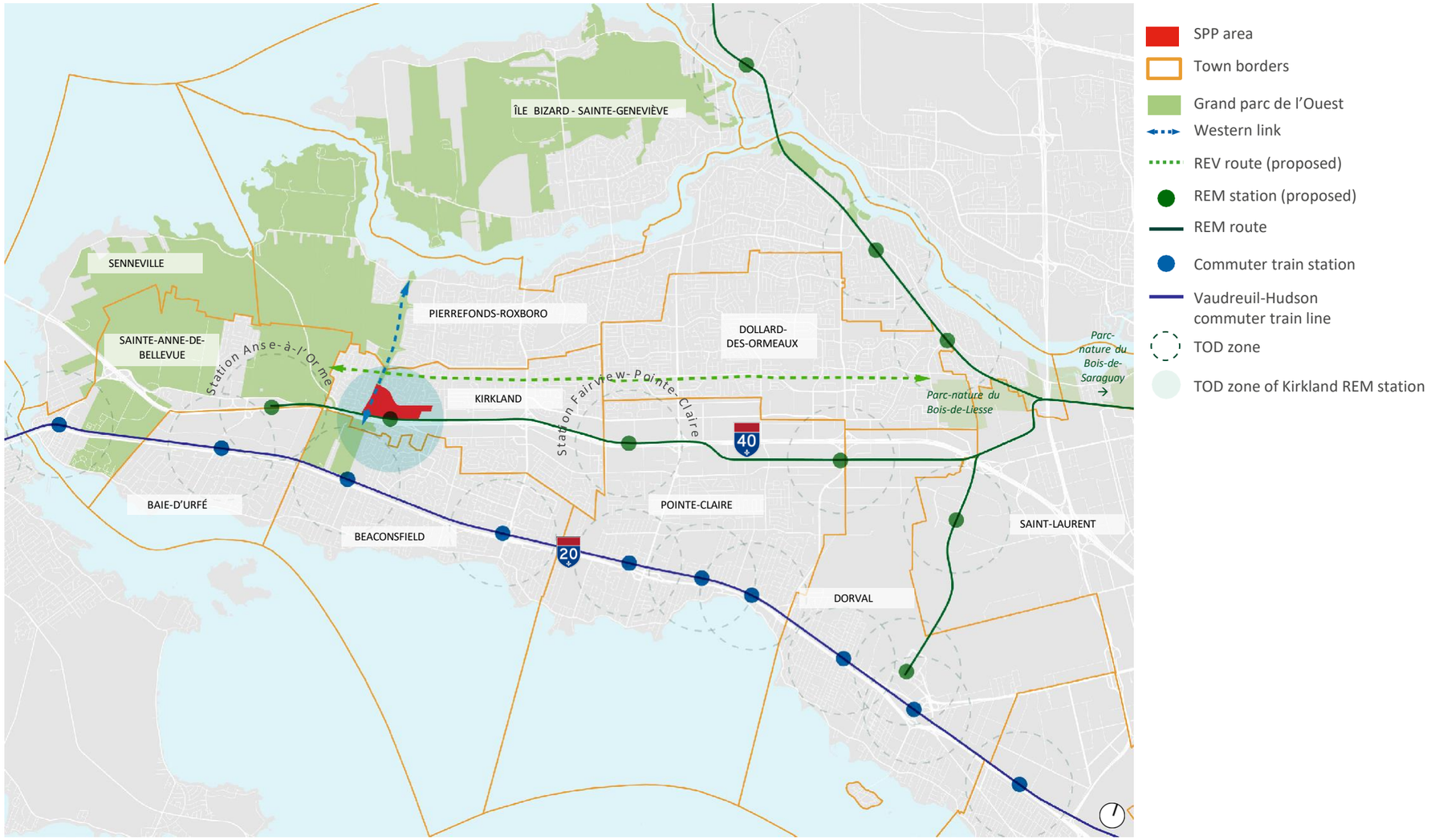


Fig.15. Major ongoing projects in Montreal's West Island

Source: Données géoréférencées, Agglomération de Montréal, 2020.

POSITIONING IN THE WEST ISLAND

Grand parc de l'Ouest

The Grand parc de l'Ouest, which is over 3,000 hectares in size, will form the largest municipal park in Canada. It will include five nature parks in Montreal's West Island: Anse-à-l'Orme Park, Bois-de- L'Île-Bizard Park, Cap-Saint-Jacques Park, Rapides-du-Cheval-Blanc Park and Bois-de-la-Roche agricultural park, in addition to 175 hectares of natural habitats acquired by the City of Montreal. The Kirkland station TOD zone territory also encompasses a section of Angell Woods, to the south of the Trans-Canadian Highway (A-40), and the Western Link that connects the woods to Anse-à-l'Orme Nature Park

Western Link (A-440 Right-of-Way ; *Lien de l'Ouest*)

The Western Link is part of the Quebec Ministry of Transportation (MTQ) right-of-way initially planned for the extension of Highway 440. An agreement was concluded between the MTQ and the City of Montreal to make this corridor a mass transit and active transportation route that will facilitate access to the Kirkland REM station. The Western link will include two lanes reserved for busses that connect to Antoine Faucon Street, as well as a shared-use bicycle path that will cross the Trans-Canada Highway (A-40) to ensure connectivity with the City of Beaconsfield and Angell Woods.

Express Bike Network (REV)

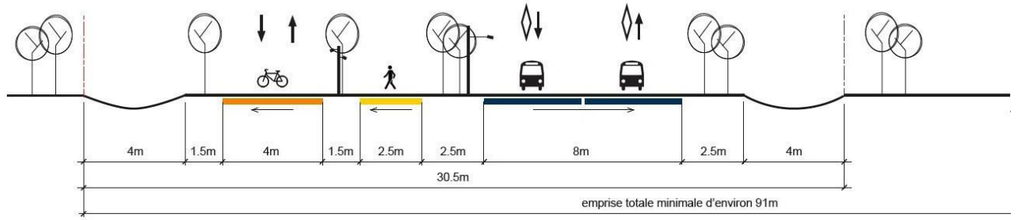
The Express Bike Network (REV) developed by the City of Montreal's administration is meant to increase the modal share of travel by bicycle, thanks to an improved bicycle infrastructure that will become more comfortable and safer. The first five sections have been completed in downtown Montreal, but ultimately the network should include a total of 17 routes. This new network of bike paths will provide a brand new alternative to utilitarian cyclists who use this network to travel across Montreal's whole territory. Although the exact final routes of the network have not been revealed, a multifunctional path might be located in the Hydro-Quebec right-of-way, to the north of the area under study. This path will cross the West Island, from Anse-à-l'Orme Nature Park to Bois-de-Liesse Nature Park, in the borough of Ahuntsic-Cartierville.


Paysages du Grand parc de l'Ouest

Source: Yves Kéroack photo

Source: Ville de Montréal

Cross-section of the transportation corridor, proposed for the western link



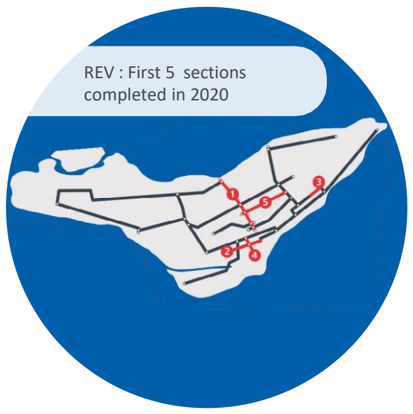
Source:Ville de Montréal


Bike path in Hydro-Québec's right-of-way, Kirkland

Source: Google Maps


Margaret-Manson school

Source: Google Maps


REV : First 5 sections completed in 2020

1. Berri / Lajeunesse / Saint-Denis
2. Viger / Saint-Antoine / Saint-Jacques
3. Souligny
4. Peel
5. De Bellechasse

DEMOGRAPHIC AND SOCIOECONOMIC PORTRAIT

The demographic and socioeconomic portrait of the TOD zone is based on data from the Statistics Canada census in 2016 for the dissemination areas included, in whole or in large part, within the perimeter of the TOD zone. This division is not an exact match of the territory under study, which is why the data shown must be interpreted with discretion. It should be noted that the TOD zone overlaps with the territories of the Town of Kirkland, to the north, and the City of Beaconsfield, to the south.

Attractive living environment for families

Within the TOD zone, there are around 7,394 inhabitants. By comparison, the Town of Kirkland has 20,151 inhabitants. It should be noted that this represents a decrease of 5.2% from 2011. Few buildings have been erected in recent years, which limits the arrival of new households.

The demographic structure of the TOD zone includes proportionately more senior citizens than people aged 15 and under compared to the Town of Kirkland as a whole (17.1% versus 15.4% at the town level). In addition, within the TOD zone, there are two times fewer people aged 25 to 45 than those aged 45 to 64 (17% versus 35%). The same trend can be observed in Kirkland. In other words, the Town of Kirkland is struggling to bring in adults under 45 years of age.

Like many cities located on the periphery of downtown Montreal, the Town of Kirkland seems particularly popular with families that have children. In that respect, the TOD zone has a large percentage of couples with two children (38%) compared to the Town of Kirkland (31.6%) and the Montreal Urban Agglomeration (22.3%). Nevertheless, a slight drop in the number of families with children was noted in Kirkland during the 2001-2016 period, which is the equivalent of losing 260 families.

HIGHLIGHTS

↘ A stable population in slight decline.

↘ Adults aged 45 and under slightly underrepresented.

↘ Many families with children.

↘ A culturally diverse community.

↘ A highly educated, high-income population.

Finally, the average household size in Kirkland is estimated at 3 people. If we look at the situation within the TOD zone, 69% of households are made up 3 or more people. Conversely, there are much fewer households with a single person (7.2%), compared to the Town (12.1%) and the Montreal Urban Agglomeration (39.4%).

English, language of the majority

Nearly 80% of the population in the TOD zone says that they are able to hold a conversation in French and English.

However, 17.3% of TOD zone residents speak only English, 2.1% only French, and 1.1% only in other languages. Furthermore, English is definitely the language of the majority, as it is spoken by 70.5% of the population at home.

Attractive location for diverse immigrant communities

In 2016, the Town of Kirkland had nearly 5,740 immigrants, i.e. over a quarter (29.3%) of its population. The majority of these people arrived in Canada twenty years ago (34% before 1981 and 21% between 1991 and 2000). The five main countries of birth of the immigrant population are China (11.3%), Egypt (8.7%), Italy (7.8%), India (6.9%) and Iran (4.6%).

Highly educated and affluent population

The TOD zone population is highly educated: more than two out of three people (63.5%) aged 25 to 64 have a university education. This percentage is higher than the percentage of the Town of Kirkland (55.1%) as a whole and well above the percentage for the Montreal Urban Agglomeration (44.8%).

This education level is reflected in the annual income of the population, both for individuals and households. The median income of Kirklanders aged 15 and up is estimated at $40,210 and the household median income is estimated at $115,381, i.e. well above the estimate for the Montreal Urban Agglomeration as a whole.

In the TOD zone, one out of four people aged 15 and up earn an annual income above $100,000. This percentage is 16.2% for the Town of Kirkland and 6.5% for the Montreal Urban Agglomeration.

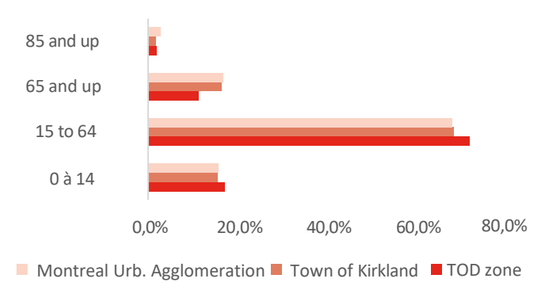


Fig.16. Percentages of the main age groups

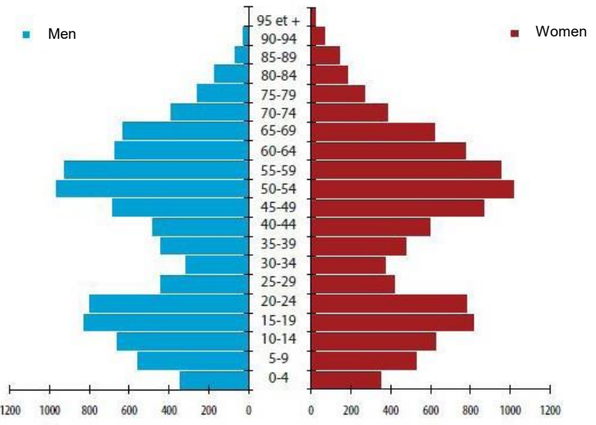


Fig.17. Age pyramid – Town of Kirkland

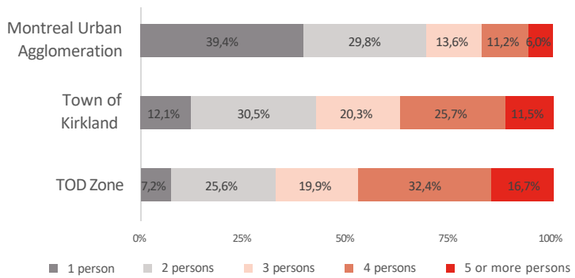


Fig.18. Household size

Immigrant status

TOD zone	Town ofKirkland	Montreal Urban Agglomeration
24,4 %	29,3 %	34 %

EDUCVATION LEVEL	TOD ZONE	TOWN OF KIRKLAND	MONTREAL URB. AGGLOMERATION
No degree	2,8 %	2,7 %	10,6 %
Secondary studies	11,9 %	16,7 %	14,9 %
CEGEP studies	22,0 %	27,2 %	27,9 %
University studies	63,5 %	55,1 %	44,8 %

Fig.19. Education level of people aged 25 to 64

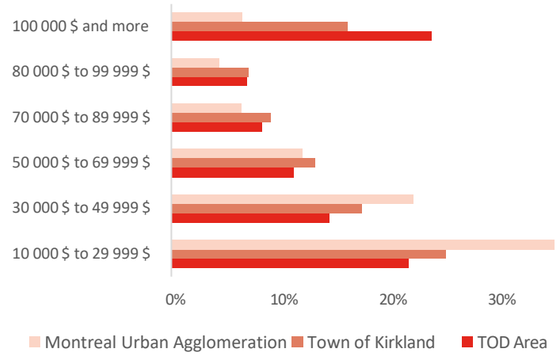


Fig.20. Income brackets of persons aged 15 and up

DEVELOPMENT HISTORY

Origins

The Town of Kirkland has its origins in the early 18th century, more specifically in 1711, when the King of France Louis XIV signed a decree founding the parish of Saint-Joachim-de-la-Pointe-Claire. Eleven years later, on March 3, 1722, it became a civil parish that would subsequently be transformed into a parish municipality on July 1, 1845. The parish municipality remained under the authority of the clergy.

The end of 1950s is a key moment in the history of the Town's development. Its neighbours to the south, Beaconsfield and Pointe-Claire, grew rapidly and attempted several times to incorporate the parish municipality into the two urban communities. However, then Mayor Marcel Meloche, supported by his fellow citizens, fiercely opposed it. His efforts would not be in vain because the Town of Kirkland officially became a municipal corporation on March 24, 1961.

The Town was named in honour of the region's National Assembly member (Jacques-Cartier riding), Dr. Charles-Aimé Kirkland, father of Marie-Claire Kirkland-Casgrain. The Town of Kirkland would develop and grow quickly, thanks to the construction of the Trans-Canada Highway (A-40).

The Growth Period

The identity of the city is rapidly transforming. Rural and agricultural landscapes are largely being replaced by residential areas, an ever-expanding industrial park, and big-box retail stores along major roadways (Highway 40 and Saint-Charles Boulevard).

Over the years, the City of Kirkland has become an important center for the pharmaceutical research industry, beginning with the establishment of the international pharmaceutical company Merck, Sharp & Dohme of Canada Ltd. along the Trans-Canada Highway (Highway 40) in the late 1960s. Other companies such as Burroughs Wellcome and Pfizer Canada followed a few years later.

Its urban fabric is developing rapidly, and the buildings reflect the trend of suburban-style real estate development. During the 1970s and 1980s, the residential area was mainly composed of single-family homes such as bungalows and cottages built on large lots. The first neighborhoods to develop were located near Montée Saint-Charles. At the end of the 1990s and the beginning of the 2000s, the residential area north of Parc des Bénévoles and the one west of the shopping center, known as Timberlea, began to expand.

Territorial Consolidation and Renewal

Since the 2000s, the City of Kirkland has experienced a certain level of stability, but the arrival of the Réseau express métropolitain (REM) in the West Island and the construction of a station within its territory signals a period of renewal. Thus, the city is entering its most recent phase of development with the announced requalification of several sectors, notably the RioCan Centre.

Thanks to the presence of several industries within its territory, the City's financial prosperity is a strength for the municipal administration and its elected officials. Moreover, the City of Kirkland enjoys an excellent reputation, as residents are proud to live there and appreciate their quality of life. Families in particular feel fortunate to live in an environment that offers high-quality residential construction as well as well-maintained parks and green spaces.

Benefiting from high-quality municipal services and a rich calendar of sports, recreational, and cultural events, Kirkland residents also enjoy participating in community life.

Town's inauguration, 1961

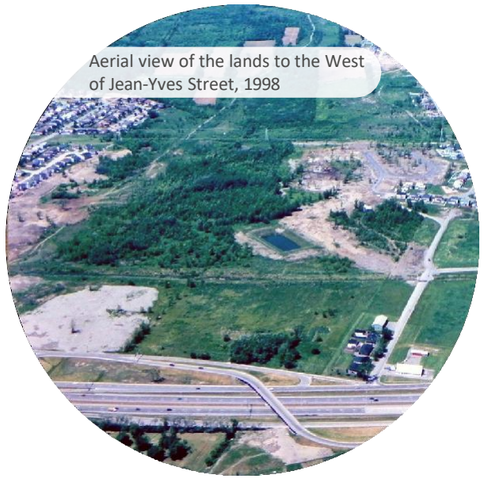
Source: Town of Kirkland

Lacey Green Street, 1962

Source: Town of Kirkland

Aerial view, 1975

Source: Archives de la Ville de Montréal



Aerial view of the lands to the West of Jean-Yves Street, 1998

Source: Archives de la Ville de Kirkland

URBAN FUNCTIONS

Land use in the TOD zone area says a lot about the suburban development approach that has been applied, as it is characterized by heavy spatial segregation between uses.

The area is marked by a predominantly residential function, which occupies nearly 63% of the territory.1 Essentially monofunctional and suburban residential neighbourhoods are developing outside the commercial and industrial functions and form the main interfaces. Institutional functions, such as Margaret Manson School and Marie Claire Academy, are also located there.

Commercial and industrial uses are located on both sides of the Trans-Canada Highway (A-40) in order to take advantage of the opportunity to showcase their services to the heavy automobile traffic. It should be mentioned that this location is not unique in the TOD zone area because most of the industries in Kirkland's territory are located along the highway. These functions account for 10% of the land use.

Although the RioCan site is mostly home to commercial activities, it is an isolated hub within a residential area that is located at the extreme west of the Town and has been somewhat in decline for a few years.

1. The percentage calculated for land use is based on the property assessment unit of the Town of Kirkland.

The highway right-of-way is an imposing physical barrier that divides the TOD zone area into two sections and occupies a sizeable portion of the territory. Public utility infrastructure, especially the highway, occupies 1.3% of the TOD zone. By comparison, 4.8% of the territory is used for the purposes of parks and green spaces. However, we should note that this percentage does not include Angell Woods or the right-of-way that was planned for the extension of Highway 440, which is currently a huge green space. Both of these large landsites are included in the 20.7% of the TOD zone area considered to be unoccupied.

Saint Charles Boulevard, located approximately 3 kilometres to the east of the SPP area is the major commercial route of the Town of Kirkland. More regional than local in its vocation, this commercial hub is consistent with the commercial offering to the south of the Trans-Canada Highway (A-40), in the City of Pointe-Claire, and includes stores, businesses and services for everyday needs (banks, grocery stores, post offices), services for semi-regular needs (shoemakers, hair salons, florists) and even services for very specific needs (pet stores, jewelry stores, professional services, electronics, etc.). As a main artery, its current configuration and the layouts of its stores and businesses (facades in the back and parking lots in the front) are characteristics that cater specifically to car drivers.

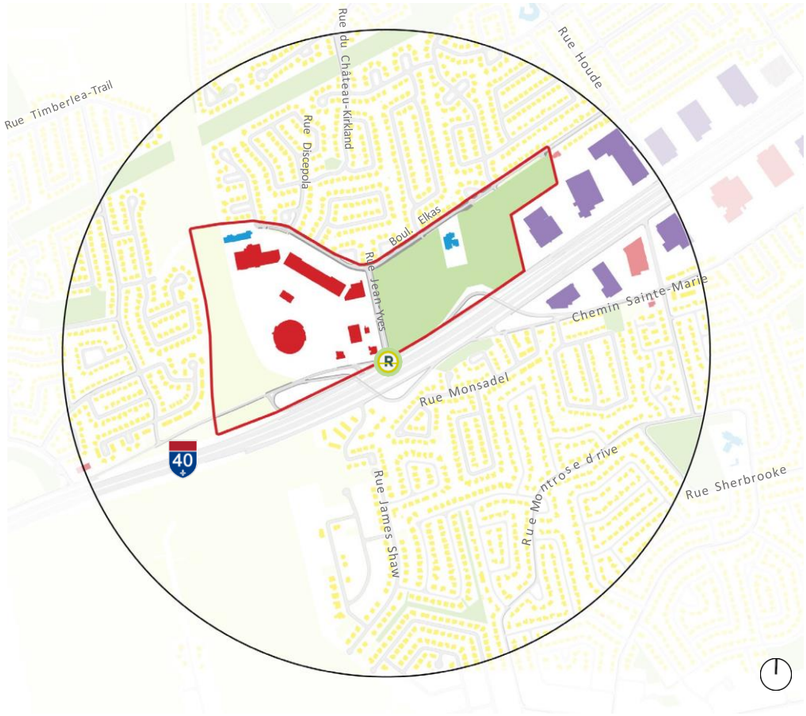


Fig.21. Distribution of the various land uses in the TOD zone

Source: Données géoréférencées, Agglomération de Montréal, 2020.

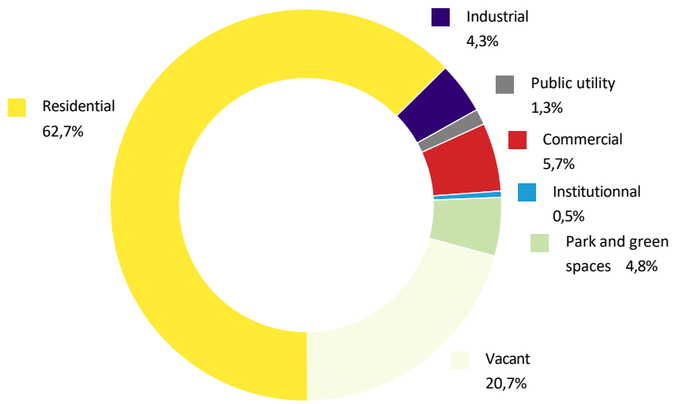


Fig.22. Land use of the TOD zone

Source: Données géoréférencées, Agglomération de Montréal, 2020.

Source: Google street view

HIGHLIGHTS

- Predominance of the residential function in the TOD zone, but the commercial function in the SPP area.
- Presence of institutional establishments inside the SPP area.
- Proximity to an employment hub with an industrial vocation, at the edge of the Trans-Canada Highway (A-40).
- Potential requalification of the RioCan site for real estate and commercial development.
- Absence of a downtown or a public square that brings citizens together within the territory of the Town of Kirkland, despite the presence of a major commercial route, Saint Charles Boulevard.

HOUSING

There are approximately 1,955 housing units within the TOD zone, based on the number of dwellings counted in the property assessment roll. These dwellings are mainly located across Kirkland's territory (65%) to the north, and within the City of Beaconsfield, located to the south of the Trans-Canada Highway (A-40) (35%).

The gross density of the TOD zone is estimated at 6.2 dwellings per hectare. This low density can be explained by the predominance of isolated single-family dwellings. This residential typology accounts for almost the entire housing stock of the TOD zone. There are a few townhouses, two-family dwellings and apartment buildings with fewer than five storeys.

It should be noted that the PMAD imposes minimum residential density thresholds for TOD zones located in the Montreal Metropolitan Community. For those located in a transportation corridor served by the metro or light-rail transit, the threshold is set at 60 housing units per gross hectare, which is ten times more than the area concerned by the TOD zone.

The built environment of the TOD zone was mostly constructed between 1985 and 2005, including the RioCan shopping centre at the turn of the 2000s. The older built environment, constructed before 1975, is located to the south of the TOD zone, in the City of Beaconsfield's territory. However, only a few buildings have been built since 2005. They are located at the edge of the highway. They are condominium-type dwellings in the form of townhouses and apartment buildings with fewer than five storeys.

HIGHLIGHTS

- ↘ A built environment constructed mostly over twenty years ago.
- ↘ Predominantly single-family homes.
- ↘ A high-value real estate market.
- ↘ Homeowners make up the majority.
- ↘ A lack of rental units and senior residences.

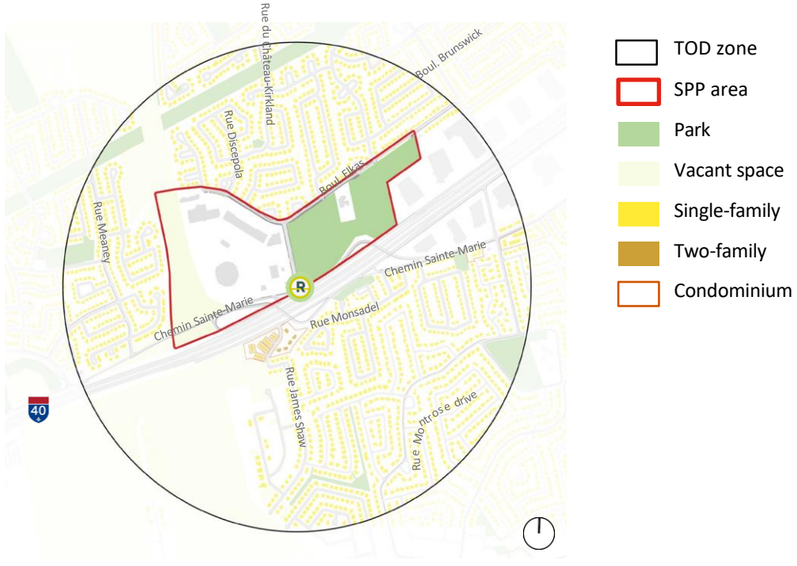


Fig.23. Distribution of residential typologies

Source: Données géoréférencées, Agglomération de Montréal, 2020.

	Homeowner	Median housing value	Households that spend + 30% of their income on housing
Kirkland	94,5%	489 726 $	15,3 %
Beaconsfield	89,8%	501 533 $	14,7 %
Montreal Urban Agglomeration	40,0%	399 785 $	30,2 %

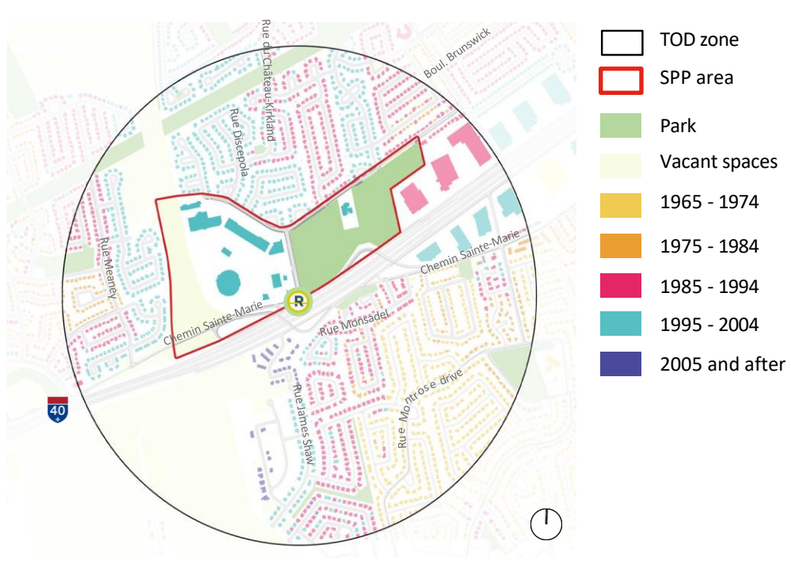


Fig.24. Construction periods

Source: Données géoréférencées, Agglomération de Montréal, 2020.

ECONOMIC ACTIVITIES

There are around 22 businesses in the TOD zone territory. Based on the types of economic activities found there, two further zones can be distinguished within the TOD zone: the site of the RioCan shopping centre and the area surrounding the Trans-Canada Highway (A-40).

The first zone alone has 19 commercial office spaces totalling 20,387 m2 (219,445 ft2). Its commercial offering is quite varied because it includes retail businesses (e.g. clothing, general merchandise, home furnishings), professional services (e.g. veterinarian's office), recreational, entertainment and leisure businesses (e.g. gym, movie theatre, recreational centre, etc.) and fast food restaurants. The RioCan shopping centre has lost a little steam in the last few years, which has resulted in more vacant spaces estimated at over 8,088 m2 (87,058 ft2).

Developed during the second half of the 1990s and in the early 2000s, the RioCan shopping centre positioned itself at that time as a top destination for Kirkland's residents and the West Island communities. However, the shopping centre has lost some of its competitive edge over the years due to the development of supra-regional commercial services offered in the City of Vaudreuil-Dorion, which draw a large pool of clients from the West Island, and with the commercial repositioning of the Cadillac Fairview shopping mall, a large regional commercial hub. Thus, the imminent arrival of the future Kirkland station and the REM, which will be located at the south end of the RioCan premises, is an opportunity to both redevelop the site and breathe some life back into the urban fabric so that it better complements the surrounding areas.

In addition, the economic activities located on the edge of the Trans-Canada Highway (A-40) are made up of heavy industrial and commercial establishments. This area has approximately 8 manufacturing, distribution, wholesale and retail businesses, among other types of businesses. Even though they are varied, these businesses require assistance from the logistics sector to receive or distribute material in connection with their activities, which explains why they are so close to a highway-type infrastructure.

Fig.25. Location of commercial and industrial activities

Source: Données géoréférencées, Agglomération de Montréal, 2020.

HIGHLIGHTS

- ↘ Predominantly commercial activity at the RioCan site, despite a decline in activity at this commercial hub.
- ↘ Employment hub with an industrial vocation, close to the SPP area.

COMMUNITY FACILITIES

Two community facilities are located within the TOD zone territory. They are Margaret Manson School and Marie Claire Academy and both are located on Elkas Boulevard. These institutions are therefore close to Des Bénévoles Park and Smiley Park.

Margaret Manson Elementary School is an English-language school affiliated with the Lester M. Pearson School Board. One of its special features is its schoolyard, which is partially located in the Highway 440 right-of-way, based on an agreement signed between the MTQ and the school. However, part of the Western Link project will be sited at that location. The location of the schoolyard will therefore need to be rethought and potentially relocated or laid out differently in the right-of-way of the future Western Link. This is a critical issue that must be taken into consideration in the planning for this area.

The Marie Claire Academy is a private bilingual school that offers a preschool and elementary school program. Its specialized program attracts student clientele from the West Island. The Marie Claire Academy can accommodate an estimated 350 students and its enrolment has been at maximum capacity for some time. The school's administration hopes to add on to the school building to meet the growing demand from families.

The area under study is also served by the Émile Nelligan Elementary School (French-language institution) and Sherbrooke Academy Senior (English-language institution), which are located just outside the one-kilometre radius of the TOD zone. We should also point out that there are no daycare centres (home-based or private) or early childhood centres (CPEs) within a one-kilometre radius of the Kirkland REM station. The only exception is Les Trésors de Marie-Claire, a private bilingual daycare centre. However, like many other educational institutions, this centre is at full capacity, which is why it is important to consider the needs of the entire population when seeking to provide appropriate quality municipal services.

Finally, the city has several facilities that accommodate community and recreational activities (library, arena, community centre, etc.), but they are all located outside the TOD zone.

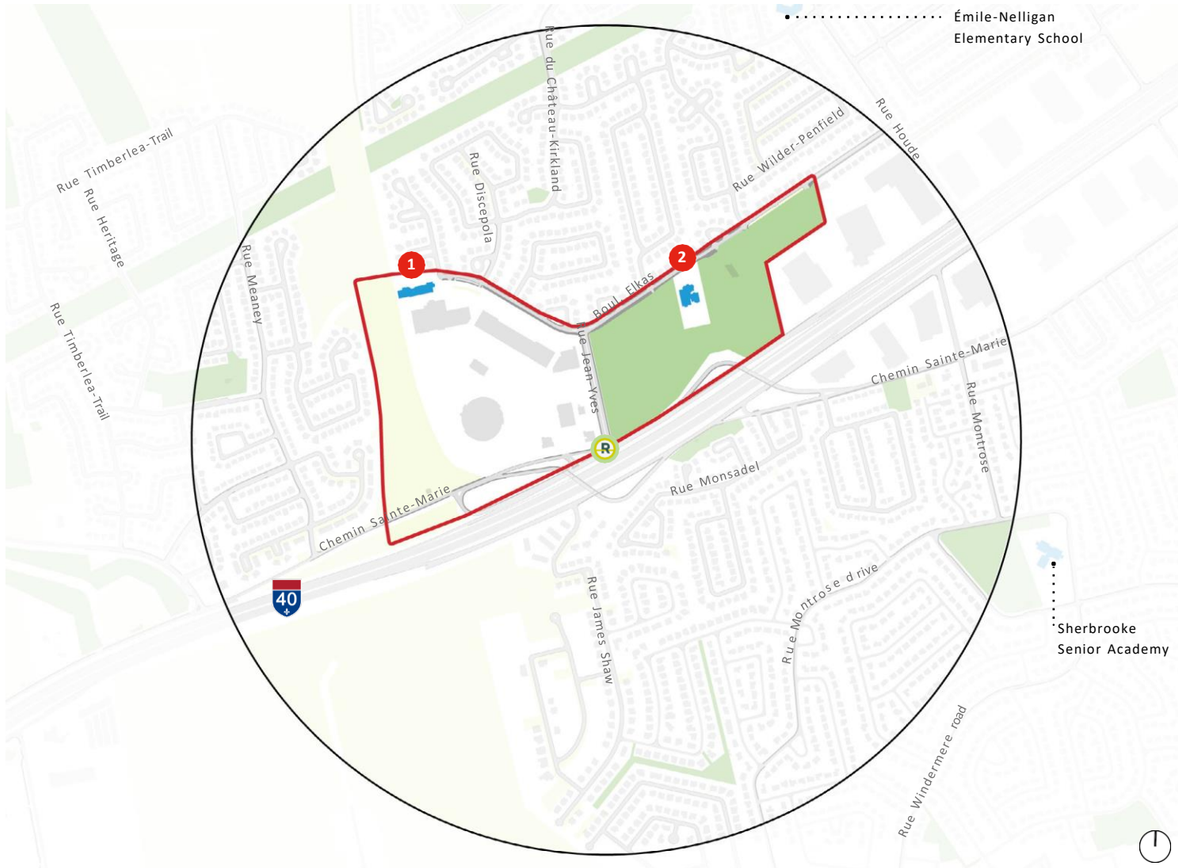
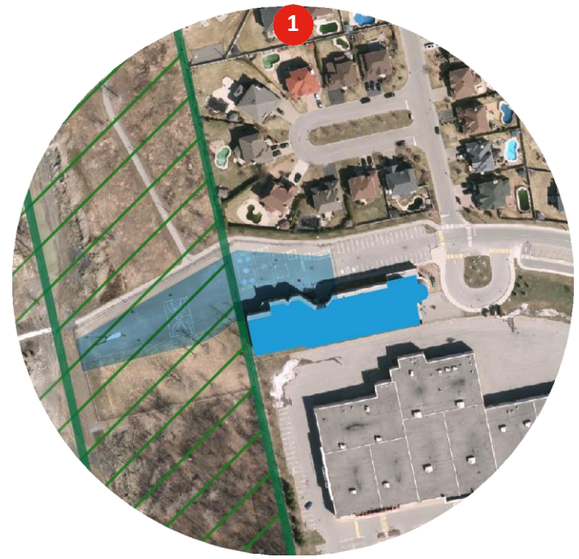


Fig.26. Location of the community facilities
Source: Données géoréférencées, Agglomération de Montréal, 2020.

HIGHLIGHTS

- ↘ Elementary-level educational institutions nearby and in the SPP area.
- ↘ Not many community facilities close to the SPP area, despite an abundant and varied array in the rest of the Town.
- ↘ Limited number of programs and services for the population aged 65 and up.

Margaret Manson School



School Schoolyard Western Link

Marie Claire Academy

School Schoolyard

PARKS AND GREEN SPACES

The TOD zone has an abundance of parks and green spaces. It has nearly 25 hectares of parks, excluding the green spaces and spaces located within the Grand parc de l'Ouest, which equals a ratio of 3.4 ha of park per 1,000 inhabitants. This ratio is 1.9 ha for the Town of Kirkland as a whole and 1.8 ha for the City of Beaconsfield as a whole.

Thus, the TOD zone has a wide range of parks that draw diverse clientele due to their vocation and types of equipment and facilities.

We should also point out that the TOD zone territory is punctuated with green islands, in the heart of the residential neighbourhoods. Although these spaces do not provide a great deal of room for playing sports or engaging in other outdoor activities, they still brighten up the immediate surrounding area and help create a peaceful atmosphere in the residential streets.
Finally, the SPP territory is enriched by Des Bénévoles Park, a municipal and regional park that serves as the host site for various events and has a range of high-quality fields or courts for playing sports that are connected by a network of multifunctional paths.

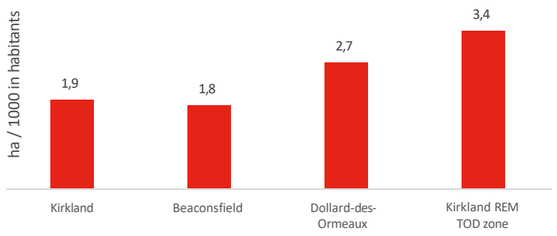


Fig.27. Ratio of park area in hectares per 1,000 inhabitants

Source: Recensement 2016, Statistique Canada. Données géoréférencées, Agglomération de Montréal, 2020, Plan directeur des parcs et espaces verts de la Ville de Kirkland, 2015, Plan directeur des parcs et espaces verts de la Ville de Beaconsfield, 2017.

Fig.28. Distribution of parks by typology and distribution of recreational and sports equipment and facilities

Source: Données géoréférencées, Agglomération de Montréal, 202, Plan directeur des parcs et espaces verts de la Ville de Kirkland, 2015, Plan directeur des parcs et espaces verts de la Ville de Beaconsfield, 2017.

PARKS AND GREEN SPACES

Green spaces, including the Angell woodland, composed of a mosaic of wetlands, are located near the area targeted by the SPP. Recognized for its ecological value, it is home to numerous threatened or endangered species. This woodland is an integral part of the Grand parc de l'Ouest project, which aims to protect more than 3,000 ha across the Borough of Île-Bizard-Sainte-Geneviève, the Borough of Pierrefonds-Roxboro, the City of Sainte-Anne- de-Bellevue, the Town of Kirkland, the City of Beaconsfield and the Village of Senneville. Other green spaces are active mobility corridors, especially the Hydro-Quebec right-of-way, which is part of the REV, as well as the Western Link, which will also have lanes reserved for mass transit and active transportation.

Grand parc de l'Ouest in short:

- An area of over 3,000 hectares, making it the largest municipal park in Canada.
- Access to over 30 km of protected shoreline along Rivière-des-Prairies and the Saint Lawrence River.
- The legacy of the agricultural period showcased by over 170 hectares of protected agricultural land.
- Diverse natural environments with excellent biodiversity in terms of plant and animal life.
- Dynamic and varied recreational programming:
  - 2 public beaches;
  - 4 boat launch ramps;
  - 1 outdoor recreational area;
  - 25 km of footpaths;
  - 18 km of bicycle paths;
  - Over 15 km of winter sports paths.

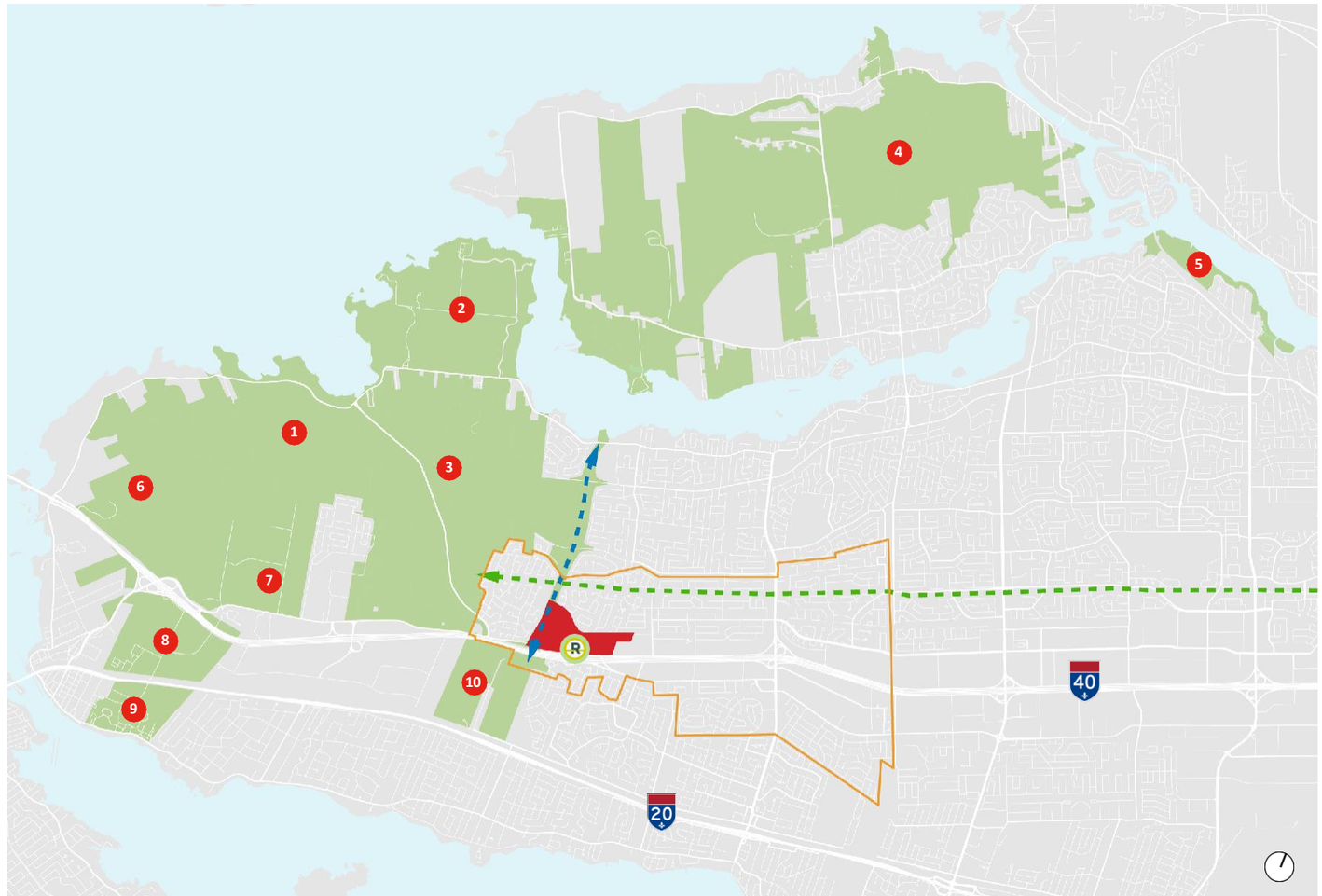


Fig.29. Location of the Grand parc de l'Ouest
Source: Données géoréférencées, Agglomération de Montréal, 2020.

HIGHLIGHTS

- ↘ Close to a number of parks with various vocations and wide-ranging types of equipment and infrastructure.
- ↘ Close to the Grand parc de l'Ouest, where visitors can enjoy an exceptional number of recreational and sports activities.
- ↘ Connected to Montreal's active transportation network, which provides access to interesting recreational and tourist attractions.

MOBILITY AND ACCESSIBILITY IN THE SECTOR

Characterization of the network

The hierarchy of the Town of Kirkland's road network is similar to the hierarchy of neighbouring cities, because it crosses mainly residential zones.

All levels are represented :

- the Trans-Canada Highway (A-40), which crosses the Town from east to west and marks a border between one-third of the Town in the south and the remaining two-thirds in the north;
- main arteries, including the service lanes that provide direct access to the highway and Saint Charles Boulevard, the only north-south route;
- secondary arteries, such as Brunswick Boulevard to the east of Saint Charles Boulevard, and a small section of Hymus Boulevard, located to the west of the Saint Charles Boulevard, whose route continues up to the Town Hall;
- collector streets, which are mainly east/west, such as Brunswick Boulevard to the west of Saint Charles Boulevard, and Sainte Marie Road;
- as well as numerous local and private streets.

However, it should be noted that there seems to be some discrepancy between the hierarchical qualification of the network and its functional use, because some routes like Elkas Boulevard and Château-Kirkland Street are classified as local streets, but used as secondary arteries or collector streets.However, when the REM arrives, the road links in this zone should be reclassified.

The arrival of the REM station is expected to lead to a change in the categorization of road links in this area.

Not far from the future Kirkland REM station, there are three types of speed limits: 40 km/h in the entire residential area, including Jean Yves Street, 50 km/h on the highway service lanes, and 100 km/h on the Trans-Canada Highway (A-40).

According to the data collected by the City of Montreal's police department (SPVM), between 2016 and 2019, all accidents that took place in the SPP area were on Jean Yves Street. They almost always involved road vehicles with material damage.

Finally, the by-laws in force limit truck traffic on residential streets that border the area, except for local deliveries.

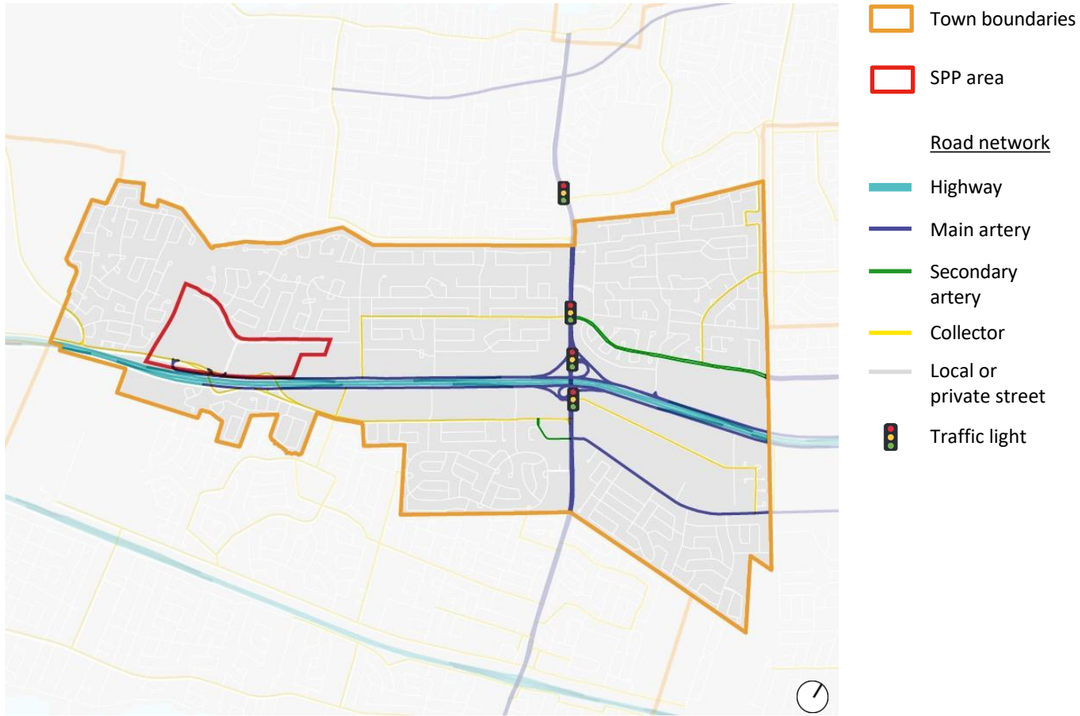


Fig.30. Characterization of the zone under study

Source : Intervia

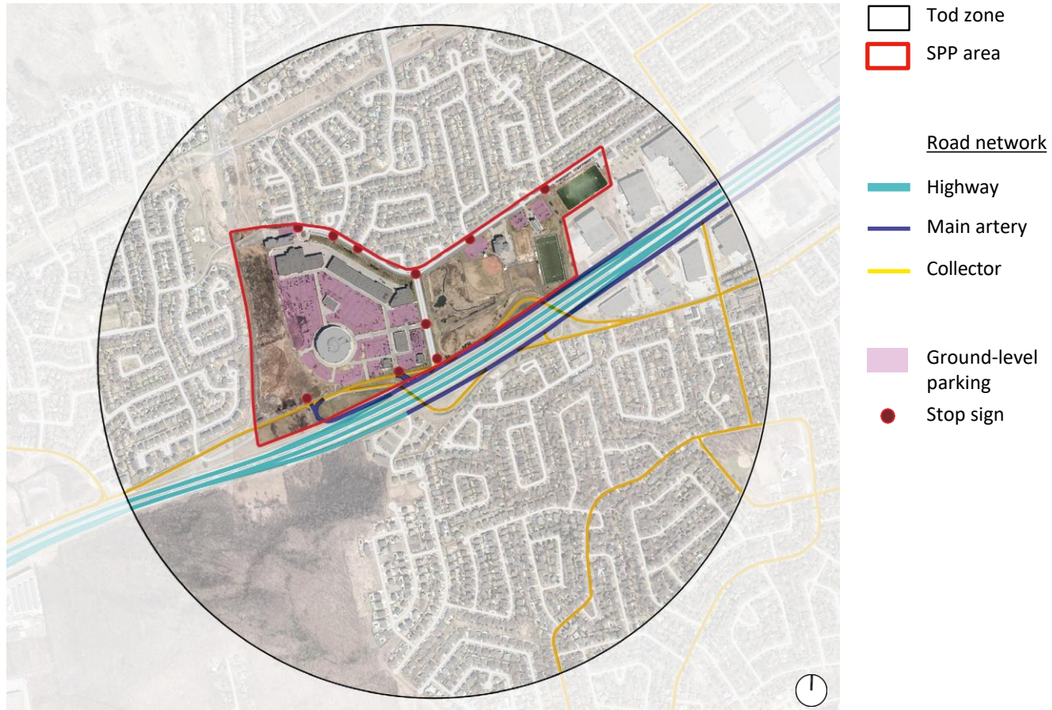


Fig.31. Road characteristics near to the area under study

Source : Intervia

MOBILITY OF PEOPLE – OD SURVEY

Because the SPP area is fairly small, the portrait-analysis is based on the trips made in Town of Kirkland as a whole in order to obtain a sufficient sample size.

The analyses were carried out based on Origin-Destination (OD) surveys in 2013 and 2018. When disaggregated data were required, they were taken from the 2013 survey, because the 2018 data were not yet available at the time when this section was being drafted.

The citizens of the Town of Kirkland mainly use automobiles, which has an impact on average vehicle ownership per household. In Kirkland, there is an average of 2 vehicles per household compared to 1.38 in the OD survey territory, which was the City of Montreal.

The trips made by residents who were leaving town during morning rush hours (AM) were made in more than half (54%) the cases for work, followed by studies (30%).

For the sake of comparison, the modal share of the trips, i.e. the percentage breakdown of the various methods of travel, was analyzed for three territories: the Town of Kirkland, the metropolitan region and the Island of Montreal. In the three cases, in increasing order, the majority of travel was done by cars, followed by public transportation and finally by active transportation. The high rate of automobile ownership in Kirkland is consistent with the modal shares observed (Figure 32), where car use was close to 90% compared to 66% for the metropolitan region.

Nevertheless, automobile use may decrease when the REM is commissioned, because the mass transit options will be greatly improved.

The analysis of the destinations and origins of the trips made by car (Figure 33) suggests that many of the trips were made within the territory of the Town of Kirkland and in bordering areas, such as Pierrefonds-Roxboro to the north, and the Town of Beaconsfield and the Town of Pointe-Claire to the south. Montreal's downtown was also one of the destinations of these trips, but not markedly more so than other areas. In sum, this describes a very clear situation of commuting between morning (midnight to midday) and afternoon (midday to midnight) trips.

In terms of the destinations and origins of trips made by mass transit, more of these types of trips were made within the borders of the Town of Kirkland. Next, we observed that the areas bordering downtown also attract the largest number of people. This can be partially explained by the structure of the mass transit network, which is primarily directed towards downtown Montreal.

Trip chains

However, the chosen method of transportation is often a constraint more than a choice. In the sociodemographic portrait, we saw that many families reside in Kirkland. This segment of the population often has more complex trip chains than others and requires multiple stops en route, such as the daycare centre, the school and the coffee shop and then finally the workplace.

Figure 34 shows the number of stops made during a trip in the morning, based on the transportation method used. Unsurprisingly, the people who have a more complex trip chain are those who mostly use automobiles, because they are more flexible than mass transit in this situation.

In the afternoon, the situation is different. Trip chains become more complicated than in the morning. More stops are made, regardless of the transportation method used. Over 40% of mass transit users will make one stop on their way home. However, it should be noted that a person is considered a "mass transit user" when they complete a portion of their trip in this way. In the vast majority of cases, users return from work and then take their car to go grocery shopping or pick up a child.

In terms of the schedule, we should note that complex trip chains (with several stops) begin around 7:00 a.m. in the morning and continue until 10 a.m. In the afternoon, when the sequences become more complex, trip chains with 3 or more stops start at noon and last until 5 p.m., which corresponds to the end of the school day. Finally, most people make a stop at 4 p.m.

In conclusion, automobile use is even greater outside of trips that are made for the purpose of work or studies.

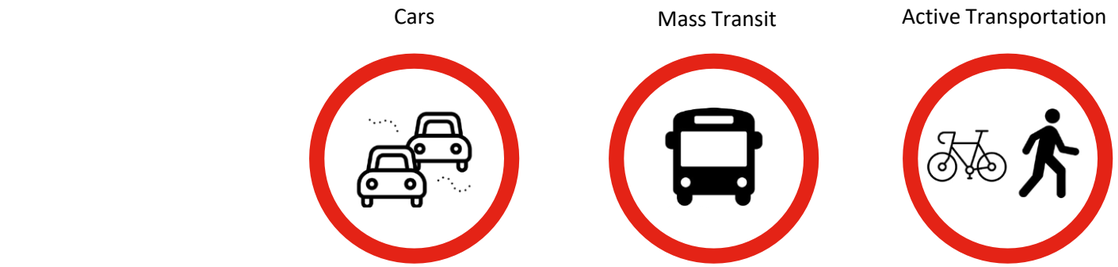


Fig.32. Modal share of trips in the morning
Source : Enquête Origine-Destination, 2013

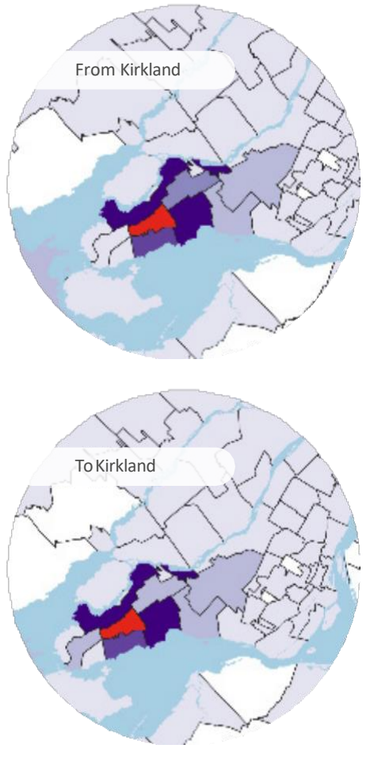


Fig.33. Destinations and origins of people traveling by car
Source : Enquête Origine-Destination, 2013

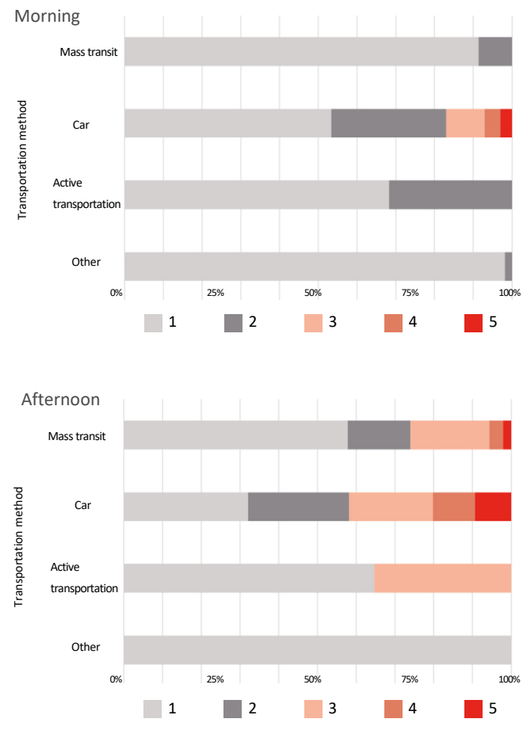


Fig.34. Number of stops made per person, based on the transportation method used
Source : Enquête Origine-Destination, 2013

MASS TRANSIT

Four bus lines cross the area under study from east to west on Sainte Marie Road and one of the two highway ramps.

Figure 26 shows that mass transit connections between north and south are non-existent, which reduces the permeability of the area and its connectivity with surrounding neighbourhoods.

Beyond the limited mass transit options, we observe that the bus service is not very frequent. Only line 425 has a slightly higher service frequency, with three passages during the rush hours, compared to two passages by lines 217, 219 and 419, with the last two lines stopping their service at 6:30 p.m.

It is important to keep in mind that line 425 is a so-called "express" bus that only travels in an eastern direction (Lionel Groulx metro) in the morning and in a western direction (Kirkland) in the afternoon. As a result, this line is mostly used for utilitarian trips between home and work during the week.

It should also be noted that the location and layout of bus stops are an additional obstacle to using the mass transit network. In fact, users coming from the opposite side of the bus stops have to cross the highway using the pedestrian paths on the overpasses, which are used by drivers.

In terms of improving the active transportation network, due consideration will need to be given not only to physical barrier crossings, with a view to reducing noise and pollution-related nuisances, but also to the specific needs of persons with reduced mobility, who cannot currently use these routes due to their lacking safety and signage.

It is noted that at the time of writing the SPP, an overhaul of the STM network was underway.

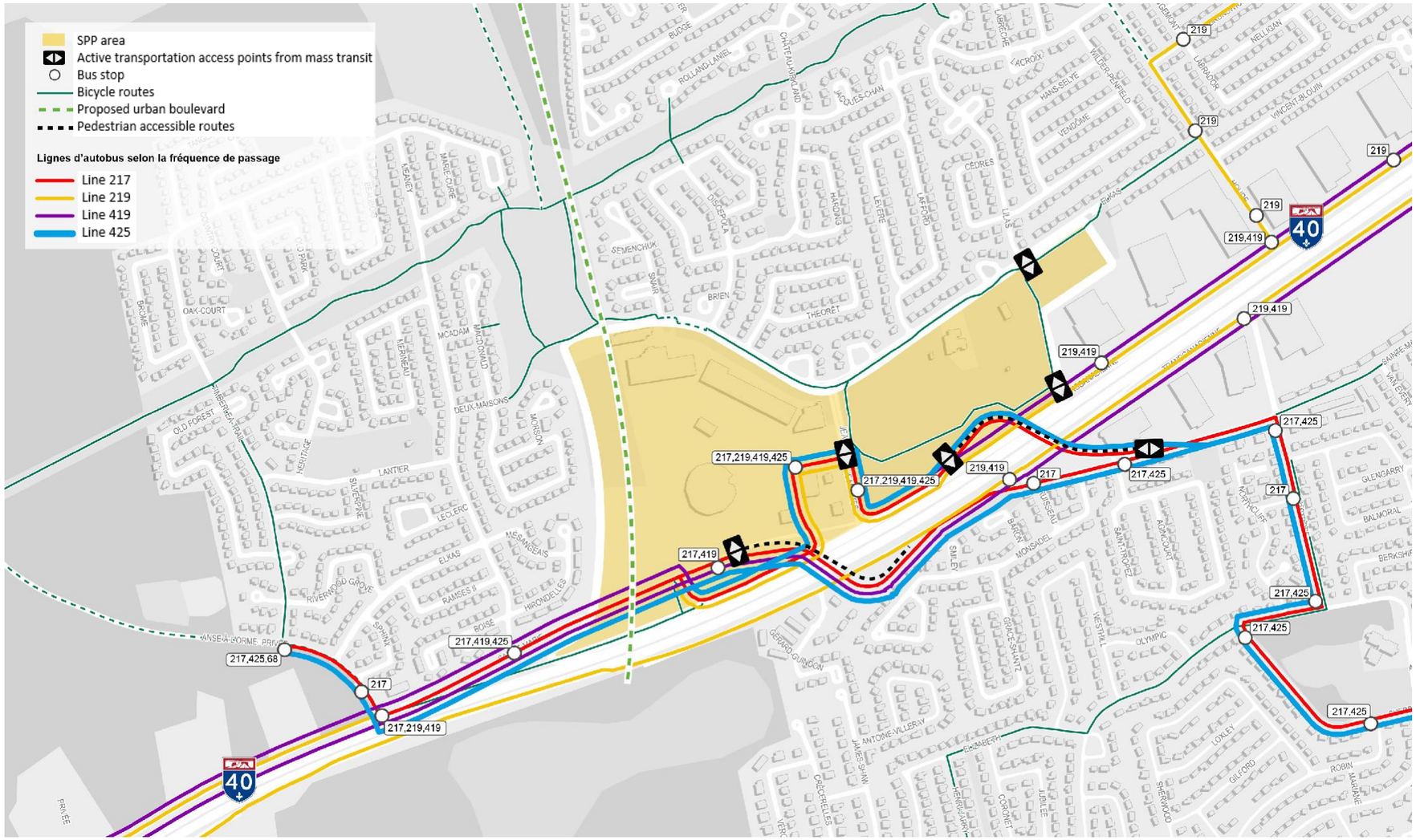


Fig.35. Mass transit network and service frequency of busses

Source: Momentum

Ligne 217. Timberlea Trail - Fairview
Ligne 219. Baie d'Urfé industrial park - Fairview
Ligne 419. John Abbott College - Fairview
Ligne 425. Timberlea Trail - Lionel-Groulx

ACTIVE MOBILITY - WALKING

A walkability analysis was conducted based on the current layout of the SPP area and surrounding environments.

Assessed on the basis of travel time from the central point of the SPP area, i.e. the future Kirkland REM station, the analysis determines the site's pedestrian potential and the radius that will be need to be reconfigured. The objective was to improve the existing infrastructure and create new infrastructure, where necessary, in order to encourage active travel and intermodality in the area under study.

According to the US Department of Transportation, many people are willing to walk up to fifteen minutes to reach a mass transit station and commute.[1] Figure 38 shows the areas covered in the time it takes to make the trip by foot, which varies between fifteen, twenty-five and thirty-five minutes.

For instance, a fifteen-minute walk is considered a utilitarian walk. In fifteen minutes, many residents in the north and west (Timberlea neighbourhood) would be able to reach Kirkland station by foot. They would also be able to reach the industrial employment hub located on both sides of the Trans-Canada Highway (A-40).

Recreationally, people are often willing to walk for over thirty minutes.[2] Based on this information and given the proximity of the Grand parc de l'Ouest to the SPP area, it was assumed that a thirty-five-minute walk would be reasonable. In thirty-five minutes, the vast majority of Timberlea neighbourhood residents would be able to reach the SPP area. They would also be able to cover a larger zone from Pierrefonds Boulevard in the north to Saint Charles Boulevard in the east and Highway 20 in the south, including the Grand parc de l'Ouest.

It should be mentioned that this map shows only the walking time in the existing road network and does not take infrastructure quality into account.

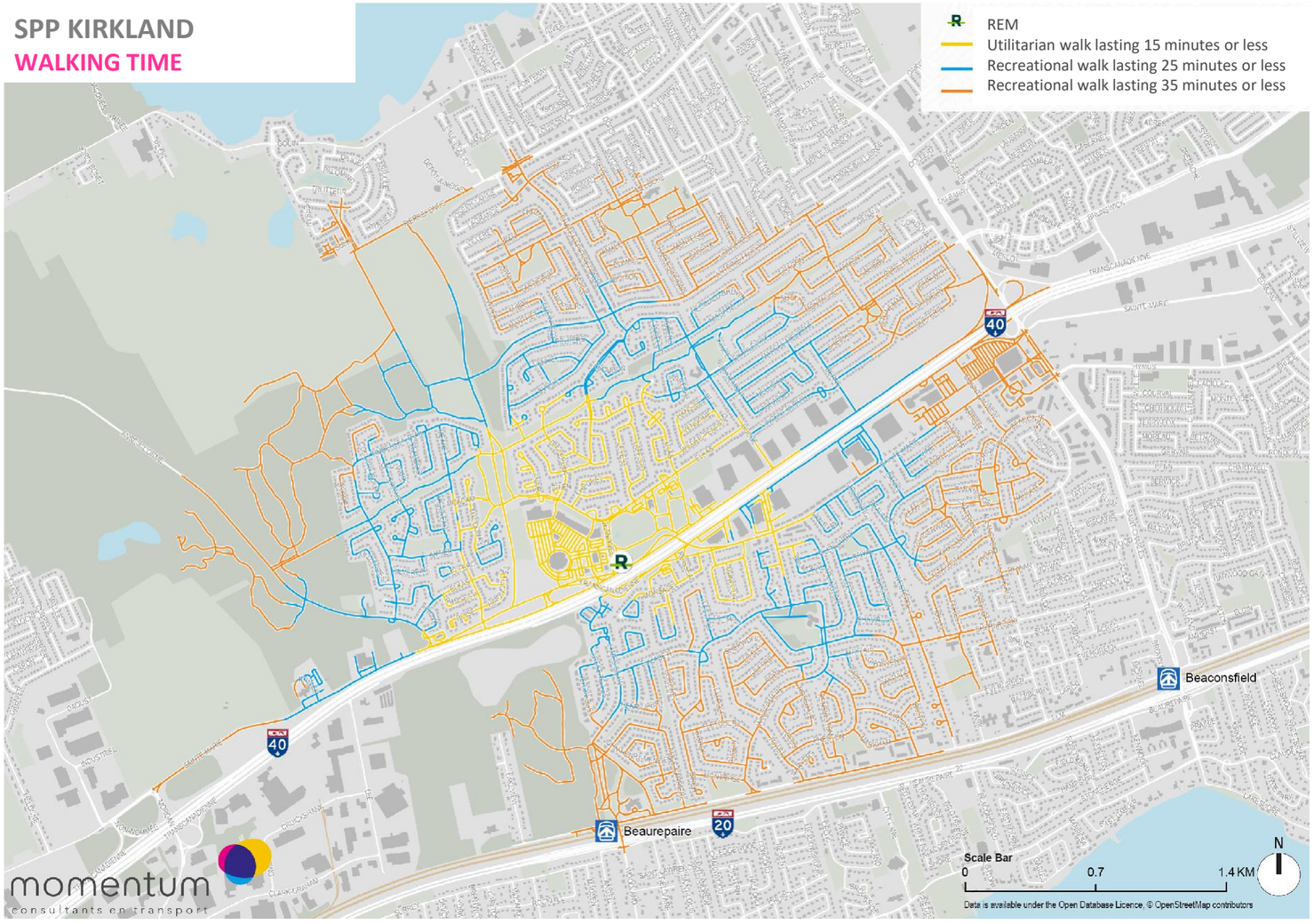


Fig.36. Walking time for utilitarian and recreational trips

Source: Momentum

1 Pedestrian Safety Guide for Transit Agencies, 2013

2 Yong Yang, Ana V. Diez-Rioux, 2013. Walking Distance by Trip Purpose and Population Subgroups

ACTIVE MOBILITY_BIKING

Just like for walking time, the central point of the SPP area is the future Kirkland REM station. A distinction between the utilitarian and recreational travel was also made.

According to a study based on the data from the Origin-Destination Survey,[1] Montrealers travel on average 3.8 kilometres by bike to go to work, which is a trip of around fifteen minutes. Based on this information, Figure 37 shows the trips made by cyclists toward the Kirkland REM station in less than fifteen minutes. These trips, which can be described as utilitarian, cover a zone that includes the residential areas located between Highway 20 and the shores of Rivière-des-Prairies, up to Sommers Street. The second travel time of twenty-five minutes pertains once again to utilitarian trips. In twenty-five minutes, residents in the neighbouring municipalities of Baie-d'Urfé and Beaconsfield would be able to reach Kirkland station.

It should be noted that the zone covered by bicycle trips of less than five minutes is clearly identical to the zone covered by walks of less than fifteen minutes.

As concerns recreational cycling, Vélo-Québec estimates that amateur cyclists in Montreal travel a maximum of 12 kilometres, which is a trip of around 40 minutes in length.[2] Based on this information and in consideration of the modal share of travel in the West Island as a whole, recreational bike trips are represented by a radius of 35 minutes from the REM station. In thirty-five minutes, it is possible to cover the entire western territory of the Island of Montreal, from Île-Perrot to Dollard-des-Ormeaux, including the City of Pointe-Claire, to the south, and Île-Bizard, to the north.

It should be noted that the travel time analyses do not take into account the quality of the existing infrastructure, a factor that will need to be assessed in order to consider the state of the existing network and the actions that need to be planned.

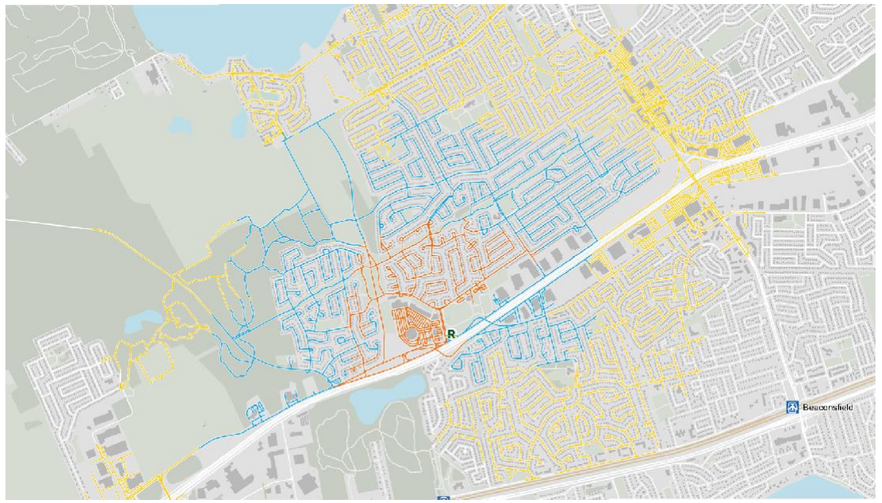


Fig.37. Travel time by bike for utilitarian trips

Source: Momentum

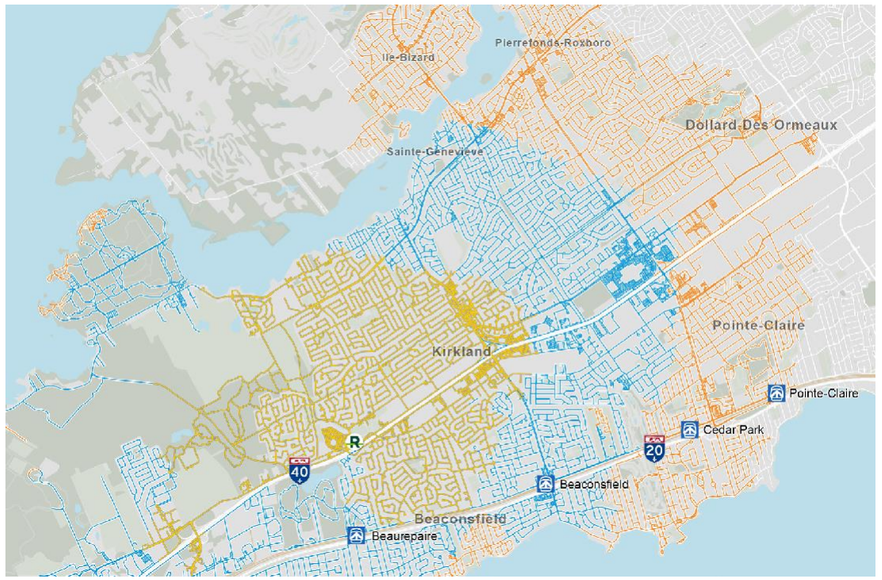


Fig.38. Travel time by bike for recreational trips

Source: Momentum

HIGHLIGHTS

Road network and mobility of people

↘ Strategic location due to the presence of the Trans-Canada Highway (A-40).

↘ Network of local streets that are used more as secondary arteries or collector streets, in the areas surrounding the SPP area.

↘ A lot of space for a ground-level parking lot on the RioCan site.

↘ Very high rate of automobile ownership that results in commuting within the borders of the Town and to downtown Montreal.

Mass transit network

↘ Non-existent north/south connection.

↘ Service focused on Sainte Marie Road, along the east/west route, with infrequent service outside rush hours.

↘ Inadequate location and layout of bus stops close to overpasses or pedestrian overpasses used by drivers.

Active mobility network

↘ Discontinuity in the bicycle network that makes utilitarian and recreational travel less effective and safe.

↘ Layouts not user-friendly or safe for pedestrians along the main routes and close to the entrances of the RioCan site.

↘ Universal accessibility principles not applied.

1 Larsen, J., El-Geneidy, A., & Yasmin, F. (2010). *Beyond the quarter mile : Re-examining travel distances by active transportation*. Canadian Journal of Urban Research : Cana- dian Planning and Policy (supplement), 19 (1), 70-88.

2 Vélo Québec. *L'état du vélo à Montréal*, 2015.

URBAN EXPERIENCE

Aside from the number and location of the various paths provided for pedestrians and cyclists in the area under study and surrounding areas, we believe it is essential to explore the concept of the urban experience as described in the Healthy Streets approach.

The aim of this approach is to determine whether users actually take advantage of these amenities and, most of all, whether the site's existing layout contributes to a sense of well-being and safety among users.

The path design is evaluated based on 10 well-being criteria such as points of interest, air quality, places to stop and rest, shade and shelter, and spaces that encourage walking and cycling. This approach promotes streets that are welcoming, safe and universally accessible.

The current layout was evaluated using these criteria and, later in this document, will also be compared to the layout proposed in the detailed design concept.

It should be noted that the existing network scored 56 out of 100, which is an acceptable result and shows potential for improvement following the site's redevelopment.

The main challenge observed in the area is crossing difficulty both within the site and in the surrounding areas. Since this is combined with proximity to busy traffic lanes such as the Highway 40 service road, the result is a reduced sense of safety among site users and a lack of encouragement to use public and active transportation on a daily basis.

The strengths observed include proximity to green spaces, community facilities and businesses as well as high-quality multi-functional infrastructure (the shared-use path along Elkas Boulevard, for example).

Furthermore, evaluating the urban experience gives us an understanding of how users perceive the existing development. The analysis of each of these well-being indicators revealed that several elements undermine the sense of comfort and safety among users.

This includes pedestrian overpasses and surrounding areas which are not easily accessible for people with reduced mobility, proximity to the highway and service road, and the overall state of repair of this infrastructure. As expected, the area's south interface adjacent to Highway 40 is the least comfortable location and, as a result, the least favourable for active transportation.

Indeed, numerous intersections have no safety measures, which gives the impression that drivers have priority. Active transit users and those with reduced mobility in particular can have difficulty crossing these intersections. Similarly, the absence of intersections along Jean Yves Street and a lack of safety measures at the existing intersection have essentially divided the area into two parts with the RioCan Centre on one side and Des Bénévoles Park on the other. Other pedestrian infrastructure is unwelcoming and difficult to access. For example, some of the crossings behind the RioCan Centre are no longer in use, which interrupts movement and can lead to conflict between users.

Pedestrian connectivity

With a view to improving and optimizing the active transportation network, a pedestrian connectivity analysis of the area under study is essential.

Figure 42 illustrates both the active transit access points from the surrounding sectors and the five points of entry to the area under study for pedestrians and cyclists. Three are located on the periphery of the RioCan site, one at Des Bénévoles Park and Sainte Marie Road, and one opposite Smiley Park. Those close to the shopping centre are deemed unsafe and unwelcoming because they do not facilitate intuitive movement within the area. This is why we can see several desire paths in this space which is devoid of active mobility infrastructure.

This can result in increased conflict between users who must cross huge parking lots and driveways along Sainte Marie Road in particular.

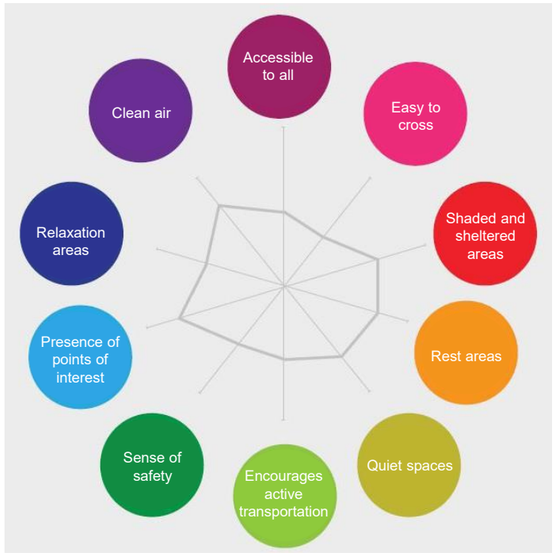


Fig.39. Evaluation of the existing layout (Healthy Streets approach)
Source: Momentum

Fig.40. Analysis of pedestrian connectivity
Source: Lucy Saunders_graphisme et Momentum_analyse

Source: Google Map

URBAN STRUCTURE

Two primary urban structures characterize the TOD zone sector. Their features are a reflection of their primary uses.

On the one hand, the residential areas along the SPP territory stand out because they make up an organic network of roads that end in a loop. Organic road networks are common in suburban housing developments and are rarely connected to arterial and collector street networks, which prevents through traffic. It is worth nothing that the Timberlea sector of the residential neighbourhood has very limited access to the surrounding urban environment.

These areas are made up of low-density residential neighbourhoods that typically contain lots of the same shape and size, each of which has a single-family dwelling. As a result, the built environment is small in size and fluctuates between buildings with one and two storeys.

On the other hand, the areas where economic activities are concentrated have an urban structure that is articulated around the Trans-Canada Highway. Indeed, the sites along this route are characterized by direct access to the highway service road and by the almost complete lack of connections with the network that serves the municipal territory.

Thus, the urban structure of the industrial and commercial area is utilitarian, focuses on increased accessibility of the highway network, and benefits from the visibility provided by this busy route. This area shares few interfaces with the residential neighbourhood.

Furthermore, the RioCan site, whose high concentration of establishments make it a commercial destination, has a network of private streets that direct the flow of travel within the site.

The industrial and commercial area is made up of heterogeneous lots. The lots are large in size and irregularly shaped as they are each adapted to a specific economic use.

Lastly, buildings in the SPP area are large in size and have one or two storeys. It is worth nothing that the industrial, commercial and institutional buildings are higher than the residential buildings.

While the buildings in the area along the highway have a large footprint, vast outdoor spaces are used exclusively as parking lots and loading bays. Furthermore, these buildings are separated from the service road by approximately 25 metres of front setback. However, part of this space is used as a right-of-way for REM infrastructure.

ARCHITECTURAL EXPRESSION

Split-level

Cottage

Commercial architecture

Industrial architecture

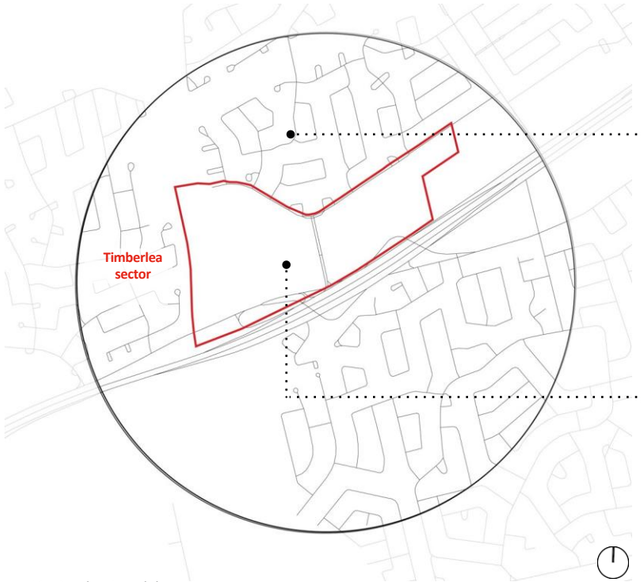


Fig.41. Road network layout

Source: Données géoréférencées, Agglomération de Montréal, 2020.

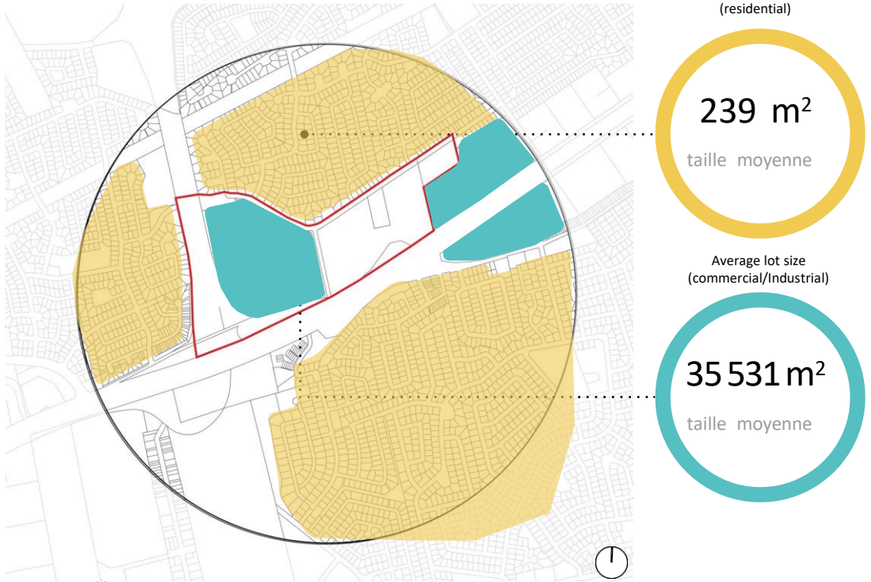


Fig.42. Parcel layout

Source: Données géoréférencées, Agglomération de Montréal, 2020.

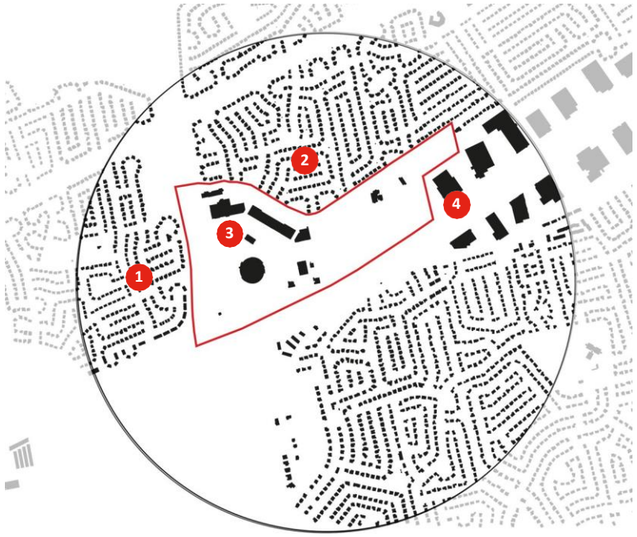


Fig.43. Built form of buildings

Source: Données géoréférencées, Agglomération de Montréal, 2007.

URBAN CONDITIONS

Urban heat islands linked to paved areas

Heat islands, locations where the ambient and surface temperatures are highest, can be found across the territory in places with extensive paving and little urban canopy. This primarily includes the RioCan site. Its vast paved parking lot makes up one of the largest heat islands in the West Island. Moreover, heat islands are present along the highway right-of-way and surrounding area where there is a concentration of various industrial and commercial establishments. These sites are noticeably hotter than spaces with denser vegetation cover. We should bear in mind that the phenomenon of heat islands negatively affects human health, quality of life, the health of ecosystems, and air and water quality.

Canopy concentrated in certain locations

We can see mature and dense canopy in the oldest residential neighbourhoods to the south of the TOD zone, particularly Angell Woods. Its high-quality forest cover is recognized as a natural component that must be conserved and protected. However, the territory targeted for the REM station SPP has little vegetation cover. Even within the parks and green municipal spaces, there are few trees and they cover only a tiny fraction of the site because a large number of sports facilities prevent tree planting. However, a large strip of woodland that is similar to fallow land can be seen in certain locations in the future right-of-way for the Western Link. Thus, certain trees will have to be felled during the construction phase.

The sun’s path and prevailing winds to consider

In order to optimize the potential passive sunlight of the built environment and avoid creating wind corridors, the sun's path during equinoxes and solstices as well as the analysis of prevailing winds are factors to consider in transforming the SPP territory. Analyzing prevailing winds shows that they mostly blow from the west and northwest to the east, which explains the presence of a wind corridor in Des Bénévoles Park, although the winds are generally light (below one knot). For this reason, the results of a wind analysis must be taken into account for the development of the RioCan site to limit, where possible, wind corridors close to public spaces in particular.

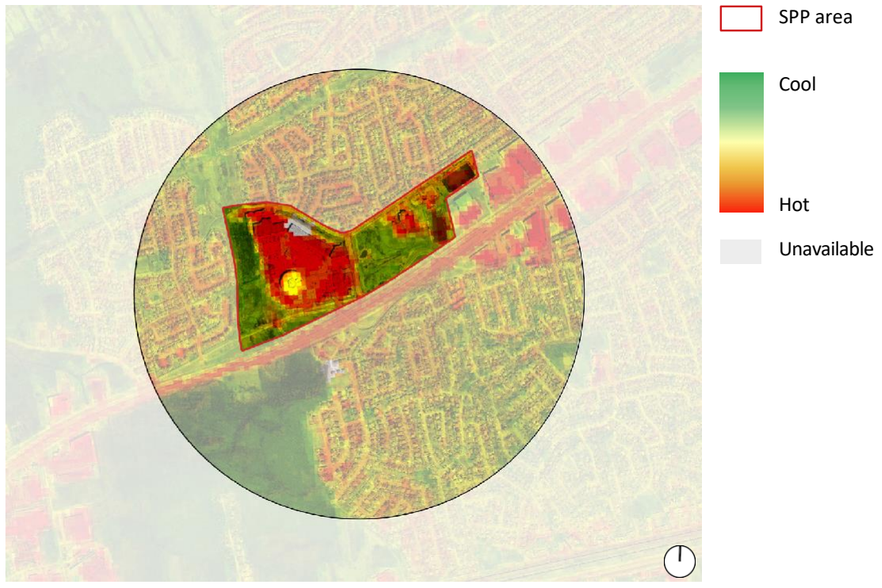


Fig.44. Urban heat island
Source: Institut national de santé publique, 2019.

Fig.46. Canopy
Source: Données géoréférencées, Agglomération de Montréal, 2020.

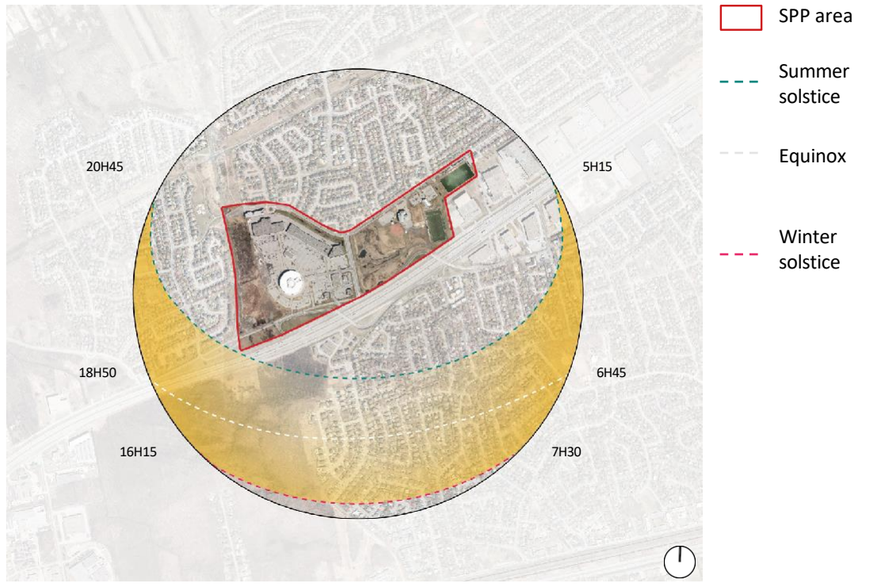


Fig.45. Sunlight during the summer solstice
Source: Sun Calc

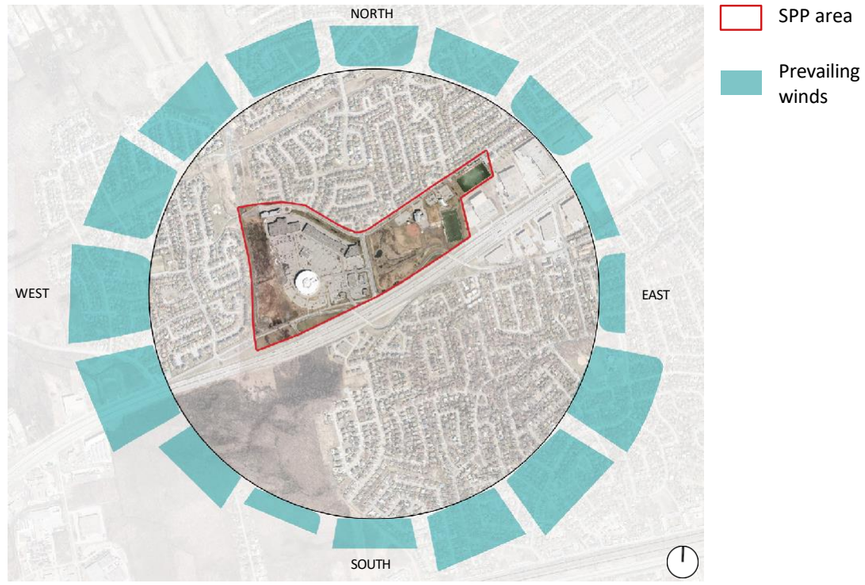


Fig.47. Prevailing winds (measured at the Beaurepaire meteorological station 2 kilometres from the SPP territory)
Source: Wind Finder

PHYSICAL AND ANTHROPOGENIC CONSTRAINTS

The TOD zone is structured around certain physical and anthropogenic constraints that are worth analyzing.

Anthropogenic constraints that create physical barriers

The Trans-Canada Highway is the primary physical barrier in the TOD zone. It can be crossed at two locations only, using highway ramps. This route thus splits the territory into two distinct sections, the north and the south. This visual and spatial fracture is emphasized by the elevated structure of the REM which connects to the highway right-of-way. The presence of these transportation infrastructures and the disruptions they cause (noise, vibration) impose limitations regarding the development of the territory, as described in the Planning Context section.

The Hydro-Québec right-of-way, on which a 120 kV power line stands, is also a development constraint in that no building may be constructed there. However, it could be developed in different ways. For example, a bicycle path that connects the West Island from Anse-À-L'Orme Nature Park to Bois-de-Liesse Nature Park crosses this right-of-way. Among other things, its potential recreational, ecological, landscape, cultural and social development is explored in the master plan specific to the Hydro-Québec right-of-way.

The MTQ right-of-way where the Western Link is connected is also a physical barrier that separates the Timberlea residential neighbourhood from the heart of the TOD zone. Cyclists and pedestrians can cross this strip at several locations. The addition of new intersections during the development of the Western Link will enhance these connections.

Lastly, there is a vegetated slope along the northern boundary of the RioCan shopping centre site. This buffer zone creates an interface between the rear facades of the commercial buildings and the adjacent residential neighbourhood and serves as a visual barrier. That being said, this shoulder can be crossed at certain points only using informal routes, most of which appear to be desire paths, which are trails created over time by a series of pedestrians choosing the same route.

Natural constraints that affect potential urban development

With regard to natural constraints, there is mature canopy and wildlands on the planned right-of-way for the Western Link, which form wooded areas at several locations, including the RioCan site.

As an integral part of the Grand Parc de l'Ouest, the Conservation designation covers the Angell woodland and protects it from any urban development. A rainwater retention basin is located in Des Bénévoles Park. This site is surrounded by a fence and is not accessible to the public. Its function is to collect water from the Rivière-à-l'Orme drainage basin during heavy rain and thereby reduce the pressure on the municipal network.

HIGHLIGHTS

- ↘ A site enclosed by transportation infrastructure and physical barriers.
- ↘ Nuisances linked to transportation infrastructure.
- ↘ Natural components to be preserved.

Fig.48. Anthropogenic constraints

Source: Données géoréférencées, Agglomération de Montréal, 2020.

Fig.49. Natural constraints

Source: Données géoréférencées, Agglomération de Montréal, 2020.

REQUALIFICATION POTENTIAL

Requalification refers to the demolition and reconstruction of a site or construction in an underutilized landsite, such as a paved parking lot. These spaces provide long-term redevelopment opportunities that involve making significant changes to the urban fabric and the function of the targeted sites.

In light of this, the RioCan shopping centre site may be the primary requalification opportunity within the TOD zone sector.

This SPP thus focuses on the requalification of the Riocan site identified in figure 50 herein, which represents a gross surface area of approximately 147 754 m^2.

The site's potential for redevelopment is amplified by the presence of structuring public facilities, infrastructures and projects located in or near the territory covered by the SPP, namely the opening of the REM and Kirkland station, the presence of the Des Bénévoles park and its recreational facilities, the redevelopment of the western link and schools. Although the SPP does not identify any potential for the requalification or rehabilitation of these elements, they must be taken into account in the preparation of the present planning document.

Source: Provencher_Roy

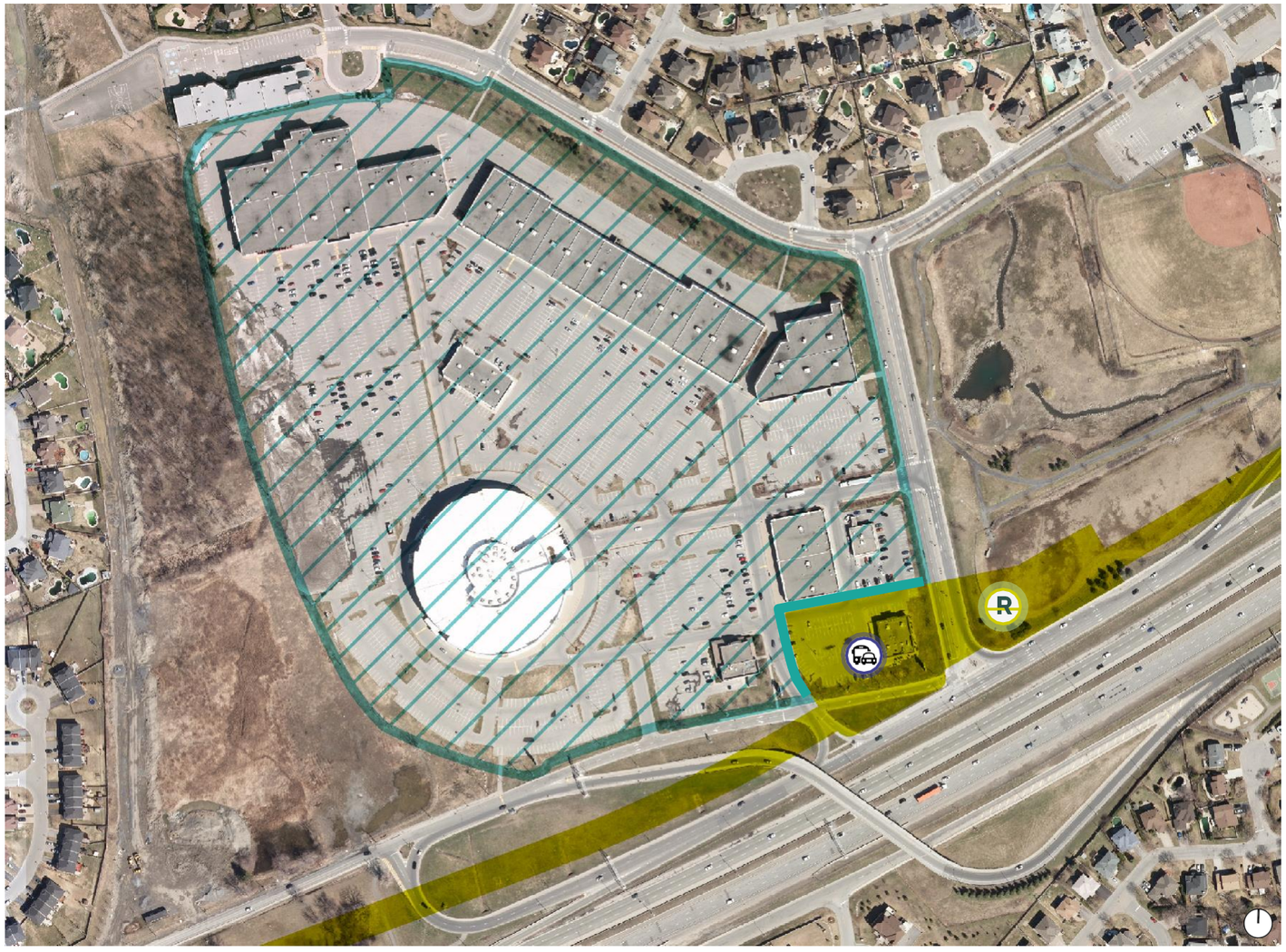


Fig.50. Requalification potential
Source: Données géoréférencées, Agglomération de Montréal, 2020.

Surface area of the RioCan site

147 754 m^2

STRENGHTS AND WEAKNESSES

Given the portrait of the territory, several strengths and weaknesses have been identified and are summarized below.

STRENGTHS	WEAKNESSES
Strategic positioning where several existing core transit networks (highway) intersect or will be linked (REM, REV, Western Link), which promotes intermodality.	Site enclosed by transportation infrastructure and physical barriers.
Presence of a local active transit network that facilitates north/south connections using overpasses above Highway 40.	Proximity to the Trans-Canada Highway, a heavy-duty vehicle infrastructure that generates significant sound nuisance.
Diverse uses within the boundary of the territory concerned by these development plans, which attracts a wide range of users.	The arrival of the REM's elevated structure, which will generate other forms of nuisance, visual in particular.
Proximity to community facilities, including educational institutions.	Decline of the commercial vibrancy of the RioCan site and its appeal across the West Island.
Proximity to parks and green spaces with various functions that contain a wide range of equipment and infrastructure.	An abundance of paved parking lots, which is suboptimal use, particularly where they are close to major mass transit infrastructure.
Proximity to the Grand parc de l'Ouest, which will be Canada's largest municipal park, thereby promoting biodiversity and offering new recreational and sports activities close to nature without leaving the Island of Montreal.	A lack of alternatives in the housing offered due to the homogeneous nature of the housing stock (typology, land tenure, purchase cost, etc.), which fails to meet the needs of certain clientele (aged 25 to 45, and 75 and over).
Proximity to a metropolitan active transportation network that provides access to recreational tourism places of interest (REV in the Hydro-Québec right-of-way linking the Grand parc de l'Ouest to Bois-de-Liesse Nature Park).	Increased use of local streets due to the scarcity of collector and arterial routes that channel traffic.
Surrounding landscape that features extensive vegetation cover (Angell Woods, Grand parc de l'Ouest, etc.), which sets Kirkland station apart from other stations on this REM line.	Paved areas that amplify the urban heat island phenomenon.
Presence of a core east/west axis, Elkas Boulevard, which lacks facilities that encourage active travel.	High car usage resulting from a range of factors.

OPPORTUNITIES AND CHALLENGES

The portrait of the territory has revealed opportunities and challenges that will be addressed during this planning exercise. They are set out below.

OPPORTUNITIES	CHALLENGES
Owned by a real estate group, which facilitates concerted planning for the territory.	Take the needs of all stakeholders involved into consideration.
Vast surface area of paved parking lots on the RioCan site, which offers incredible potential for redevelopment and requalification.	Adapt the development to the capacity of the Town of Kirkland's underground and road infrastructure.
Local and human-scale character of the RioCan site due to its defined physical boundaries (Western Link, embankments between residential neighbourhoods, Jean Yves Street, Trans-Canada Highway).	Create a living environment across the Town while strengthening its community spirit.
Intensified urban activity with the arrival of the REM, which will support the development of a unifying and dynamic space for the entire population.	The issue of the project's social acceptability in light of the potential increase in through traffic in the area following the arrival of the REM.
Improved accessibility of living environments and employment sectors close to the site..	Reduce nuisances created by the transportation infrastructure through the integration of noise mitigation measures.
Repositionnement des activités commerciales et renouvellement du pôle de destination du site de RioCan.	Improve space sharing between car users and mass transit and active transportation users.
Enhancement and diversification of residential typologies to meet the various needs of the population.	Promote the coexistence of various modes of mass transit.
Connectivity of a range of green spaces and natural environments near the site.	Encourage modal transfer to attract new mass transit users who have complex trip chains.
Animated public spaces that complement the existing spaces.	Integrate new uses on the south face of the RioCan site while respecting the requirements set out in the Montreal Urban Agglomeration Land Use and Development Plan related to nuisances and constraints generated by a traffic lane with a wide access point.
Connection of the large green spaces, such as Western Link, the *Grand parc de l'Ouest* and Des Bénévoles park through the RioCan site redevelopment project	Maintain existing businesses on the RioCan site in the medium term and require phased development that is adapted and flexible.
Promotion of the urban environment through the addition of facilities and measures that encourage active travel.	Urban and architectural integration of the redevelopment project in nearby neighbourhoods characterized by a low-density homogeneous built environment (between one and two storeys).

SUMMARY OF DEVELOPMENT FACTORS

The development factors identified as strengths, weaknesses, opportunities and challenges are spatialized opposite

- Natural environment (*Grand parc de l'Ouest* and Angell woods)
- Des Bénévoles Park
- Educational institution
- Mobility hub (REM station)
- Structuring sustainable mobility axis

Fig.51. Location of commercial and industrial activities

Source: Données géoréférencées, Agglomération de Montréal, 2020.

3. VISION AND OBJECTIVES

The vision statement and underlying design principles are the basis for the SPP area design guidelines. Four goals broken down into specific objectives are the cornerstone of the spatial organization concept presented at the end of this section.

VISION STATEMENT

Through this planning document, the Town of Kirkland wishes to implement, over the next 15 years, the following vision for the Kirkland REM station SPP area. This ambitious project involves providing a new comprehensive and high-quality living environment, with a new urban core that offers downtown living.

Located between the future *Grand parc de l'Ouest* and the Kirkland REM station, the new neighbourhood in the heart of the SPP will offer a truly urban experience and a great place to live, work and enjoy leisure activities. A stone's throw from an exceptional natural landscape, it will serve as a gateway to one of the most popular recreational tourism destinations on the Island of Montreal, the Grand parc de l'Ouest.

Rooted in the philosophy of new urban trends that promote a harmonious coexistence of different modes of transportation, the development of this new intermodal transportation hub will prioritize active modes of transportation in a secure and welcoming environment.

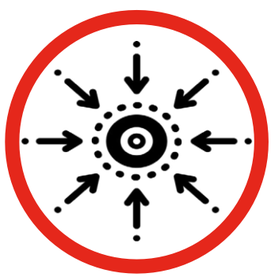
This new multi-functional living environment will offer uses and services that complement those already available in the town. It will be developed using graduated density that will allow for integration with the existing residential neighbourhoods in a spirit of social acceptability.

With a focus on mixed and complementary uses, diversification of the residential offering and inclusive and flexible public spaces, the neighbourhood will contribute to the emergence of a dynamic and pleasant living environment. These assets will also serve to create a high-quality neighbourhood life and strengthen the sense of belonging.

Lastly, the unique nature and appeal of this new cutting-edge living environment with regard to sustainable development will reflect the values cherished by the Kirkland community. Young adults, families and seniors who regularly spend time in this neighbourhood will particularly appreciate how the natural and man-made landscapes are showcased with a view to increasing biodiversity and the quality of municipal services offered.

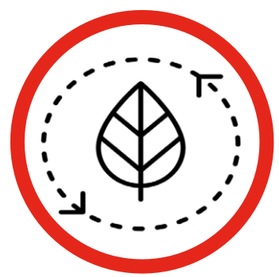
DESTINATION

INTERMODAL



CENTRAL

QUALITY OF LIFE



DURABILITY

OBJECTIVE 1

An inviting, dynamic and unifying living environment for all members of the community.

- ↘ OBJECTIVE 1.1 Create a bustling neighbourhood that fosters social, recreational and cultural interactions.
- ↘ OBJECTIVE 1.2 Increase the permeability within the SPP area while preserving the tranquility of neighbouring areas.
- ↘ OBJECTIVE 1.3 Intensify activities close to the Kirkland REM station by offering complementary uses that include a horizontal and vertical mix, while respecting the capacity of road and underground infrastructure and the town's goals with regard to density.
- ↘ OBJECTIVE 1.4 Develop a diversified residential offering to meet the needs of a varied clientele.
- ↘ OBJECTIVE 1.5 Connect public spaces and green spaces to promote a recreational tourism network that extends to the *Grand parc de l'Ouest*.


Animated public square
Village of Rosemont, Illinois, États-Unis


Diversified residential offering
Quartier général, Montréal, Canada


Horizontal and vertical mix
Projet esplanade Cartier, Montréal, Canada


Connected public spaces
Médiathèque Françoise Sagan, Paris, France

OBJECTIVE 2

An inclusive and sustainable living environment where the built environment becomes part of the existing landscape.

- ↘ OBJECTIVE 2.1 Prioritize a compact built environment to optimize land use.
- ↘ OBJECTIVE 2.2 Modulate the density of the built environment to ensure harmonious integration with the existing urban environment.
- ↘ OBJECTIVE 2.3 Maximize views through intelligent development of links that will offer sightlines to the public spaces, the Western Link, the drop-off zone beside the train station and Des Bénévoles Park.
- ↘ OBJECTIVE 2.4 Create versatile, flexible and comfortable public spaces that meet the needs of a diverse range of users and will contribute to a rich social life that revolves around meetings, discussions and mutual assistance.
- ↘ OBJECTIVE 2.5 Adapt public domain facilities and buildings for pedestrians to offer a range of experiences year-round.
- ↘ OBJECTIVE 2.6 Be aware of the quality of the urban environment to ensure that residents are offered comfort and quality of life.
- ↘ OBJECTIVE 2.7 Minimize sound and visual nuisances close to large transportation infrastructure.


Modulated density
The Lyric, Seattle, Washington, États-Unis


Sightline from the approach nose
Assembly Row, Somerville, États-Unis

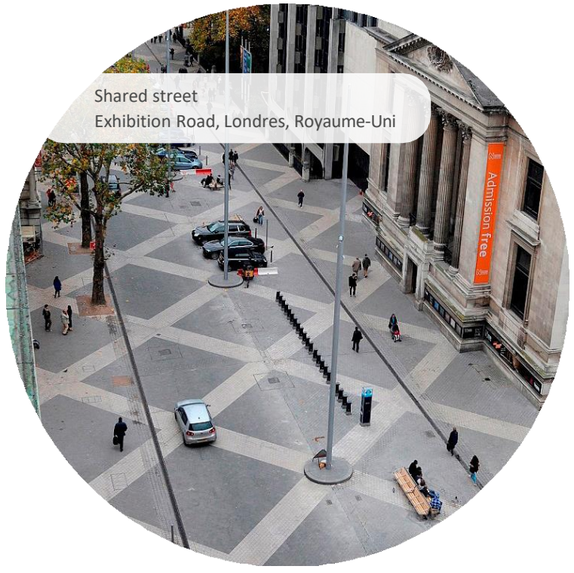

Versatile public spaces
Parc Levy, Houston, Illinois, États-Unis


A range of urban furniture adapted to different users
Parc Maggie Daley, Chicago, Illinois, États-Unis

OBJECTIVE 3

An accessible and safe neighbourhood that meets the needs of the local population and supports sustainable mobility.

- ↘ OBJECTIVE 3.1 Ensure fluid motor vehicle travel near the REM station, especially during rush hours.
- ↘ OBJECTIVE 3.2 Limit the expansion of the road network and through traffic in existing neighbourhoods by favouring local traffic lanes in the new neighbourhood and respecting the capacity of the road infrastructure.
- ↘ OBJECTIVE 3.3 Optimize vehicle accessibility conditions for the neighbourhood's residents, workers and business owners.
- ↘ OBJECTIVE 3.4 Promote the intermodality of travel through connectivity between all networks and the development of user-friendly and safe pedestrian and cycle paths, in particular by maximizing the connection of the esplanade with the main sites of interest
- ↘ OBJECTIVE 3.5 Reduce and improve travel chains to encourage sustainable mobility. Develop active transportation corridors that meet both utilitarian and recreational needs. Create an optimized and innovative parking offer.
- ↘ OBJECTIVE 3.6 Adopt a smart strategy for goods delivery and waste management systems.
- ↘ OBJECTIVE 3.7 Ensure smooth vehicular traffic flow around the REM station, especially during peak hours.
- ↘ OBJECTIVE 3.8 Limit the expansion of the road network and through traffic into existing neighborhoods by prioritizing local streets within the new district, in accordance with the capacity of road infrastructure.



Shared street
Exhibition Road, Londres, Royaume-Uni


Pedestrian path
Siège Social Urban Outfitters, Philadelphie, États-Unis


All-season path
Vélo d'hiver, Montréal, Canada


Multi-storey parking lot
Place des Canotiers, Québec, Canada

OBJECTIVE 4

A neighbourhood renowned for its architecture and high-quality design.

- ↘ OBJECTIVE 4.1 Develop a unique and distinctive visual identity through a built environment with an impressive environmental performance.
- ↘ OBJECTIVE 4.2 Pay particular attention to the architectural integration and aesthetics of buildings in consideration of the urban environment of surrounding neighbourhoods.
- ↘ OBJECTIVE 4.3 Embellish the Trans-Canada Highway interfaces to create a showcase that residents and visitors will find inviting.
- ↘ OBJECTIVE 4.4 Create new, signature urban landmarks for the Town of Kirkland.
- ↘ OBJECTIVE 4.5 Adopt a greening strategy that supports biodiversity, surface-water runoff management and urban agriculture initiatives.
- ↘ OBJECTIVE 4.6 Aim for sustainable development certification for certain infrastructure (e.g. ENVISION, SITES, Parksmart) or buildings (e.g. LEED, WELL, Zero Carbon Building).
- ↘ OBJECTIVE 4.7 Maximiser les vues sur les paysages environnants en positionnant stratégiquement les bâtiments.


Signature urban development
Montréal, Canada


Architectural urban landmark
Projet Arbora, Montréal, Canada


Surface-water runoff management
Boulevard Décarie, Montréal, Canada


Sustainable development certification
Maison du dév. durable, Montréal, Canada

SPATIAL ORGANIZATION CONCEPT

The spatial organization concept conveys the vision through illustrations of planning intentions and guides the detailed design of the territory.

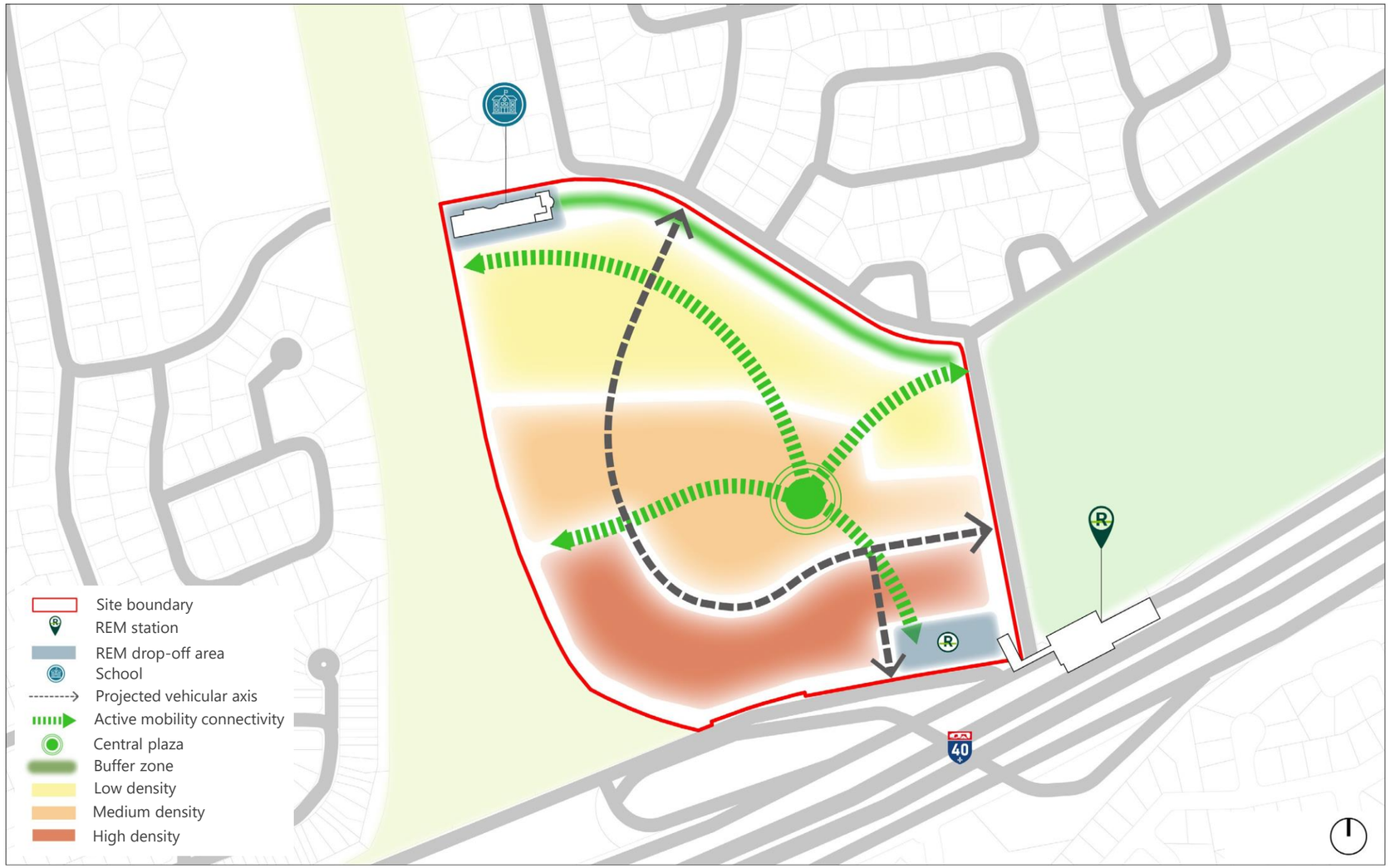
First, it is important to highlight that the existing and planned centralities of the area form the framework of the conceptual plan. These include the REM station, nearby parks such as the Grand Parc de l'Ouest and Parc des Bénévoles, key sustainable mobility corridors like the Western Link and the REV segment, as well as elementary schools.

Based on this framework, the spatial organization proposes a gradual development of the site, structured around a central plaza. This plaza serves as the convergence point for active mobility corridors, connecting the main centralities of the sector and contributing to the social and commercial vibrancy of the neighborhood.

The concept is designed with a gradation of densities, promoting a smooth transition between the existing residential neighborhoods to the north and the higher-density areas along Highway 40 and near the REM station.

A buffer zone is planned at the northern edge of the site to ensure harmonious integration with existing neighborhoods and to preserve the existing vegetative edge along Elkas Boulevard, providing a gentle transition with the surrounding residential fabric.

The proposed circulation axes ensure efficient local service while avoiding fragmentation of the site. Emphasis is placed on active connectivity, with a green network composed of pedestrian paths and landscaped public spaces. This network crosses the site in all directions, connecting residents to services, green spaces, and the structural transportation network.



Note to reader : The spatial organization concept illustrates planning principles and is provided for information purposes. The actual configuration and composition may differ from this proposal.


KIRKLAND

4. DESIGN CONCEPT

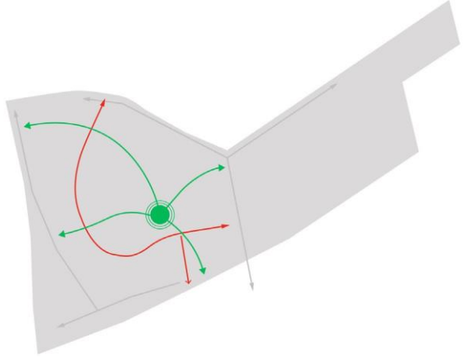
The design concept realistically reflect the vision and major planning directions that will guide the emergence of a new living environment on the requalification site. Located next to the REM station, this site will host a variety of residential typologies, buildings with distinctive architecture and design that will contribute to the vibrancy and dynamism of the neighborhood, as well as an extensive network of public spaces, parks, and green areas that will be a source of pride for the Kirkland community.

DESIGN CONCEPT

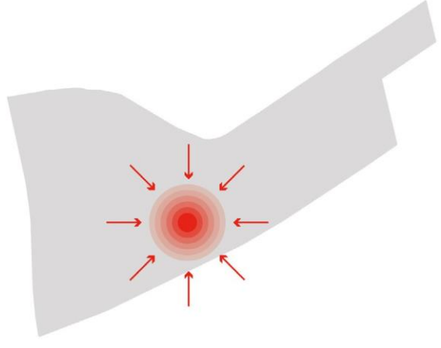
DESIGN PRINCIPLES

The proposed spatial organization concept is structured around six major design principles. These reflect the main challenges to be addressed in the SPP sector and form the basis for the planning guidelines and specific objectives.

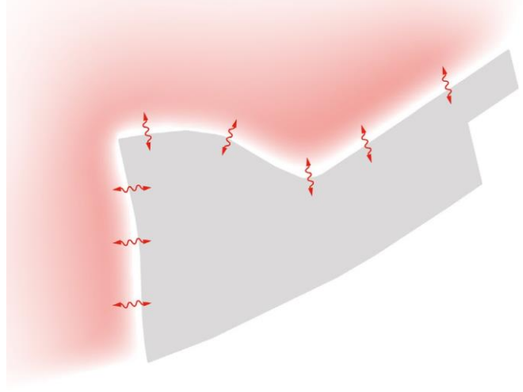
In addition, the following pages illustrate other design principles to be considered when designing projects within the SPP territory. These principles influence urban design, environmental resilience, mobility, and various other urban dynamics.



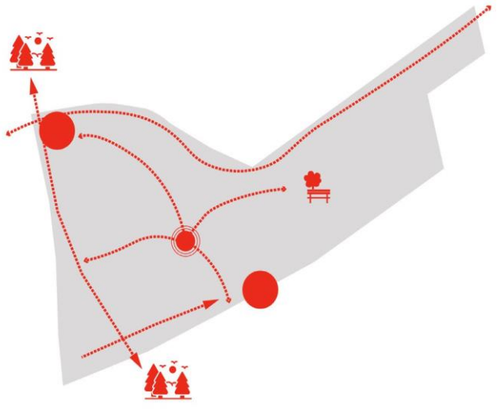
CONNECTED TO THE GREEN NETWORK AND THE EXISTING ROAD NETWORK



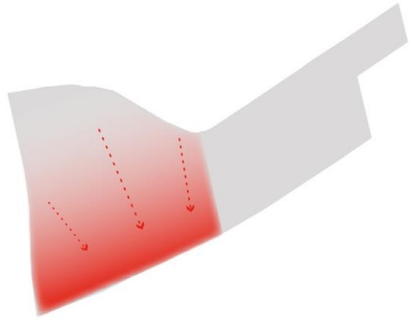
A LIVELY AND UNIFYING BUSTLING NEIGHBOURHOOD CLOSE TO THE REM STATION



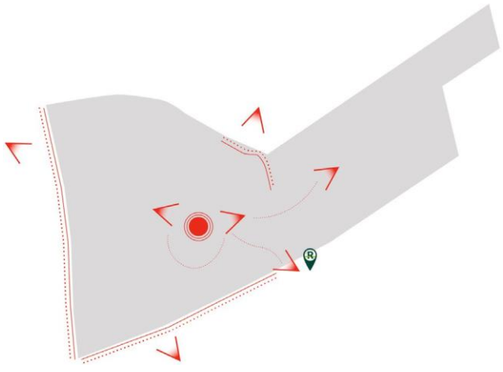
COMPLEMENTARY DEVELOPMENT AND SEAMLESS INTEGRATION INTO THE EXISTING NEIGHBOURHOODS



STRUCTURED ACTIVE MOBILITY NETWORK
UNIVERSALLY ACCESSIBLE PEDESTRIAN AND BICYCLE PATHS THAT LINK VARIOUS POINTS OF INTEREST



GRADATION OF DENSITY TO INTEGRATE INTO THE NEARBY BUILT ENVIRONMENT



SHOWCASE VIEWS AT NEIGHBOURHOOD ACCESS POINTS AND WITHIN THE NEIGHBOURHOOD

MOBILITY

Main Vehicular Axis

To structure the RioCan site and ensure service to all proposed buildings, the street grid of the new neighborhood is organized around a main vehicular axis adapted to the site's layout and the existing urban fabric.

This axis will connect to the existing road network to the north via Elkas Boulevard, aligned with Discepola Street, and to the east via Jean-Yves Street. It is complemented by a road serving the REM drop-off area, which connects to Sainte-Marie Road to the south.
The intersections at Jean-Yves Street and Sainte-Marie Road, along with the REM station, thus become the main gateways to the neighborhood and facilitate circulation around the future mobility hub. The intersection at Elkas Boulevard serves as a secondary gateway for users arriving from the northern part of the city.

Traffic Study

The Kirkland SPP project is part of a diverse road network that includes a dense local grid intersected by Highway 40. The area is surrounded by a residential zone, separated from the SPP to the south by the A40 corridor. This particularity of the Town of Kirkland results in a high rate of car ownership among residents, with an average of more than two vehicles per household.

The modal share of car usage within the territory of Kirkland accounts for 86% of all trips. Such dependence could be reduced in the residential areas surrounding the SPP with the arrival of the nearby REM station.

The Kirkland SPP study area currently benefits from good traffic conditions, and no major issues have been identified. However, current travel habits in the area show that users tend to use the A40 service road and then Jean-Yves Street heading north to access elementary schools or the RioCan center. That said, traffic volumes observed on Elkas Boulevard should not be overlooked, as it serves more enclosed residential areas to the north.

As the redevelopment project progresses, traffic studies will be necessary to ensure an acceptable level of service within and around the site. These studies may require the implementation of mitigation measures to ensure smooth and harmonious integration of the project with the road access points in the targeted area.

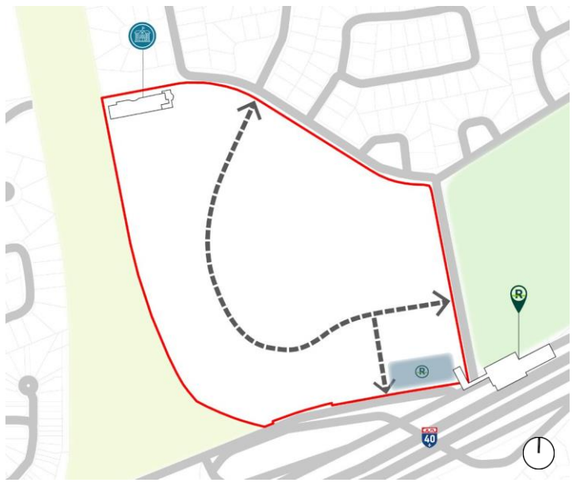


Fig.52. Location of the main vehicular axis

DESIGN PRINCIPLES

- Setbacks and street rights-of-way with comfortable and safe dimensions;
- Two-way street (bidirectional traffic);
- Medium-spread tree alignment, integration of landscaped islands and drainage swales for sustainable stormwater management;
- Widened sidewalks on each side of the street;
- Traffic flow management through traffic lights and pedestrian crossings at major intersections;
- Pavement markings, lighting, and appropriate symbols to clearly identify crosswalks.

Fig.53. Redevelopment of Saint Charles Street, Longueuil, Canada
Source : Ville de Longueuil

Fig.54. Redevelopment of Victoria du Cap Street, La Baie, Canada
Source : Collectivités viables

MOBILITY

Parking

As part of the redevelopment of the site, it will be necessary to integrate an off-street parking lot with approximately 200 spaces into the project, for the exclusive use of Kirkland residents who wish to park their vehicles to access the REM station.

In addition, some on-street parking spaces could be considered at strategic locations, to allow delivery of trucks, short-term parking or even temporary parking for occasional visitors, particularly near residential units. However, great importance should be given to the landscaping of these spaces, in order to reduce the heat island effect caused by mineralized surfaces

Fig.55. Blue zone (short-term free parking), France
Source : La Farlède

Fig.56. Parking lot, La Falaise apprivoisée, Quebec City, Canada
Source : Pierre Martin & Associés

DESIGN PRINCIPLES

- Prioritize the development of indoor or street-invisible parking areas to encourage continuous framing of the public realm;
- Develop an off-street parking lot with 200 spaces for the use of Kirkland residents using the REM located within 350 meters of the station;
- Create a safe and user-friendly pedestrian access link between the Kirkland station and the off-street parking dedicated to residents;
- Integrate greening measures through the addition of green islands that, once mature, provide generous shade;
- Promote sustainable stormwater management along vehicular and public roadways (e.g., vegetated swales, retention basins, permeable and porous surfaces, etc.);
- Provide secure bicycle parking spaces, both indoor and outdoor, located near the REM station, shops, offices, residential units, and public spaces;
- Parking areas are enhanced with vegetation to provide shade.

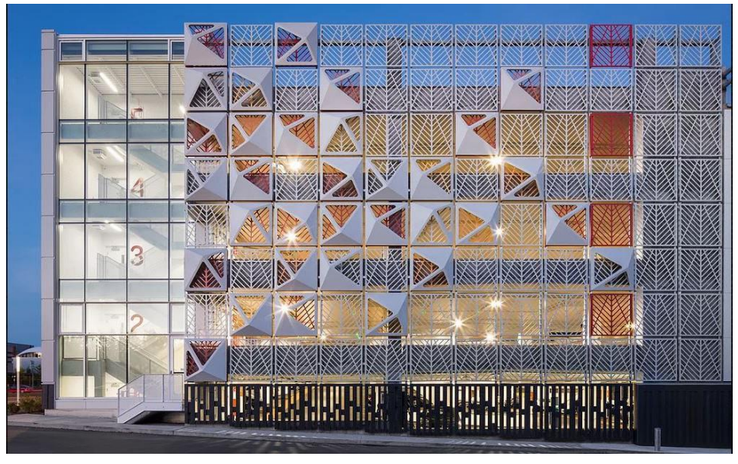


Fig.57. Parking lot, Place Ste-Foy, Quebec City, Canada
Source : Coarchitecture

Fig.58. Reversible urbanism parking lot, Saint-Roch, Montpellier, France
Source : Archikubik

MOBILITY

Actitve mobilty links

In an effort to increase the permeability of the urban fabric with existing residential neighborhoods, without increasing through vehicular traffic, active mobility links will be developed throughout the site. These will enhance walkability in the area and contribute to the vibrancy of the proposed neighborhood, while integrating into the regional active mobility network.

Indeed, these links will connect to the planned network along the Western Link, thus providing access to nearby nature parks and the express bike network (REV). Furthermore, these recreational and functional corridors will connect adjacent residential neighborhoods, Des Bénévoles park and the REM station.

Fig.59. One-way roadway bicycle path, Montreal, Canada
Source : The Centre of Active Transportation

Fig.62. Bicycle path, Senne Park, Brussels, Belgium
Source : La Compagnie du Paysage

Fig.60. Elevated bicycle path, Philadelphia, US
Source : Ville de Philadelphie

DESIGN PRINCIPLES

- Develop paths dedicated to active transportation, in particular with separate paths for cyclists and pedestrians;
- Offer an efficient and continuous active mobility network that connects existing and planned bicycle and pedestrian paths;
- Introduce servitude rights-of-way on the private domain or integrate them into the public domain to increase the number of connections and improve recreational trips;
- Prioritize the development of bicycle paths with exclusive right-of-way or along designated roadways;
- Create a network of bike paths and sidewalks to connect major points of interest (e.g. public square, REM, Western Link, Des Bénévoles Park).

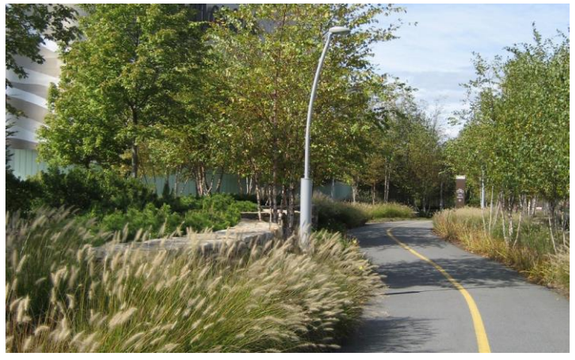


Fig.61. Two-way bicycle path, Natick, US
Source : Lauraknosp

Fig.63. Proposed redevelopment of De Rouen Street, Montreal
Source : Réalisons Montréal

MOBILITY

Bicycle facilities

To meet the needs of users, bicycle parking spaces will be installed at several strategic locations such as neighbourhood access points, commercial spaces and inside office buildings.

All forms of installations (bicycle shelters or racks, for example) should ideally be located between close from the main entrances and exits and from public transit stops.

Fig.64. Bicycle shelter, Sainte-Rose station, Laval, Canada
Source : EXO Québec

Fig.65. Bicycle parking, McGill University, Montreal, Canada
Source : Ekm Architecture

Fig.66. Chronovélo bicycle station, Grenoble, France
Source : Place Gre'net

DESIGN PRINCIPLES

- Encourage covered bicycle parking spaces, preferably with an enclosed structure to enhance bicycle security;
- Locate parking spaces away from areas where motorists cross and near key destination hubs.

Fig.67. Smart bicycle shelter, Nantes, France
Source : Le Monde

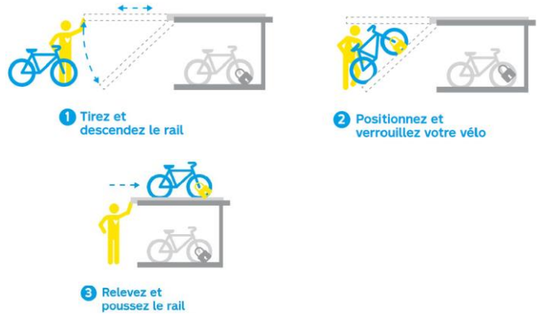


Fig.68. User's guide for the STM bicycle shelter
Source : Société de transport de Montréal

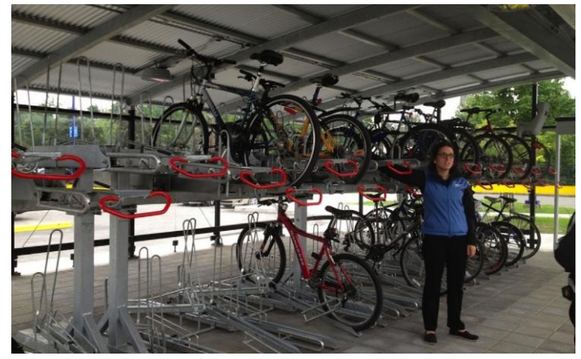


Fig.69. Bicycle station, Deux Montagnes commuter train station, Canada
Source : Agence Métropolitaine de transport

Fig.70. Bicycle station, Lionel-Groulx station, Montreal, Canada
Source : Société de transport de Montréal

MOBILITY

Development of intersections

Sustainable and active mobility is central to the neighbourhood's design principles. The objective is to complement the mobility hub at Kirkland REM station and to prioritize active travel through the creation of an efficient, secure and pleasant network. By adding a range of facilities, this network will span the neighbourhood. Measures must be introduced to manage conflict at certain strategic intersections both within and around the sector to increase the visibility of all street users and optimize points where pedestrians, cyclists and motorists meet.

Pedestrian walkways will be developed at the busiest intersections where different transportation modes cross paths. An elevated pedestrian walkway with a central island is preferred to increase the safety of pedestrians and cyclists travelling between the REM plaza and the public square.

DESIGN PRINCIPLES

- Prioritize elevated intersections;
- Maximize sight triangles beside intersections;
- Choose distinctive and qualitative ground markings (fun patterns, colourful paving blocks, etc.) to increase their visibility.

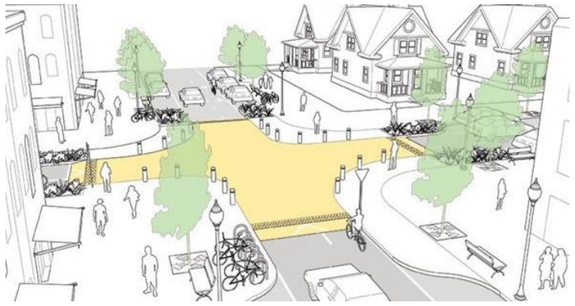


Fig.75. Elevated intersection
Source : NACTO

Fig.76. Central island with an elevated passage
Source : NACTO

Fig.71. Example of a bicycle path at intersections, Ottawa, Canada
Source : Ville d'Ottawa

Fig.72. Proposed layout for a bicycle path, New York, US
Source : Behance

Fig.73. Elevated intersection, Matthew, North Carolina, US
Source : NACTO

Fig.74. Elevated pedestrian crossing, Santa Monica, US
Source : RRM Design Group

Fig.77. Pedestrian crossing with a central island, Arlington, Virginia, US
Source : NACTO

Fig.78. Pedestrian crossing with a central island, Austin, US
Source : NACTO

PUBLIC SPACES AND GREEN SPACES

Connectivity across the network

The goal of the development proposal is to create a new and human-scale living environment that fits seamlessly into the existing urban environment. The development, size and compact nature of the built environment will allow for the prioritization of public spaces and green spaces. These green zones will be spread out across the sector in a targeted manner and will offer a range of experiences based on user needs.

The versatility of the facilities and equipment will facilitate a range of activities throughout the year. These public spaces and green spaces will complement each other and make up an internal loop-shaped network that links various destinations. This network will enhance the neighbourhood's entry points and become a subtle interface with the existing residential neighbourhoods and key transportation infrastructure.

Lastly, connectivity will be promoted through the creation of alternative active transit pathways along the street that criss-cross the entire neighbourhood and link to existing active transit routes including Des Bénévoles Park and the Western link.

DESIGN PRINCIPLES

» Showcase the neighbourhood points of entry;

» Protect and enhance the existing vegetation;

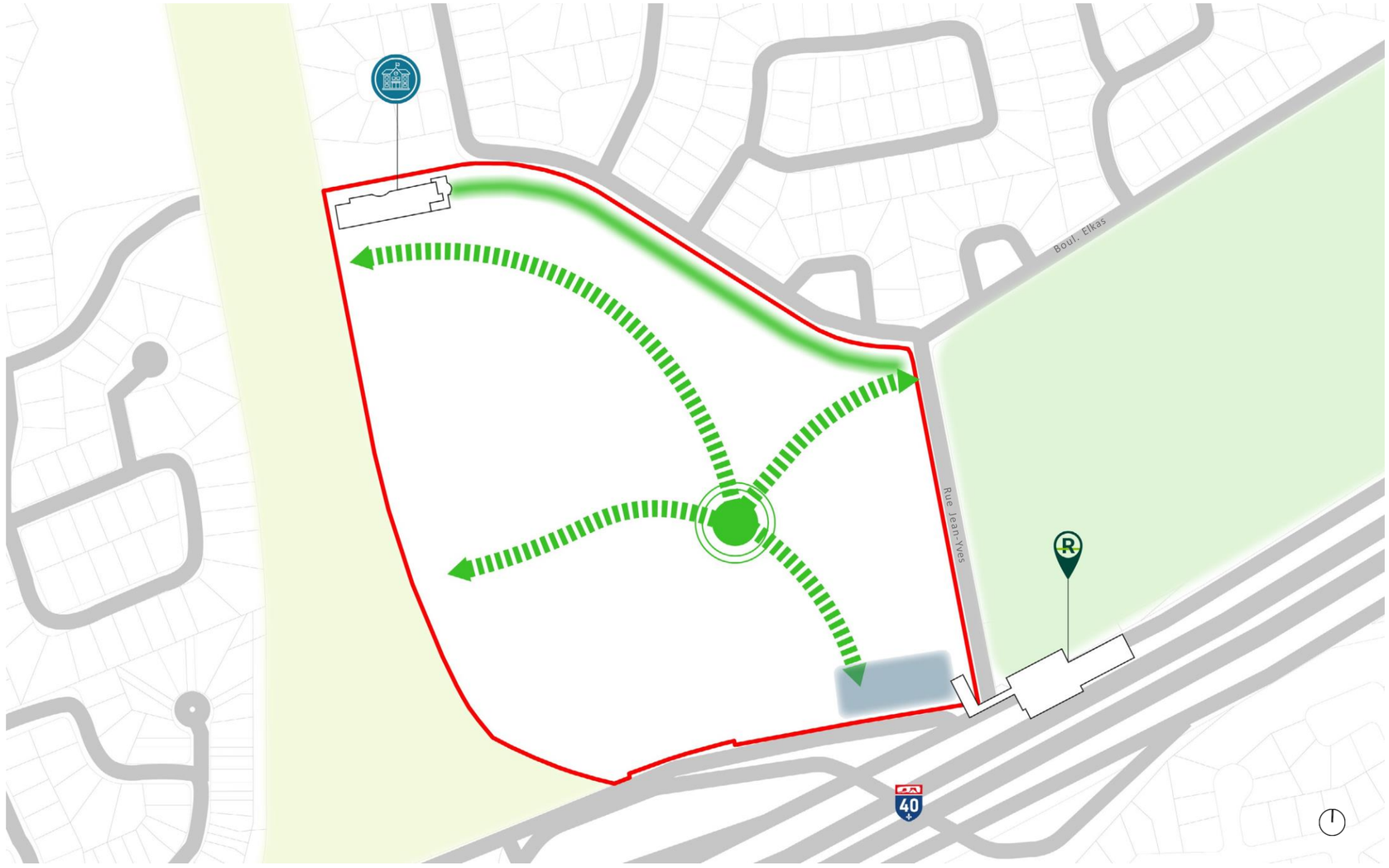
» Strengthen the neighbourhood’s urban canopy;

» Develop pathways with interspersed ornamental spaces and rest areas;

» Enhance the offering of public spaces and parks;

» Create a distinctive visual identity for the neighbourhood (lighting, urban furniture, ground markings, etc.);

» Ensure the creation of a structuring green link promoting active transportation in the form of an esplanade towards major sites of interest such as: the Western link, the REM station and the public plaza



PUBLIC SPACES AND GREEN SPACES

Sustainable storm water management

The installation of rain gardens contributes to sustainable storm water management. Indeed, the introduction of green drainage beds and water retention islands along major arterial routes will allow for rainwater recovery and filter it. These measures will also serve to limit sewer overflow during periods of heavy rain through the introduction of plant species that promote water bioretention. The green drainage beds will be widened at intersections to maximize the coverage of green spaces and offer a larger and unobstructed field of vision that increases pedestrian safety by making them more visible to motorists and truck drivers.

Fig.79. Rain garden, Papineau Street, Montreal, Canada
Source : Lise Gobeille

Fig.80. Rain garden, Basile Routhier Street, Montreal, Canada
Source : Lise Gobeille

Fig.81. Rain garden, Mountain Sights Street, Montreal, Canada
Source : Catalyseur urbaine

DESIGN PRINCIPLES

» Maintain or improve the hydrological balance of the land by minimizing impermeable surfaces and integrating sustainable storm water management measures;

» Prioritize permeable paving and green spaces to promote water entry into the soil;

» Promote the development of rain gardens into which surface-water runoff is diverted;;

» Integrate green filter strips (grass and other plants) into outdoor spaces to allow for water filtering, flow and entry into the soil;

» Introduce plant species that require natural irrigation and promote water bioretention

Fig.82. Green drainage bed, Congress Avenue, Austin, US
Source : Kevin Michael Sullivan

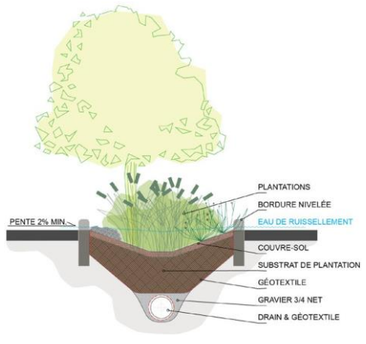


Fig.83. Diagram of a green drainage bed
Source : Provencher_Roy

Fig.84. Rainwater retention basin, Outremont campus, Montreal, Canada
Source : Provencher_Roy

Fig.85. Rain garden, Bonaventure project, Montreal, Canada
Source : Formes

PUBLIC SPACES AND GREEN SPACES

Buffer zone and vegetated berm

The vegetated berm along Elkas Boulevard marks the boundary between the existing residential neighborhoods and the redevelopment of the RioCan site. As a green buffer zone, it helps define the transition between neighborhoods while remaining permeable. At this level, targeted openings can be created to encourage pedestrian and cycling connections, thus ensuring continuity between different parts of the neighborhood.

Located near Margaret Manson School, this green corridor is preserved in its current state to maintain the landscaped character of the area and to retain the environmental benefits associated with the existing vegetation. The berm may be enhanced occasionally, when deemed necessary or appropriate, notably through the addition of complementary plantings or simple features that promote biodiversity or user experience.

The buffer zone is integrated into the active mobility network and forms part of the planned green framework of the neighborhood, including the central plaza.

Fig.86. Vegetated berm along Elkas Boulevard, Kirkland, Canada
Source : Google Street View, Google Maps

Fig.87. Buffer zone of the spatial organization concept

DESIGN PRINCIPLES

» Maintain and enhance the existing vegetated berm to preserve a natural buffer zone between the existing neighborhoods and the RioCan site;

» Develop multifunctional paths where necessary to break the barrier effect of the berm and ensure the permeability of the urban fabric;

» Preserve mature trees and vegetation on the berm and within the existing buffer zone;

» Protect trees and vegetation during construction work, when necessary;

» Integrate the buffer zone and berm into the planned green spaces on the site;

» Integrate the active mobility network into the buffer zone.

Note to the reader: The species are provided for reference only. The actual landscaping may differ from these proposals.

PUBLIC SPACES AND GREEN SPACES

Greening strategy

Despite the fact that the current landscape is heavily paved, greening strategies promote the creation of a living urban environment that is verdant and soothing. This priority involves increasing the number of green spaces in the neighbourhood core. The green network will offer a wide range of landscape features while significantly enhancing the vegetation cover across the territory. Specifically, certain planting criteria must be respected so as to guarantee the growth of grasses, perennials, hardwood trees, shrubs and fruit trees. This will involve choosing species that require natural irrigation and promote rainwater bioretention, diversifying planted species to maximize biodiversity and enhance the landscape, and constructing planting pits deep enough to support the survival of large trees.

DESIGN PRINCIPALES // PUBLIC DOMAIN

» Maximize the planting of intermediate and large trees along the vehicle routes to enhance the vegetation cover and provide shaded areas for pedestrians;
» Carefully select native species of vegetation and diversify flower species to create a variety of plant layers (dimensions, leaves, flowering periods);
» Promote the integration of a rainwater retention strategy in landscaped areas;
» Favour the use sustainable materials for urban furniture;
» Design planting pits that are large enough to support tree survival and growth, especially near major roadways.

DESIGN PRINCIPALES // PRIVATE DOMAIN

» Encourage the development of green terraces and roofs on medium-density and high-density buildings;
» Green the parking spaces.

GRASSES

FESTUCA ARUNDINACEA

FESTUCA RUBRA

AGROPYRON TRACHYCAULUM

AVENA SATIVA

CALAMAGROSTIS ACUTIFLORA «KARL FOERSTER»

PERENNIALS

VERBENA HASTATA

HYPERICUM PERFORATUM

AGASTACHE ‘BLUE FORTUNE’

DENNSTAEDTIA PUNCTILOBULA

ASCLEPIAS INCARNATA

ECHINACEA ‘CHEYENNE SPIRIT ’

BORAGO OFFICINALIS

PRUNELLA VULGARIS

IRIS VERSICOLOR

SOLIDAGO SEMPERVIRENS

IRIS PSEUDACORUS

ANTHEMIS NOBILIS

Note to the reader: The species are provided for reference only. The actual landscaping may differ from these proposals.

HARDWOOD TREES

GLEDITSIA TRIANCANTHOS VAR. INERMIS

BETULA NIGRA

GINKGO BILOBA ‘AUTUMN GOLD’

ACER X FREEMANII ‘AUTUMN BLAZE’

CARPINUS CAROLINIANA

LARIX LARICINA

QUERCUS RUBRA

GYMNOCLADUS DIOCIUS ‘ESPRESSO’

SHRUBS

ARONIA MEL. LOW SCAPE MOUND

BERBERIS CONCORDE

BERBERIS THUN. GOLDEN NUGGET

BERBERIS THUNB. ROSY GLOW

BETULA GOLDEN TREASURE

BUDDLEJA DAV. PUGSTER PERIWINKLE

CARYOPTERIS CLAN. BEYOND MIDNIGHT

CLETHRA ALN. CRYSTALINA

CORNUS ALB. ELEGANTISSIMA

FRUIT TREES

POIRIER BARTLETT

PRUNIER PETITE SOEUR

AMELANCHIER CANADENSIS

- Native species
- Species that tolerate urban stress (snow/ice salt, disease, pests, arid climate conditions, etc.)
- Species that promote biodiversity (bee pasturage)
- Edible species

PRIVATE DOMAIN DEVELOPMENT

Development of private outdoor spaces

In addition to creating public spaces, the design concept focuses on greening private outdoor areas. These defined spaces between residential and mixed-use buildings are large, particularly to compensate for the height of certain buildings. As a result, they will offer social spaces for residents and rest areas. More specifically, the extension of the primary green network to each of these islands will play a key role in connecting ecological corridors. These private spaces will be for the exclusive use of building occupants and visitors. They will strengthen a sense of belonging among occupants and contribute to increasing the property value. For example, these interior courtyards could be easily accessed using pedestrian and bicycle paths that lead to urban vegetable gardens or grassy areas with urban furniture (picnic tables, flower boxes, swings, lounge chairs, etc.)

Fig.88. Private green spaces, Boulogne-Billancourt, France
Source : Landezine et Hervé Abbadie

Fig.89. Pedestrian trail, Zac Docks, Saint Ouen, France
Source : Nicolas Fussler, Ateliers 2/3/4

Fig.90. Private residential spaces, Aarhus, Denmark
Source : CEBRA, MBYland

DESIGN PRINCIPLES

» Develop public access points throughout the public spaces;
» Create large interior courtyards that focus on greening and on social activity by serving as meeting spaces;
» Maintain the hydrological balance of this site by minimizing impermeable surfaces and integrating sustainable storm water management measures;
» Prioritize permeable surfaces to promote water absorption by the soil;
» Install adequate lighting to ensure a feeling of safety while limiting light pollution.

Fig.91. Pedestrian trail, NOCA project, Montreal, Canada
Source : McGill immobilier

Fig.92. Private spaces, Muret, France
Source : Emma Blanc

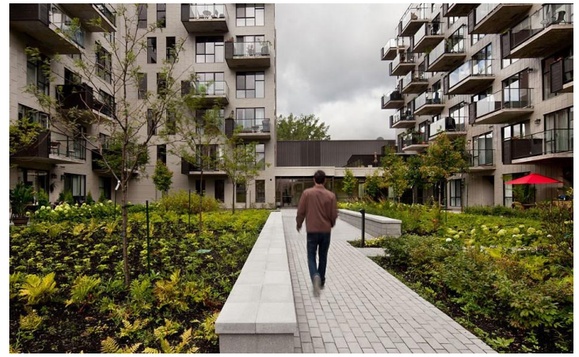


Fig.93. Walkway, Le William Condos, Montreal, Canada
Source : Figurr

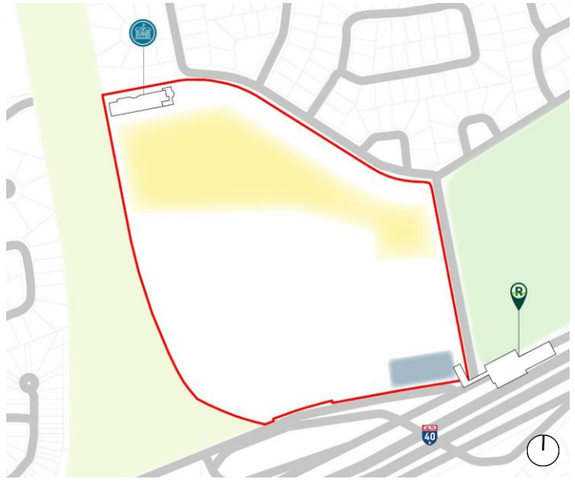
BUILT ENVIRONMENT

Low density area

The interface with the existing residential neighborhoods is characterized by a low-density built environment. The main objective is to ensure a harmonious transition with the surrounding context in order to preserve the tranquility and privacy of established residents. The building placements promote optimal street framing, increase the permeability of the area through new pedestrian pathways, and ensure human-scale development.

DESIGN PRINCIPLES

- » Height : 1 to 6 storeys ;
- » Approximate gross residential density : 30 to 45 units/ha ;
- » Development of outdoor spaces promoting greening;
- » Priority given to the development of interior parking spaces.



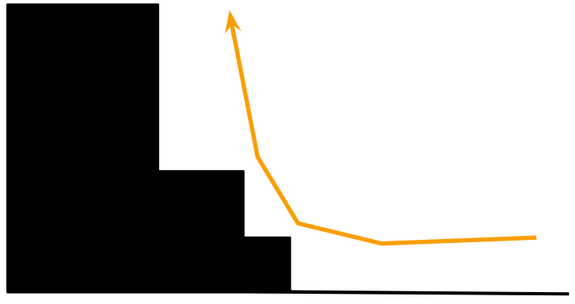


Fig.96. Volume modulation principle that encourages a harmonious interface with lower buildings located opposite.

Fig.94. Rolland-Therrien hub, Longueuil, Canada
Source : Ville de Longueuil

Fig.95. Residential building, Münster, Germany
Source : FRML

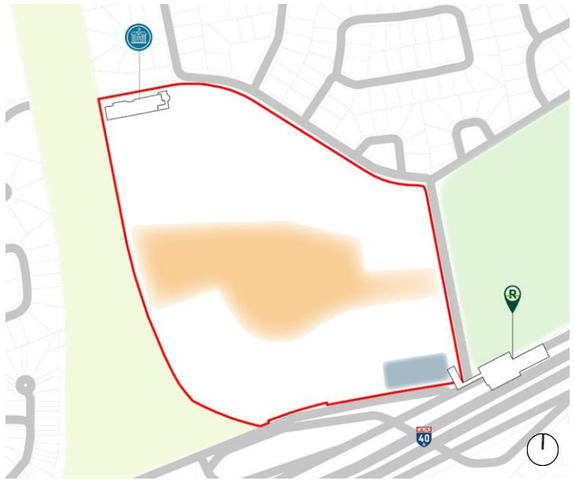
Fig.97. Ely Court quadruplex, London, UK
Source : SKE Portico

Fig.98. Notskriften, Eskilstuna, Sweden
Source : Calle Warnelov

BUILT ENVIRONMENT

Medium density area

To respect the principle of height gradation, medium-density buildings are located within the interior of the neighborhood and set back from main access roads in order to better integrate new constructions into the surrounding neighborhood



DESIGN PRINCIPLES

- » Height : 4 to 10 storeys ;
- » Approximate gross residential density : 60 to 130 units/ha ;
- » Building layout ensuring a gradation of heights, from lower heights in the north of the site to higher ones toward Highway 40.
- » Priority given to the development of interior parking spaces.

Fig.99. 495 Beaumont, Montreal, Canada
Source : Montoni

Fig.100. Pentagon Row, Arlington, Virginia, US
Source : BCT Design Group

Fig.101. Queen Alix, Montreal, Canada
Source : Guide Habitation

Fig.102. Erith Park, London, UK
Source : Boradway Maylan BM

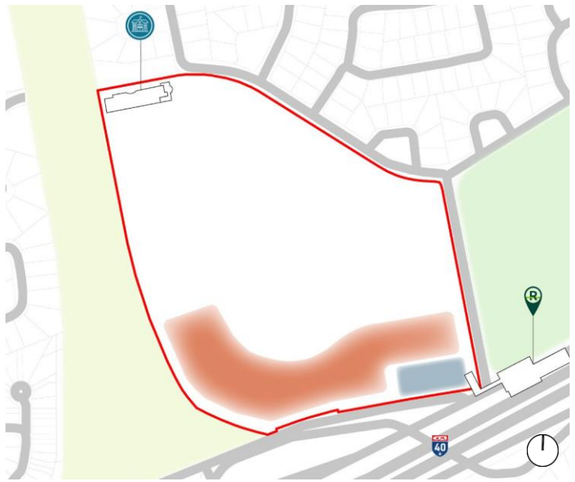
Fig.103. Loggia complex, Saint-Lambert, Canada
Source : Guide Habitation

Fig.104. M2-M3 project, Valence, France
Source : Patriarche

BUILT ENVIRONMENT

Higher density area

The upcoming arrival of the future REM station at the southeastern end of the area requires a redefinition of the urban form, which is primarily reflected in the densification of the living environment. The intensification of activities goes hand in hand with diversification through the introduction of residential and mixed uses around the future mobility hub. Residential use predominates, although some strategically located buildings (near the highway, the REM station, and the central plaza) may feature commercial ground floors and accommodate office spaces and professional services on the upper floors. Taller buildings will be located near Highway 40.



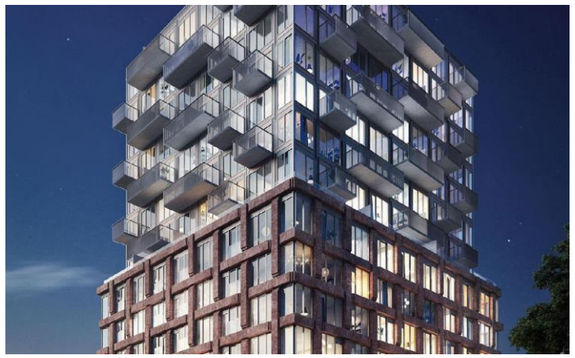


Fig.105. Rush Condos, Toronto, Canada

Source : BDP-Quadragle

Fig.106. Espace Montmorency, Laval, Canada

Source : Portail Constructo

DESIGN PRINCIPLES

- » Height : 6 to 14 storeys ;
- » Approximate gross residential density : 60 to 260 units/ha ;
- » Harmonious integration with the existing built and landscaped environment through height and volume modulation to avoid massing effects and standardized forms;
- » Thoughtful building placement with an emphasis on urban compactness that supports the creation of a network of public and green spaces for the entire community;
- » Development of inner courtyards and shared spaces to foster social cohesion and interaction among occupants;
- » Priority given to the development of interior parking spaces.;
- » Building layout ensuring a gradation of heights, from lower heights in the north of the site to higher ones toward Highway 40.

Fig. 1551 Basin, Montreal, Canada

Source : Nocacondos

ARCHITECTURE, DESIGN AND SUSTAINABLE DEVELOPMENT

Architectural signature of the site

The uniqueness of this new living environment is based on several assets that are the pride of the Kirkland community. One of them is undoubtedly the importance given to architecture and quality design. Wishing to highlight the surrounding landscape and natural assets and embellish the interface with the Trans-Canada Highway, the positioning of the buildings is intended to be strategic since it allows to maximize the views towards Lake Saint-Louis to the south, the Rivière des Prairies to the north, downtown Montreal, as well as the wooded and agricultural landscapes of the West Island of Montreal.

Fig.108. Rose des vents project, Montreal, Canada
Source : ADHOC architecture

Fig. Cité Angus 2 project, Montreal, Canada
Source : Cite Angus

Fig.110. Origine Condos, Montreal, Canada
Source : Kanva architecture

Fig.111. Cité Angus 2 project, Montreal, Canada
Source : Cite Angus

DESIGN PRINCIPLES

» Offer high-quality architectural design that considers the interface between buildings and the street and access points for the public domain;
» Consolidate the unique position of buildings within or close to the destination point;
» Make a distinction between uses by varying the architectural treatment, volume and type of opening, such as by creating separate entrances;
» Focus on volume and height gradation so that large buildings do not appear bulky by combining different kinds of materials (concrete, brick, glass, aluminium).
» Promote high-quality contemporary architecture
» Strategically position medium- and high-density buildings to maximize views of Lake Saint-Louis to the south, the Rivière des Prairies to the north, downtown Montreal, as well as the wooded and agricultural landscapes of the west of the island of Montreal.

ARCHITECTURE, DESIGN AND SUSTAINABLE DEVELOPMENT

Architectural treatment of façades

Beyond the detailed planning of each landscape component and the integration of signature buildings that act as urban landmarks within the neighbourhood, particular attention is paid to the architectural treatment of facades. To allow for direct interaction with the public domain along the REM station plaza and the public square in particular, we recommend breaking up the facades on a vertical level to make the user's path more dynamic, in addition to maximizing access points and transparency effects that enhance the main entrances of both commercial spaces and residential buildings.

Fig.112. LaPlace, Arcueil, France
Source: Leclerq Architecture

Fig.113. Transparent commercial facade, Arbora project, Montreal, Canada
Source: Provencher_Roy

Fig.114. Campus MIL, Montreal, Canada
Source: MonDev

DESIGN PRINCIPLES

» Prioritize narrow ground-floor facades or ensure that long facades are broken up on a vertical level to make the user's path shorter and more dynamic ;

» Prioritize transparent facades on the ground floors of mixed-use or commercial buildings to create open and lively facades that appeal to the senses of passers-by;

» Favour the use of high-quality materials (wood, masonry, durable composites) as the dominant component of facades facing the public domain;

» Create a sufficient number of entrances to the primary buildings that face the street and enhance their main entrances with architectural treatments that make them stand out.;

» Provide separate entrances for residents of mixed-use buildings to avoid conflict between different users in the same building.;

» Focus on architectural details on the ground floors that draw the attention of passers-by/users and enrich their experience (protection from sun, rain, wind, snow). Take into account that the first five-meter portion is visible to pedestrians and influences their experience ;

» Favorise building concepts with a basal form in order to distinguish commercial use and create a human scale

ARCHITECTURE, DESIGN AND SUSTAINABLE DEVELOPMENT

Greening and urban agriculture

The development of green roofs is increasingly popular. They can reduce the heat island effect, effectively manage and minimize surface-water runoff during sudden climatic events, as well as positively impact our physical, emotional and intellectual well-being. Biophilic architecture is strongly encouraged for medium-density and high-density buildings and aims to provide direct access to nature and the landscape. Through intelligent placement of buildings and the use of modulation and recess on the upper floors, the views of green roofs, interior courtyards, the central plaza and the urban canopy beyond the neighbourhood entrance will become an asset and a source of pride for residents. For example, the greening strategy for the public and private domain involves enhancing the vegetation cover across the territory, increasing the number of landscaped areas that promote biodiversity, food self-sufficiency and security, and developing buffer strips around the neighbourhood. The buffers will act as landscape screens and limit sound and visual nuisances and vibrations generated by the road infrastructure, and strengthen the sense of privacy and tranquility for nearby residents.

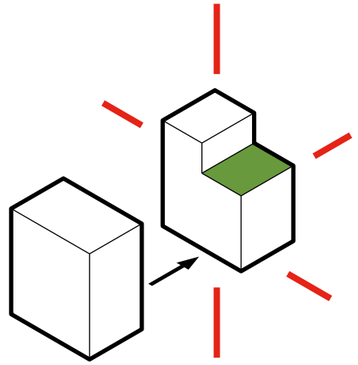


Fig.115. Creation of green terraces

DESIGN PRINCIPLES

- » Ensure the comfort, well-being and health of people by recognizing the eco-friendly benefits and qualitiesVof horticulture and greening;
- » Aim to integrate green walls and intensively or extensively vegetated roofs with a high solar reflectance index (SRI) and light-coloured surfaces to reduce the heat island effect;
- » Select species that can tolerate urban stress and contribute to floral diversity, specifically by opting for edible species that are indigenous to Quebec;
- » Focus on diversification of flowering herbaceous, shrub and tree species in order to encourage annual flowering;;
- » Provide shared outdoor spaces that the community can benefit from.

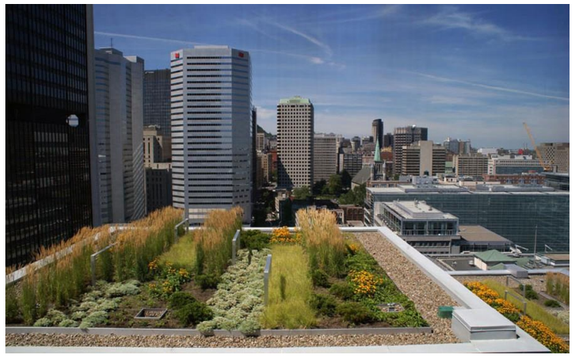


Fig.116. Québecor's green roof, Montreal, Canada
Source : Les toits vertiges

Fig.117. Green facade, Los Angeles, US
Source : Rios

Fig.118. Green terraces, Montpellier, France
Source : Valode & Pistre Architectes

Fig.119. Green sunbreaker on multi-storey parking lot, Switzerland
Source : Ganz Landschaftsarchitekten

Fig.120. Rooftop edible gardens, Montreal, Canada
Source : Le Devoir

ARCHITECTURE, DESIGN AND SUSTAINABLE DEVELOPMENT

Sustainable architecture and materials

Inspired by the most effective sustainable development strategies, new construction projects must respect stringent green construction standards. To create pleasant, safe and sustainable living environments that meet the needs of occupants while limiting construction and operating costs, the building design should focus on the relationship between people and the environment (nature). The implementation of a global and multidisciplinary “integrated design process” approach, a focus on eco-efficiency and following one or more environmental certification requirements are practices that must become commonplace. In addition, the use of high-quality materials on facades facing the public domain (masonry, wood, metal and other durable composites) contributes to the visibility and overall quality of the neighbourhood’s buildings.

DESIGN PRINCIPLES

» Design comfortable and efficient residential and mixed-use buildings to optimize our resources and reduce our environmental footprint;

» Strive for stringent green construction standards by choosing to apply a variety of energy efficiency measures inspired by sustainable development standards and certifications (LEED, Zero Carbon, EnVision, Passive House) or those focused on user health and well-being (WELL);

» Promote the use and integration of renewable energy (solar energy, geothermal energy, bioenergy);

» Prioritize bioclimatic architecture, including the integration of passive strategies such as passive solar heating, ventilation and natural light;

» In order to work toward a sustainable environment, use high-quality, local, recycled and affordable materials and resources with an environmentally responsible life cycle;

» Opt for durable and easy-care materials to maintain the overall quality of the buildings.

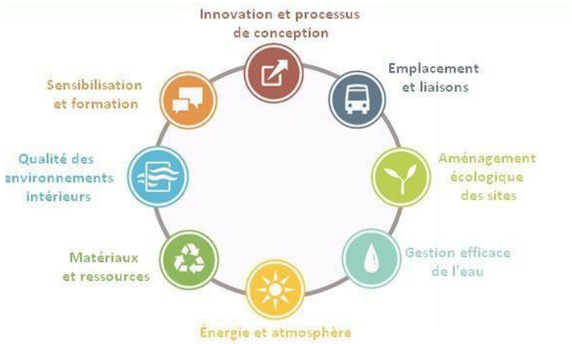


Fig.121. LEED certification
Source : Solution ERA

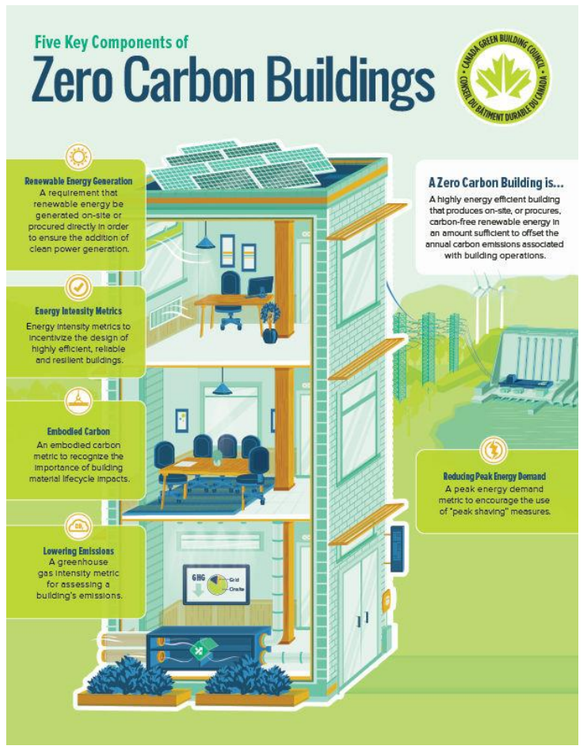


Fig.123. Components of Zero Carbon buildings
Source : Canada Green Building Council

Fig.122. Arbora project (wood structure), Montreal, Canada
Source : Provencher_Roy

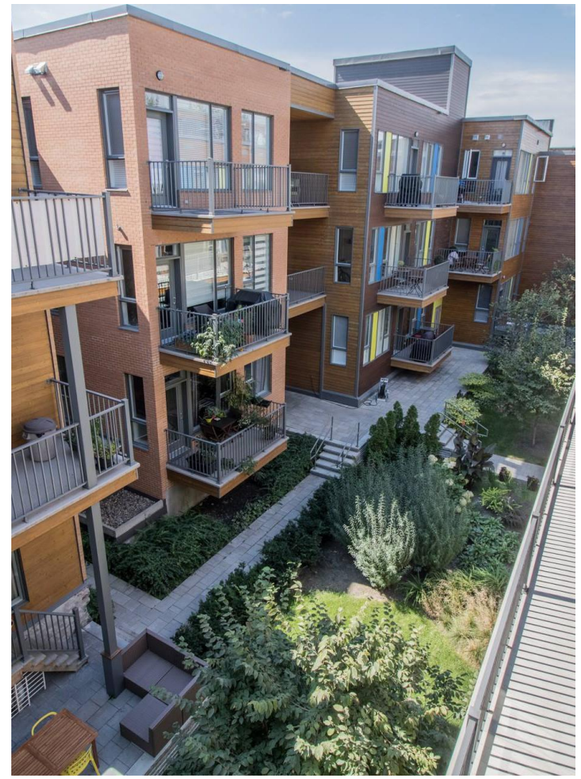


Fig.124. 311-5529 Papineau Avenue, Montreal, Canada
Source : Juan P. Saad

ARCHITECTURE, DESIGN AND SUSTAINABLE DEVELOPMENT

Universal accessibility

As outlined above, the configuration of the road network, green spaces and public spaces aims to promote the use of active modes of transportation. The combination of traffic reduction measures and the integration of universal accessibility principles is the cornerstone of the development guidelines. The objective, which applies to architecture and facilities in the private domain, is to offer spaces that are accessible to the entire population, including the most vulnerable and those living with disabilities (motor, visual, hearing, etc.) or intellectual or psychological impairments.

DESIGN PRINCIPLES

- Reduce the height difference between public streets and ground levels;
- Provide universal accessibility to each building's exterior entrances and focus on ground-level access doors;;
- Design the building components to facilitate their use by people with functional limitations;
- Encourage the development of safe, well-lit pathways between buildings and public streets.

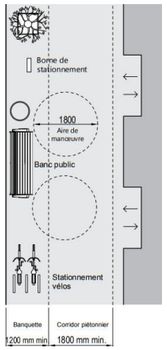


Fig.125. Diagram of pedestrian corridor widths (example)
Source : Ville de Montréal

Fig.126. Warning plate
Source : Ville de Montréal

Fig.127. Auditory signal device at intersections
Source : Ville de Montréal

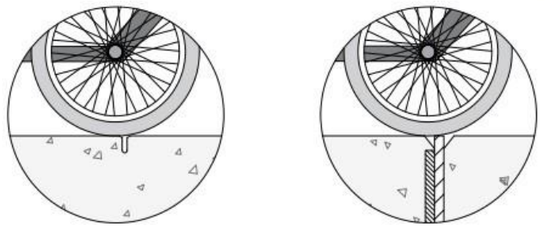


Fig.128. Diagram of ground marking ridges
Source : Ville de Montréal

Fig.129. Obstacle-free corridor
Source : INLB

Fig.130. Street-level building entrance
Source : AQDR

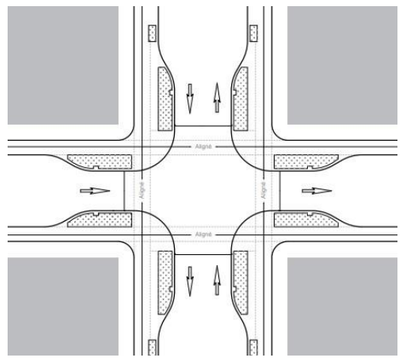


Fig.131. Diagram of protected intersections
Source : Ville de Montréal

Fig.132. Delineated pedestrian corridor to the street corner
Source : INLB

Fig.133. Plants delineating the pedestrian corridor
Source : AQDR

5. IMPLEMENTATION

This section aims to ensure the consistent and gradual implementation of the orientations and objectives of the Special Planning Program. It identifies the land uses and densities of the site as well as the concrete actions to be undertaken by the City in order to promote the development of a structured, accessible, sustainable, and integrated living environment around the REM Kirkland station.

PRIMARY LAND USES

The spatial organization concept of the Special Planning Program (SPP) is based on a gradation of built densities to ensure a smooth transition between existing neighborhoods and the redevelopment of the site around the REM station. Thus, buildings ranging from 1 to 6 storeys are planned to the north, along the edge of existing residential areas, while constructions will reach between 6 and 14 storeys to the south, in the immediate vicinity of the REM station and the highway. A medium-density sector, composed of buildings from 4 to 10 storeys, will ensure a smooth transition between these two ends.

The RioCan shopping center site will adopt a minimum gross residential density of 60 dwellings maximum gross residential density of 120 dwellings per hectare. This threshold was defined to ensure a balance between urban intensity, integration with the surrounding built environment, capacity of existing infrastructure, and long-term economic viability. It also includes the development of a 200-space parking lot reserved for Kirkland residents.

To structure the development of the site, the SPP specifies the various primary land uses designations: residential (primarily), residential and commercial, as well as recreational, cultural and institutional. The mixed-use area (residential and commercial), located mainly around the REM station and the future central plaza, will allow for the grouping of shops, offices, and housing in a friendly and lively environment, and will form the heart of the neighborhood.

The primary land uses plan illustrates the functional organization of the site as well as the gradation of heights and density. The illustrated densities are the maximum gross densities planned for each part of the site to ensure the principle of density gradation across the site.

<u>Available spaces on the site of the targeted SPP undergoing requalification, excluding areas designated for recreational, cultural, or institutional facilities.</u>

Category of available spaces	Definition	Surface area (ha)	Minimum density standards (units/ha)	Housing capacity (units)	Maximum density standards (units/ha)	Housing capacity (units)
Sector 1	Residential	6,19	30	6,19 ha X 45 = 186 units	45	6,19 ha X 45 = 279 units
	Residential and commercial	0,73	30	0,73 ha X 30 = 22 units	30	0,73 ha X 30 = 22 units
Sector 2	Residential and commercial	4,30	60	4,30 ha X 60 = 258 units	130	4,30 ha X 130 = 559 units
Sector 3	Residential and commercial	4,27	60	4,27 ha X 60 = 256 units	260	4,27 ha X 260 = 1 110 units
Entire site		15,49	60	15,49 ha X 60 = 929 units	120	15,49 ha X 120 = 1 858 units

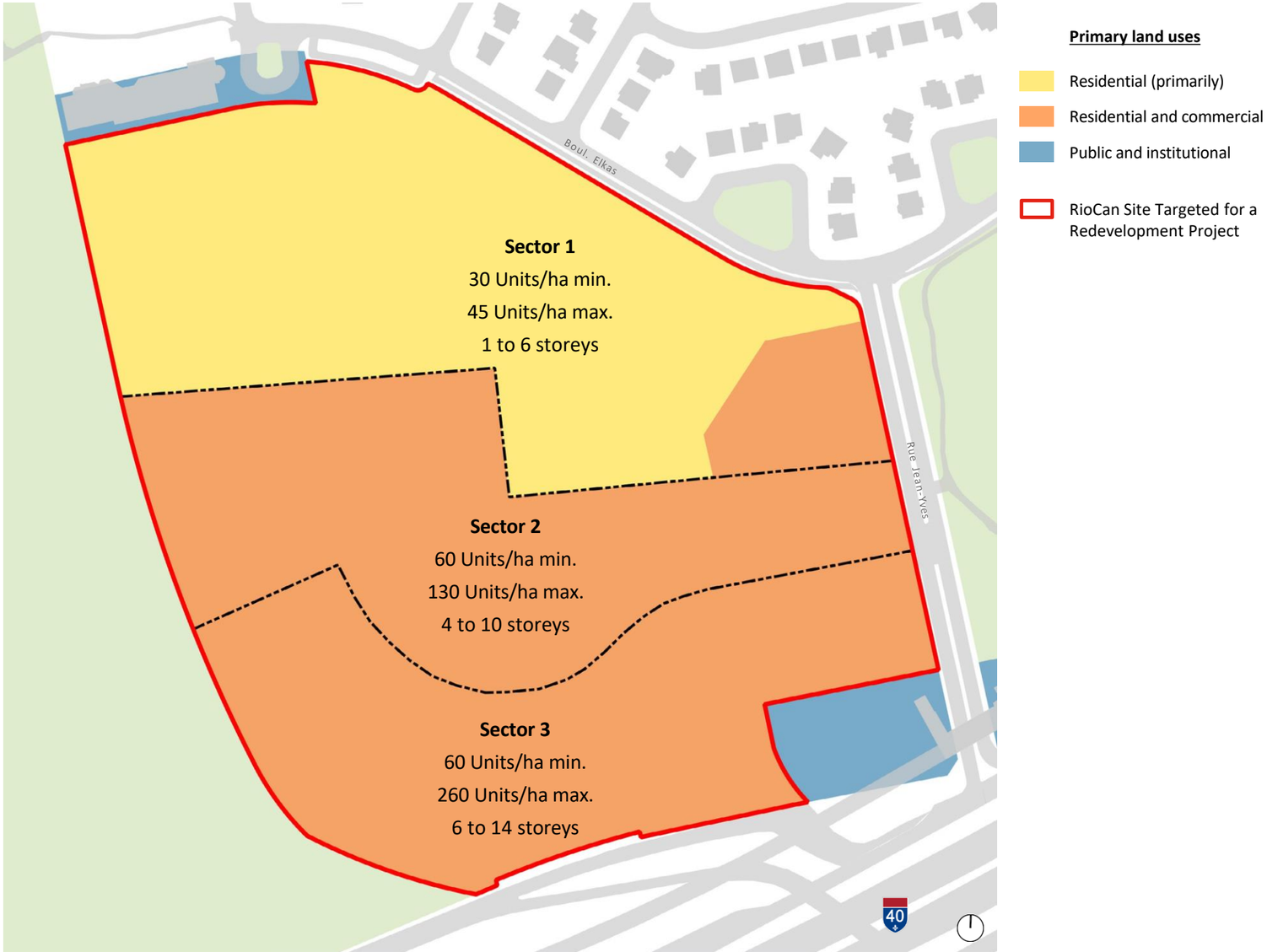


Fig.134. Detailed Land Use Plan

ACTION PLAN

The action plan serves as a management and monitoring tool for municipal services, while also providing a clear vision to partners and citizens regarding the interventions to be anticipated. The proposed actions cover several areas of intervention, including the adaptation of urban planning regulations, the development of public spaces, the improvement of mobility, the enhancement of natural environments, as well as social and cultural integration. The action plan is designed as an evolving framework, intended to be updated based on project progress and collaboration with local stakeholders.

ACTIONS	HORIZON
Sign one or more agreements related to the municipal works required for the development of infrastructure and public utility facilities, including in particular the construction of an incentive parking lot reserved for Kirkland residents, as well as the development of a central plaza.	Short term
Ensure the location of the parking lot reserved for Kirkland residents is no more than 350 meters from the REM station.	On an ongoing basis
Ensure the connectivity of the RioCan site to the Western Link developments providing access to the Express Bike Network and the Grand Parc de l'Ouest.	Long term
Make the necessary amendments to urban planning by-laws to ensure consistency with the Special Planning Program.	Short term
Proposed regulatory adjustments	
Amend the zoning plan and create new specification grids to establish the regulatory framework for the site;	
Revise the grids to align land uses, volumetric parameters, and densities with the designations and densities defined in the Special Planning Program (SPP);	
Adjust the required siting standards (setbacks, floor area ratio, etc.) and building heights;	
Provide specific greening and planting provisions for the RioCan site;	
Amend the Site Planning and Architectural Integration Program (SPAIP) by-law to regulate, in particular, the architecture, materials, building forms, and sustainability measures;	
Provide regulatory amendments to govern the layout, location, and operation of the incentive parking lot reserved for Kirkland residents during the site's redevelopment.	