



VILLE DE Deux Montagnes

*...faites le plein d'air:
respirez la vie*

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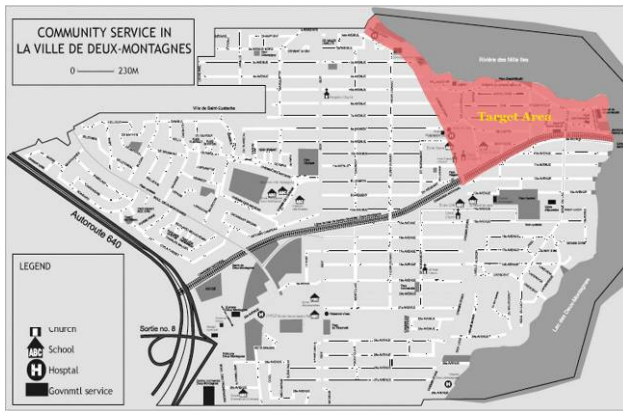
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Table of Contents

I.	Introduction	4
A.	Deux-Montagnes: Socio-economic Profile	4
B.	Planning Problems and Pressures for Change	6
C.	Goals, Principles and Objectives	6
II.	Concept Plan	9
A.	Waterfront	9
1.	Commercial Aspects	9
2.	Waterfront Design	9
3.	Expropriated Land	10
III.	Train Station	11
A.	Commercial Aspects	11
1.	Concept	12
2.	Outdoor Commerce	12
3.	Sustainable Building Concepts	12
	Expropriated Land	13
4.	Traffic	13
5.	Pedestrian Access	15
6.	Parking	15
7.	Design	15
IV.	Main Street Revitalization - Oka Road	16
A.	Walkable Communities Principles	16
1.	Design	17
B.	Increase Green Space in the Area	17
V.	Transportation	18
A.	Public Transit	18
B.	Bicycle Network	18
C.	Parking	19
1.	Benefits of Paid Parking	19
VI.	Increasing Housing Density in Deux-Montagnes	21
A.	Current population and density	22
B.	TOD: Principles & CMM Plan d’Aménagement	23
C.	Growth Projections	23
D.	Scenarios selected	27
E.	Growth Distribution & Suggested redevelopment areas	28
VII.	Social Inclusion and Sustainability	29

VIII.	Expected Benefits of the Plan _____	29
IX.	Compatibility with municipal zoning _____	30
A.	Oka Road _____	30
B.	Water Front _____	30
C.	Train Station _____	31
D.	The Holy Family Church _____	31
X.	Support from Other Agencies _____	32
XI.	Critical Path Steps and Implementation _____	33
XII.	Municipal Financial Impact _____	34
A.	Financial Analysis _____	36
XIII.	Potential barriers and problems _____	37
XIV.	Conclusion _____	38
XV.	Bibliography _____	39
XVI.	Appendix _____	41
A.	Square Footage of Main Interventions of Concept Plan _____	41
B.	Critical Steps and Implementation Timeline _____	42
C.	Municipal Budget Forecasts & Project Proformas _____	45
1.	Scenario 1: Municipal Budget Forecast (10 years) _____	45
2.	Scenario 2: Municipal Budget Forecast (10 years) _____	46
3.	Main Plaza Complex _____	47
4.	Public Waterfront _____	49
5.	Residential example: four story residential unit _____	51
6.	Detailed Costs: Oka Road _____	53
D.	Activities Map _____	54
E.	Waterfront _____	55
F.	The Location of the New Train Station _____	56
G.	Improvements on Oka Road _____	57
H.	Overall Transportation Map _____	59
I.	Railway Map _____	60
J.	Bus route map _____	60
K.	Bike path map _____	61
L.	Sidewalks map _____	62
M.	Sustainable Design _____	63
N.	Overall Concept Map _____	64
O.	Traveling Distance to Train Station and Method _____	65

I. Introduction



This report focuses on providing an assessment of the City of Deux-Montagnes and its potential for transit oriented development. Deux-Montagnes is a small municipality (approx. 6.16 km²) located on the north shore of the Montréal region. For the purposes of this study, the boundaries of the planning area in Deux-Montagnes are defined as the Rivière des Mille Îles to the north, 20th

Avenue to the south, Lac des Deux-Montagnes to the east and Henri-Durant Street to the west.

This study is research based and has three primary objectives. First, it builds a brief socio-economic description of the area. Next, it outlines specific goals, principles and objectives for greater densification, community centre revitalization and transit oriented development around the Grand-Moulin train station. Finally, the report details five main areas of intervention: the Waterfront, the Grand-Moulin Train Station, Oka Road, Housing Density and Social Inclusion and Sustainability.

Several techniques of data gathering were used in this study. Data from the 2001 census for the City of Deux-Montagnes and the planning area (census tract) were collected and analyzed. The raw data was then used in conjunction with field work in the manner of visual observation, informal conversations and formal interviews with community residents, business owners and local officials.

It is hoped that this plan will provide the municipality of Deux-Montagnes a suggested framework to guide growth in the area over the long term.

A. Deux-Montagnes: Socio-economic Profile

Historically, Deux-Montagnes has been a bedroom suburb to Montréal. During 1921-1945, many Montréalers were attracted to the area for their beaches and often vacationed in Deux-Montagnes (known at this time as Saint-Eustache-Sur-Le-Lac) during the summer.

Today, the City of Deux-Montagnes has a population of 17,080 (2001 census), of which 48% are male and 52% are female. Since 1996, the city has grown by 7.1%, which is well above the Montréal average of 0.003%. The majority of the population (53%) falls between the ages of 20-54, while a significant number of the population (30%) is under 20 years old.

Of residents aged 15-24, 90% of these attend school full time. 13% of residents are over 60 years old. Most children live in areas 1 (45%) & 2 (21%). The majority of seniors live in area 4 (37%) and area 2 (21%).

The population of Deux-Montagnes is still also quite homogeneous as 95% of residents are Canadian-born and only a very small percentage of visible minorities are living in the area. Of these, the visible minorities are primarily from China, the Philippines and Latin America.

Deux-Montagnes is also principally Catholic (83%), followed by Protestant (10%). Residents speak mostly French (76%), followed by English (19%).

Deux-Montagnes is true to its suburb roots - 71% of dwellings in the community are owned, with the average value of a dwelling being \$99,833. In contrast, 29% of dwellings in Deux-Montagnes are rented with the average rent being \$604. Suburbs are also typically characterized by the use of cars. Not surprisingly, 77% of residents in Deux-Montagnes use a car or truck to go to work, while only 18% of residents use public transit.

In terms of families, 53% of families are married couple families and are composed of 3.3 persons. 29% of families are common law couple families and are composed of 2.9 persons. 18% of families are lone parent families and are composed of 2.5 persons. Of note here is that 80% of lone parent families are single moms.

The unemployment rate in Deux-Montagnes is 6.9%, which is below the Montréal average of 13%. The household income is \$53,213 and in Montreal it is \$40,848.

Over the last ten years, the improved commuter rail line which connects Deux-Montagnes to downtown Montréal has seen increased ridership. As such, transportation oriented development in the area may provide a trigger for both commercial and residential redevelopment. As these developments unfold, new infrastructure and new services should always keep in mind the needs of current and projected residents.

B. Planning Problems and Pressures for Change

Deux-Montagnes is lacking in accessible commercial and entertainment activity that is appealing to an intergenerational and multicultural community, causing poor local and regional linkages and consequently creating obstacles towards community building. Unsuitable densities and urban design do not support transit-oriented development (TOD). Local residents are car dependent due to inadequate public transit services and pedestrian-unfriendly streets. The current Grand Moulin station has inadequate shelter and both the train and buses run infrequently. Inappropriate development has been and remains to be a threat to the existing natural environment in the area.

Deux-Montagnes is lacking in public space for its local residents. The town only has one coffee shop, Lola’s, which was an instant success when it opened in 2005. Deux-Montagnes also has only a handful of restaurants in the neighbourhood. There is a lack of middle-aged programming for residents; this could be improved by increasing the amount of commercial services in the area (local cafés and businesses, farmers market, and craft and hobbies store). Already existing spaces are underutilized in Deux-Montagnes; for example, the local community center is closed on weekends. Residents complained about a lack of youth programming, restaurants, cafés, and recreational health facilities in the neighbourhood. In order to create a more active and lively center in Deux-Montagnes that would attract a wider demographic, there needs to be an increase in community services in the area.

C. Goals, Principles and Objectives

Visioning a vibrant and dynamic center

While maintain a harmonious living environment, our vision is for Deux-Montagnes to have a dynamic economic and cultural centre that is accessible and appealing to all residents in the region. Deux-Montagnes will increase local and regional linkages not only to re-connect to its own community, but also to other communities in the area. Reviving Oka Street and the waterfront as well as developing the Grand Moulin Train Station in a sustainable and accessible fashion are key elements in order to nourish a more congenial and comprehensive dynamic center in Deux-Montagnes. Throughout this process, working with the existing natural environment will remain an essential aspect of this project.

In order to create a more dynamic and liveable core within Deux-Montagnes, we have developed the following seven objectives:

1. Enhance Intra and Inter-Community Public Transport

- Increase public transit use by 3% (up to 20%)
- Decrease car use by 3% (down to 80%)

2. Encourage Alternative Transportation Modes

- Increase bike usage to 1%
- Create a bike station network

3. Improve Parking Facilities

- Increase ATM parking space to 208 spaces; charge \$2/day

4. Create a network of Diverse Commercial Activity

- Create a weekend Farmers Market
- Establish a local Craft Center; 30-50 vendors
- Create jobs within our study area in order to provide jobs for 50% of unemployed people
- Create jobs within our study area in order to decrease job dependency by 20%
- Create a Chamber of Commerce that incorporates 80% of businesses in the area
- Encourage the establishment of more diverse commercial activity; restaurants, coffee shops, local businesses

5. Support Community Activities and Cultural Spaces (please see appendix D for map of proposed activities)

- Have three municipal wide activities (i.e. Autumn, Winter, and Summer Street Festival)
- Create 2 community gardens

6. Optimize Land Usage and Current Housing Stock to Increase Density

- Increase population 1400 in site (2000 DM)
- Create over 600 units along Oka Road and around the train station to increase density

7. Promote Policies for Social Inclusion and Sustainability

- 10% of all new development devoted to affordable housing
- 50% of community activities devoted to promote social inclusion
- 25% of community activities be intergenerational

- Create a Mission Statement and Set of Values & Principles for the residents in Deux-Montagnes that feed into planned activities
- Create a municipal policy that requires 40% of demolition materials be incorporated into new design
- Increase public consultations; at least 2 yearly
- Promote sustainable design for new development and renovations

II. Concept Plan

A. Waterfront



Presently, public access to the waterfront bordering the Mille Îles river and the Deux-Montagnes lake has been effectively blocked by private property owners. Only a few parks (Parc Moir, Parc Grand Moulin) and a small number of lots scattered along the waterfront grant public access to these bodies of water. Providing a meaningful and social gathering space for residents and visitors of Deux-Montagnes near the waterfront is a means to rectify this imbalance. More specifically, we propose the creation of a park on De La Legion and a deck/dock area on the waterfront itself for recreational use by residents (please see appendix E for Waterfront Design).

1. Commercial Aspects

The following commercial aspects will be incorporated into the design of the waterfront:

- A restaurant located in the Legion building
- Café with interior/exterior use
- Bike Station for bicycle rental
- Kiosk for kayak and canoe rentals during the Summer
- Kiosk for figure skate rentals during the Winter

2. Waterfront Design



Two areas of intervention are considered here for the waterfront design. The first is a public park; the second is the waterfront itself. Ideally, both would be implemented to create a comprehensive waterfront design area.

A public park will be created around the Legion building in order to make the waterfront a more inviting place for use by all residents and visitors in Deux-Montagnes. The park would include a wading pool or

playground for children, benches, pleasant pedestrian trails and other street furniture or public art. The parking space that surrounds the Legion would also incorporate elements of sustainable design by providing shade trees and planters.

In regard to the waterfront, an outdoor deck made of natural building materials would be placed immediately behind the restaurant located in the Legion. A boardwalk near the water along the park would also be constructed to attract pedestrians and passers-by. A small boat dock/boat launch on the western part of the water access would also be incorporated to accommodate the kayak and canoe rentals during the summer while serving as a base for a large community skating rink during the winter. This community skating rink would be located in the natural curve in the lake to the immediate east of the restaurant. A fishing dock beside the boat access could also accommodate a gazebo or benches for residents to enjoy the peaceful river view.

3. Expropriated Land

A total of thirteen properties around and between the Mille Îles river, Grand Moulin, Oka Road and the Legion would be expropriated to create the Waterfront Boardwalk and Park project. In addition, lots located on the corner of De La Legion and Oka Road would also be acquired.

III. Train Station

The Grand Moulin station currently does not have an adequate shelter or structure and is lacking a sufficient pedestrian, bicycle and bus network. The train schedule does not meet the current demands of its users and the parking lot is poorly organized. We are proposing to relocate the current Grand Moulin Train Station to a new location on Oka Road (please see Appendix F). The new train station will integrate commercial activity, helping create an effective transit oriented development model, and will incorporate sustainable design. The new train will run more frequently throughout the week as well as the weekend and more bikes will be allowed on the train (the trains will also integrate more bike racks within the trains). The transportation network surrounding the train will also be improved, making the train station more accessible to bikers, pedestrians, elderly and disabled people etc (please see appendix H for the overall transportation map).

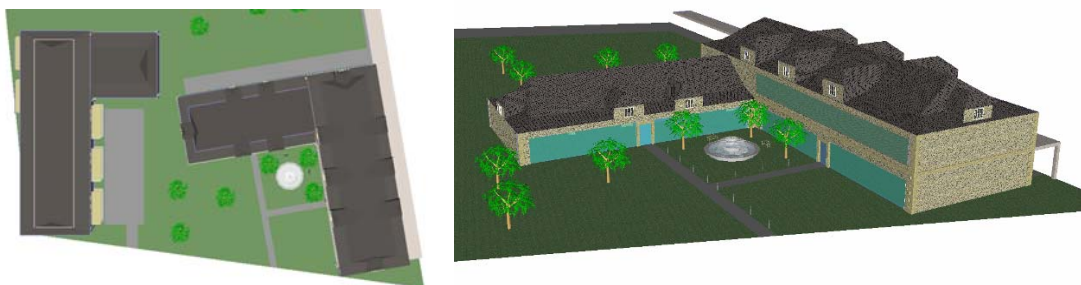
A. Commercial Aspects

The following commercial aspects will be incorporated into the design of the train station:

- Interior convenience establishments (i.e. magazine vendor, convenience store, dry cleaners/shoemaker)
- Café with internal/external terrace (similar to Lola’s)
- Vending machines with healthy snacks for off hours/late night convenience
- Ticket vendor machine for AMT train and buses
- Bike Station for bicycle rental
- Outdoor farmers market on weekends, seasonal vendors (including roasted chestnuts in the winter, maple syrup vendor in the spring, flower vendor in the summer, baked goods/harvest products i.e. apple pies, jams, ciders)
- Outdoor weekend craft/artisan market (including crafts made by local painters, carpenters, and artisans)
- Public performance platform, supporting musicians, street performers, buskers and mimes

1. Concept

The first floor will include commercial spaces and benches in the waiting area with planters, tables and chairs spilling out from the café. The second floor will have washrooms, vending machines with healthy snacks, as well as a waiting area with a TV panel displaying local weather, news, as well as the time.



2. Outdoor Commerce

- The outdoor commerce will have an integrated infrastructure to allow for setup for tents etc. to maintain the specific feel of the station
- Each patio landing in the park will contain an electrical outlet as well as a phone jack for use by vendors to connect interact machines and credit cards

3. Sustainable Building Concepts

- Maximize sunlight and natural ventilation through use of solar heating and convection venting
- Reduce the reliance on the earth's resources by utilizing green building materials where possible, for instance bamboo paneling, fly-ash cement aggregate as well as recycled materials
- The materials, building systems, methods and construction procedures will be selected in order to have the least destructive ecological impact (i.e. energy efficiency) and to provide for the greatest possible use of recycled materials

Expropriated Land



A total of nine properties are being expropriated to create the train station, open space/outdoor market and mixed use massing along Oka road.

4. Traffic

Rush hour traffic in the area surrounding the current AMT parking lot (near the intersection of 8th Avenue and Boulevard du Lac) is a burden and safety concern for local residents. The following is a brief analysis of the impact of moving the train station (and parking) to the new location at Oka Road.

There are 201 parking spaces at the Grand Moulin station and additional parking is available on the neighbouring streets. North Shore commuters who travel to the Montreal Central Business District (CBD) via the AMT line use these spots from Monday to Friday. A large majority of these commuters arrive between 7:00am and 9:00am to catch the train, and return on the train between 5:00pm and 6:30pm.

Figure 1 shows the likely routing of the traffic that currently leaves Grand Moulin station each evening (assume the opposite direction on the same routes in the morning). The routes that drivers would take to connect to the North Shore's autoroute network pass directly through residential streets and neighbourhoods.

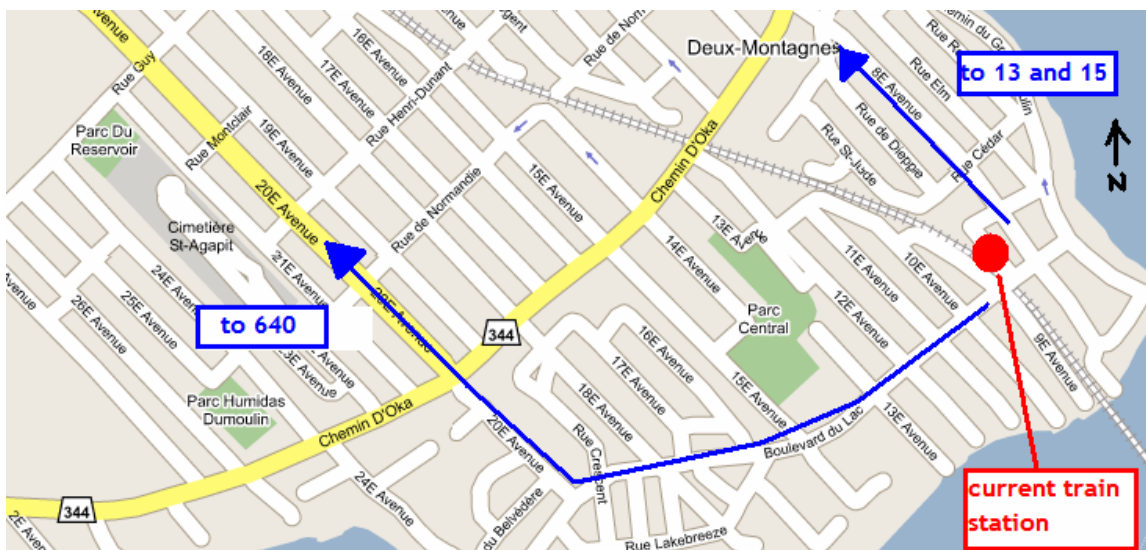


Figure 1-Evening Traffic routing

The new train station, located directly on Oka Road, would allow commuter traffic to use Oka Road directly, rather than accesses (or bypassing) it through the residential street network. Figure 2 shows the new routes for commuters to reach Autoroutes 13, 15 and 640. These routes keep traffic on higher traffic roads, and away from pedestrians on small residential streets.



Figure 2 - New routes for commuters to reach Autoroutes 13, 15 and 640

One-way access to the train station parking (from and to Oka Road) would be possible to help alleviate bottlenecks at high traffic times.

5. Pedestrian Access

The main pedestrian access to the train station complex would be from Oka Road (before the slope begins to accommodate the tunnel underneath the train tracks). There would be secondary access through the residential complex to the east of the station, leading onto rue de la Chapelle.

By integrating the design of the train station into the design of the Oka Road streetscape it is believed that together they can form a walkable environment for visitors and residents from the second they arrive in Deux-Montagnes.

6. Parking

There will be over 200 parking spaces within the new train station.

7. Design



Current birds-eye view



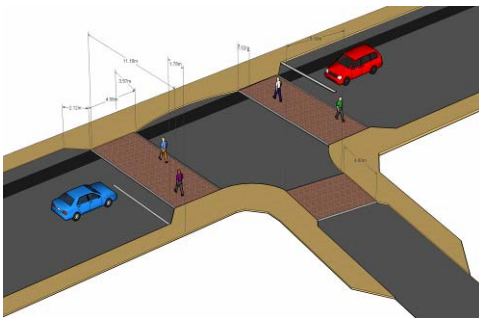
Proposed birds-eye view

IV. Main Street Revitalization - Oka Road

Over the years, Oka Road has played a very important role in the city of Deux-Montagnes. Many of the first inhabitants of the area settled around the road, and as such, many government (Town Hall-1931, Police Station- 1931, Little Yellow School House-1940s), community (Saint-Agapit Church-1962, Holy family Parish-1957) and commercial buildings (Forget Grocery Store-late 1920s, the Normandy Theatre-late 1930s, Theatre Moon-1946) were concentrated there. The presence of these “main street building blocks” thus solidified Oka Road as a prominent gathering place and Main street both for residents and visitors.

Over the past few decades however, the establishment of suburban and regional shopping centres has lessened the importance of Oka Road as a central focal point for the Deux-Montagnes community. As such, the revitalization of Oka Road should be at the heart of any Deux-Montagnes redevelopment plan. The experience and expertise of La Fondation Rues principales could move such a redevelopment plan along. The mission of La Fondation Rues principales is to promote economic development by drawing on the cultural, natural and socioeconomic assets specific to cities and towns through an incremental and self-help approach (please see Appendix G).

A. Walkable Communities Principles



Physical improvements, organized events and promotion as well as economic development along Oka Road should also be complemented by Walkable Communities principles. Walkable Communities put urban environments back on a scale for sustainability of resources (both natural and economic) by making areas more pedestrian friendly and walkable. Walkable Communities are more livable communities

and lead to whole, happy, healthy lives for the people who live in them. A more walkable Deux- Montagnes may also encourage and spur the redevelopment of commerce in the area, taking into account the new location of the Train Station as well. Specific principles of Walkable Communities are discussed in the following section (please see Appendix L).

1. Design

- Provide Continuously Linked Walkways with sidewalks of greater width along both sides of Oka Road to enhance mobility, especially for the elderly and physically challenged
- Use of different colors or materials may also make the sidewalks more attractive
- A 50/50 ratio of walking space to vehicle space is often seen as ideal for maximum economic development a long any Main Street or commercial area
- Pedestrianize intersections to accommodate pedestrians, and make intersection design clear and understandable to drivers
- Bulbouts and medians can be used to reduce pedestrian street crossing exposure
- Energy-saving illumination should be improved at all intersections to provide for clearer visibility of pedestrians at night
- Combine walking with transit, more specifically, with the Bike Stations, Public Transit system and Train Station Transit should be inviting, convenient and efficient
- Transit stops should also be easy to reach by sidewalks
- Universal landscaping for the walkway environment should include street furniture such as benches, shade trees and plantings, trash receptacles, transit stop shelters, lighting fixtures and directions to places of interest
- Street furniture placement should not impede the natural pedestrian traffic flow
- Incorporate walkways with commercial buildings by adding similar banners or signboards and architectural styles

B. Increase Green Space in the Area

We are proposing to develop a park between the IGA and the Holy Family Church. There will be a square in the middle of the park with street furniture (benches, lighting) to serve as a public space for the local residents to gather and rest (Please see appendix for before and after of cross sections and streetscape of Oka Road).

V. Transportation

Fluid and effective movement in a transit oriented development is central to its success. Two main intervention areas, Oka Road and the Grand Moulin Train station, are key to achieving greater movement around the study area. As such, detailed plans and proposals for these two major focus areas were specifically discussed in the previous sections. Three more areas related to transportation also bear mentioning here: Public Transit, a Bike Network and Parking (please see Appendix H).

A. Public Transit

Informal interviews with local residents revealed that those who use public transit in Deux-Montagnes would like better access and improved frequency to bus routes currently in place. In addition to increasing the frequency of the buses in Deux-Montagnes, we propose a new route to serve the higher densities and the elderly population located in the east of the study area. Ultimately, the new route would provide more comprehensive coverage in Deux-Montagnes and an expanded line would bring in more people from the other areas (St. Eustache, Oka) to the Grand Moulin station, thus strengthening the community’s local links and regional links.

The proposed route would connect the waterfront, retirement homes, and targeted high density residential area along with the railway with the community gardens, schools, Oka Road and the Grand Moulin train station.

Improved waiting environments for the bus stops would also be a priority and timetables displayed at each of these bus stops would be prominently featured (please see appendix J).

B. Bicycle Network

As part of a more sustainable transportation network, bike usage would be encouraged by setting up three cooperative bike stations on the three main activity nodes in the study area. A cooperative bike enterprise entails maintaining a fleet of communal bicycles which are rented on demand at specific stations across a given area. The bikes are rented on short-term or long-term loans. Members of this bicycle network would have to register in order to have access to the bikes. Ideally, this program could be run by local volunteers or a non-profit organization.

Furthermore, in order to sustain such a bicycle network, bicycle infrastructure along Oka Road and the Chemin du Grand Moulin would need to be installed and maintained. Other roads in the study area would not have to formally install bicycle paths to ensure access, but in principle they would be considered open to bikes as well (please see appendix K).

C. Parking

At the Grand Moulin station, most riders come from nearby to take the train; 71% of riders come from within 3km of the station while 88% come from within 5km. These short trips could be made on other, less polluting forms of transportation such as bike, foot, feeder buses, or even carpooling. Forty-six percent of the riders at Grand Moulin get to the station by driving there, while another 14% get there in a car driven by someone else (AMT, 2004). When people drive short distances to a transit station, they negate most of the environmental benefits of transit. The auto emissions from a 3km trip to the station are nearly as great as those from an 8-16km trip (WRN, 2003). Furthermore, surveys have indicated that transit riders would be willing to take transit, walk, or bike to stations if these modes were convenient (please see appendix O).

1. Benefits of Paid Parking

Charging people to park their cars reduces the public subsidy borne by all taxpayers and shifts some of the costs of parking onto its users, helping to recover them. When parking is not free, people are faced with prices that more accurately reflect the true costs of parking, and they are encouraged to carpool to split the price, or to use other transportation modes that are less harmful to the environment. With paid parking, both the demand and the necessary supply become finite. Thus less land is consumed for parking, and that which is can be used more efficiently. At a commuter rail station like Grand Moulin, free parking typically means that the lot fills up with the earliest commuters catching the first train into the city. Market-priced parking wouldn’t reduce transit ridership because the market price of a parking space in Deux-Montagnes is still much lower than that of a space in downtown Montreal. The AMT commuter who drives to the station may pay more for parking, but most will still park and take the train as long as it costs less than driving and parking downtown. Because AMT pays for parking at its lots now, market-priced parking is more equitable as well. All AMT riders are subsidizing parking through their train fares, as are most taxpayers through their taxes. When parking is paid for by its users, the revenue can be used in ways that benefit everyone, such as reducing train fares.

We are proposing to change \$2 per day at the train station parking lot at \$2 a day; nearly \$7M a year would be raised. Consequently, AMT fares could be reduced and would likely increase ridership throughout the system, correspondingly raising the value and appeal of homes and businesses clustered near AMT stations. Another possibility would be for the AMT to increase its fare recovery ratio from the current 45% to as high as 67%. That would reduce the public subsidies needed to operate the system, which could then be passed on to the region’s population in the form of lower taxes or other services. The revenue could also be used to improve train service, possibly to buy more train cars and increase train frequency so more riders can take the train more conveniently. Finally, the most obvious use for parking revenue might be to expand and improve feeder bus service to AMT stations. This would help get more riders to the station by more environmentally friendly means. It could make it more convenient for riders who already take buses to the station, and boost ridership and reduce the need for suburban residents to own cars. Alone or in any combination, these are meaningful benefits the public could enjoy from parking revenue.

The above benefits all pertain to parking revenue the AMT could collect at Grand Moulin and its other parking lots. Of course, if the City of Deux-Montagnes uses metered parking around the AMT station and along its main street (Oka Road), it could use the funds to improve the community as it best sees fit.

VI. Increasing Housing Density in Deux-Montagnes

A transit oriented development (TOD) strives for higher densities to happen around a transit node in order to incite people to use public transit. TOD’s also provide higher property values and create more pedestrian friendly environments that are key enablers for successful commercial activity. Deux-Montagnes’ housing stock has great potential to adapt in order to seize this opportunity for a vibrant and attractive community.

Deux-Montagnes’ high rate of homeownership and growing property values mean that many residents are in good positions to make changes to their homes. At the small end of the continuum, some residents may want to finish unused attics and basements in their homes to create new bedrooms or home offices—whether working from home full time or telecommuting elsewhere. Others may want to build additions to their houses to open low-impact businesses like accounting or barber salons. At the large end of the continuum, residents may want to expand their homes to include attached or unattached apartments they can rent out for extra income or use to house a returning college graduate or older parent who is still independent but no longer wants a large home to maintain. In some cases, this may provide an affordable way for young people to become homeowners; first living in the apartment and renting out the larger house, then doing the reverse as their incomes and families grow.

Quebec’s “long lot” pattern of land subdivision means that there is often little space to expand into on the sides of a home, but there is frequently room to grow up or to the rear of the lot. Residents might want to add a storey to their house to meet any number of needs, and adding a second storey apartment above the garage may be an attractive way for some households to provide a small but separate living space for an additional person. Finally, long lots are especially conducive to garden apartments or “granny flats” behind existing houses. These may be cozy but provide enough living space for one person at around 40 square meters. They allow a resident to be independent, but also stay near the family for regular contact and in case of emergency. These detached structures would have paths to the main house and to the street. These smaller scale increases in population density would use the city’s existing infrastructure more efficiently, and of course any increase in the value of a home represents additional property tax revenue to the municipality. As an investment toward these benefits, the city might consider modest incentive programs to help people adapt their homes to changing needs, such as paying for consultations with architects or helping provide ideas and assistance to homeowners (Friedman, 2002).

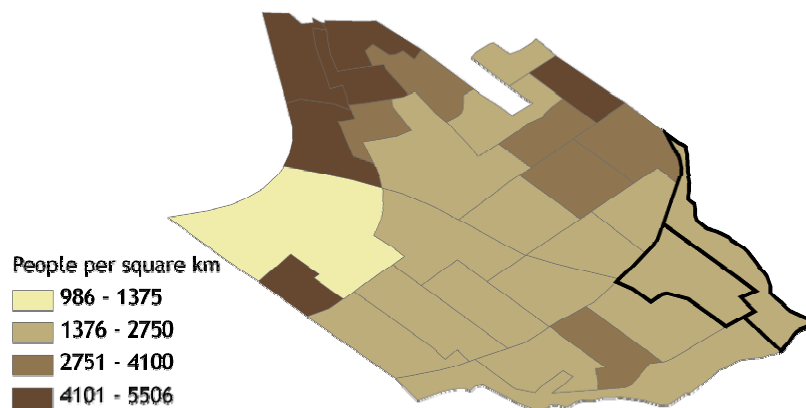
A. Current population and density

Deux-Montagnes' population has experienced a slow down in its growth rate over the past 10 years (from 23% to 7%). However, the last five year period portrays a significant growth rate considering that the City of Montréal only grew 0.003% in that same period.

	1991	1996	2001
Deux-Montagnes			
Deux-Montagnes Population	13,035	15,953	17,080
Growth rate		22.4%	7.1%
Area (km ²)	6.16	6.16	6.16
Density	2,116	2,590	2,773

Grand-Moulin

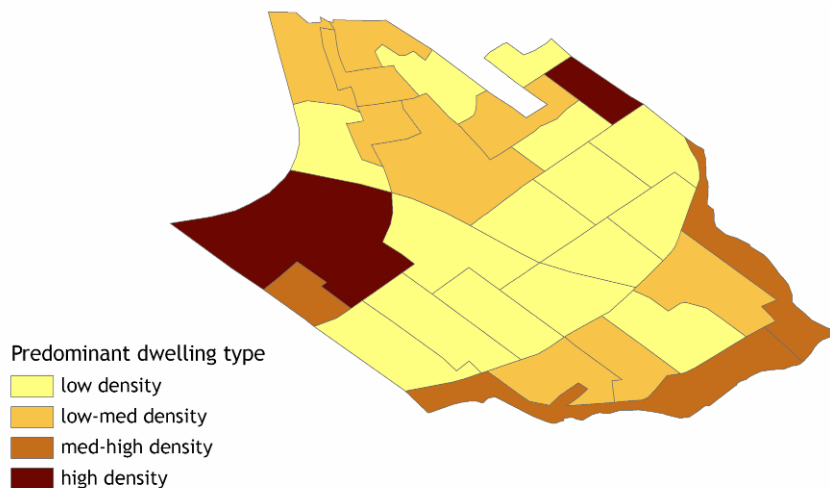
Grand-Moulin Population	1283
Grand-Moulin total units	575



Densities:

Population & Housing Stock

Deux-Montagnes has higher densities to the North West. The study area, Grand-Moulin, has a significantly lower density which may impede commercial growth.



B. TOD: Principles & CMM Plan d'Aménagement

The following table summarizes the densities aimed by the AMT's TOD principles around a transit node.

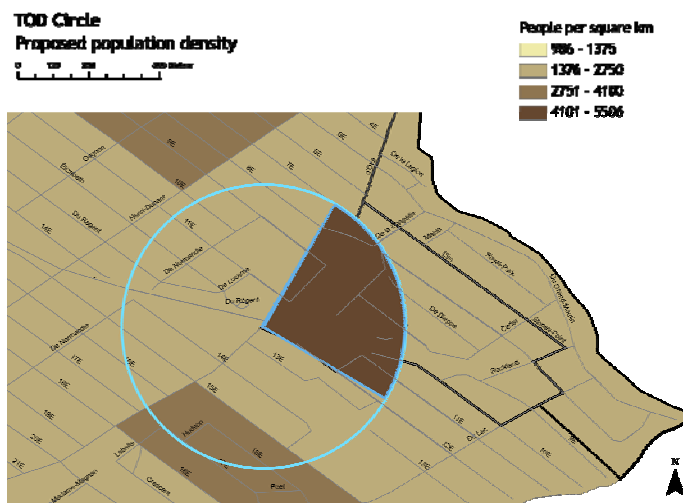
AMT - TOD Principles					
Radius	Density (units/km ²)	Area (km ²)	Potential units	Population	Population density
0-250 m	7500	0.137	1028	2569	18750
250-500 m	5000	0.412	2060	5150	12500
500-750 m	2500	0.687	1718	4294	6250

It is assumed each unit has 2.5 persons

The following table summarizes the densities put forth by CMM's Plan d'Aménagement's principles around a transit node.

CMM Plan d'Aménagement					
Radius	Density (units/km ²)	Area (km ²)	Potential units	Population	Population density
0-1km	2500	0.687	1718	4294	6250

C. Growth Projections



In order to calculate the ideal density for Grand-Moulin, a density circle with a 500m radius was drafted around the ideal train station. Hence, three calculation methodologies were followed. The first one assigns 80% of the AMT's density target to the area compounded by this circle.

The second assigns the density to the circle area according to the current growth rate (1996-2001); and the third, combines both previous methodologies. Moreover, two scenarios are put forth for each of these methodologies. The first one assumes that 25% of the circle's increased population will impact the overlapping area on Grand-Moulin, and the second assumes that 50% will impact this same area. Calculations for all possible 6 cases follow.

1) Transit Oriented Development (TOD) Standard by CMM

Population: Transit Oriented Development (TOD) calculation					
SCENARIO 1: 25% TOD-density circle area			SCENARIO 2: 50% TOD-density circle area		
CMM-TOD suggested density	6250	23%	CMM-TOD suggested density	6250	23%
Proposed density percentage	80%		Proposed density percentage	80%	
Proposed density for circle	5000		Proposed density for circle	5000	
% of density circle	25%		% of density circle	50%	
Density area	0.19625		Density area	0.3925	
Population increase GM	981		Population increase GM	1963	
Total population GM	2264		Total population GM	3246	
Proposed density circle GM	5000		Proposed density circle GM	10000	
Proposed density GM	3838		Proposed density GM	5501	
Required units	393		Required units	785	
Total units	968		Total units	1360	
Population increase DM	3925		Population increase DM	3925	
Total Population DM	21,005		Total Population DM	21,005	

Land required: Transit Oriented Development (TOD) calculation			
SCENARIO 1: 25% TOD-density circle area		SCENARIO 2: 50% TOD-density circle area	
Residential units per building	14	Residential units per building	14
Commercial units per building	2	Commercial units per building	2
Required buildings	28	Required buildings	56
Total stories per building	4	Total stories per building	4
Average mts per unit	250	Average mts per unit	250
Units per floor	4	Units per floor	4
Floor area (mts)	1,000	Floor area (mts)	1,000
Total building space (mts)	28,036	Total building space (mts)	56,071
Total land required (mts)	33,643	Total land required (mts)	67,286

2) Current Growth Rate

Population: Current growth rate calculation (CGR)					
SCENARIO 1: 25% TOD-density circle area			SCENARIO 2: 50% TOD-density circle area		
CMM-TOD suggested density	6250	15%	CMM-TOD suggested density	6250	15%
Proposed density percentage	51%		Proposed density percentage	51%	
Proposed density for circle	3185		Proposed density for circle	3185	
% of density circle	25%		% of density circle	50%	
Density area	0.19625		Density area	0.3925	
Population increase GM	625		Population GM	1250	
Total population GM	1908		Total population GM	2533	
Proposed density circle GM	3185		Proposed density circle GM	6369	
Proposed density GM	3234		Proposed density GM	4293	
Required units	250		Required units	500	
Total units	825		Total units	1075	
Population increase DM	2500		Population increase DM	2500	
Total Population DM	19,580		Total Population DM	19,580	

Land required: Current growth rate calculation (CGR)			
SCENARIO 1: 25% TOD-density circle area		SCENARIO 2: 50% TOD-density circle area	
Residential units per building	14	Residential units per building	14
Commercial units per building	2	Commercial units per building	2
Required buildings	18	Required buildings	36
Total stories per building	4	Total stories per building	4
Average mts per unit	250	Average mts per unit	250
Units per floor	4	Units per floor	4
Floor area (mts)	1,000	Floor area (mts)	1,000
Total building space (mts)	17,857	Total building space (mts)	35,714
Total land required (mts)	21,429	Total land required (mts)	42,857

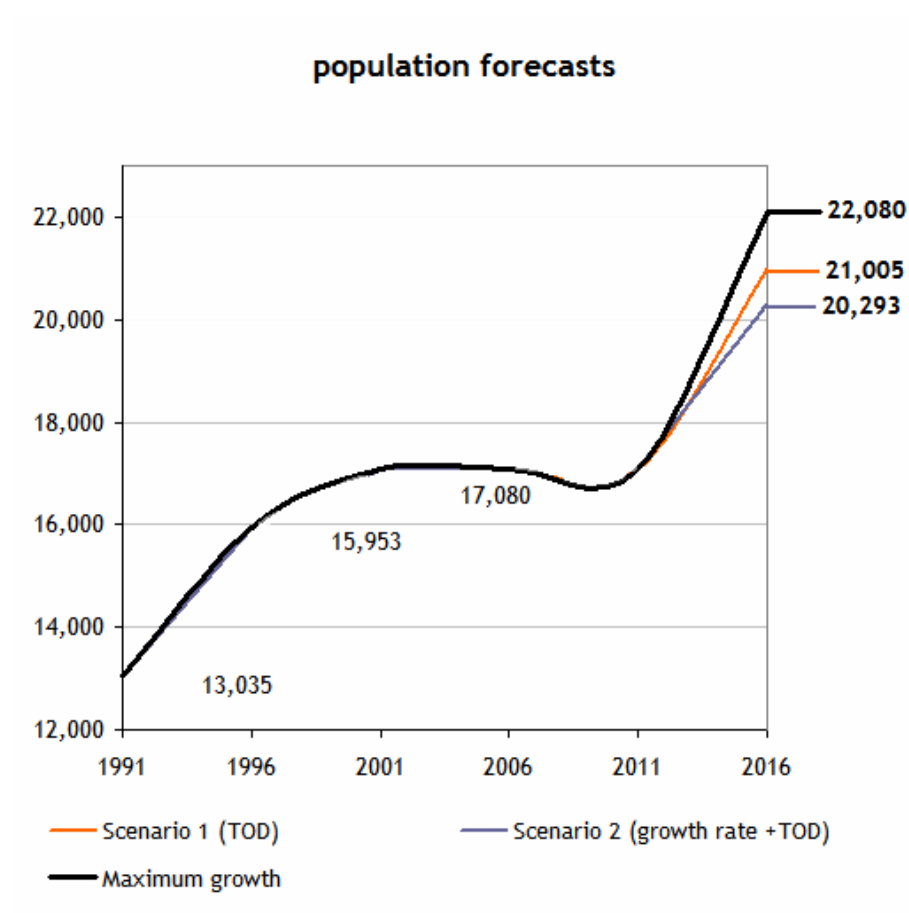
3) Mixed TOD and Current Growth Rate (CGR)

Population: Average scenarios (TOD + CGR)					
SCENARIO 1: 25% TOD-density circle area			SCENARIO 2: 50% TOD-density circle area		
CMM-TOD suggested density	6250	19%	CMM-TOD suggested density	6250	19%
Proposed density percentage	65%		Proposed density percentage	65%	
Proposed density for circle	4092		Proposed density for circle	4092	
% of density circle	25%		% of density circle	50%	
Density area	0.19625		Density area	0.3925	
Population increase GM	803		Population increase GM	1606	
Total population GM	2086		Total population GM	2889	
Proposed density circle GM	4092		Proposed density circle GM	8185	
Proposed density GM	3536		Proposed density GM	4897	
Required units	321		Required units	643	
Total units	896		Total units	1218	
Population increase DM	3212.5		Population increase DM	3212.5	
Total Population DM	20,293		Total Population DM	20,293	

Land required: Average scenarios (TOD + CGR)			
SCENARIO 1: 25% TOD-density circle area		SCENARIO 2: 50% TOD-density circle area	
Residential units per building	14	Residential units per building	14
Commercial units per building	2	Commercial units per building	2
Required buildings	23	Required buildings	46
Total stories per building	4	Total stories per building	4
Average mts per unit	250	Average mts per unit	250
Units per floor	4	Units per floor	4
Floor area (mts)	1,000	Floor area (mts)	1,000
Total building space (mts)	22,946	Total building space (mts)	45,893
Total land required (mts)	27,536	Total land required (mts)	55,071

D. Scenarios selected

Scenario 1 from the TOD methodology and scenario 1 from TOD+CGR methodology were selected. They render smaller land, and if the population increase were brought about thru the entire density circle, the population in Deux-Montagnes would still be below the maximum growth allowed in Deux-Montagnes, as shown in the graph below.¹



¹ According to maximum water and sewage capacity. "Constraints Report for Deux-Montagnes". McGill University. 2006.

E. Growth Distribution & Suggested redevelopment areas

Scenario 1 33643

Lot area	m ²	Existing buildings
1	2359	4
2	1004	2
3	1665	2
4	1278	1
5	2043	2
6	2748	2
7	1826	1
8	1846	3
9	1792	3
10	917	2
11	11240	6
13	4215	5
TOTAL	32933	33



Scenario 2 17,857

Lot area	m ²	Existing buildings
1	2359	4
2	1004	2
4	1278	1
5	2043	2
6	2748	2
7	1826	1
10	917	2
11	11240	6
13	4215	5
TOTAL	27630	25

VII. Social Inclusion and Sustainability

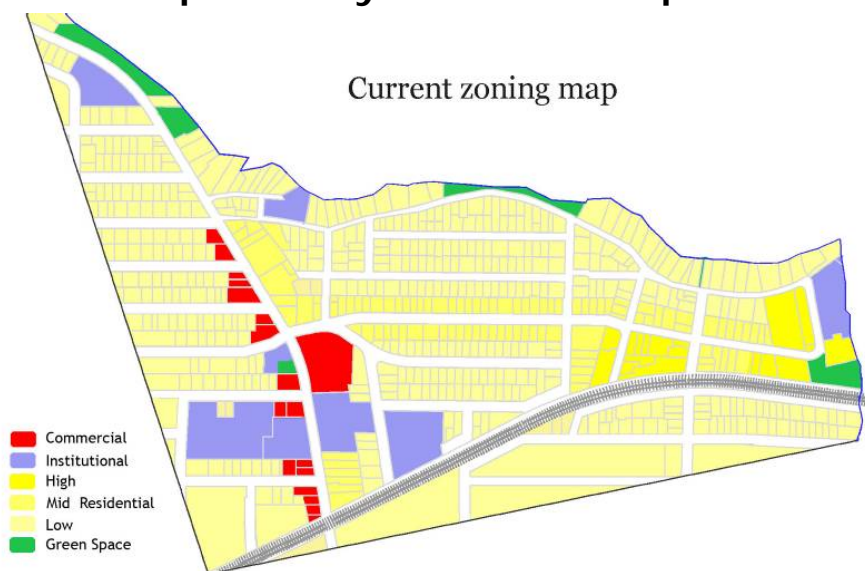
We recommend that Deux-Montagnes create a Mission Statement and Set of Values & Principles for its residents. This Mission Statement will feed into the existing planned activities. Increasing public consultations (at least two annually) will be greatly beneficial for strategic planning. We recommend that the city develop a policy that requires 10% of all new development be devoted to affordable housing as well as a policy that requires all public spaces to be wheel-chair accessible. We encourage 50% of community activities be devoted to promote social inclusion and 25% of community activities be intergenerational. Developing two Community Gardens (with composting on site) within the study area will be central to community building.

We encourage the City of Deux-Montagnes to promote sustainable green design for new development and renovations and create a municipal policy that requires 40% of demolition materials to be incorporated into new design (please see Appendix M).

VIII. Expected Benefits of the Plan

A transit oriented development is a compact, walkable development anchored around a transit centre. Benefits of a development of this nature include diversity, healthy communities and balance. This is achieved through moderate to high density targets in order to create a sense of neighbourhood identity and to foster a sense of community among residents. A range of housing types, ranging from apartments to single and multi-unit dwellings also create opportunities for a variety of people to settle in the area, keeping in mind key demographic changes and trends. Reduced parking encourages a more pedestrian friendly environment ripe for social interaction opportunities. Pedestrian friendly environments also provide local businesses a chance to flourish. Access to various types of transportation (walking, biking, bus, commuter train, car) caters to many preferences and ensures affordability. High quality design elements may also make transit oriented developments more attractive. These elements include, but are not limited to: shorter setbacks from the street, architectural details, attractive streets and facades and less surface parking.

IX. Compatibility with municipal zoning



A. Oka Road

Along Oka Road, between 5th and 8th, the zoning is currently commercial on one side and residential on the other side of the road. Between 8th and the railroad, it is zoned almost exclusively commercial except near the railroad on the east side where there is a small patch of residential development. Finally, north of 5th Oka is zoned residential except in the specific cases where there is public property. In order to have a dynamic and healthy main street along Oka Road there needs to be mixed use building. Current zoning does not allow for this type of development, therefore, we are proposing to change the zoning to mixed residential (Class 3 and Class 4) and commercial use. Within these plans there should be a 3-1 residential to commercial usage ratio, this will help prevent misapplication of our guidelines.

B. Water Front

The current zoning is P1-46 (public space for services). This does not allow for commercial venues; therefore, we feel that a zoning change needs to be made to this area. We recommend a mixed-use zone that would allow for small commercial uses on the public property (commercial class B).

C. Train Station

The proposed train station development on Oka Road will be situated on lots that are currently zoned R4-54. In order to meet the train station’s varied design needs, we recommend that the zoning be changed in the surrounding area. The train station will consist of commercial, public and residential space, and the zoning will need to reflect this. We suggest mixed use zoning that will allow for commercial venues on public land, and adjacent residential development.

D. The Holy Family Church

The Holy Family church property is currently zoned as P1-50. This zoning allows for the development of green space and public services. Our proposed plan to develop a public park between the IGA and the Holy Family church does not require any zoning changes as the IGA property is currently zoned C2-56 which also allows for the development of green space.

Proposed Zoning



X. Support from Other Agencies

A number of local, provincial and federal agencies have programs or policies in place that support our plan for transit oriented development, waterfront access and main street revitalization in Deux-Montagnes.

At the federal level, the Canadian Housing and Mortgage Corporation (CHMC) assists in providing guidance and funds to communities and individuals for affordable housing initiatives. Heritage Canada also provides funding that supports cultural activities.

At the provincial level, Hydro Québec allocates funds to help municipalities place electrical cables underground. In many cases, this can help revitalize an area and make neighborhoods more attractive and inviting both to residents and visitors. The Power Line Undergrounding (PLUG) program provides funding up to \$100 million a year to municipalities for the undergrounding of existing power systems.

Gaz Métropolitaine also has a program initiative which partners with building owners on green roof projects and solarwalls. For example, the Energy Efficiency Fund offers a financial assistance equal to 1\$ per cubic meter of natural gas saved when a household buys a residential solarwall.

At the local level, if the Grand Moulin train station is moved closer to Oka Road, the Agence the Transport Métropolitaine (ATM) will need to be consulted in order to devise a more integrated public transportation system in Deux-Montagnes. Ultimately, this will help Deux-Montagnes by providing a more comprehensive transportation network. This is key if the community is to be considered for more transit oriented development in the future.

In regard to waterfront revitalization, in 2002, the Communauté métropolitaine de Montréal (CMM) put aside funds for municipalities to provide or improve public access to their waterfront areas. The program has spent \$6 million on 16 water-oriented projects between 2002-2004.

La Fondation Rues Principales also offers a partnership approach with participating municipalities to revitalize their Main Streets. More specifically, the non-profit foundation develops knowledge of the local environment by collectively analyzing the situation in regard to its commercial, economic, social, cultural and physical characteristics. The organization also assists in finding start-up funding for a Rues principales project.

XI. Critical Path Steps and Implementation

In order to proceed with the proposed plan, the municipal government of Deux-Montagnes will need to adopt short, medium and long-term goals and actions. Ultimately, the Deux Montagnes Revitalization Committee, local urban planners, the Executive Committee of the City of Deux Montagnes and other stakeholders will decide which steps are necessary to move forward at this point. However, our team suggests the following critical path steps for implementation of our plan (please see appendix B).

Our implementation plan has been divided into four phases over a ten year period, and addresses seven goals, as discussed in this document. They include: the creation and adoption of a Deux-Montagnes Master Plan with a Programme Particulier d’Urbanisme, changes to current zoning, public waterfront access and improvement, a more comprehensive public transportation network, moving the Grand Moulin train station closer to Oka Road, Oka Road revitalization and housing to accommodate increased density. Here, it is important to note that the catalyst to the implementation of our plan is the creation and adoption of a Deux-Montagnes Master Plan.

XII. Municipal Financial Impact

In order to assess the feasibility of the projects proposed, three Project Proformas were drafted: the Main Complex Plaza², the Public Waterfront and a sample Four Story Residential Unit. Though the first two projects are mainly public in character and Proformas are usually created for private developments, these projects are being assessed from a private standpoint. This has been done to provide the Municipality of Deux-Montagnes with the option of either engaging on a public-private partnership or handing these projects over completely to a private developer to put forth the initiatives (See complete Proformas and corresponding detailed costs for each of them in Appendix C; see Appendix A for approximate square footage).

1) Main Plaza Complex

Proforma Summary Table 1: Main Plaza Complex	
capital cost	
land cost	\$1,827,004
hard cost	\$11,988,595
soft cost	\$4,144,680
total cost	\$17,960,278
income	
gross revenue	\$4,031,195
operating expenses	\$876,919
net operating income	\$3,507,677
debt services	
mortgage	\$2,532,479
annual repayment	\$220,793.06
net annual revenue	\$582,949

² (Train Station, mixed-use market, underground parking, & park)

2) Public Waterfront

This example is based on the assumption that the Royal Legion will not be sold but rented to a third party to operate. Income comes from rent in this arrangement. Further study on how much this property would sell for must be performed in order to assess the validity of this alternative. Furthermore, this value should be compared to the “net present value” of the “net annual revenue” provided in the present Proforma to verify which option is most financially attractive.

Proforma Summary Table 2: Public Waterfront	
capital cost	
land cost	\$1,627,574
hard cost	\$833,107
soft cost	\$730,523
total cost	\$3,165,599
income	
gross revenue	\$813,789
operating expenses	\$162,758
net operating income	\$651,031
debt services	
mortgage	\$1,666,889
annual repayment	\$145,326.96
net annual revenue	\$505,704

3) Residential example: four story residential unit

Proforma Summary Table 3: Four Story Residential Unit	
capital cost	
land cost	\$334,800
hard cost	\$2,744,656
soft cost	\$923,837
total cost	\$4,003,293

income	
gross revenue	\$688,890
operating expenses	\$137,778
net operating income	\$551,112
debt services	
mortgage	\$3,202,634
annual repayment	\$279,220.24
net annual revenue	\$271,892

4) Oka Road

Proforma Summary Table 4: Oka road	
capital cost	
land cost	\$0
hard cost	\$1,562,360
soft cost	\$468,708
total cost	\$2,031,068

A. Financial Analysis

The 10-year municipal budget projection (see Appendix C), taking into consideration the projects conveyed in this report as well as both population increase scenarios, foresee significant medium-term fiscal surplus for the Municipality.

More importantly, the cost per capita has a decreasing trend over the years projected and the revenue per capita is increasing with time. This only means that the financial surplus, assuming the conditions in the Balance Sheet remain constant, will continue to grow with a smaller economic burden to the population of Deux-Montagnes as a whole.

XIII. Potential barriers and problems

Environmental constraints and land availability are the two main potential barriers that exist with regards to development and consequently need to be considered when thinking about developing a dynamic center within Deux-Montagnes. Deux-Montagnes has a small amount of land available for development, therefore creating a physical constraint with regards to growth. There are also three main environmental barriers that affect the development of Deux-Montagnes. Firstly, our study area is lacking adequate storm sewer infrastructure. This is a significant problem as part of our study area is below sea level including west of the train station. Secondly, Deux-Montagnes is close to bedrock and the topsoil ranges from 0-100 cm in depth. Consequently, excavation is extremely costly especially when considering development plans (ex. underground parking). Finally, Lac des Deux-Montagnes’ water is clean enough for swimming; however, the Rivière Milles Îles is too polluted to allow for recreational swimming. Consequently, our proposed waterfront activity needs to be limited to kayaking, canoeing and recreational fishing throughout the summer.

XIV. Conclusion

In order for there to be a more active, vibrant and dynamic core within Deux-Montagnes, attention needs to be focused on creating an economically viable and creative center for the area that is not only attractive to an intergenerational community but also will serve the existing population’s needs and be scalable as those needs grow and change. Developing the waterfront, creating a mixed-use train station, improving the transportation network, developing a public park near the IGA and revitalizing Oka Road are all critical steps to creating a healthy and exciting center within Deux-Montagnes. Developing a comprehensive Transit Oriented Development model will reduce the amount of vehicles on the road (limiting green house gas emissions). Improving bus and train frequency will encourage more people to use public transit. Improving bike paths, allowing more bikes on the trains as well as creating a bicycle station program will increase bike usage. Improving lighting and sidewalks and adding street furniture to Chemin d’Oka will help increase pedestrian traffic and wheel-chair accessibility.

Social inclusion, sustainable design and holistic practice are key elements to developing a healthy community and consequently need to be integrated within this process. Creating a crafts market, farmers market, annual street festivities and community gardens within the study area will be integral to community building.

In the end, there is much potential to not only bring density to Deux-Montagnes, but to create a rich economic and cultural center that serves an important historical landmark for years to come.

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XVI. Appendix

A. Square Footage of Main Interventions of Concept Plan

1) Waterfront project

a. Total square meters of deck:

653.8 m²

b. Total square meters of legion building:

725.8 m²

2) Train station

a. Total area of train station:

First floor 2000 m²

Second floor 1200 m²

b. Area and number of units for commercial area:

6 commercial units of 100m²

2 commercial units of 150m²

c. The building across from the train station is a mixed use building, with the first floor serving as commercial use

Area of the building:

First floor 1600 m²

Second floor 1600 m²

Third floor 1200 m²

ii. The first floor is commercial, there would be 6 units, 3 would 200m², 1 would be 130m², 2 would be 300m². There could potentially be room for 400m² of office space on the second floor also.

Consultations										
3.3 Funding										
3.4 Construction										

4. Transportation Network										
4.1 Consultations & Feasibility Study with AMT										
4.2 Public Consultations										
4.3 Funding										
4.4 Bicycle Network										
4.5 Bicycle Stations										
4.6 Public Transit buses										
4.7 Parking										
5. Train Station										
5.1 Consultations with AMT										
5.2 Develop Public-Private Partnerships										

with Investors										
5.3 Funding										
5.4 Construction										
6. Main Street										
6.1 Public Consultations										
6.2 Funding										
6.3 Underground hydro wires and Light Fixtures										
6.4 Bulbouts and Pedestrian Crossings										
6.5 Install Street Fixtures and Furniture										
7. Housing										
7.1 Increase density										
7.2 Enable Conversion of Houses										
7.3 New residences										

* Note: We propose a Master Plan Update every 5 years.

C. Municipal Budget Forecasts & Project Proformas

1. Scenario 1: Municipal Budget Forecast (10 years)

981 people added

Foreseen budget	Year 0 2006	Year 1 2007	Year 2 2008	Year 3 2009	Year 4 2010	Year 5 2011	Year 6 2012	Year 7 2013	Year 8 2014	Year 9 2015	Year 10 2016
Previous balance	0	(\$100,100)	(\$1,974,318)	(\$4,967,764)	(\$7,043,944)	(\$8,717,297)	(\$5,495,789)	(\$2,073,344)	\$1,550,036	\$5,374,353	\$9,399,605
Revenues											
General property taxes	\$8,776,000	\$8,776,000	\$8,923,309	\$9,070,617	\$9,217,926	\$9,365,235	\$9,512,543	\$9,659,852	\$9,807,161	\$9,954,469	\$10,101,778
Non residential property taxes	\$249,300	\$249,300	\$285,932	\$322,565	\$359,197	\$395,829	\$432,462	\$469,094	\$505,726	\$542,358	\$578,991
Drinking water rates	\$955,500	\$955,500	\$961,880	\$968,259	\$974,639	\$981,019	\$987,398	\$993,778	\$1,000,158	\$1,006,537	\$1,012,917
Wastewater rates	\$859,300	\$859,300	\$864,533	\$869,767	\$875,000	\$880,233	\$885,467	\$890,700	\$895,933	\$901,167	\$906,400
Waste management rates	\$938,000	\$938,000	\$943,383	\$948,766	\$954,149	\$959,531	\$964,914	\$970,297	\$975,680	\$981,063	\$986,446
Local assessment rates	\$695,600	\$695,600	\$695,600	\$695,600	\$695,600	\$695,600	\$695,600	\$695,600	\$695,600	\$695,600	\$695,600
Payments made in lieu of taxes	\$393,700	\$393,700	\$393,700	\$393,700	\$393,700	\$393,700	\$393,700	\$393,700	\$393,700	\$393,700	\$393,700
Other revenues from local sources	\$7,662,300	\$7,662,300	\$7,662,300	\$7,662,300	\$7,662,300	\$7,662,300	\$7,662,300	\$7,662,300	\$7,662,300	\$7,662,300	\$7,662,300
Transfers	\$466,000										
Suggested project revenue	\$0	\$0	\$0	\$813,789	\$813,789	\$5,198,385	\$5,198,385	\$5,198,385	\$5,198,385	\$5,198,385	\$5,198,385
Subtotal	\$20,995,700	\$20,529,700	\$20,730,637	\$21,745,363	\$21,946,300	\$26,531,832	\$26,732,769	\$26,933,706	\$27,134,643	\$27,335,580	\$27,536,517
Operating Expenses											
General administration	\$2,265,100	\$2,265,100	\$2,265,100	\$2,265,100	\$2,265,100	\$2,265,100	\$2,265,100	\$2,265,100	\$2,265,100	\$2,265,100	\$2,265,100
Public safety	\$7,224,600	\$7,224,600	\$7,224,600	\$7,224,600	\$7,224,600	\$7,224,600	\$7,224,600	\$7,224,600	\$7,224,600	\$7,224,600	\$7,224,600
Transportation	\$2,020,700	\$2,020,700	\$2,020,700	\$2,020,700	\$2,020,700	\$2,020,700	\$2,020,700	\$2,020,700	\$2,020,700	\$2,020,700	\$2,020,700
Environmental hygiene	\$2,875,100	\$2,875,100	\$2,875,100	\$2,875,100	\$2,875,100	\$2,875,100	\$2,875,100	\$2,875,100	\$2,875,100	\$2,875,100	\$2,875,100
Health and welfare	\$52,100	\$52,100	\$52,100	\$52,100	\$52,100	\$52,100	\$52,100	\$52,100	\$52,100	\$52,100	\$52,100
Installations, urban planning and development	\$480,800	\$1,788,917	\$3,109,081	\$3,206,540	\$3,004,648	\$2,695,319	\$2,695,319	\$2,695,319	\$2,695,319	\$2,695,319	\$2,695,319
Social and cultural events	\$2,186,800	\$2,186,800	\$2,186,800	\$2,186,800	\$2,186,800	\$2,186,800	\$2,186,800	\$2,186,800	\$2,186,800	\$2,186,800	\$2,186,800
Funding costs	\$1,530,000	\$1,530,000	\$1,530,000	\$1,530,000	\$1,530,000	\$1,530,000	\$1,530,000	\$1,530,000	\$1,530,000	\$1,530,000	\$1,530,000
Subtotal	\$18,635,200	\$19,943,317	\$21,263,481	\$21,360,940	\$21,159,048	\$20,849,719	\$20,849,719	\$20,849,719	\$20,849,719	\$20,849,719	\$20,849,719
Other Financial Activities											
Reimbursement of capital	\$2,460,600	\$2,460,601	\$2,460,602	\$2,460,603	\$2,460,604	\$2,460,605	\$2,460,606	\$2,460,607	\$2,460,608	\$2,460,609	\$2,460,610
	\$21,095,800	\$22,403,918	\$23,724,083	\$23,821,543	\$23,619,652	\$23,310,324	\$23,310,325	\$23,310,326	\$23,310,327	\$23,310,328	\$23,310,329
Yearly surplus/deficit before appropriation	(\$100,100)	(\$1,874,218)	(\$2,993,446)	(\$2,076,181)	(\$1,673,352)	\$3,221,508	\$3,422,444	\$3,623,380	\$3,824,316	\$4,025,252	\$4,226,188
Cumulative surplus/deficit before appropriation	(\$100,100)	(\$1,974,318)	(\$4,967,764)	(\$7,043,944)	(\$8,717,297)	(\$5,495,789)	(\$2,073,344)	\$1,550,036	\$5,374,353	\$9,399,605	\$13,625,792
Per capita indicators											
Population	17080	17080	17189	17298	17407	17516	17625	17734	17843	17952	18061
Operating cost per capita	\$1,091.05	\$1,168	\$1,237	\$1,235	\$1,216	\$1,190	\$1,183	\$1,176	\$1,168	\$1,161	\$1,154
Surplus/deficit per capita	(\$6)	(\$116)	(\$289)	(\$407)	(\$501)	(\$314)	(\$118)	\$87	\$301	\$524	\$754

2. Scenario 2: Municipal Budget Forecast (10 years)

803 people added

Foreseen budget	Year 0 2006	Year 1 2007	Year 2 2008	Year 3 2009	Year 4 2010	Year 5 2011	Year 6 2012	Year 7 2013	Year 8 2014	Year 9 2015	Year 10 2016
Previous balance	0	(\$100,100)	(\$1,974,318)	(\$5,004,240)	(\$7,153,372)	(\$8,936,152)	(\$5,860,546)	(\$2,620,481)	\$784,045	\$4,353,030	\$8,086,476
Revenues											
General property taxes	\$8,776,000	\$8,776,000	\$8,896,568	\$9,017,136	\$9,137,704	\$9,258,272	\$9,378,840	\$9,499,407	\$9,619,975	\$9,740,543	\$9,861,111
Non residential property taxes	\$249,300	\$249,300	\$279,282	\$309,265	\$339,247	\$369,230	\$399,212	\$429,195	\$459,177	\$489,160	\$519,142
Drinking water rates	\$955,500	\$955,500	\$960,722	\$965,943	\$971,165	\$976,386	\$981,608	\$986,830	\$992,051	\$997,273	\$1,002,494
Wastewater rates	\$859,300	\$859,300	\$863,583	\$867,867	\$872,150	\$876,433	\$880,717	\$885,000	\$889,283	\$893,567	\$897,850
Waste management rates	\$938,000	\$938,000	\$942,406	\$946,811	\$951,217	\$955,623	\$960,029	\$964,434	\$968,840	\$973,246	\$977,651
Local assessment rates	\$695,600	\$695,600	\$695,600	\$695,600	\$695,600	\$695,600	\$695,600	\$695,600	\$695,600	\$695,600	\$695,600
Payments made in lieu of taxes	\$393,700	\$393,700	\$393,700	\$393,700	\$393,700	\$393,700	\$393,700	\$393,700	\$393,700	\$393,700	\$393,700
Other revenues from local sources	\$7,662,300	\$7,662,300	\$7,662,300	\$7,662,300	\$7,662,300	\$7,662,300	\$7,662,300	\$7,662,300	\$7,662,300	\$7,662,300	\$7,662,300
Transfers	\$466,000										
Suggested project revenue	\$0	\$0	\$0	\$813,789	\$813,789	\$5,198,385	\$5,198,385	\$5,198,385	\$5,198,385	\$5,198,385	\$5,198,385
Subtotal	\$20,995,700	\$20,529,700	\$20,694,161	\$21,672,411	\$21,836,872	\$26,385,929	\$26,550,390	\$26,714,851	\$26,879,312	\$27,043,773	\$27,208,234
Operating Expenses											
General administration	\$2,265,100	\$2,265,100	\$2,265,100	\$2,265,100	\$2,265,100	\$2,265,100	\$2,265,100	\$2,265,100	\$2,265,100	\$2,265,100	\$2,265,100
Public safety	\$7,224,600	\$7,224,600	\$7,224,600	\$7,224,600	\$7,224,600	\$7,224,600	\$7,224,600	\$7,224,600	\$7,224,600	\$7,224,600	\$7,224,600
Transportation	\$2,020,700	\$2,020,700	\$2,020,700	\$2,020,700	\$2,020,700	\$2,020,700	\$2,020,700	\$2,020,700	\$2,020,700	\$2,020,700	\$2,020,700
Environmental hygiene	\$2,875,100	\$2,875,100	\$2,875,100	\$2,875,100	\$2,875,100	\$2,875,100	\$2,875,100	\$2,875,100	\$2,875,100	\$2,875,100	\$2,875,100
Health and welfare	\$52,100	\$52,100	\$52,100	\$52,100	\$52,100	\$52,100	\$52,100	\$52,100	\$52,100	\$52,100	\$52,100
Installations, urban planning and development	\$480,800	\$1,788,917	\$3,109,081	\$3,206,540	\$3,004,648	\$2,695,319	\$2,695,319	\$2,695,319	\$2,695,319	\$2,695,319	\$2,695,319
Social and cultural events	\$2,186,800	\$2,186,800	\$2,186,800	\$2,186,800	\$2,186,800	\$2,186,800	\$2,186,800	\$2,186,800	\$2,186,800	\$2,186,800	\$2,186,800
Funding costs	\$1,530,000	\$1,530,000	\$1,530,000	\$1,530,000	\$1,530,000	\$1,530,000	\$1,530,000	\$1,530,000	\$1,530,000	\$1,530,000	\$1,530,000
Subtotal	\$18,635,200	\$19,943,317	\$21,263,481	\$21,360,940	\$21,159,048	\$20,849,719	\$20,849,719	\$20,849,719	\$20,849,719	\$20,849,719	\$20,849,719
Other Financial Activities											
Reimbursement of capital	\$2,460,600	\$2,460,601	\$2,460,602	\$2,460,603	\$2,460,604	\$2,460,605	\$2,460,606	\$2,460,607	\$2,460,608	\$2,460,609	\$2,460,610
	\$21,095,800	\$22,403,918	\$23,724,083	\$23,821,543	\$23,619,652	\$23,310,324	\$23,310,325	\$23,310,326	\$23,310,327	\$23,310,328	\$23,310,329
Yearly surplus/deficit before appropriation	(\$100,100)	(\$1,874,218)	(\$3,029,922)	(\$2,149,132)	(\$1,782,780)	\$3,075,605	\$3,240,066	\$3,404,526	\$3,568,986	\$3,733,446	\$3,897,906
Cumulative surplus/deficit before appropriation	(\$100,100)	(\$1,974,318)	(\$5,004,240)	(\$7,153,372)	(\$8,936,152)	(\$5,860,546)	(\$2,620,481)	\$784,045	\$4,353,030	\$8,086,476	\$11,984,382
Per capita indicators											
Population	17080	17080	17169	17258	17348	17437	17526	17615	17705	17794	17883
Operating cost per capita	\$1,091.05	\$1,168	\$1,238	\$1,238	\$1,220	\$1,196	\$1,190	\$1,184	\$1,178	\$1,172	\$1,166
Surplus/deficit per capita	(\$6)	(\$116)	(\$291)	(\$414)	(\$515)	(\$336)	(\$150)	\$45	\$246	\$454	\$670

3. Main Plaza Complex³

Proforma	Main Plaza Complex		
	Train station & mixed use market	Underground parking	Park
PROJECT COSTS			
LAND			
area (sq.mts)	6548.4	6548.4	2948
price (\$/sq.mts)	\$279.00	\$0.00	\$0.00
total land cost	\$1,827,003.60	\$0.00	\$0.00
HARD COSTS			
area (sq.mts.)	3,600	19,644	2,948
cost (\$/sq.mts)	\$1,614.59	\$313.91	\$3.28
construction cost			
additional associated costs			
total hard costs	\$5,812,511.63	\$6,166,411.67	\$9,671.92
SOFT COSTS			
% L+H costs	0.30	0.30	0.30
total soft costs	\$2,291,854.57	\$1,849,923.50	\$2,901.57
TOTAL COSTS	\$9,931,369.79	\$8,016,335.17	\$12,573.49
ANNUAL PRO FORMA			
GROSS REVENUE			
gross area	2,400	6,548	
efficiency	0.90	0.90	
occupancy	0.95	0.95	
sale/rent (\$/sq.meter)	\$172.22	\$720.00	
gross revenue	\$353,400.71	\$4,031,195.04	
OPERATING EXPENSES			
cost (\$/sq.mt)	\$34.44	\$144.00	
total operating exp.	\$70,680.14	\$806,239.01	
NET OPERATING INCOME	\$282,720.57	\$3,224,956.03	
DEBT SERVICING			
total cost	\$17,960,278.46		
equity	\$3,592,055.69		
% of investment	0.80		
mortgage	\$14,368,222.77		

³ (Train Station, mixed-use market, underground parking, & park)

mortgage rate	0.06
payback period (yrs)	20
mortgage constant	0.08718
annual repayment	\$1,252,687.14
NET ANNUAL REVENUE	\$2,254,989.46
RETURN ON EQUITY	0.63

Return on Investment	
total investment	\$17,960,278.46
gross revenue	\$4,384,595.75
operating expenses	\$876,919.15
net operating income	\$3,507,676.60
return on investment	0.20

Return on equity	
total cost	\$17,960,278.46
mortgage	\$14,368,222.77
equity	\$3,592,055.69
net revenue	\$2,254,989.46
return on equity	0.63

Main Plaza Complex Detailed Costs

	Area	Cost per m ²	Subtotal
Train station	2,000	\$1,614.59	\$3,229,173
Mixed use market	1,600	\$1,614.59	\$2,583,339
Underground parking*	19,644	\$313.91	\$6,166,412
Park	2,948	\$3.28	\$9,672
Total cost			\$11,988,595

This underground parking provides over 200 parking spots

4. Public Waterfront

Proforma	Waterfront project	
	Deck	Building
PROJECT COSTS		
LAND		
area (sq.mts)	5,834	
price (\$/sq.mts)	\$279	
total land cost	\$1,627,574	
HARD COSTS		
area (sq.mts.)	650	720
cost (\$/sq.mts)	\$50	\$1,076
construction cost		\$775,002
additional associated costs		\$25,605
total hard costs	\$32,500	\$800,607
SOFT COSTS		
% L+H costs	0.30	0.30
total soft costs	\$498,022	\$240,182
TOTAL COSTS	\$2,158,097	\$1,040,789
ANNUAL PRO FORMA		
GROSS REVENUE		
gross area	5,834	
efficiency	0.90	
occupancy	0.90	
sale/rent (\$/sq.meter)	\$172	
gross revenue	\$813,789	
OPERATING EXPENSES		
cost (\$/sq.mt)	\$34	
total operating exp.	\$162,758	
NET OPERATING INCOME	\$651,031	
DEBT SERVICING	fixed + current assets	current assets
total cost	\$3,198,886	\$2,083,611
equity	\$1,531,997	
% of investment	0.80	
mortgage	\$1,666,889	calculated from
mortgage rate ⁴	0.06	current
payback period (yrs)	20	

⁴ Mortgage in this section is calculated based on required assets and hence, excludes owned assets (the Royal Canadian Legion Property).

mortgage constant	0.08718
annual repayment	\$145,327
NET ANNUAL REVENUE	\$505,704
RETURN ON EQUITY	0.33

RETURN ON INVESTMENT	
total investment	\$3,198,886
gross revenue	\$813,789
operating expenses	\$162,758
net operating income	\$651,031
return on investment	0.20

RETURN ON EQUITY	
total cost	\$3,198,886
mortgage	\$1,666,889
equity	\$1,531,997
net revenue	\$505,704
return on equity	0.33

Public Waterfront Detailed Costs

	Area	Unit	Cost per m ²	Unit cost	Subtotal
Demolition expropriated	1105		\$15.89		\$17,561.01
Park expropriated	1836		\$3.28		\$6,024.28
Trees		2		\$510	\$1,020
Benches		2		\$500	\$1,000
Deck	650		\$50		\$32,500
Building	720		\$1,076		\$775,002
Total cost					\$833,107

5. Residential example: four story residential unit

Proforma	Residential Unit Building
LAND	
area (sq.mts)	1200
price (\$/sq.mts)	\$279
total land cost	\$334,800
HARD COSTS	
area (sq.mts.)	4000
cost (\$/sq.mts)	\$1,615
construction cost	
additional associated costs	
total hard costs	\$2,744,655.90
SOFT COSTS	
% L+H costs	0.3
total soft costs	\$923,837
TOTAL COSTS	\$4,003,292.67
ANNUAL PRO FORMA	
GROSS REVENUE	
gross area	4,000
efficiency	1
occupancy	1
sale/rent (\$/sq.meter)	\$172
gross revenue	\$688,890.27
OPERATING EXPENSES	
cost (\$/sq.mt)	34
total operating exp.	\$137,778.05
NET OPERATING INCOME	\$551,112.21
DEBT SERVICING	
total cost	\$4,003,293
equity	\$800,659
% of investment	\$0.80
mortgage	\$3,202,634
mortgage rate	0.06
payback period (yrs)	20
mortgage constant	0.08718
annual repayment	\$279,220
NET ANNUAL REVENUE	\$271,891.98
RETURN ON EQUITY	0.34

RETURN ON INVESTMENT	
total investment	\$2,031,068
gross revenue	\$688,890
operating expenses	\$137,778
net operating income	\$551,112
return on investment	0.27

RETURN ON EQUITY	
total cost	\$4,003,293
mortgage	\$688,890
equity	\$137,778
net revenue	\$271,892
return on equity	1.97

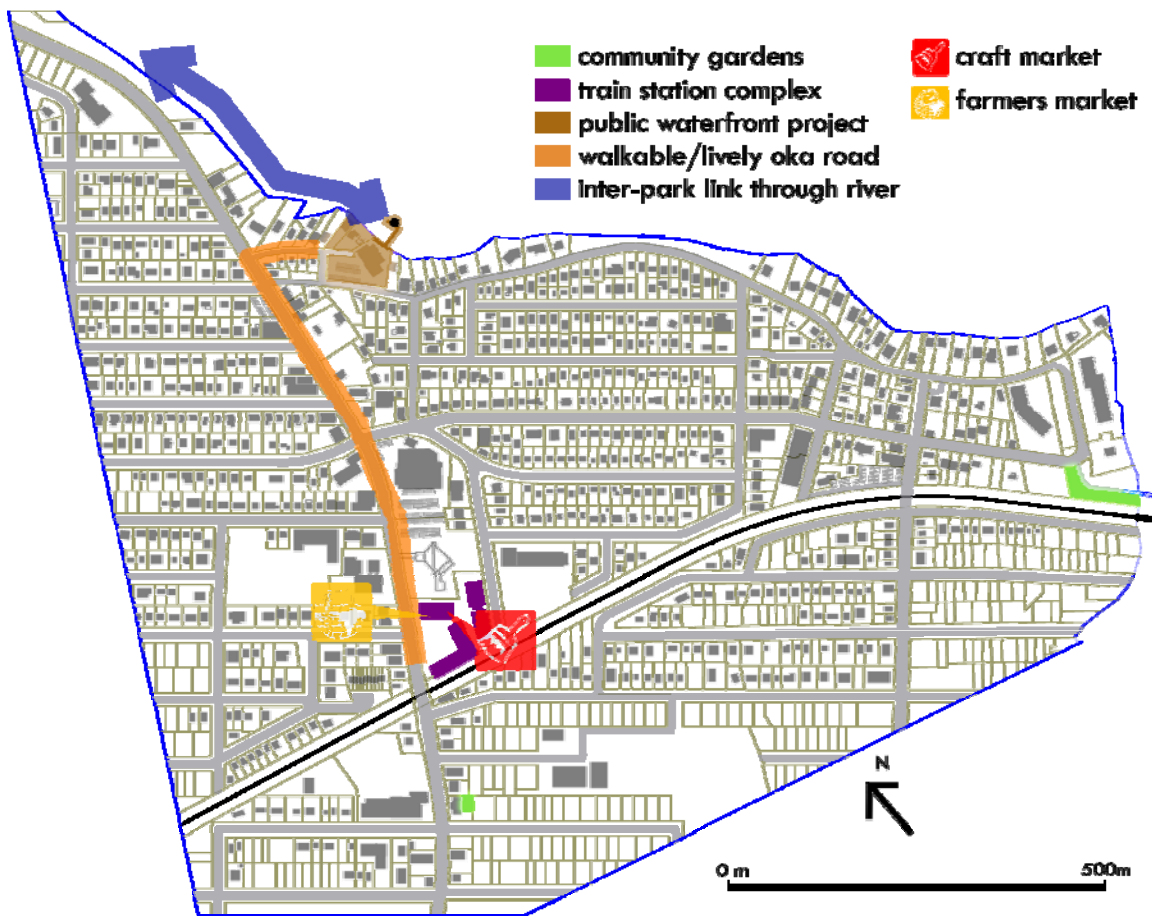
Residential detailed cost

	Cost	Meters	Subtotal
Underground parking (m ³)	\$314	3600	\$1,130,069.34
Building cost (m ²)	\$1,615	1000	\$1,614,586.56
Total			\$2,744,655.90

6. Detailed Costs: Oka Road

	Units	Quantity	Cost	Subtotal
Pedestrian lights	3		\$100,000	\$300,000
Meters sidewalk (linear m)		1,500	\$85.14	\$127,707
Benches	20		\$500	\$10,000
Trees	150		\$510	\$76,500
Sidewalk lighting	150		\$6,000	\$900,000
Street lights	20		\$6,000	\$120,000
Bulb-outs (m ²)		75	\$41.83	\$3,137
Cobblestone crossings (m ²)	3	288	\$86.86	\$25,016
Total cost				\$1,562,360

D. Activities Map



E. Waterfront



F. The Location of the New Train Station



G. Improvements on Oka Road

- Conceptual drawings



Before



After

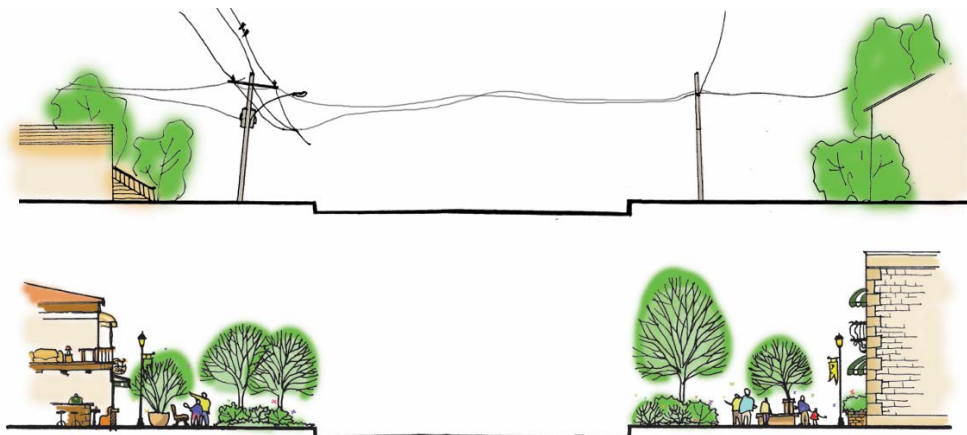


Before



After

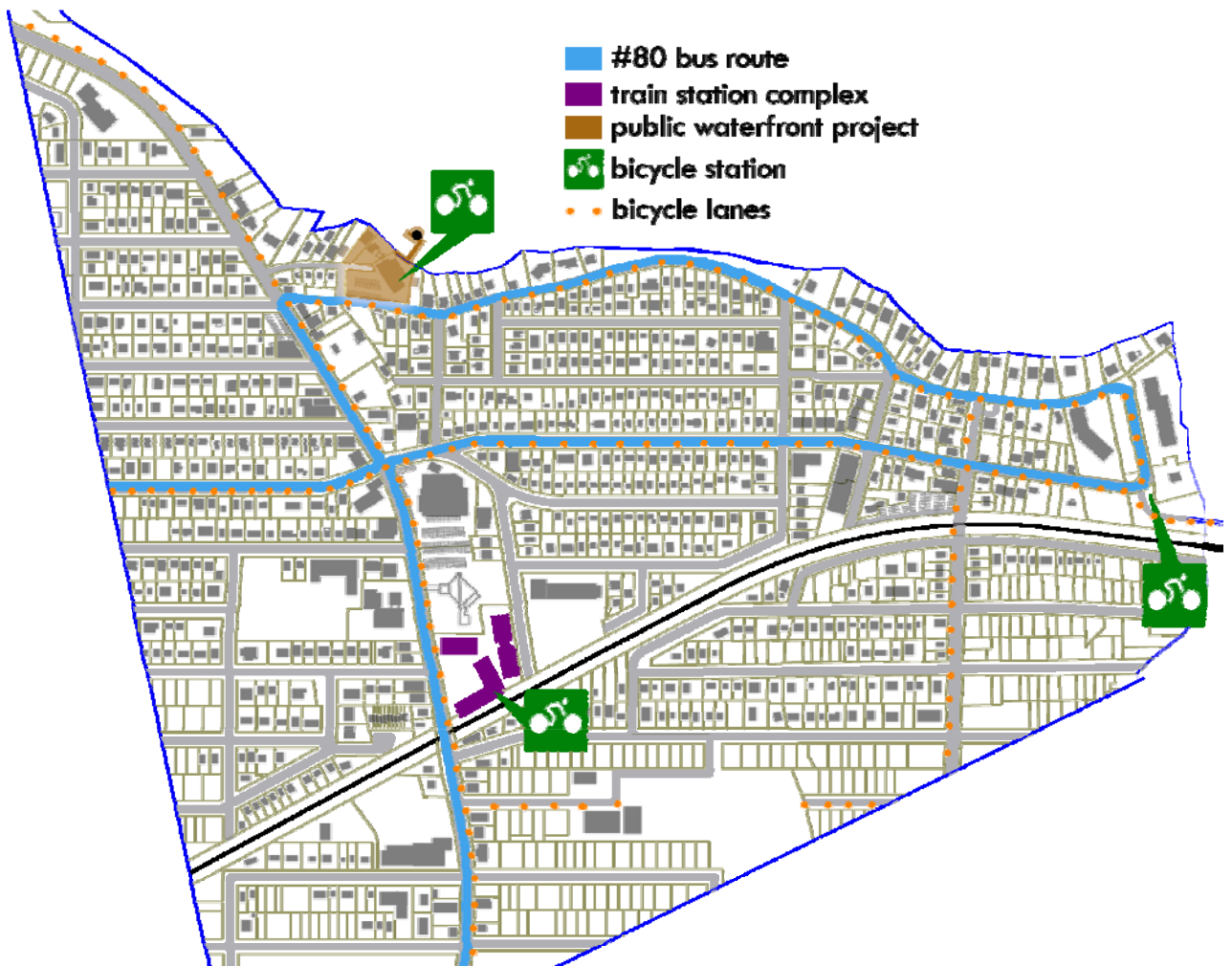
- Aesthetic improvements: under grounding electrical cables



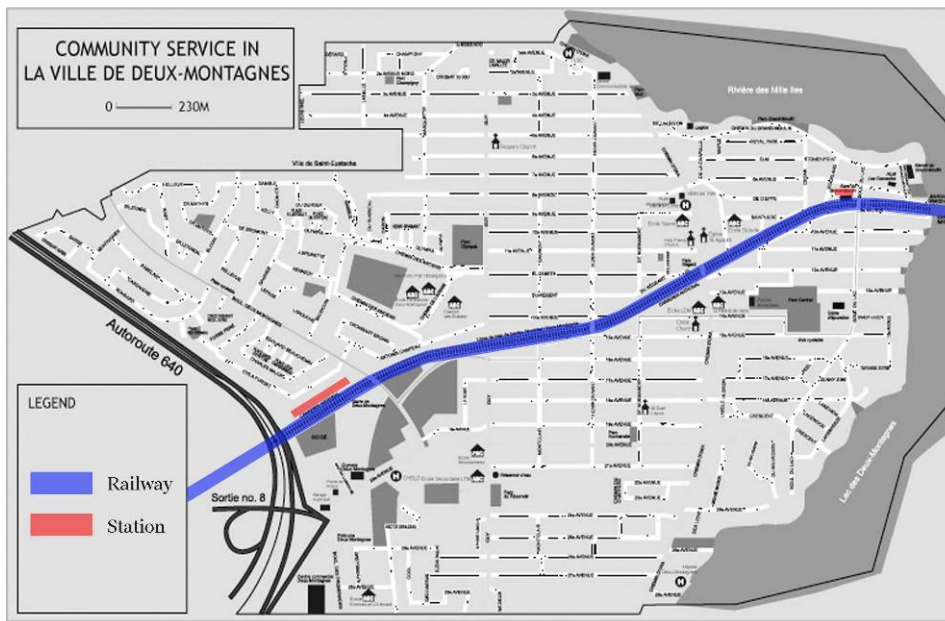
- Increasing density with existing buildings



H. Overall Transportation Map



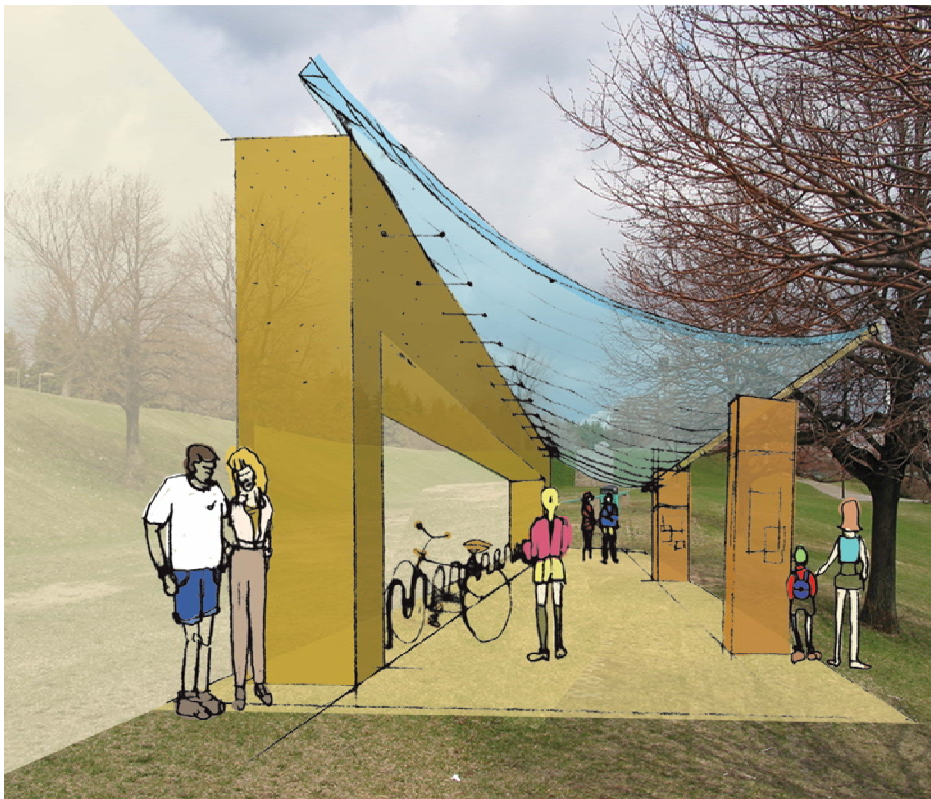
I. Railway Map



J. Bus route map



K. Bike path map



Example of Community Bicycles

L. Sidewalks map



M. Sustainable Design



Green Rooftop



N. Overall Concept Map



O. Traveling Distance to Train Station and Method

Enquête à bord

Trains de banlieue

Ligne Montréal / Deux-Montagnes

21 septembre 2004

Compilations

Distance d'accès à la gare selon le mode utilisé avant (rayon de distance en km)



	Marche	Vélo	Auto- conducteur	Auto- passager	Autobus et métro		
Somme FEXP	Modeavant						
Rayon_gare	1	2	3	4	6	0	Total
1	197	7	39	25	1	4	272 34.4%
3	57	11	155	46	17	5	291 36.8%
5	1		100	34			135 17.1%
10			41	4	1		47 5.9%
20	1		18	5	1	1	27 3.4%
30	1		8				9 1.1%
100	1		3				4 0.5%
(vide)			4			3	6 0.8%
Total	258	18	367	114	21	13	791
	32.7%	2.2%	46.4%	14.4%	2.6%	1.6%	

Note: Rayon à la gare de 100 correspond à une distance supérieur à 30 km de la gare.