

D'Anjou Boulevard Reinvented

Supervised Research Project Report

Submitted in partial fulfillment of the Master of Urban Planning degree

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1.0 INTRODUCTION

Many suburban boulevards of the past are no longer serving human settlements in the most efficient, effective, or sustainable ways. In fact, the automobile often dominates such streets in consequence of urban sprawl and the low-density housing that monopolizes the region. Such boulevards are lined with single use buildings with spacious parking lots, are aesthetically dated, and tend to be unsafe for pedestrians and cyclists. Effective public and active transportation are often an afterthought, and car-centric behaviour contributes to congestion as well as environmental nuisances.

Such is the case with D'Anjou Boulevard, in Chateauguay, Quebec which is a working class, suburban arterial lined with low density commercial uses and overwhelmed by parking lots. It is very car oriented bringing issues of noise, traffic safety, and air pollution making active and public transportation options limited and unattractive. It has existing green corridors and the Chateauguay River, which could be better connected to local neighbourhoods and the boulevard itself. There is significant potential for mixed use, and multi-modal growth to increase housing and transportation capacities, in combination with supportive public and social infrastructures.

The goal is to reinvent the street making it a more convivial, dynamic, and responsive environment taking into the consideration the principles of sustainable development and the ideals of a complete living environment with multifunctional spaces, design at a human scale, quality architecture and furnishings, an active economy, and a healthy environment.

This report provides an account of existing conditions, opportunities, and challenges for D'Anjou Boulevard in Chateauguay, Quebec. It explores a range of issues that affect quality of life, including land use, transportation, public facilities, urban design, and the natural environment. The final section of this report synthesizes these findings to generate a proposed vibrant and lively street redesign.

1.1 Regional Context

D'Anjou Boulevard lies in the heart of the City of Chateauguay in the Greater Montreal region of Quebecⁱ (see Figure 1). Situated on Montreal's south shore, it is approximately 25 minutes from the downtown core and has a land base of 49.48 square kilometresⁱⁱ. Chateauguay is part of the administrative Montérégie regionⁱⁱⁱ (see Annex 1) and is also within the Municipalité régionale de comté (MRC) de Roussillon^{iv} (see Annex 2).

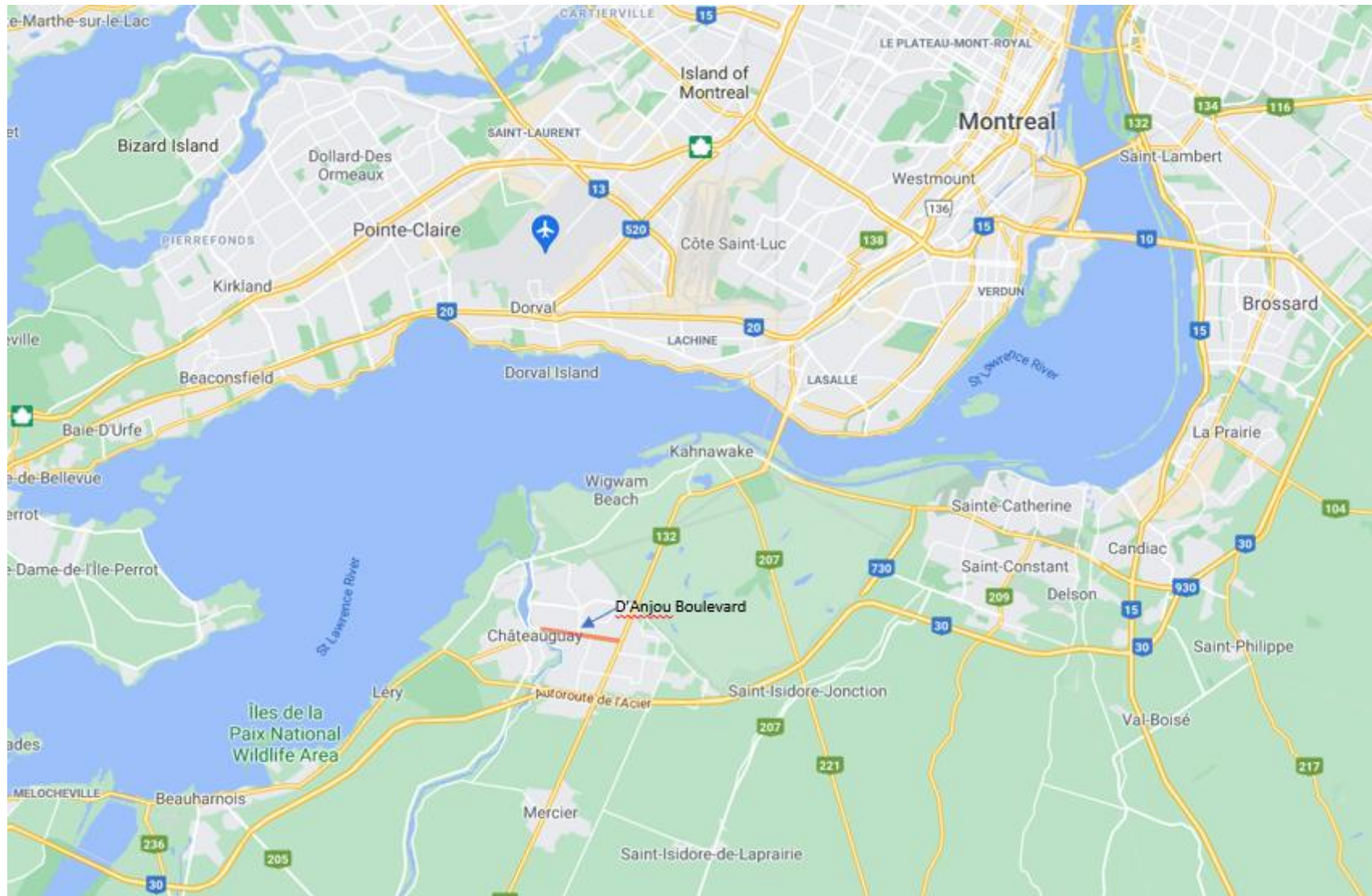


Figure 1, Map of the Greater Montreal Region, 2021 Google Maps

1.2 Study Area History

Prior to European contact, the Kanien'kehá:ka (People of the Flint) First Nations—also known as the Mohawks—occupied parts of the lands that are now considered upstate New York and the St. Lawrence region in Canada (Figure 2) which includes the Chateaugay region^v.

Following European contact, Chateaugay, located at the mouth of the St. Lawrence River, served as a trading center during the settlement of the surrounding area in the mid-1700s^{vi}. Early settlers were of French, Scottish, English, French-Canadian, and American descent. A historic event that marks the area is the Battle of Chateaugay in 1813 in which British troops (with the aid of the Kanien'kehá:ka people) prevented the capture of Montreal by stopping the invasion of American soldiers during the War of 1812^{vii}.

As per the Historic Society of Chateaugay^{viii}, the abolition of the seigneurial regime resulted in the merging of several towns and villages within the Seigniories of Chateaugay and Beauharnois making up the County of Chateaugay in 1855. With a population of approximately 16,000 the main agricultural staples were grain growing and dairy farming. In 1913, the Ville de Chateaugay that we know today was established and has since grown into a bustling, and predominantly residential, suburb.

D'Anjou Boulevard itself is between 145 - 170 years old with its origin coming from local garage owner, Mr. Jules Eddie D'Anjou^{ix}, in 1906. The boulevard began as a cote along the Chateaugay River and now connects to Highway 132 (St. Jean Baptiste Boulevard) and Highway 30 on the Chateaugay perimeter.

1.3 Considerations

With the completion of Highway 30 in 2012, new developments are being realized in the region that pose a threat to the economic viability of the Chateaugay Regional Shopping Centre and other retailers and services provided on D'Anjou Boulevard. Examples of this are the Faubourg Chateaugay, the City of Beauharnois, and the Quartier Dix30.



Figure 2, Source: The Canadian Encyclopedia

Aimed at improving the quality of life for its residents, the Chateauguay has generated several ambitious plans around sustainable development, social development, parks and green spaces, and action plans for people with disabilities (see plan descriptions in section 2.6). As a result, noticeable new buildings and redevelopment of the Chateauguay mall have begun, however, there is no evidence that the street infrastructure will be modified or upgraded. With the uncertain viability of the boulevard, the D'Anjou will benefit from an innovative reimagining that invites mixed-use redevelopment, sustainable transportation, economic development, and social infrastructure.

This plan considers a street redesign in combination with a land use policy for the surrounding corridor. This would permit mixed-use development and sanction an increase in the number of dwellings and new housing options that would provide the required density to sustain the street's commercial activities and services—and ultimately—help diminish urban sprawl. An improved street design could enhance permeability, improve safety, and increase walkability while strengthened public and active transportation options can help mitigate negative environmental impacts. New public nodes with flexible entertainment and green space paired with an attractive street remake could promote social cohesion, enhance cultural diversity, and help create a new neighborhood character.

The remainder of the report will comprise of an existing conditions report, discuss regional plans and considerations as well as design precedents and a proposed modern streetscape.

2.0 EXISTING CONDITIONS REPORT

This Existing Conditions Report provides an overview of the current conditions of D’Anjou Boulevard considering its neighboring community, the City of Chateauguay, and the surrounding region. With the characteristics of a healthy and complete community in mind, the report observes the Boulevard’s current land use patterns, the transportation network, public amenities, its urban design, and environmental conditions. The methods used to collect information on the existing conditions include digital photographs, digitized mapping, the Chateauguay City plans, and various websites.

2.1 Demographics

The figures below provide a snapshot of the 2016 demographic characteristics for the Chateauguay, which is home to 47,906 residents^x. The population density recorded at that time was 13.32 habitants per hectare compared to the City of Montreal which is 38.89 people per hectare^{xi}. The unemployment rate was 8% and the variation in population growth was 4% between 2011 and 2016.

2.1.1 Population and Family Characteristics

Approximately half of the population is over the average age of 41 years old, and more than half of residents are of workforce age between 15 and 64 (Figure 3). Majority of households consist of two people or less (59%), and there is almost an equal number of couples with and without children at home (Figures 4 & 5).

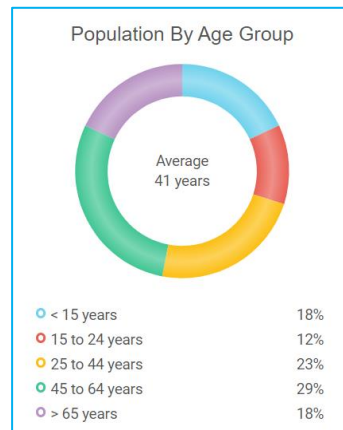


Figure 3, Source: Centris

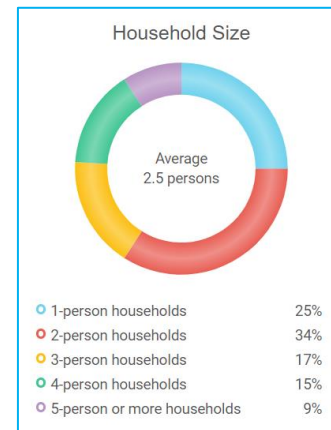


Figure 4, Source: Centris

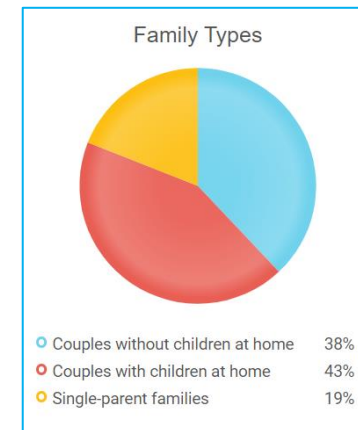


Figure 5, Source: Centris

2.1.2 Dwellings and Household Characteristics

Most Chateauguay residents are homeowners (75%), with the remaining quarter of households being renters (Figure 7). As per Figure 6, majority the City's housing stock is composed of single-detached dwellings (66%), with a significant minority (27%) taking the form of low-rise apartment dwellings (this includes traditional triplexes and duplexes as typical of Montreal architecture). Much of the housing stock was built in the 1960s, with a fifth of units having been added since the turn of the millennium (Figure 8).

Although the Chateauguay Social Development Policy and Senior Friendly Municipality Plan^{xii} states that it has a generous number of social housing and affordable units (747), consultations with community brought forward several issues including long waiting lists for housing, the housing needs for people living in poverty, housing adapted to people with reduced mobility or disabilities, and social housing for elderly who cannot afford senior residence living. The plan also states that 15% of households in Chateauguay live under the poverty line and 18% of families are single parents. Lastly, the City acknowledges the absence of a social housing inclusion policy that can protect residents. Thus, specific housing priorities identified by the City include access to home ownership for young families and access to social housing for the elderly both with and without low income.

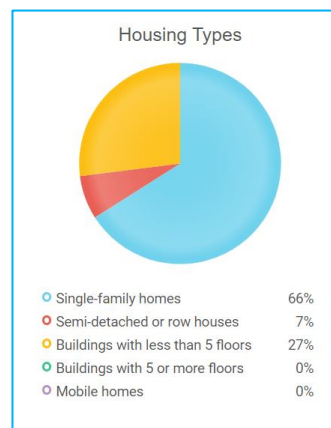


Figure 6, Source: Centris

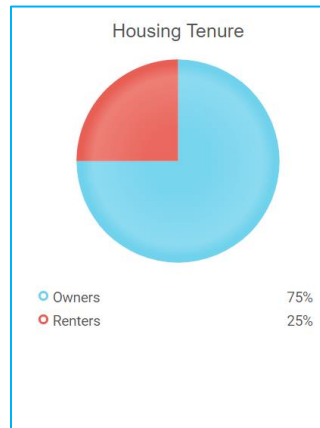


Figure 7, Source: Centris

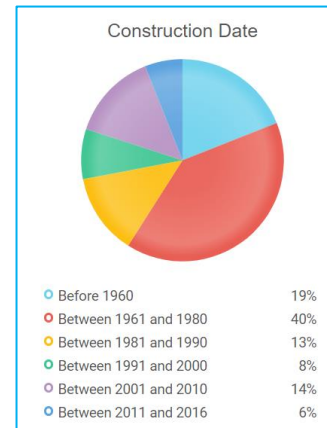


Figure 8, Source: Centris

2.1.3 Household Income in 2015 and Education

Statistics Canada records households in Chateauguay making an average of \$75,852 (Figure 9) meaning half of the City's households are averaging less than that. In comparison, households in the Montreal Census Subdivision are making an average of \$69,046^{xiii}.

According to Statistics Canada^{xiv} more than three-quarters of Chateauguay's population have completed high school or a higher level of education with 33% of the workforce possessing a college or university degree (Figure 10).

In comparison, Montreal educational statistics are as follows: University (35%), College (16%), Secondary/High school (20%), Apprentice or trade school diploma (10.5%) and No diploma (18%)^{xv}. As well, 61% of the Montreal workforce possess a college or university degree.

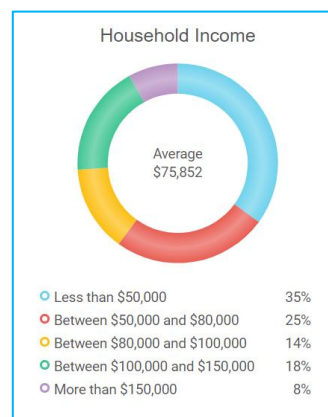


Figure 9, Source: Centris

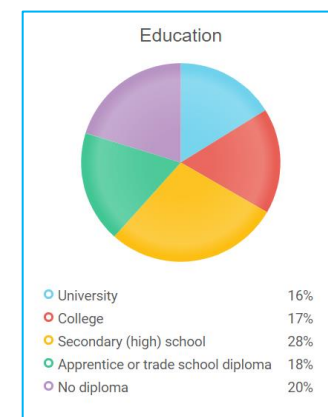


Figure 10, Source: Centris

2.1.4 Citizenship, Ethnic Origin and Languages

The Census Statistics (2016), indicate that 97% of Chateauguay's residents identify as Canadian citizens, and of that, 16% hold immigrant status (Figure 11). As per the Canadian Census of 2016, there has been a decline of 10% in immigration from 2011 - 2016, however, the overall population growth is recorded at 7.1% and the projected growth for 2014 – 2031 is 12.9%^{xvi}.

According to Figure 12, 62% of citizens speak French, however, the 2016 Census indicates that more than half of Chateauguay residents speak French and English (55%) making more than half of the workforce bilingual^{xvii}. For the remaining population, 36% speak only French, 8% speak only English, and 1% speak neither French nor English.

As per the 2016 Census, Table 1 below represents the eight different ethnic groups in Chateauguay with the subcategories showing the most prominent ethnicities.

According to this, majority of Chateauguay's population is white with 4.56% being of North American Aboriginal origins, 8.67% identifying as black and 15.74% identifying with other ethnic groups.

It is important to note that, individuals may have identified under more than one ethnic group.

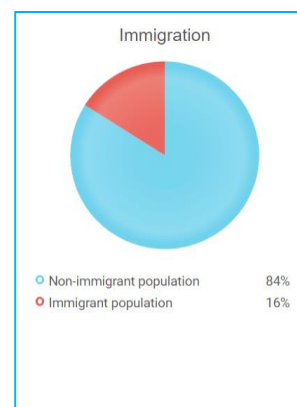


Figure 11, Source: Centris

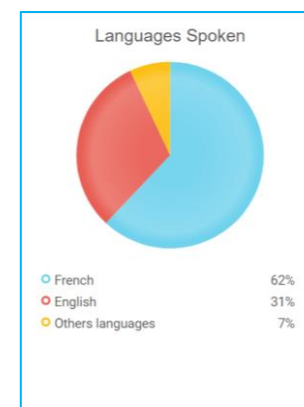


Figure 12, Source: Centris

Table 1, Chateauguay Ethnic Groups as per Census 2016

<ul style="list-style-type: none"> • North American Aboriginal origins 4.56% <ul style="list-style-type: none"> ○ First Nations (North American Indian) 4.26% • Other North American origins 58.44% <ul style="list-style-type: none"> ○ Canadian 55.42% • European origins 44.35% <ul style="list-style-type: none"> ○ French 22.06% ○ Irish 10.13% ○ English 6.52% ○ Scottish 5.57% ○ Italian 4.68% 	<ul style="list-style-type: none"> • African origins 4.74% • Asian origins 4.60% • Caribbean origins 3.93% • Latin, Central and South American origins 2.63% • Oceania origins 0.02%
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2.1.5 Occupations and Industries

Table 2 below demonstrates the top eight categories of occupations for Chateauguay residents as per the 2016 Census National Occupational Classification as well as the top seven industries most prominent in Chateauguay according to the North American Industry Classification System (NAICS):

Table 2, Chateauguay Occupation and Industry percentages.

Occupations		Industries	
24%	Sales and services	14%	Health care, social assistance
17%	Trades, business, finance, administration, transport, equipment operators and related	13%	Retail trade
10%	Education, law, social, community and government services	10%	Manufacturing
9%	Management	7%	Transportation and warehousing, construction, educational services
7%	Health	6%	Accommodation and food services
5%	Manufacturing, utilities, natural and applied sciences and related fields	5%	Professional services, scientific services, technical services
2%	Art and culture, recreation, and sport	5%	Wholesale trade, administration, support, finance, and insurance, waste management and remediation services
1%	National resources, agriculture, and related production		

2.1.6 Commuting Destination, Mode, and Duration

The commute mode chart below (Figure 13) indicates a strong percentage of single-person car, truck and van use and public transit as the second most prominent choice of transportation. Figure 14 demonstrates the time spent travelling by Chateauguay residents with half of travellers spending less than 30 minutes commuting.

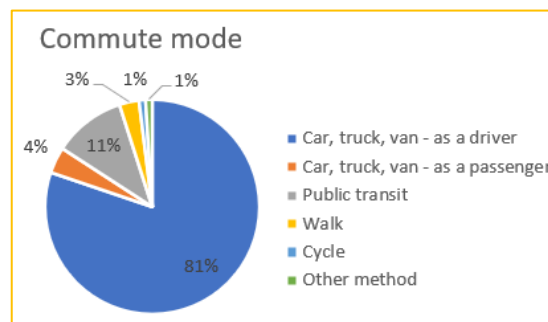


Figure 13

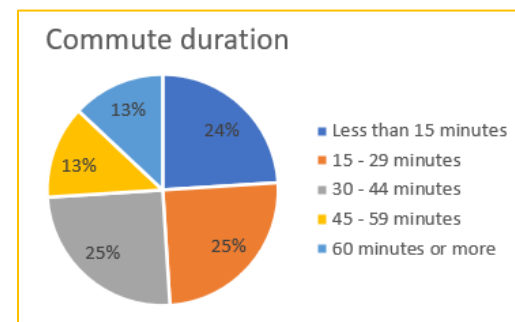


Figure 14

In summary, demographics play a significant role in influencing development, policy decisions, and the design of cities and each of the sections discussed above will be considered when proposing new design solutions for D'Anjou Boulevard.

2.2 Land Use

This section describes the existing land use and development characteristics within the City of Chateauguay. The information in this section has been obtained from various online mapping sources, local community plans, and visual assessment.

2.2.1 Inventory and map of current land uses

Below is the zone coding system (Table 3) and map for Chateauguay—both of which describe the land uses of an area. D’Anjou Boulevard is highlighted in yellow in Figure 15. The eastern side of D’Anjou Boulevard is zoned commercial (C-220, C-225, C-227, C-504, C-509, C-524, C-623) whereas the western part has two residential parcels (H-503; H-620) as well as two community parcels cutting across the boulevard (P-508; P-618). North and south of the street is mostly residential with small pockets of public zones. As per the City of Chateauguay, the red sections are areas for specific construction projects, modification, or occupation of a building.

Today, D’Anjou Boulevard is a bustling minor arterial road that serves approximately 20,000 vehicles daily (based on morning and afternoon rush hour readings), has over 200 businesses and employs over 1000 people (based on a minimum of five people being employed at each business).

Table 3, Zone coding system

Naming Letter	Main Condition
H	Housing
C	Commerce
I	Industry
P	Community
P	Public utility
A	Agriculture

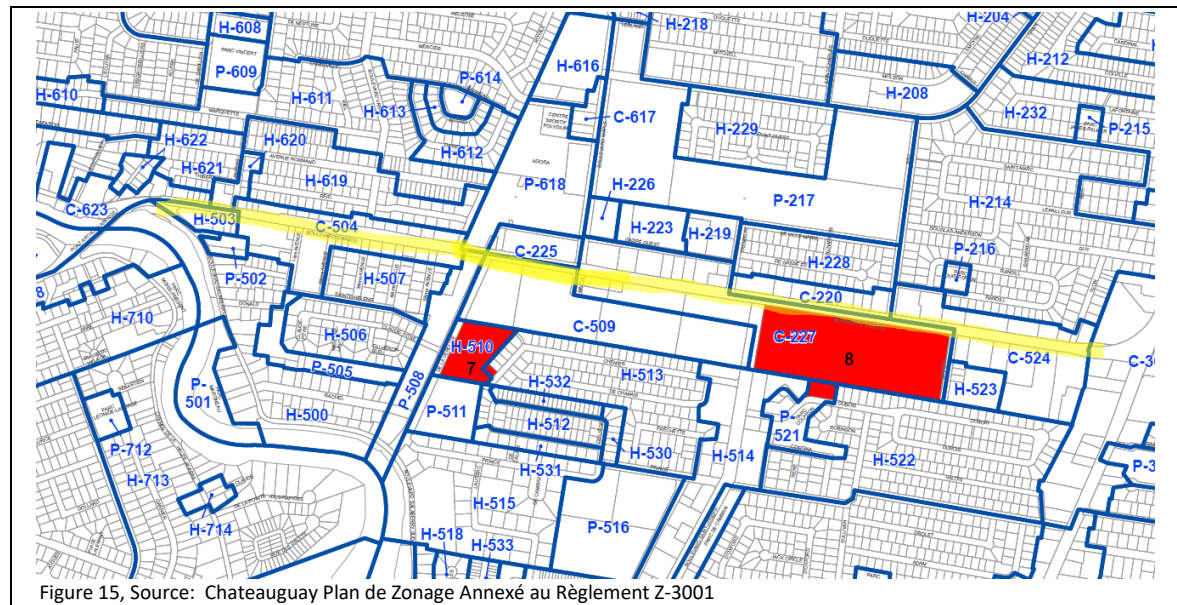


Figure 16 below shows the current land use patterns of the street represented by different colours. The turquoise strip represents D'Anjou Boulevard, and the blue is the Chateaugay River. The red zones are low density commercial spaces, the orange areas are low-density residential spaces, the white are amenities, and the green lines outline the greenspaces. The pink section is highlighted as a future public node that will be discussed in section 4.0, Proposed Redesign.



Figure 16, Source: Google Earth Pro 2021

2.2.2 Existing Land Use



Figure 17, Photo division des Communications Chateauguay

D'Anjou Boulevard is a low-density, auto-centric street bustling with commercial and retail activity as well as various amenities and services as demonstrated in Figure 17. This arterial road runs 2.4 kilometers from the Chateauguay River on its west to its eastern connection on Saint-Jean Baptiste Boulevard also known as Highway 132 (see Figure 1). The topography of D'Anjou is mostly flat with the east side being the highest point and a slight incline towards the river. The built environment of this four- to five-lane multi-directional street consists of grade-level, single-use buildings with large parking lot footprints, and one-meter sidewalks adjacent to the boulevard. It has a handful of residential dwellings and a variety of retail stores, restaurants, and supermarkets (see Table 4). It is a commercial and employment core with office buildings, community amenities, and services like convenience stores, gas stations and car repair shops, beauty salons, pharmaceutical and medical clinics, and financial, architectural, legal, and real estate services.

As well, there are various periods of high-volume traffic throughout the day often making the pedestrian and cyclist experience an unpleasant and unsafe one. The area north of the boulevard and east of the linear park is identified as a low-income neighborhood (see Annex C) that will require a housing policy that protects affordability to avoid gentrification.

The south side of the street has large setbacks and parking lots compared to the north. As well, the former has the 60-year-old Chateauguay Regional Mall and other big-box stores whereas the northeast part of the street is lined with strip plazas and independent buildings. Concrete is ubiquitous throughout the east section of D'Anjou with little vegetation in comparison to the west side that has a residential feel with more greenery and businesses located in refurbished homes (see Figure 16).

Besides a linear park, and the river with a small greenspace and historic site, there is an absence of public nodes along the boulevard and many single-use spaces that offer an opportunity to enhance and diversify the land use activity.

Table 4

	
<i>Pharmacy</i>	<i>Chateauguay Regional Mall</i>
	
<i>Supermarket</i>	<i>Lotus Restaurant with terrasse</i>

Source of photos: Google Maps

2.2.3 Built Form and Density

Buildings in the D’Anjou Boulevard region typically comprise of low-rise buildings, with a few mid-rise buildings, and taller apartment buildings located along major connector roads. On D’Anjou, commercial and professional buildings, such as the mall, retail shops and service providers, vary from grade-level to a maximum of three floors. The big box buildings tend to be set back from the public sidewalk with store entrances oriented towards surface parking facilities. Smaller businesses on the northern side of the street are closer to the sidewalk providing closer pedestrian access, but no clear or safe pathways.



Figure 18, Residential apartment building, Source: Google Maps

D’Anjou Boulevard itself has very little housing with three single-detached dwellings on its west side and one small, dated apartment building in its center (Figure 18). Housing density in the surrounding area consists mainly of single-detached dwellings and a handful of duplexes, 3-storey condominiums, and apartment buildings to a maximum of five storeys. As well, there are three independent senior housing buildings—two of which were recently built in response to the Social Development Policy and Senior Friendly Municipality Plan. The only building above five stories in the area is one of the new retirement residences standing at seven storeys. Majority of residences in the area have generous setbacks and lush vegetation.

2.2.4 Density and Intensity

Currently, D’Anjou is zoned commercial and has low density and low urban intensity. Based on the Census subdivision for the Chateauguay centre, the population density is 13.32 people per hectare. According to the Social Development Policy and Senior Friendly Municipality Plan^{xviii}, the City of Chateauguay has experienced steady growth since the 1960s including an increase 4,3% in its population from 2001 – 2006 and 7.3% between 2006 – 2011. As well, the City projects a growth rate of 12.9% from 2014 – 2031. As for intensity, most buildings are single-purpose, grade-level buildings that do not support a good concentration of multi-use functions like office, housing and retail clustered together. The current low-density configuration offers potential for ‘gentle intensification’ and a mixture of residential with commercial uses to increase its potential for sustainable, multimodal population growth.

2.2.5 Development Projects



Figure 19, Source: Google Maps

The implementation of the 2014 – 2020 Chateauguay Sustainable Development Action Plan has sparked revitalization projects on the boulevard evidencing effort to densify and intensify the street. For example, the new Vice-Versa Chateauguay retirement residence is the area's first seven storey building offering 175 units and providing various amenities, services, recreation opportunities and public spaces to attract residents.

The Chateauguay Regional Mall is receiving a new façade and several new buildings with modern characteristics and terrasses are being added to the mall's parking lot to give it an outdoor and commercial lifestyle centre characteristic like the Quartier Dix30 in Brossard, Quebec.

Furthermore, a brochure from Colliers International, owners of the Midway Center on D'Anjou, mentions studies and preliminary conversations with the City of Chateauguay to expand their grade-level building to a 220+ condo unit with 260 underground parking possibilities^{xix}. This development activity indicates a demand for intensification, yet there is currently no local planning policy framework in place to ensure that the intensification is supported by multimodal transportation infrastructure, appropriate public space, amenities or services, and good urban design principles. This is the gap that this plan seeks to address.

As well, two small public seating spaces have been realized. One in the city centre (Figure 19) and one along the riverbank discussed further in section 2.4.4, Parks and Recreation.

2.3 Transportation

This section describes the existing transportation system of Chateauguay—and particularly D'Anjou Boulevard—with a focus on connectivity, public transit, mobility, travel patterns, road conditions, parking, transportation technology and programs and incentives. The information in this section was obtained from the City of Chateauguay online sources and visual analysis of existing conditions.

2.3.1 Connectivity

Two major freeways are accessible from D’Anjou Boulevard—Highway 132 providing Chateauguay residents access to the Mercier Bridge leading to Montreal, and Highway 30 connecting to other south shore cities and Highway 20 towards Ontario (see Figure 1). Most collector roads that feed into the boulevard are less than 500 meters apart. Both D’Anjou and the adjacent neighborhoods are made up mostly of T-intersections, and there are three cul-de-sacs in smaller residential streets—all placing limits on connectivity and permeability as well as accessibility to public transportation. Streets and paths within the residential developments connect internally, but there is typically only a single point of connection to the larger street system outside of the development. Lastly, residents have a direct route from D’Anjou to the Chateauguay River, by foot, bike, or car, through the linear park and on the easternmost part of the street. Thus, residential developments that have limited access to the public realm and little integration with D’Anjou boulevard will be noted for the redesign phase.

2.3.2 Public Transit Network

All bus services in Chateauguay are provided by Exo which is a regional train, bus, and paratransit commuter network specialized in transit in the Montreal metropolitan region^{xx}. Some of the bus routes that pass through the City of Chateauguay connect with the neighbouring communities of Mercier and Beauharnois on the south shore. Regardless of destination, all the Chateauguay bus routes begin and end at Angrignon Metro station which is a multi-modal transit station in the City of Lasalle on the Island of Montreal.

Exo bus services are provided daily on D’Anjou Boulevard with reduced frequency on the weekends. As the City’s sole public transit network, 11 of the 17 bus routes provided pass on D’Anjou providing frequent access. Sixteen bus stops can be found on the boulevard with seven that are covered. With most of Chateauguay’s seasons being on the cooler side and increased exposure to ultraviolet rays due to climate change, creating a pleasant experience for patrons is a priority for this plan (see Figure 20).



Figure 20, Pedestrian exposed to passing vehicles and the elements while waiting for the bus.

2.3.3 Mobility

Regarding the pedestrian network and conditions, sidewalks run straight on either side of the street throughout the length of D'Anjou. Besides a few small repairable sections, the conditions are good and free of obstructions. As well, there are frequent at-grade crossings and small blocks to allow pedestrians to conveniently reach destinations. However, with narrow sidewalks adjacent to the roadway, pedestrians may be at risk to close passing vehicles and other nuisances like noise, getting splashed by passing cars, and snow-filled sidewalks in the winter (see Table 5). The rightmost photo in Table 5 is an indication of the need for a wider pathway as there is wear and tear to the left of the sidewalk.



Table 5, View of narrow and unpleasant sidewalks dangerously close to high-speed traffic and lacking visual interest.

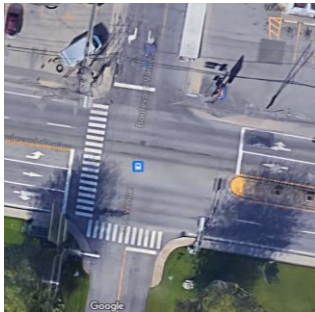


Figure 21, Shows passing on only one side of the street and lacks a clear pedestrian crossing from the northern collector road.
Source: Google Maps

Chateauguay has a Walk Score of 44 out of 100 with 100 being the most preferred (as in Annex D). This rating classifies Chateauguay as a car-dependent city that requires a vehicle to run most errands^{xxi}. For the most part, D'Anjou Boulevard allows for free and easy pedestrian movement although some of the major intersections only allow for passage on one side of the street (Figure 21). Main intersections use white coloured paving to indicate crossing points while all the collector road crossings are unmarked (Figure 21). The sidewalks are raised, one meter in width, and have tactile waling surface indicators for visually impaired users at main intersections only (Figure 22). Audible crossing alerts are installed at all intersections, but risk being drowned out by noise.



Figure 22, Tactile waling surface indicator for visually impaired. Source: Patricia Deer

Table 6 captures two crosswalks that could pose serious navigational challenges and possibly bring harm to visually or physically impaired users. Of note, crossing #1 is the only part of D’Anjou that lacks a crossing for more than 500 meters. This stretch is 629 meters and is cumbersome to pass once reached. Given that this is a new configuration, finding an alternative solution will be arduous. As well, most buildings—such as the Chateauguay mall—have no segregated or formal pedestrian paths leading to their entrances (Figure 23). Resolving the issues raised above and improving mobility and walkability in the area will be high priorities.



Figure 23, Source: Patricia Deer

Table 6, Potentially hazardous crosswalks

<p>Crossing #1, East D’Anjou</p>				
<p>Crossing #2, West D’Anjou</p>				

Photo sources: Google Maps and Patricia Deer

2.3.4 Bicycle Network

Indicated by green lines on the map below (Figure 24), the existing Chateauguay bicycle network connects from only one street to D’Anjou Boulevard. With a number of collector roads, there is great potential to connect more paths and develop an active transportation route on the street. Currently rated with a bike score of 55 on the Walk Score website (Annex D), Chateauguay is considered bikeable as it has some bike infrastructure^{xxii}. However, streets play an important role in determining cyclability and safety. According to the Centre for Disease Control and Prevention^{xxiii}, high-stress and low-stress streets refers to the level of stress the street segment imposes on cyclists with the classification based on traffic characteristics such as road width, traffic speed, the presence of a parking lane, and whether bikes

are in mixed traffic, bike lanes, or on segregated paths. Based on this, D'Anjou would fall within a medium-stress street as there are no parking lanes or obstructions on the road, however, there is no segregated bike path or shoulder for cyclists to ride on which obligates them to share the street with traffic moving at 50 km/per hour. An active transportation route would be ideal on D'Anjou Boulevard to reduce risk and will be a key feature in the plan.



Figure 24, Source: Google Maps

2.3.5 Daily Travel Patterns

Weekday morning congestion flows from west to east on D’Anjou as residents seek access to the Chateauguay Park-and-Ride on Boulevard St. Jean Baptiste (Highway 132) or the Mercier Bridge. Conversely, the traffic flows in the opposite direction during rush hour in the late afternoon and often causes congestion at the Arthur Laberge Bridge by the river. On weekends, the street traffic peaks from 11:00 a.m. – 5:00 p.m. as residents flock from many nearby south-shore neighborhoods to shop, attend appointments, run errands, or for recreation. These daily travel patterns can influence street design and will be taken into consideration.

2.3.6 Road Conditions

For the most part, D’Anjou Boulevard is well maintained and in mediocre condition according to condition and capacity ratings of the American Infrastructure Report Card 2021^{xxiv}. With signs of wear and tear the road requires minor maintenance and repairs as it has no potholes, few bumps, and no obstructions (Table 7).

Table 7, Photos of D’Anjou Boulevard road conditions.



Source of photos: Patricia Deer

2.3.7 Parking

There is no “on street” parking provided on D’Anjou Boulevard and the parking lots currently serve a single use, are in abundance, and are tariff-less throughout its length. Parking lots are used most on weekends and only reach maximum capacity during Christmas season. Active transportation parking is rare and appears to be a second thought where provided.

2.3.8 Air-Quality/Greenhouse Gas Emissions

Because of high volumes of daily vehicle traffic and the sparse tree canopy cover on the street, air quality is compromised and needs to be addressed. Therefore, climate action initiatives will be proposed to help reduce greenhouse gas (GHG) emissions and heat island effect.

2.3.9 Noise

Ambient noise levels on D’Anjou are caused by automobiles, motorcycles, delivery trucks and other heavy vehicles that use the street (Figure 25). Rush hour and other peak times are the most common times of nuisance and can be unpleasant—and even deter pedestrians and cyclist from wanting to use the street. This plan will look at opportunities to reduce noise conflicts.



Figure 25, Source: Patricia Deer

2.3.10 Transportation Technology

Chateauguay currently has two private electric charging stations on the strip (as per Google Maps). To date, intentions to plan for autonomous vehicles, car-sharing, and public electric charging stations are not evident in any of the City's plans although Uber eats is now available^{xxv}. To combat climate change and align with other city plans, this plan will promote these transportation technologies through recommended policy and design.

2.3.11 Programs and incentives

Chateauguay offers Vélo-bus services on the entire bus network so travellers can bring their bicycles. However, the rack is limited to two bikes and users must be at least 16 or accompanied by an adult to use the rack. Besides this and regular paratransit services, Chateauguay plans do not indicate any further transportation programs or services that pertain to D'Anjou Boulevard.

2.4 Public Facilities, Services, and Safety

This section of the report illustrates the existing public safety and infrastructure facilities, public amenities, and parks as well as public services provided in Chateauguay. Information was gathered from the City of Chateauguay online sources, City plans, and visual observation.

2.4.1 Public safety

Police and fire services protect property and enhance personal safety and D'Anjou Boulevard has both within its vicinity. The Chateauguay Fire Department is located on the western part of D'Anjou, and the Chateauguay Police are in proximity on a northern collector road along the linear park. The redesign will ensure public safety access routes remains as is or improved.

2.4.2 Public amenities: community services, education, health

Good access to public amenities that are within proximity to one another can benefit local citizens. D'Anjou has several offices, schools, one daycare and training facilities within its neighborhood. On the boulevard itself has the Municipal Court of Chateauguay, Transport Quebec, the Chateauguay Local Employment Centre, and the Chateauguay Community Mental Health Organization. As well there is the Chateauguay Fire Station, several public health institutions and medical centres in addition to two educational institutions: Valleyfield College Study Centre and the Centre of Popular Education. In the surrounding region, and within walking distance, are also an elementary school, a high school, and an adult education institution. As well, the linear park has a police station, library, a community center, and recreation area with some adjacent social housing.

2.4.3 Infrastructure (water, sewer, etc.)

The infrastructure system, including wastewater, water supply, and storm water conveyance, ensures that growth and development are responsibly managed and accommodated. D'Anjou's sewage system appears to be a combined sewage overflow system that captures surface runoff water from storms, melting, and rain through manholes. Extreme weather events may cause inundation—especially near the river—if the water treatment plant does not have enough capacity.

Furthermore, the Chateauguy River is the only natural water source on D'Anjou under the exclusive jurisdiction of the Society for the Conservation and Development of Watersheds in the Chateauguy Zone)^{xxvi} and the MRC de Roussillon^{xxvii}. Both bodies have plans to maintain the river quality and share jurisdiction over all the waterways within the region. Therefore, this plan will ensure that any changes made to the boulevard will not affect the water quality of the Chateauguy River.

Besides the Chateauguy River, there is no other surface water, however, there is one covered water source that stretches from the Chateauguy River to the commercial area on D'Anjou (see Figure 26). The possibility of re-exposing this covered water source will be given consideration.

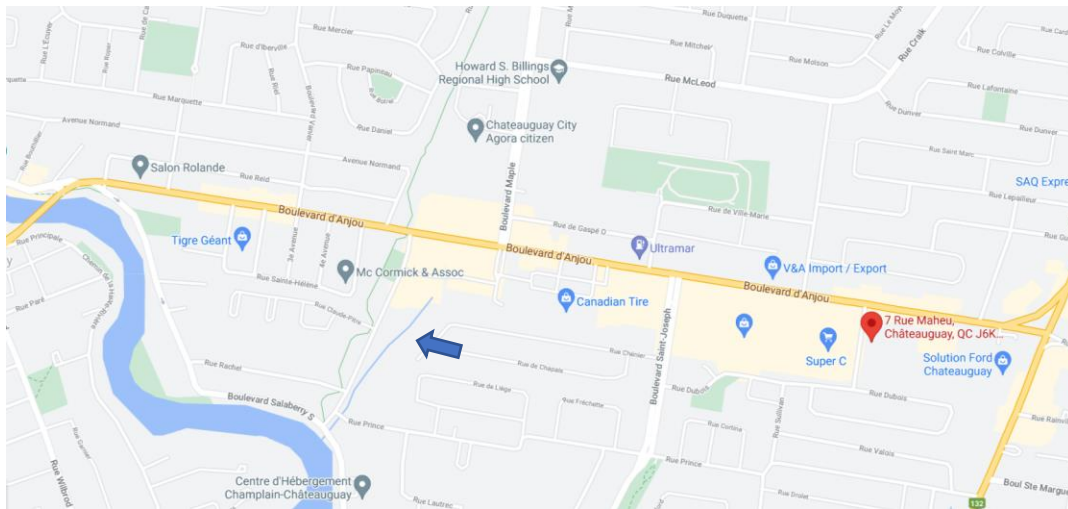


Figure 26, Source: Google Maps



Figure 27, Source: Patricia Deer

The environmental constraints most likely to affect D'Anjou Boulevard are flooding of the Chateauguy River and winter conditions. According to the Quebec government's map outlining zones at risk of flooding (the purple hue in Figure 27), D'Anjou boulevard (indicated by the red line) is not at risk of inundation neither along the river, nor throughout the street's length^{xxviii}. Although flooding is low risk, development of

infrastructure, buildings, and vegetation should bear all of this in mind with changing climate conditions. As well, planning for winter conditions for pedestrians and drivers is important—especially since snowfall can begin as early as November and last until mid-April.

2.4.4 Parks and Recreation

Parks and open spaces provide opportunities for recreation, relaxation, walking, and community gathering. D’Anjou has a perpendicular linear park that is a central community gathering space with a children’s park, a skateboard park, a community centre, a municipal library, a swimming facility, and open and covered public gathering spaces. South of D’Anjou, the linear park has a shared community garden and an active transportation trail leading to the Chateauguay River. D’Anjou itself would benefit from more public greenspaces and seating areas in addition to the two small ones that exist—Figure 28 by the riverside and Figure 19 previously mentioned in section 2.2.5, Development Projects.

Lastly, the street bears one historic site on its west end by the river marked by the Village Cross (Figure 29), which has roots dating back to 1840 when it inaugurated as a memory of the people’s faith in Chateauguay^{xxix} (Laberge, 2006). Since, the cross has been replaced and moved on the site several times due to street reconfigurations. This plan will ensure that current uses of community space, and functions that take place in public spaces, can be maintained.



Figure 28, Seating area by the Arthur Laberge Bridge



Figure, 29, Both photos are of the Village Cross at the crossroads of D’Anjou Boulevard and Salaberry Boulevard Sud. The left photo dates to around 1900 (Source: Journal annuel de la Société historique de la vallée de la Chateauguay, 1973) and the right was taken November 2020 (Source: Google Maps, November 2020)

2.5 Urban Design

This section describes the existing urban form of the planning area and highlights some of the opportunities to create responsive environments and innovative and practical design improvements to the street.

2.5.1 Blocks and Lots

D'Anjou and its surrounding region is made up of six superblocks which are all rectangular and approximately 500 meters in length and around 450 meters in depth. The boulevard itself is straight with a taxonomy of street patterns in the surrounding residential area made up of gridiron, curvilinear and rectilinear streets. As noted previously in the Connectivity section, 2.3.1, efforts will be made to factor connectivity, accessibility, and permeability into the design.

Commercial lots on the south side of the street are significantly larger than those on the north to accommodate the big-box stores and their parking lots. As well, the big box stores have significant amounts of space between them whereas the smaller business on the opposite side of the street are closer and have lots with shared strip malls. Thus, the larger lots provide the opportunity for added public spaces and/or infill.

2.5.2 Edges and Neighborhoods

D'Anjou Boulevard and its immediate surrounding region can be classified as a neighborhood that has a low urban centre as well as a residential and employment environment. Figure 1 provides an aerial view of the boulevard that makes it easy to distinguish the edges of the urban center. For example, there is a clear delineation between the southern shopping district and the residential neighborhood behind it. As well, the western part of the street has several edges starting with the linear park followed by a predominantly residential and lower urban environment with more small greenspaces and ends with the river on its western fringe. The northern edge of the street is less delineated with uneven sized lots and streets, various sized buildings and the linear park with a less structured building setup and grounds.

On a microscale, there are two evident edges where the Chateauguay Regional Mall and the D'Anjou strip mall sit on a lower elevation than the street creating an obvious separation. However, new edges that can create robustness and add character to the street will be examined.

2.5.3 Streets

D'Anjou is heavily auto-centric street with little thought for the pedestrian experience. Aesthetically, the street comprises a substantial amount of concrete, above-ground hydro electricity wires, street lighting on the hydro poles, and small street signs that are segregated from overhead traffic lights (Figures 30 & 31)—all making the street look cluttered. Deciduous trees line the boulevard and are leafless for a large portion of the year (Figure 32). There is a shortage of public spaces for people to interact and hold programming or activities although there is a handful of steel benches at public transit stops (Figure 33). Signage throughout the street is incoherent (Figure 30) and there are no water features. D'Anjou can benefit from a more orderly and attractive look and become a place where people want to spend time.



Figure 30, Source: Patricia Deer



Figure 31, Source: Patricia Deer



Figure 32, Source: Patricia Deer



Figure 33, Source: Patricia Deer

2.5.4 Lighting

The main source of lighting on the street is provided by the streetlights on the hydro electric poles on the north side of the boulevard (Figure 30) and commercial parking lots providing a secondary source of lighting. There is one small area of the street where the lighting fixtures are decorative streetlight poles (see Figures 34 & 35).



Figure 34, shows decorative streetlight poles, Source: Patricia Deer

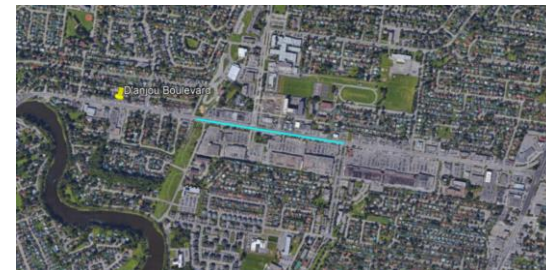


Figure 35, shows the section of D'Anjou with decorative streetlight poles, Source: Google Maps

2.5.5 Buildings

Representative building types in the planning area are shown in Table 9 on the following page. All but two buildings on D’Anjou are positioned to frame the street helping to minimize blind frontages and allow for casual surveillance of the street through windows and doors. Building entrances are set back far from the street and a considerable number of buildings are aesthetically dated and likely not up to Leadership in Energy and Environmental Design (LEED) standards.
















Neighborhood single-family dwellings have typical characteristics of post-War traditional-suburban homes with smaller houses, larger parcel sizes, and no garages. They are street facing and typically have 10-meter front and rear setbacks. Almost all back yards are fenced whereas most frontages are unfenced and have a driveway, walkway, and grass.

D’Anjou has several vacant and dated buildings with heavily concreted landscapes—all of which would benefit from revitalization (Table 8).

Table 8, Dated and vacant buildings on D’Anjou Boulevard.



Table 9, Representative Building Types

<i>Building Type</i>	<i>Examples</i>		
Residential Single Family			
	<i>Post-WWII</i>	<i>Modern</i>	<i>Traditional</i>
Residential Multi-family			
	<i>Duplex</i>	<i>Multiplex</i>	<i>Apartments</i>
Commercial			
	<i>Corner retail</i>	<i>Strip mall</i>	<i>Shopping Centre</i>
Employment			
	<i>Professional Office</i>	<i>MedicaléBusiness centre</i>	<i>2nd Floor Office</i>
Civic/Institutional			
<i>Photo sources: Google Maps</i>	<i>Place of worship</i>	<i>Schools</i>	<i>Public Facilities</i>

2.5.6 Land, Form and Natural Features

The topography of D’Anjou is slightly varied with its highest point being 38m on the east to its lowest point of 31m on the west. Its maximum slope is 7.9% and its average slope is 2.3%^{xxx}. The Chateauguay River is one of the city’s greatest natural features for which D’Anjou has three direct vehicular routes connecting its south side to the river as well as one active transportation route. As for northeast of D’Anjou, the linear park and street grid both prohibit direct access to the river except for a few residential roads west of the linear park.

2.5.7 Community Character and Identity

D’Anjou lacks building and street design coherence as well as public nodes for people to gather, artwork to be displayed, and cultural diversity to be celebrated. This provides a great opportunity to create spaces that accommodate a variety of uses and users, invite citizens to personalize the street, and make other modifications that can ensure the boulevard stays within character and identity of its citizens and provides a strong sense of “place”.

2.5.8 Urban Forestry, Parks, Recreation and Open Space

Chateauguay’s Parks and Green Space Plan 2018 – 2028, highlights the need for parks and greenspaces both north and south of D’Anjou Boulevard. Currently, the south side of the street is sparsely lined with mostly deciduous trees that are less than halfway to maturity whereas the north is almost completely absent of trees altogether. In addition, west of the linear park has more mature trees that are widely spaced hindering the ability to provide appropriate amounts of shade. The boulevard, itself, has no recreation opportunities but provides access to the linear park which has a children’s play park, a skateboard park, and an active transportation trail. Thus, an approach to improve access to other parks, recreation, and public/greenspace will be taken.

Furthermore, in line with the conservation goals of the 2018 – 2020 Chateauguay Parks and Green Spaces Master Plan^{xxx} and the MRC de Roussillon environmental regime to protect the Chateauguay-Lery greenbelt^{xxxii}, this plan will make great effort to conserve all vegetation along D’Anjou.

Finally, involving D’Anjou business owners in the development of a street tree plan and generating their awareness of the most suitable tree species for the boulevard can help fill the gaps where trees are most needed, improve the boulevard aesthetics, and provide many other benefits. As well, added shrubs, flowers and other landscaping can add to the beauty and livability of the community.

2.6 Regional and Planning/Policy Context

This section of the report involved a scan of regional plans to determine the overall planning context and gain an awareness of goals for the greater Montreal region that this plan can align with. Research included a review of the Montreal Master Plan, a scan of the Montérégie region, the Municipalité régionale de comté (MRC) de Roussillon^{xxxiii} Plan, and the Société de conservation et d'aménagement des bassins versants de la Zone Châteauguay (Society for the Conservation and Development of Watersheds in the Chateauguay Zone)^{xxxiv}.

As mentioned in section 1.3, Considerations, Chateauguay has generated several plans such as the 2014 – 2020 Sustainable Development Action Plan^{xxxv}, the Social Development Policy and Senior Friendly Municipality Plan^{xxxvi}, the Action Plan for People with Disabilities 2019 – 2020^{xxxvii}, and the 2018 – 2020 Parks and Green Spaces Master Plan^{xxxviii}. More specifically, the Sustainable Development Action Plan has four short- and medium-term urban development actions to support the revitalization of the City centre: 1) monitor the financial incentive program relative to the revitalization of downtown Chateauguay, 2) create a renovation assistance program for heritage buildings and equipment, 3) modify town planning regulations to allow for revitalization, and 4) implement a financial incentive program for the renovation and revitalization of commercial buildings.

Based on the larger context, the existing conditions report, and the Chateauguay plans, the following goals have surfaced:

- Increased density and intensity
- Complete streets
(Inviting, pedestrian safe, and socially cohesive)
- Designing functional, attractive, and multi-use spaces (aesthetics, natural features)
- High quality urban landscape
- Improving mobility (connectivity and permeability)
- Encouraging modal shift
- Maintaining affordable housing
- Sustainability practices
- Increasing economic prosperity (including tourism)

2.7 Section Summary

Keeping in mind current planning practices of working towards complete streets, this Existing Conditions Report evidences the need for innovative change on D'Anjou Boulevard. Current restrictive land uses, dated buildings, and limited transportation modes, as well as inadequate infrastructure and an insubstantial street design provide the conditions that are conducive to revitalization.

A new mixed land use policy will allow for a built form that minimizes car usage and parking lots, favours the pedestrian and cyclist, and provides new housing options to support increased densification and intensification. Supplementary modes of transportation can increase transportation capacities, and the Chateauguay River and existing green corridors can be better connected to D'Anjou Boulevard and the surrounding neighbourhood. D'Anjou Boulevard has the potential to be transformed into a convivial and lively City center that is sustainable, offers a

complete living environment, attracts people to live and visit, and generates economic activity. The goal is to reinvent the street making it a more dynamic and appealing with multifunctional uses and supportive public and social infrastructure.

The following sections of this report synthesize these findings and look at design precedents and a redesign of D'Anjou Boulevard.

3.0 RESEARCH AND PRECEDENTS

The following precedents take into consideration the planning context, the existing conditions, and the goals of the plan. This includes opportunities to develop public grounds, improve and introduce new transit modes, greening the street and surrounding area, and all the different urban design elements. This section of the report is a compilation of inspiring street revitalization initiatives regionally, nationally, and internationally. Looking at some of the wise practices, photos will be used to help demonstrate existing and potential design ideas.

The following large-scale projects are key sources of inspiration for the D'Anjou Boulevard redesign concept:

3.1 Lancaster Boulevard California

3.2 Taschereau Boulevard

3.3 Cheonggyecheon, Seoul, South Korea

Subsequent influences of consideration are organized around the following themes:

3.4 A Public Node

3.5 Complete Street

3.6 Intersections

3.7 Active Transportation

3.8 A Recreational Attraction

3.1 Lancaster Boulevard California was transformed from an auto-centric, five-lane street (Figure 37) to a focal node of celebrations and events. Reduced to two bi-directional lanes, tree-shaded public ramblas were added to the center of the thoroughfare giving it some much needed character and a cohesive design.

The rejuvenated downtown is now a shared community space with multiple performance venues and the ability to accommodate large crowds. Majority of the parking is behind the buildings with some on-street and angle-in parking at the street's center. Up to 800 housing units were built or restored. This nine-block makeover has generated 48 new businesses, 802 permanent jobs, 1,100 construction jobs, and has doubled tax revenues.

Currently lacking a central space, Chateaugay would benefit from a new downtown core, like Lancaster Boulevard (Figure 38), to attract residents and visitors for celebrations and events (Figure 36).



Figure 36, Source: Congress for the New Urbanism^{xxix}



Figure 37, Prior to redesign, Source: Congress for New Urbanism^{xl}

“The city has never seen such crowds downtown... tens of thousands attend its yearly events.”

-Jason Caudle, Deputy City Manager



Figure 38, After redesign, Source: YouTube^{xli}



Figure 39, Source: le courrier du sud^{xlii}

3.2 Taschereau Boulevard has a revitalization plan to increase density and intensity through the addition of multi-use buildings and increased residential development in the surrounding neighborhood (Figures 39 & 41). The goal is to achieve an attractive living environment with quality architecture, an ecological aesthetic (Figure 42), cohesive signage and fittings, and less visible parking. Transit and active mobility will be prioritized as well as greening the boulevard to reduce greenhouse gas emissions, mitigate heat island effect, and beautify the street. Shared paths will be segregated from the roadway and run along the full length of the street. Some of the street's other inspiring elements are public transit nodes distanced from the roadway (Figure 43) and electric car charging stations.



Figure 40, Source: Patricia Deer

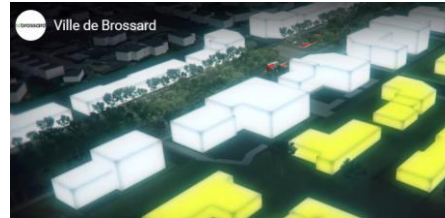


Figure 41, Source: Patricia Deer



Figure 42, Source: Patricia Deer



Figure 43, Source: Patricia Deer

Taking from the Taschereau example, D'Anjou Boulevard can adopt similar zoning practices that permit mixed-use development (like Figure 40) to help the street thrive through increased density and intensity. As well, greening the street and adding car charging stations can contribute to sustainability, and wider transit nodes can create safer environments by moving pedestrians away from the passing vehicles.

3.3 Cheonggyecheon was formerly a 50-meter-wide arterial road that has now been restored, by SeoAhn Total Landscape, to a historic stream that runs 11 km through downtown Seoul (Figure 46). An attractor of 64,000 visitors daily, the waterway has many social, environmental, and economic benefits^{xliii} (Figures 44 & 45).

This inspiring feat is a good reminder of the importance of the element of water in the city and how people are drawn to it.



Figure 44, Source: mikyong kim design^{xliv}

Chateauguay's River is currently an underused space with a simple design of lined trees and a bicycle path. This project can draw on the Cheonggyecheon stream example and become a lively public space where people can reconnect with the natural elements and appreciate the water and trees. Existing walking and cycling paths that connect D'Anjou Boulevard and the river can be improved by adding points of interest along the way.



Figure 45, Source: Istock^{xlv}



Figure 46, Source: Science Direct^{xvi}

3.4 A Public Node on D'Anjou Boulevard with a sunken plaza and water feature can be enjoyed by residents and visitors alike. Similar to the FAB Park Solar, a sustainable building can double as an open-air entertainment space on the upper floor that overlooks the plaza and street to maximize views for spectators. With a tree canopy, ecologically aesthetic greening, and a lot of seating options, visitors can relax or enjoy the water plaza that can double as a place to cool off in the summer and place to skate in the winter.



Figure 47, Source: INHABITAT^{xvii}

Los Angeles FAB Park Solar, designed by OMA and IDEO near the Los Angeles City Hall (Figure 47) is an inspiration for a large public node that enhances greenspace and an event center.



Figure 48, Source: Urban Development Bureau of Taichung City Government^{xviii}

The Outdoor Amphitheatre Taichung City, Taiwan (Figure 48), can be drawn on with its grand entrance to the public node, flags can be installed that represent the different ethnicities of Chateauguay's residents, and the City name sign can mark the City's core.



Figure 49, Source: JML Water Feature Design^{xlix}, Elizabeth Quay day and nighttime features.

A **Water Plaza** like the Elizabeth Quay water feature in Perth, Australia by JML Water Feature Design (Figures 49 & 50) can be designed to double as a skating rink in the winter.



Figure 50, Source: JML Water Feature Design



Figure 51, Source: Peña Architecture^l

Seating can be built into the sunken plaza like the outdoor theater in Hulst, Netherlands by PEÑA architecture & LUDO design (Figure 51).

A trendy **vertical garden** like the one designed by Green over Grey Design (Figure 52) can help dress up the public plaza and hide nearby parking lots.



Figure 52, Source: Western Living^{li}



Figure 53, Source: JML Water Feature Designⁱⁱⁱ

A waterfall feature, in the D’Anjou plaza, like the Parc Diderot (Figure 54), can appease the aural senses and create an interesting and playful environment for visitors.

A water trail, like the Place Francois Mitterrand in Le Creusot, France (Figure 53), can start at D’Anjou public plaza, flow down to the river, come back through St. Joseph Boulevard, and flow into the public plaza. Such a feature could link all the spaces and create a point of interest to draw patrons along its path then back to the commercial street.



Figure 54, Park Diderot in Paris France, Source: JML Water Feature Designⁱⁱⁱ

3.5 Complete Street design elements are important in making the street feel safe, attractive, and inviting, and a place where one would enjoy living and gathering with neighbours. Below are specific features to make such a welcoming and sustainable environment.



Figure 55, Source: Photo posted on Twitter by Brendt Todarian^{lv}

Terrasse space as part of the walkway, like that of Quebec City (Figure 55), can help generate new gastronomy experiences for visitors of Chateauguay.

A parklet, like the rendering (Figure 56) in downtown San Diego, can draw visitors to relax, socialize, and linger. Some parklets could be covered or enclosed to create shade or protection from the elements and lighting could be used to enhance visibility and create ambiance.



Figure 56, Source: kbps^{lv}



Figure 57, Source: ArchDaily^{lvii}



Figure 58, Source: ArchDaily^{lvii}

Splashes of colour can be used throughout the boulevard, like lighting on Lonsdale Street Dandenong (Figure 57) designed by BKK Architects, cladding on buildings (Figure 58), and street furniture (Figure 59, next page). A cohesive colour design can connect D'Anjou to the river path and back and decorative lighting can help enhance visibility.



Figure 59, Source: Wohn Design Trend^{lviii}



Figure 60, Source: THE DIRT^{lix}

Seating that invites people to linger, relax, and socialize, like Figures 59, 60 & 61, will be important features to implement. These examples are also chosen as they demonstrate creative ways to provide shade and protection from the elements as well as ambient lighting.



Figure 61, Source: ISA^{lx}

Green infrastructure installations, like bioswales and rain gardens (Figures 62 & 63) can be used to capture and filter storm water from the boulevard's impervious surface. This is a great way to improve water quality and beautify streets and parking lots with either simple or lavish vegetation.



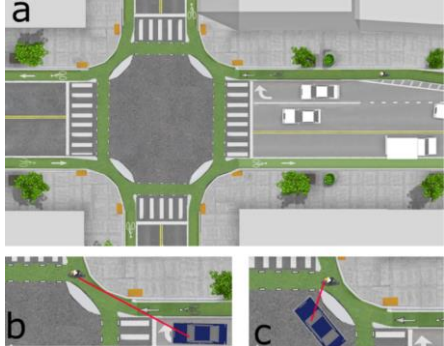


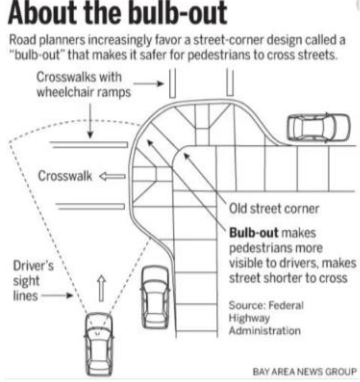
Figure 62, Bioswale, Source: Pinterest^{lxi}



Figure 63, Rain garden, Source: New York City Environmental Protection^{lxii}

3.6 Intersections throughout the boulevard may require different solutions depending on the level of activity and accessibility requirements. The purpose of the examples in Table 10 below—whether from the Netherlands, NATCO, or American Standards—is to make complete streets that are more hospitable for alternative modes of transportation other than driving. Currently, D’Anjou Boulevard is very auto-oriented, alienating, and unpleasant for pedestrians. These design precedents, demonstrate how it is possible to designs streets in a way that slows down traffic to create safe opportunities for walking and cycling and for taking transit.

Table 10

<p>A Dutch Junction Design</p> <p>will be considered at all major intersections.</p>	 <p>Source: Urban Big Data Centre^{lxiii}</p>	<p>A raised intersection</p> <p>like the NATCO Urban Design Guide is a good example for implementation at the linear park crossing as a street calming measure.</p>	 <p>Source: NATCO^{lxiv}</p>
<p>Accessibility measures for physical and visually impaired persons will be incorporated into the new design taking the four seasons into consideration.</p>	 <p>Source: Accessible Design for the Blind^{lxv}</p>	<p>Bulb-outs</p> <p>are potential solutions in areas where on-street parking may be added.</p>	<p>About the bulb-out</p> <p>Road planners increasingly favor a street-corner design called a “bulb-out” that makes it safer for pedestrians to cross streets.</p>  <p>Source: Federal Highway Administration^{lxvi}</p>

3.7 Active Transportation trails may take different forms depending on the segment of the street. In anticipation of cycling traffic on D’Anjou Boulevard, a single-direction cycleway with a buffer on either side of the street will be beneficial. This will ensure a smooth flow of cyclists and increase safety by reducing the possibility of collision with vehicles and other cyclists.



Figure 64, Source: Southwark Cyclists^{lxvii}

A one-way, curb separated bike lane

like the rendering for Southwark Cyclists in the UK, will keep cyclists away from moving traffic and offer a raised buffer between them and passing and parked vehicles (Figure 64).

Buffered bike lanes come in a variety of options as shown in the City of Brockville Active Transportation Plan^{lxviii}. Such lanes can be used on segments of the street where there is less traffic (see Figure 65).



Figure 65, Source: Brockville Active Transportation Plan

3.8 A recreational attraction can be inspired by the LA River and pedestrian bridge examples by making the Chateauguay River a tourist area that provides visitors with numerous ways to interact with the river. This includes overlooks, light boating, recreation trails and a pedestrian bridge to connect greenspaces, the river's east and west shores and provide both day and night use through interesting light features.



Figure 66, Source: INHABITAT^{ix}

The LA River in California has restoration plans that will transform the concrete canal into an accessible and inviting space for residents. As in Figure 66, the river will be turned into one of the longest recreational zones with trails and boating options.



Figure 67, Source: ArchDaily^{ix}

Paprocany Lake Shore Redevelopment in Poland has developed net seating on its riverside-promenade. This is a great example designed by RS + Robert Skitek that can be duplicated over the Chateauguay River so visitors can unwind and connect with the water (see Figure 67).



Figure 68, Source: dezeen^{lxvi}

Providence River Pedestrian Bridge

links two parks in Providence, Rhode Island. Designed by Inform Studio and Buro Happold, it is made of Wana wood and is durable and resistance to rot (Figures 68 & 69).



Figure 69, Source: dezeen^{lxvii}

Riverview Bridge

(Figure 70) is a 1,010-foot-long bridge with a 14-foot-wide path that links two previously separated city parks on opposite banks in Chicago.



Figure 70, Source: Chicago Tribune^{lxviii}

Rainbow Bridge

is deemed an innovative event space, the 605-foot elevated pedestrian walkway provides both logistical and aesthetic benefits to groups holding gatherings at the venue (Figure 71). This bridge demonstrates potential for playful lighting.



Figure 71, Source: Facebook^{lxix}

3.9 Section Summary

All these precedents will contribute to achieving the planning goals in section 3.5 and reinventing D'Anjou Boulevard. This includes improving the public realm, providing new transit modes, and providing a safe and pleasant pedestrian experience. Furthermore, these examples have given to guidance on how to provide a quality urban landscape incorporating the City's natural water source, creating recreational tourist spaces, and making an attractive and inviting street by adding urban design elements.

4.0 PROPOSED REDESIGN

Three goals stand out from the Existing Conditions Report: a modified land use plan, a transportation plan, and a public realm and ecological greenspace plan. This section of the report covers a proposed redesign that will give the City of Chateauguay a pronounced central core where the City's identity and character are at the forefront and citizens can gather in large numbers for celebrations and events. The intent is to increase density at the City centre while ensuring an amenable and affordable "quality of place" for people to live, age in place, and enjoy their neighbors as well as work, shop, relax, and visit. This will be achieved through land use planning that promotes mixed-use, a modal shift that allows for more modes of transportation through its urban form, and by providing services, and sustainable public infrastructure and parks.

4.1 Land use planning changes

The proposed urban redesign will target land use planning changes for D'Anjou Boulevard and its immediate surroundings. The plan will encompass an area of approximately 175 meters north of the street and from 450 – 880 meters on the south side (see Figure 72). To help achieve the goal of increase density and intensity, a modal shift, and a complete street, the red and orange land use zones (in Figure 16) will change from commercial use to a built form that allows for mixed-use and mid-rise development, a modification of the streetscape to promote multi-modal transportation, and added public space—all discussed in the Existing Conditions Report.

The new multi-use buildings will have a mix of housing, commercial and office capacity (like Figure 40, in section 3.2) as well as designate new areas for open space.

Buildings will be moved to the street forefront and parking will be mostly underground—especially for residents. Some surface visitor parking will be provided at the rear of buildings and there will be minimal on-street parking.

Building heights will increase to a maximum of seven floors and density bonuses will be granted to incentivize developers to include

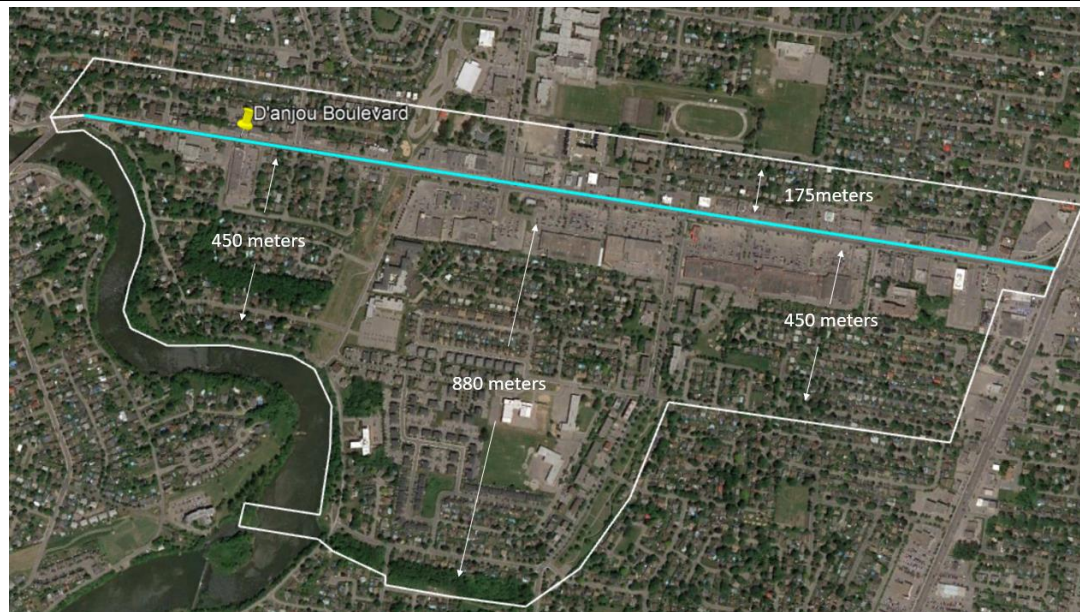


Figure 72, Source: Google Earth Pro 2021

features like public nodes and greenspace, bus stops, and to build structures that increase density—including missing middle housing.

Given the need for affordable housing for the existing community (as identified in the Existing Conditions report and regional goals), social inclusion housing policies will be implemented to protect existing multi-unit buildings from redevelopment, to ensure that any redevelopment meets a 20% affordable housing policy (with existing tenants having the option to move into the new housing at the same price), and to promote community partnerships to build co-op housing that is decommodified. The intent of these policies is to implement for rent control to protect vulnerable residents from displacement and gentrification.

A new land use plan will revolutionize the way people use the space and allow for the conversion of large surface parking lots into multi-use spaces, outside of regular business hours, for public gatherings and activities. With a new urban form, D’Anjou Boulevard will have a state-of-the-art public plaza (located in the pink section of Figure 16) and the street will double as an event space in the City centre as in the Lancaster Boulevard example in section 3.1 (see Figure 36). The built form will allow for a pedestrian sidewalk, in the middle of the street between the roadways, and widened sidewalks on both sides of the boulevard thereby increasing the public realm and providing more pedestrian movement and access. Like the Southwark Cyclist example in the UK (section 3.7), a single-direction active transportation trail on both sides of D’Anjou Boulevard will be a new land use feature as well as on-street bicycle parking and enhanced connectivity with the existing Chateauguay bicycle network.

Existing greenspaces will be maintained, and the modified urban design will incorporate more ecological spaces where possible as in Figure 42 in the Taschereau Boulevard example. This includes a high-quality, sustainable urban landscape with green infrastructure like bioswales and rain gardens (Figures 62 & 63 in section 3.5), green roofs and vertical walls (Figures 47 & 52 in the precedents section), and an abundant tree canopy.

With increased densification, new amenities like daycares, schools, medical centres or other services, may be required and the new built form will allow for this. As well, access to these new amenities from the surrounding neighborhoods will be improved by addressing low road access networks and ensuring a safe pedestrian experience by added paths through residential areas (as discussed in 2.3.1, Connectivity in the Existing Conditions Report), sidewalks separated from roadways, and an expanded bicycle network referred to in section 2.3.4, Bicycle Network.

Figure 73 below demonstrates the new built form with building density heights up to seven stories along the Boulevard and missing middle housing as you move further away from the D’Anjou. The urban fabric of the street shows the pedestrian sidewalk (light grey in the center), the active transportation trails (in red), the sidewalks alongside the buildings, the new tree canopy, and street furniture to enhance the pedestrian experience.

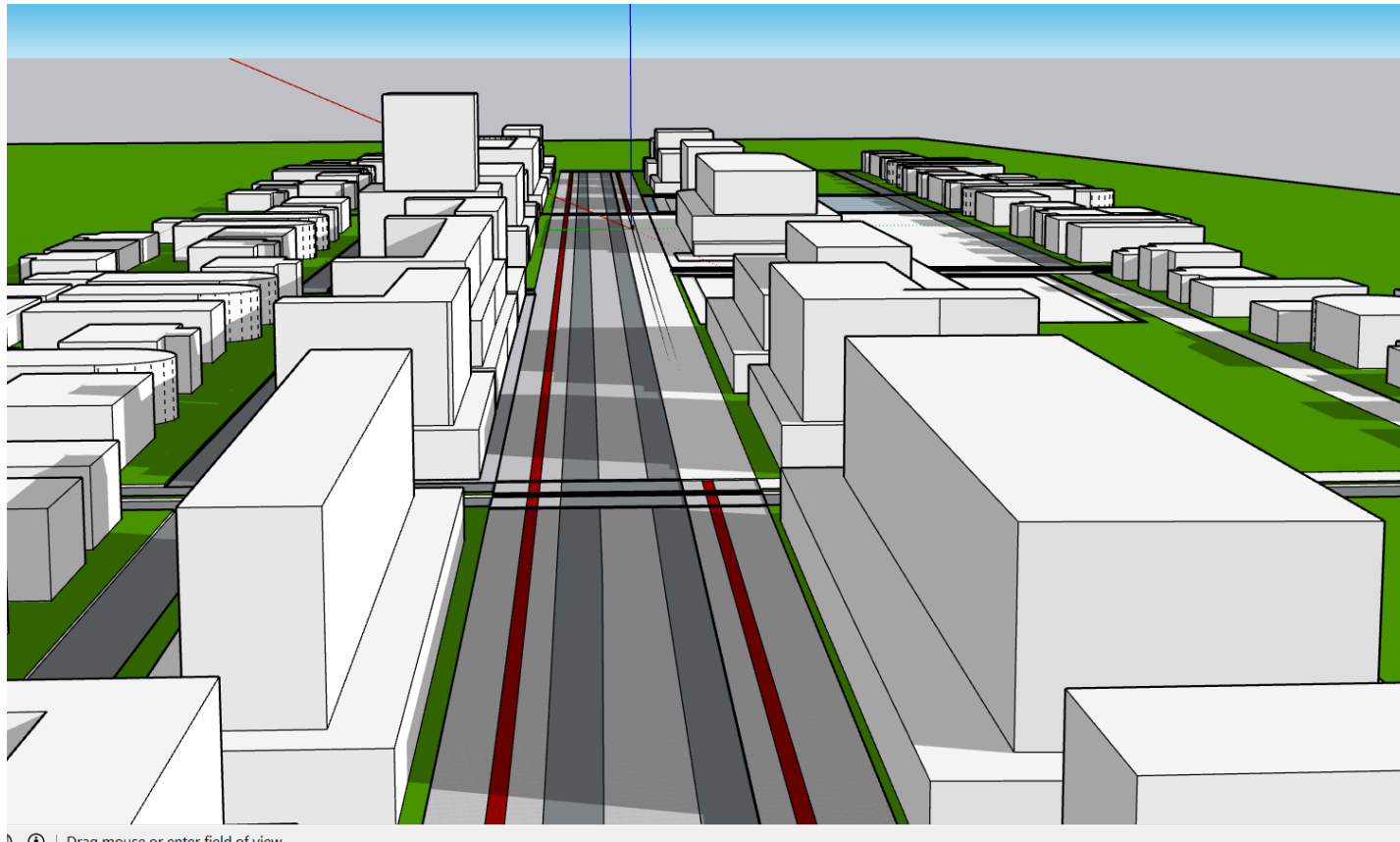


Figure 73, Source: SketchUp

4.2 Transportation plan

Using a complete street approach, D’Anjou Boulevard’s streets, sidewalks, and public rights-of way will be designed to enable safe access for all users whether pedestrians, cyclists, public transit users, or automobile drivers. With a new convivial and livable design, the street will have human scale treatments like street furniture, trees, and wide pedestrian paths to animate the public realm and encourage people to linger. The street section below (Figure 74) represents the new design for the red land use zones in Figure 16. This complete street will feature an active transportation trail, a tree-lined pedestrian street, widened sidewalks, street calming measures, and increased bus services.

To promote the plans of a modal shift and a thriving economy, D’Anjou will have a new active transportation route that will run in a single direction on either side of the street to generate activity on both fronts. The bike trail will be street level, segregated from the car lanes with a buffer, and have a width of 1.8 meters to allow for easy passing (similar to that of Southwark Cyclists in section 3.7, Active Transportation). Bike-share services will be integrated on-street and ample bicycle parking will be made available throughout the public realm including indoors at the public plaza and other locations. To achieve the goal of improved connectivity, the existing Chateauguay bicycle network will be linked with the new trail on D’Anjou Boulevard from the following streets: Boulevard Vanier, Boulevard Maple, rue Bell, Boulevard St. Jean Baptiste, and Boulevard Saint Joseph (Figure 24 in section 2.3.4, Bicycle Network). According to Streetmix street designing software, the capacity of the new bicycle trail on D’Anjou Boulevard will allow for up to 12,000 users per hour.

Another new feature of this plan is to add a 9.5-meter tree-lined pedestrian sidewalk—like the Lancaster precedent in section 3.1—in the center of the street adding a capacity of 15,000 people per hour (as per Streetmix). With the intent to achieve the goal of a functional and multi-use space, the sidewalk can double as an area to host festivals, markets, and holiday celebrations when not being used as a pedestrian passageway. As well, permanent parklets like Figure 56 (some covered) and benches will be installed for visitors to rest and relax and promote social cohesion. The footpath will be flat and at sidewalk level with a permeable stone walkway, grass buffers and trees along the roadway, and wayfinding signage.

In addition to this, the sidewalks along the buildings will be widened to 6.1 meters on the north side and 7.9 on the south side to allow for terrasse seating, benches, bicycle racks, lighting, trees, and pedestrians. These increased footpaths—compared to the original 1-meter sidewalks—will allow for an increased capacity of 15,000 people per hour in addition to the center pedestrian sidewalk (as per Streetmix). This modification appeases the goals of creating a complete street, functional and attractive multi-functional spaces, a sustainable and high-quality urban landscape, and generating economic activity.

Several street calming measures will be used to enhance the pedestrian experience and safety. For example, driving lanes will be reduced from five to two and the speed limit will decrease to 30 kilometers per hour from 50. As per Streetmix, the two driving lanes will allow for up to 1,500 people per hour. Two additional lanes on either side of the road will serve multiple purposes such as some on-street parking, a bus stop lane, and a location for bike-share stations. However, a new policy will be implemented to allow these additional lanes to be used solely for bus and car traffic during morning and afternoon rush hour to alleviate congestion. Bulb outs will also be used at all intersections on D’Anjou except at the linear park where a raised intersection will be incorporated to slow vehicles and bring attention to pedestrians and cyclists (both examples can be found in section 3.6, Intersection).



Figure 74, The new street view of D'Anjou Boulevard.

To enhance mobility, street design recommendations for low vision people will be incorporated from the Sight Line Project^{lxxv}. This includes wide flat-surface footways to reduce pedestrian collisions, strong tonal contrast and yellow lines to better distinguish the carriageway from the footway, and coloured paving so crossing points can be easily located. Tactile (or guidance) paving will run along the full length of the level surface to help users distinguish between footway and carriageway where curbs are absent and to keep users away from obstructed building lines. As well, guidance paving will surround bus stops and lead visually impaired users to controlled crossings where control boxes with tactile rotating cones can be found letting users know when its safe to cross. Strong colour contrast is important for guardrails to help users locate crossing points and for ballards to help users locate the edge of the footway in the absence of a curb thereby reducing the risk of collision with on-coming vehicles. Lastly, rope or solid partitions can assist users around terrace-like obstructions and strong tonal contrast between street furniture and surrounding paving can help prevent collisions.

In hopes of increasing the walk and bike scores further and to provide added movement, a four-way intersection will replace a T-intersection at Rue Sullivan and Rue Bell. To improve the urban fabric further, pedestrian and cyclist paths will be added (where possible) through residential areas to connect with D'Anjou.

4.3 Public realm and ecological greenspace plan

This part of the plan has two areas of focus: to enhance the public realm and to preserve and improve the green network. Taking into consideration the social dynamics of public outdoor space, this plan will work to maximize the engagement of all ethnic groups to ensure diverse neighbourhood places of shared activity, parks, spaces of passing-by and of retreat as Rishbeth et al. discuss (2018)^{lxxvi}. Accomplishing a complete street also requires the cultivation of an aestheticization of inclusion that Duncan and Duncan (2004)^{lxxvii} talk about and to celebrate the City's identity and character, standards to obtain a sustainable and quality architecture and urban landscape will be implemented.

As well, all efforts will be made to the goal of sustainability. As per Steiner (2016)^{lxxviii}, "an ecological infrastructure can serve as tissue in the urban fabric, weaving together the natural and built environments (p.9)" [and provide] cultural benefits like intellectual and spiritual inspiration, recreation, ecotourism, and scientific discovery (p. 8)".

4.3.1 D'Anjou Boulevard

The Existing Conditions Report demonstrates the need for more connections and added public space to satisfy densification and intensification requirements such as places for residents to work, tend to errands, and enjoy some leisure time. To accomplish this, the street will double as an event space in the City centre helping create an attractive and prideful sense of "place" for residents. A first step towards this will be to move the Hydro electric wires underground and to provide more room on the street's edges for expansion. A second step will be to upgrade the public realm and other public places with a coherent street, colour and landscape scheme as well as an ecological design. Parklets and various seating options like the precedents examples in Figures 59, 60, and 61 will be incorporated into the design.

As well, various artworks can be displayed to celebrate local artists and the City's diversity, and the street can be closed during event times. Lighting is also an important feature that will be used to highlight D'anjou Boulevard's nightscape and provide functional, safe, and aesthetic urban lighting of the public realm for pedestrians and drivers alike. Like Montreal's lighting plan, key buildings, facilities, and sites will be enhanced—while keeping with local surroundings and the new City character—and the plan will be aimed at reducing light pollution and power consumption. Colour changing pole lighting, like that of the Lonsdale Street Dandenong, will be used in the center of the tree-lined pedestrian sidewalk (see Figure 57 in design precedents) and rope lighting (as in Figure 36) will hang from tree to tree to create an ambient, celebratory, and inviting atmosphere.

Additionally, sustainable infrastructure and modern water capture techniques will be incorporated with the goal to increase stormwater absorption through urban design, to mitigate against flood risk and reduce the need for stormwater treatment plants. Bioswales and rain gardens can be seen along the roadway in Figure 74.

Using water as a key attraction, a water trail will be incorporated into the Boulevard's new design and the Chateauguay River will be redeveloped for tourism. The water trail, like that in Figure 53, will start at the public plaza and be located on the center-street pedestrian sidewalk. From there it will run east toward the Chateauguay River and flow alongside Boulevard de Salaberry until Rue St-Eugene where it will then connect and return to D'Anjou by St. Joseph Boulevard (see Figure 75). However, rather than reconnect on the pedestrian sidewalk, the trail will draw followers into the public plaza and spill into a

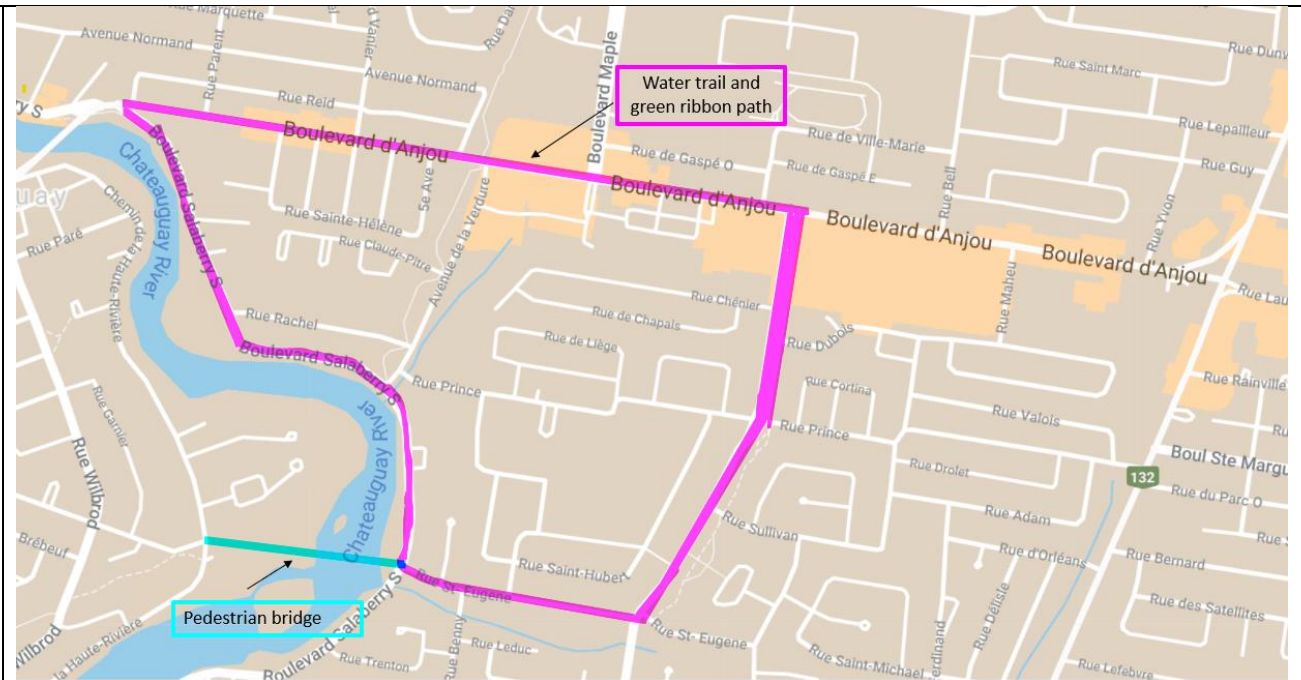


Figure 75, showing the route for the water trail and green ribbon path as well as the location for the pedestrian bridge.

fountain in the shape of the City's emblem. The purpose of this returning location is to prompt visitors who follow the trail, or patrons of the Chateauguay River, to return to D'Anjou Boulevard and generate economic activity.

A larger effort to draw visitors to the region involves redeveloping the Chateauguay River as a tourist attraction like the LA River (Figure 66). This will include river overlooks, light boating services (i.e. kayaks, canoes, and paddleboards), and net seating like that of Paprocany Lake (see Figure 67). As well, new pedestrian and cyclist trails will be incorporated along with a pedestrian bridge (indicated by the turquoise line in Figure 75) to link the Chateauguay River's east and west shores and improved access to D'Anjou Boulevard.

4.3.2 Public Plaza

To create such a space, the City can purchase privately owned property to redevelop as a focal point such as the pink lot in Figure 16. This area could accommodate a variety of uses and users and provide a high-quality public realm where shade is provided, people can gather and children can play, and surrounding restaurants can have outdoor terrasses—all making it an enjoyable place to live and work.

The D'Anjou redesign will incorporate a sunken public plaza to do just this. Figure 76 (following) provides an overhead view of the plaza and Figure 77 a perspective view. The plaza will have several main features like a grand entrance announcing the city center (bottom left) similar to the Outdoor Amphitheater in Taichung City, Taiwan (see Figure 48), an event centre (top right) like the Los Angeles FAB Park Solar (Figure 47), a water plaza like the Elizabeth Quay (Figure 49) that doubles as a skating rink in the winter (top left), and outdoor theatre-type seating modeled like that of the outdoor theatre in Hulst (Figure 51). To help develop an increasingly diverse society, flags representing all nationalities and ethnicities.

A key attraction will be a 2nd floor restaurant that doubles as an open-air entertainment space where spectators can watch from within the plaza, the neighboring restaurant terrasses, and D'Anjou Boulevard itself (when closed for such events). The building's bottom floor will house a café, an ice cream parlor, a washroom/changing room, and some indoor bicycle parking.

Some unique design features include the vertical green wall (top right) to block the outdoor surface parking and inspired by Figure 52, a water feature with a small pedestrian bridge (bottom right) like the Place Francois Mitterrand in France (see Figure 53), and the water trail (top left), modelled off the Parc Diderot (see Figure 54) that ends in a design of the City's emblem in the plaza.

Pedestrian and cyclists plaza entrances can be accessed from the sidewalks and active transportation trails on D'Anjou and St. Joseph as well as one shared path at the rear and right of the plaza. To ensure safety of children, there is purposely no plaza entrance located by the water park. This is also strategic to draw visitors onto the water trail and invite them into the plaza. As well, a variety of seating is strategically placed for people can face one another and easily socialize.

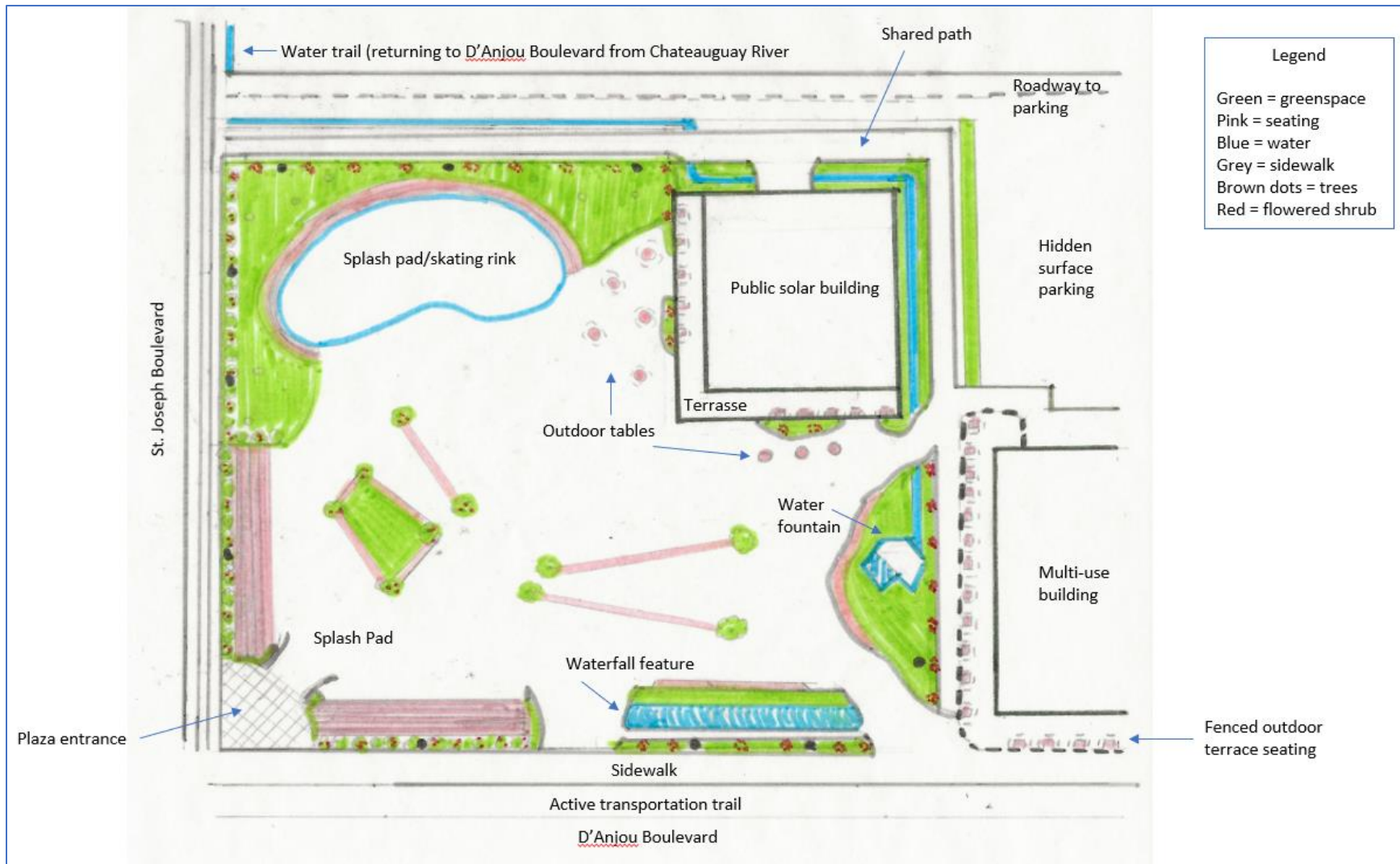


Figure 76, Overhead view of public plaza. Source: Patricia Deer

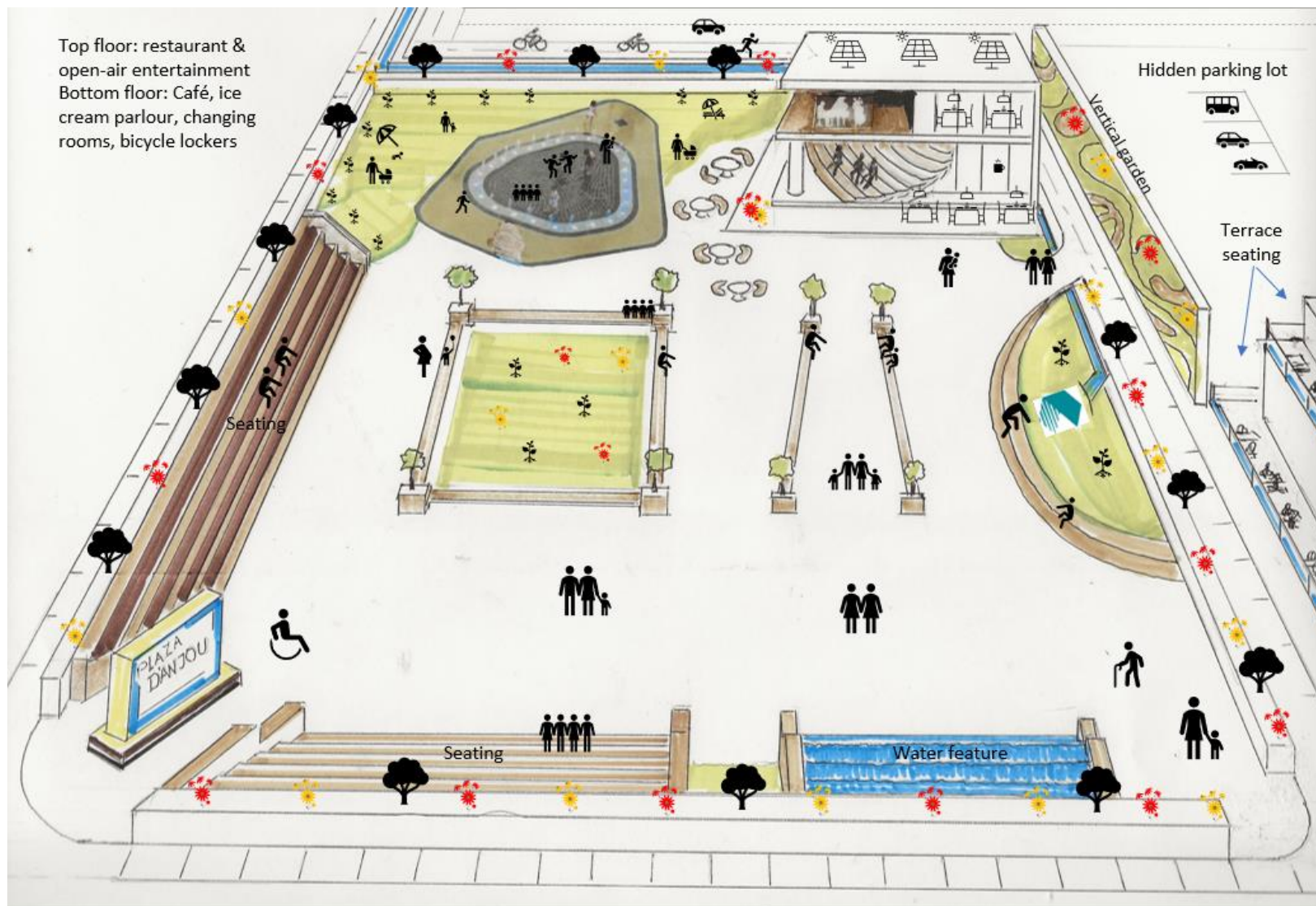


Figure 77, Perspective view of public plaza. Source: George Dickson.

A Green Network

A green network in the D’Anjou Boulevard region has already been initiated and requires further connection for completion (see Figure 16). This project will focus on connecting this green ribbon throughout the areas indicated in Figure 75. This will include a walking and cycling trail along the linear park, the river, and all of the green space from St. Eugene and Boulevard St. Joseph and the public square. All the parks will form a loop from the public realm and link up and creating a pleasant walking or cycling experience.

Figure 75 also shows where the pedestrian bridge (like Figures 68 – 71 in the precedents section) will be located so residents of the west shore can easily access Rue St. Eugene, Boulevard Saint-Joseph—and ultimately—D’Anjou Boulevard.

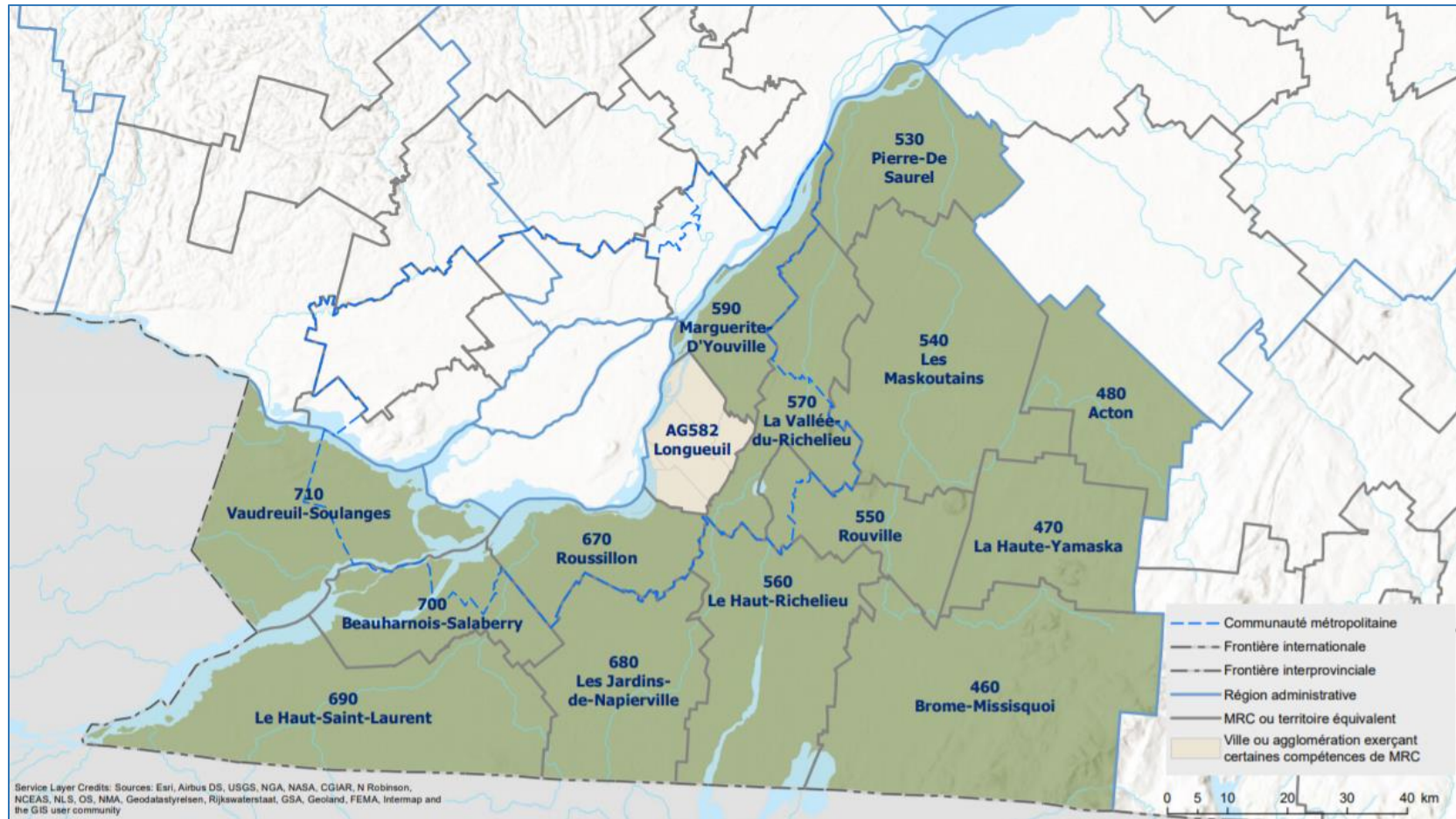
4.4 Section Summary

The proposed changes to land use, transportation and the public realm will provide D’Anjou Boulevard—and Chateauguay—with the means to become a “location of opportunity” with new dense housing, more modal choices, and a chance to reconnect with nature and enjoy public spaces. With added tourist attractions and a new City center designed for events, the City will have a new appeal to draw in visitors and improve the economy.

5.0 Conclusion

D’Anjou Reinvented is a plan meant to provide Chateauguay with the chance to revive its core and become an attractive and economically viable location that ultimately enhances the “quality of life” of its residents and makes it a place where people want to live, work and play.

APPENDIX A



Map of the Montérégie Administrative Region, Source: Quebec Ministry of Municipal Affairs and Housing^{xxx}

APPENDIX B



Map of the MRC Roussillon, Source: MRC de Roussillon website^{xxx}

ANNEX C

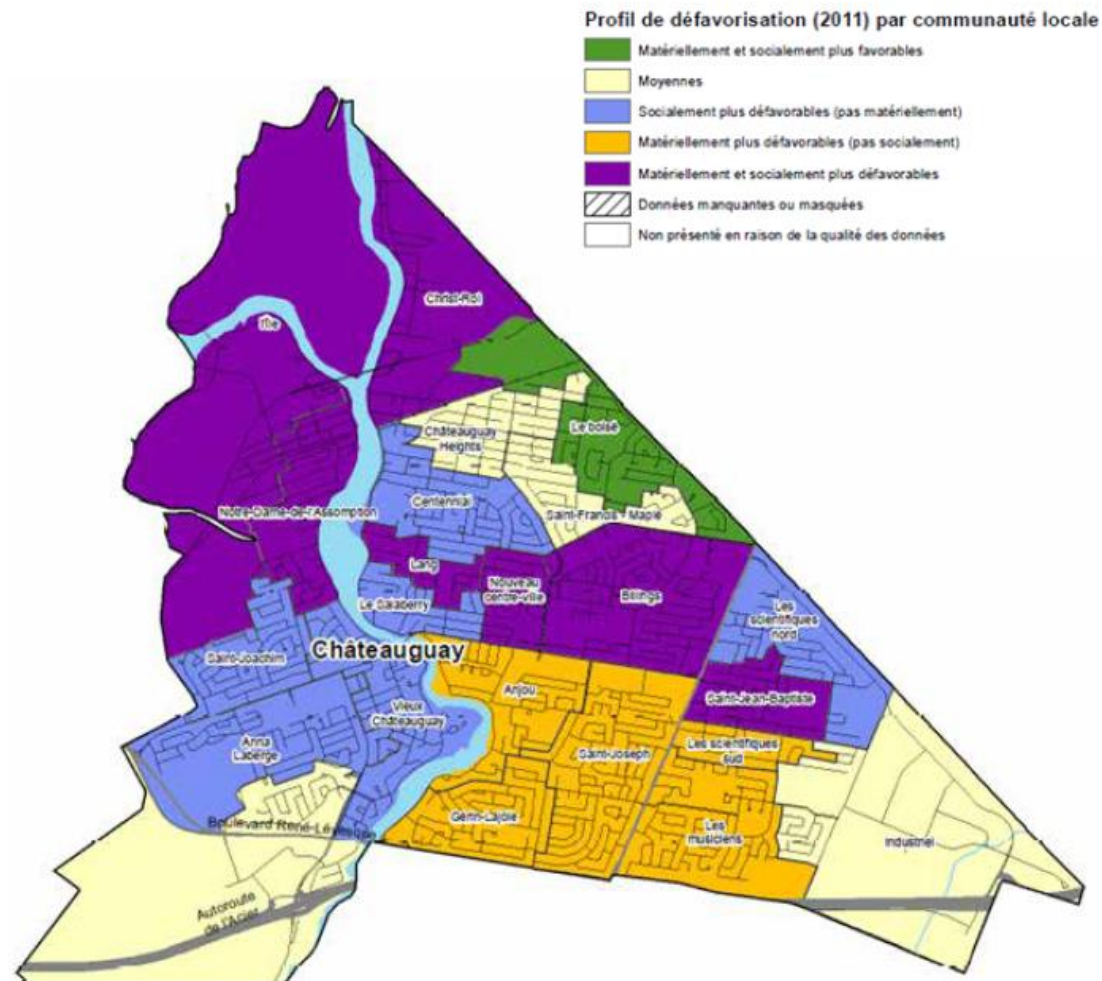


Figure A, Deprivation profile by local community, Source Châteauguay's Parks and Green Space Plan 2018 – 2028^{xxxx}

ANNEX D

Walk Score®	Description
90–100	Walker's Paradise Daily errands do not require a car.
70–89	Very Walkable Most errands can be accomplished on foot.
50–69	Somewhat Walkable Some errands can be accomplished on foot.
25–49	Car-Dependent Most errands require a car.
0–24	Car-Dependent Almost all errands require a car.

Bike Score	Description
90–100	Biker's Paradise Daily errands can be accomplished on a bike.
70–89	Very Bikeable Biking is convenient for most trips.
50–69	Bikeable Some bike infrastructure.
0–49	Somewhat Bikeable Minimal bike infrastructure.

Walk and Bike Score rating system descriptions, Source for both figures: <https://www.walkscore.com/CA-QC/Ch%C3%A2teauquay>

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