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**From Theory to Practice: Planning for an Ecological Transit-Oriented-Neighbourhood in  
Montreal**

**BY**

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Of  
MASTER OF LANDSCAPE ARCHITECTURE**

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*"Sprawl has turned the world inside out. Landscape architects may be the ones to civilize it."*<sup>1</sup>

*Suzannah Lessard*

## **Introduction**

*"Having increased our individual mobility in both the physical and social sense - the speed and ease with which we can travel from place to place as well as the power to choose our hometowns - we find ourselves less and less sure of where it is we have finally arrived....."*<sup>12</sup>

*Robert Finch*

### **Issues**

North American metropolitan planning in the 21<sup>st</sup> century has seen a renewed interest in revitalizing and re-populating urban centres, a growing awareness that suburban structure and function have to be challenged for them to become more than bedroom communities and finally, a mounting interest in the benefits of mass transit use and transit-oriented development. There has been much talk and discussion about the benefits of better design principles for the 'sustainable community', the 'urban village', 'the transit village', the 'neotraditional quarter' or for 'smart growth.' However highlighting these interests and concerns and finding solutions has largely remained more of an academic debate and obsession. Although prolific writers and several practitioners have had the opportunity to build actual projects, the ratio of successful built or designed projects incorporating these principles is still low in comparison to the vast number of 'placeless' suburban sprawling subdivisions that sprout up in numerous places all across Canada and the United States. The result of this 'template' planning has been largely (1) increased infrastructure costs, (2) loss of natural green corridors, woods and habitats (3) automobile-dominant and dependent communities (4) loss of walkable, pedestrian-friendly neighbourhoods (5) traffic-congestion, environmental degradation and increased pollution.

In the Montreal context, the charming, pedestrian friendly quality of the city's vibrant neighbourhoods is fast degenerating in the suburban areas. Even in areas connected by rail, the developments are more 'transit-adjacent' rather than 'transit-oriented'. They are usually clones of their American counterparts with a complete loss of natural, ecological and vernacular architectural character. Thankfully, the 'Agence métropolitaine de transport de Montréal' (AMT) recognizes the need and potential to incorporate the principles of the transit-oriented-development (TOD) concept propagated by its most prominent pioneers and the models encouraged by West Coast transit agencies in California and Oregon. (As the analysis in the document will prove later, larger Canadian cities have in fact higher per capita transit use than their American counterparts. However the danger of sprawl has increased more with growing continued adoption of older American models by developers and planners.) Rigid zoning codes, parking ordinances (most often by the transit agencies themselves), uncooperative developers and fast, copy-cat designs are some of the hurdles that face the implementation of TOD neighbourhoods. But even more importantly, one of the greatest challenges it faces is a lack of recognition and acceptance of the multi-disciplinary necessity while planning these projects and problem-solving through synthesis rather than segregation. In an ideal situation before actual development or design begins on a site, a team of urban planners and landscape architects, biologists, local residents, conservationists, economists,

engineers and environmentalists and representatives of the concerned government agencies should discuss the problems, brainstorm for ideas and come up with innovative, sustainable solutions. But in practice, it is often not the case as mercenary profit margins of the developer group to do 'fast-track' projects and use existing 'cookie-cutter' models take priority. The layouts are mostly prepared by surveyor firms and the house plans literally bought off internet sites. Only a few players are involved in the initial design and analysis process.

Luckily, in the case of the eco-territory 'Rapides-du-Cheval-Blanc', there were many interest groups involved due to its prime location on the banks of the "Des Prairies" river adjoining a recognized eco-park and wetland and the train tracks running next to it as part of the local commuter train network. The project site was also part of a larger ambitious regional urban design proposal by the City of Montreal Master Plan along with the AMT which saw it as an ideal spot for adding a new train stop on the existing rail track, as well as by the Parks Services which wanted to develop the riverside park. Earlier proposals by the developer group in spring 2002 had met with stiff resistance from the West Island Green Coalition whose determined efforts stopped the building of several 12 storied high rises on the now protected eco-territory's western sector. In 2003 the renewed plans which were on the eastern sector of the site still had several shortcomings. Fearing community backlash, these were rejected by the City, the AMT and the Parks Services because of its insensitive proposed annihilation of the existing woods and marshland and a lack of making it more 'transit-oriented'. Preservation and enhancement of the site's natural vegetation and characteristics became a fundamental requirement rather than an afterthought. The project took a multidisciplinary aspect due to complications rather than planned intention and the complexity of the site proved to be a blessing in disguise to bring a synthesis of transit community principles combining landscape architecture, housing, ecology and conservation. It was at the time of the second rejection that the project reached the firm I was working for. In spite of being such an important issue-based project the mandate of the firm was simply to give a fast, efficient and sensible layout that would please all the groups. With my background in both architecture and landscape architecture and prior work experience in sustainable neighbourhoods and housing design, and my availability at the time, I had the good fortune of becoming the project designer. This practicum is an exploration of the issues governing the justifications, constraints and opportunities that guide the concept of an ecological neighbourhood TOD and how well these can be resolved on the actual site. It is the theoretical exploration of a practice-driven project with a self-imposed freedom for academic research and speculation. In its final synthesis it is an attempt to reach beyond the restrictions imposed by time schedules, design derivatives and contractual constraints as an employee of a firm. Instead it is an exploration in the role of an academic researcher and as a design student to analyse the challenges, interconnections and opportunities in shifting from dichotomy to dialectic<sup>3</sup> between the rhetoric and the reality of a concept.

#### **Intent**

- To review the ongoing issues governing neighbourhood transit-oriented-development and the concept of 'ecological' design and relate them to the project site through synthesis.
- To answer the needs of the different interest groups involved with the project.
- To go through the theoretical basis of TOD design, look at precedents of similar scale as the project site and come up with a planning proposal that embodies the guiding principles.
- To create a design that aims to capitalize on the functional integration of land use and transit and provide the choices of movement and usage that should accompany a viable

neighbourhood TOD.

- To design a community which reflects the unique characteristics of the site and is location specific – not simply following a standard set of rules. The layout also has to also work within the existing zoning laws instead of future changes that are yet to come or may never come. Fortunately amendments to the by-laws had already been made to make them mixed-use and TOD supportive.
- To highlight the role of the landscape architect as the master planner - as the co-coordinator between the other disciplines and as a professional whose education empowers to think in a variety of scales and interconnections- a quality crucial for TOD design.
- Last but by no means the least, to identify and execute the dual function of the TOD as both a ‘node’ within a larger regional or metropolitan system and as a good ‘place’ in its own right

### **Process**

The work is divided into the sections ‘theory’ and ‘practice’ – the former becoming the basis to deliver the latter. The theory delves into the definitions of the terms used to describe this project. ‘TOD’ or the ‘transit village’ concept is an existing model under New Urbanism which is gaining popularity across many countries. It also looks into the history of the linkage between transit and development, and the reasons why the concept of an ecological transit-oriented-development project is a step towards curbing sprawl and its related negative effects. The research looks into the future directions, the challenges and solutions facing TODs from a city-specific perspective. The literature review is an exploration of the relevant writings on the topic – but with a slant towards the necessity for multi-disciplinary planning and the ecological component - as a tool for both the design and the identity of a community. It draws parallels and tries to find an integration between transit neighbourhoods, healthy communities and ecological sustainability. A study of relevant case studies – which are based more on the neighbourhood TOD model- highlight precedents with related scales and sizes as the actual project site. With this background and research, the section pertaining to ‘practice’ concentrates solely on the site of the project, the commuter train network passing along the site and the facts and figures relevant to justify the need for a TOD in this area. The project being part of a larger regional master plan, the public consensus on the usage of the site as a TOD has already been taken in a general presentation to the borough residents in February 2004. Public transit oriented community design with conservationist tendencies was an option that was favourably viewed by the community groups whose pressure had allowed part of this eco-territory to be conserved in 2002 in the first place and restrict construction only to the brownfield side. The mandate and demands of the different interest groups and government bodies involved is outlined in the ‘practice’ section and follows a system of layering data. This layering of data allows determining the site-specific constraints and opportunities present from a multi-disciplinary point of view. The site inventory has been done both through personal investigation and with the biologists from the Ville de Montreal, especially the flora and fauna inventory,



to have their point of view and expertise. Zoning by-laws, transit guidelines, the developer's profit margin all played an important role in the final synthesis and a large body of research material was accumulated, although for the sake of brevity of this document the research has been summarised to display only its main highlights.

Based on all this site-specific information as well as a synthesis of design criteria and guidelines developed from the 'theory' section and the input of all the different client groups involved, the design of an 'ecological neighbourhood TOD' has been presented.

# **Part I : Theory**

## SECTION A

### 1. Transit-Oriented-Development Neighbourhoods

"The land use and urban form of cities are...fundamentally shaped by priorities in transportation...the essential character of a city's land use comes down to how it manages its transport".<sup>4</sup>

Peter Newman & Jeffrey Kenworthy

#### Definitions

The general commonality between most definitions pertaining to *transit-oriented-development* or *transit-oriented-design* is an emphasis on moderate to higher density mixed-use development within a walkable distance of a major transit stop supporting pedestrian access, environmental protection and an effective use of the infrastructure and public services.

With specific regard to this practicum's project site the TOD definitions discussed here will emphasize a neighbourhood model.

As per Peter Calthorpe's definition in his book *The Next American Metropolis: Ecology, Community and the American Dream* (1993):

"Neighbourhood TODs are located on a local or feeder bus line within 10 minutes transit time (no more than 3 miles) from a trunk line transit stop. They should place an emphasis on moderate density residential, service, retail, entertainment, civic and recreational uses."

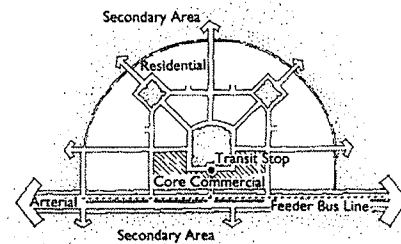


Fig.1 Neighbourhood T.O.D diagram (Calthorpe)

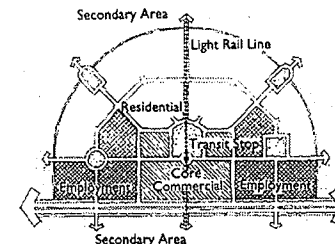


Fig.2 Urban T.O.D diagram (Calthorpe)

However, in *New Urbanism: Comprehensive Report and Best Practice Guides* compiled by the staff of New Urban News (2001) it is written that the TOD concept for a long time has had unclear definitions. The label has been used to anything from a solitary high-rise apartment building adjoining a station to mixed-use neighbourhoods of several hundred acres<sup>5</sup>.

Some conventional developers even refer to a retail mall built alongside a transit stop as TOD. The broadest definition could encompass hundreds of “transit-oriented” projects which range from suburban park-and-rides, to older pre-war streetcar neighbourhoods, to more recent planned projects adhering to the concepts of New Urbanism<sup>6</sup>. Sometimes even among new urbanists there is some ambiguity over the usage of the term varying from light rail system supported neighbourhoods where no point is further from a 10 minute walking distance from the transit stop to including all projects on bus lines as well as other public transport means. In an effort to settle confusion in terminology *The Lexicon of the New Urbanism* by Duany Plater-Zyberk & Co. was created. According to its definition of the TOD structure, the focus is specifically on the presence of rail. The Lexicon states that “an advantage of the TOD model is that rail is the most efficient form of transit. As it is also the most expensive, this model provides for its support by a high population density within the pedestrian catchment of each station – a minimum of 14 dwelling units per acre.”<sup>7</sup>

The size of a TOD can vary from having a quarter mile (400 metres) radius around a station or encompass 63(255,000sq.m) acres on one side of the central stop to 125(506,000sq.m) acres on both sides. The minimum size of a TOD as proposed by Calthorpe Associates and widely adopted by the New Urbanism practice guides is 30 to 60 acres (121,400 sq.m to 243,000sq.m) depending on the transit mode and regional location. Table 1 below indicates general guidelines for the size of TOD recommended by them.

Table 1<sup>8</sup>

TOD locations	Allowable size of TOD (acres)	Land devoted to mixed use core	Land devoted to employment uses (outside core)	Land devoted to residential uses (outside core)	Land devoted to civic uses* (anywhere in TOD)
Transitway, rail & major bus transfer zone	60-125	10-40% of TOD area	20-50% of TOD area	20-50% of TOD area	10% minimum
CBD/core zone	30-125	10-40% of TOD area	20-50% of TOD area	20-50% of TOD area	10% minimum
Inner urban/suburban zone & pockets	30-125	10-40% of TOD area	0-70% of TOD area	0-70% of TOD area	10% minimum
Outer suburban zone	30-125	5-30% of TOD area	0-20% of TOD area	50-80% of TOD area	10% minimum

\* Civic uses include parks, plazas, recreation, government/civic, day care.

Neighborhood TODs can become a tool to provide affordable housing with its mixed typologies and have a land use pattern that reduces the need for multiple car ownership, limit inter-community traffic through residential areas, preserve open spaces for parks and provide community areas and pleasant walking and bicycling environments. However, the TOD concept completely acknowledges the reality of car ownership and does not exclude it from the design – it only gives more choices and tries to create a structural, functional and aesthetic ambience which is less car-dominant and more pedestrian friendly. Another important feature of the neighbourhood TOD is the ‘core commercial area’ which should ideally

be a mixed-use commercial 'hub' located adjacent to the transit stop. While neighborhood serving retail, community services or offices are desired in suburban areas, core areas may also combine supermarkets, restaurants, entertainment facilities, second-floor residential and employment-intensive offices in larger urban TODs. In Calthorpe's elaboration on neighbourhood TODs though the focus is more on residential and local-serving shops and a density appropriate for its context.

Another term used for transit-oriented compact neighbourhood development is the 'transit-village' or the 'transit station community.' The 'transit village' is described a compact, mixed-use, pedestrian-friendly community, centered around the transit station that, by design, facilitates residents, workers, visitors, and shoppers to use their cars less and ride mass transit more. Michael Bernick and Robert Cervero in *Transit Villages in the 21st Century* (1997) outline the following criteria that should be followed when planning a transit village:

1. The transit village extends roughly a quarter mile from a transit station, a distance that can be covered in about 5 minutes by foot.
2. The centerpiece of the transit village is the transit station itself and the civic and public spaces that surround it.
3. The transit station is what connects village residents and workers to the rest of the region, providing convenient and ready access to downtown, major activity centers and other popular destinations.
4. The surrounding public spaces or open grounds serve the important function of being a community gathering spot, a site for special events, and a place for celebrations.

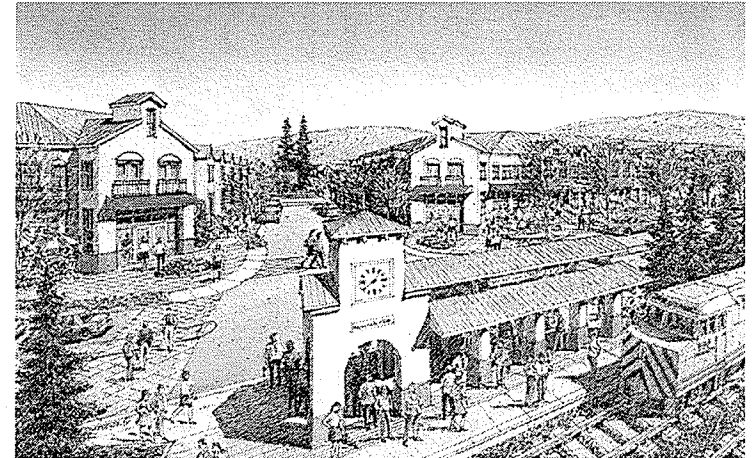


Fig.3 Design for a Caltrain Station at 'The Crossings' TOD in Mountain View.

## History – Causes and Consequences

*“There are images that insist and force us to remember further back into our past.....and our entire reality becomes spectral.... All values must remain vulnerable and those that are not are dead.”*  
Gaston Bachelard.

A look into the nexus between transit and development in North America over the course of one and a quarter century shows four types of relationships<sup>10</sup>:

- i) *Development-Oriented-Transit*
- ii) *Automobile-Oriented-Transit*
- iii) *Transit-Related-Development*
- iv) *Transit-Oriented-Development*

### *i) Development-Oriented-Transit*

Before the invention of the automobile, most people lived where they worked: if one owned a family farm one lived in the country; if one had an industrial job, one lived in the city. In the slower pace of life with horse wagon transit, areas outside town remained largely undeveloped. The invention of the steam train set new speed records and encouraged growing settlements to live along urban nodes.

In the early 20<sup>th</sup> century, the streetcar suburbs evolved in a setting that no longer exists today. Typically, a single owner developed the streetcar lines and their adjacent residential communities, building transit to add value to the residential development by providing a link between peripheral housing and jobs in an urban centre. Hence, the phrase “development-oriented transit” is more suited to describe these places than does “transit-oriented development,” since private developers built transit to serve their development rather than vice-versa<sup>11</sup>. In this setting, small retail clusters serving local residents and commuters usually surrounded the streetcar stops. These small mixed-use transit neighbourhoods are in a way the predecessor of today’s TOD concept and represented a good balance between place and node. But the interdependence between jobs, housing and transit inherent in the early streetcar suburbs dramatically changed with the mass production of the automobile. As cities grew, most of the “streetcar suburbs,” were absorbed. Mimico, New Toronto, West Hill, and The Beach are Toronto neighbourhoods that were originally streetcar suburbs. Outremont, Mount Royal, Dorval and Lachine in Montreal have similar histories<sup>12</sup>. In 1912, in order to reduce travel time between the cities of Hawkesbury and Quebec City, Canadian Northern Railways drilled a 5.2 km tunnel through the volcanic rock of Mount Royal. From a 13.6 acre piece of land purchased by the company to build a station which would

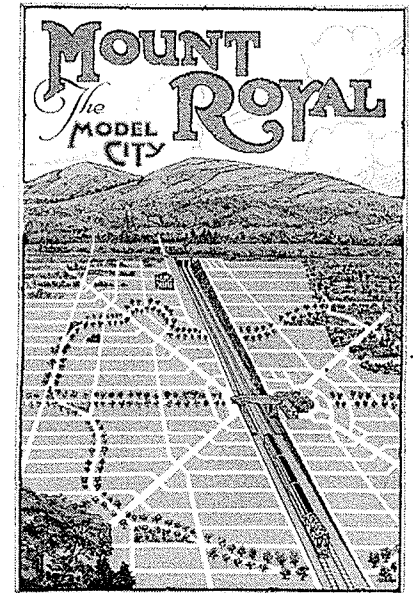


Fig.4 Town of Mount Royal plan -1912

later become Central Station, the tunnel opened at the other end on a garden city designed by the C.No.R architects based on European city plans.<sup>13</sup> This city, called Town of Mount Royal, quickly became a favourite spot for rich people looking for lavish homes and in a sense can be called one of the earliest examples of development based on transit.

Beginning in the 1930s, roads and highways became the preferred transport infrastructure in North America. Development was no longer dependent on public transit and developers started getting out of the business of building transportation systems.



*Fig.5 Tram on Montreal's Rue St. Charles, 1894*



*Fig. 6 Tram on Montreal's Rue St. Jacques 1907*



*Fig.7 Street Car use up to 1956 in downtown Montreal – Rue Bleury & St. Antoine.*

### *ii) Auto-Oriented Transit*

The mass production of automobiles radically changed the North American landscape, directly linking automobiles and government policies to urban sprawl. The defining momentum for urban sprawl occurred in the post World War II period. There was a radical decline to mass transit and the dismantlement and abandonment of many rail systems<sup>14</sup>. Although rail transit was in operation, buses became the primary mode of public transit. Buses used the same streets as cars and had less influence on land-use patterns as opposed to that by fixed-rail. With the exception of older cities such as Boston, New York, Montreal and Chicago which still functioned reasonably well as transit-based communities, most rail transit played a subservient role

instead of a major player tied to development. After the war, federally funded government grants and programs made it cost effective for large number of city dwellers to buy homes in the country for very low mortgage payments. Single family houses found large numbers of buyers among returning GIs and women who left their jobs in urban factories. A building company Levittown started mass producing carbon copy houses and selling them for less than \$10,000 in the countryside of Pennsylvania, New Jersey and New York utilizing the potential buying power of GIs. In fact so successful was Levittown that it came to symbolize the birth of suburbia. The 1956 federal highway Act reinforced massive inter-state roads. Former farmlands now grew houses in place of crops.<sup>15</sup>

In Canada car and government -policy induced sprawl was only a matter of time. To speed traffic between cities and towns, in the 1950s, traffic engineers recommended limited-access highways, like Ontario's 401. There was also a wave of so-called slum clearance and urban highway building, but the subsidy available was small by comparison to the U.S. For a while this shielded the cities from sprawl and the centres of Canadian cities held strong. They did not assume the "donut"-empty in the centre- growth pattern of their American counterparts. But by the 1980s the donut had been forming in urban areas like Winnipeg, Saskatoon and Regina. Builders continued to subdivide the land around cities at a rapid rate. Winnipeg's urban footprint almost quadrupled between 1971 and 1991, yet its population only doubled. Calgary already takes up as much land as New York City with only a tenth of its population. In the thirty years before the last census, the Vancouver urban area population grew almost 70 per cent, with four-fifths of that growth occurring outside the core cities of Vancouver, Burnaby, and New Westminster<sup>16</sup>. In Canada's two largest cities, Toronto and Montreal, sprawl had already begun at significant proportions. According to census, during the 1970s and 1980s Canadian metropolitan areas were growing faster than American metropolitan areas. Goldberg and Mercer's statement in 1986 in *The Myth of the North American City* that "sprawl in Canadian cities does not have the same extent as, in American cities." was fast becoming obsolete. The reason for this was that on average, Canadians live at higher local densities than do Americans. Most of its population lives in clusters along a narrow band near the U.S border. According to the 2001 census, close to 80 per cent live in an urban area, defined as a place with a population of 10,000 or more<sup>17</sup>. Hence, local population density, measured as the average number of people living nearby, is higher in much of Canada compared to America even though nationwide gross population density is much lower. (Miron 2003) Refer Table 2. Since the difference between the growth rates of



Fig.8 Levittown, Pennsylvania, 1951



Fig.9 'Oakville', anywhere, 1978  
Where are the 'oaks' in this 'ville'?



people and of the land they occupy defines urban sprawl, as cities spread into larger low-density urban areas, sprawl in Canadian cities continues to drain on ecological, social and economic capital.

**Table 2**

**Urban sprawl in Canada and America: just how dissimilar?**

Table 5 Population density in the ten largest urban regions in Canada, 2001, and America, 2000, showing comparable density in previous census.

Urban Region	Population (000s)	Latest Census			
		Land area (sq km)	AD	LD <sub>2</sub>	S <sub>2</sub>
New York CMSA	21,200	27,065	783	6,855	7,552
Toronto CMA	4,683	5,903	793	3,681	2,274
Montreal CMA	3,426	4,047	847	3,632	2,776
Los Angeles CMSA	16,374	87,944	186	3,200	2,323
Chicago CMSA	9,158	17,941	510	2,892	2,583
San Francisco CMSA	7,039	19,083	369	2,872	2,365
Vancouver CMA	1,987	2,879	690	2,826	1,684
Hamilton CMA	662	1,372	483	2,246	1,382
Philadelphia CMSA	6,188	15,372	403	2,231	2,394
Winnipeg CMA	671	4,151	162	2,123	1,176
Calgary CMA	951	5,083	187	2,032	951
Ottawa - Hull CMA	1,064	5,318	200	1,908	1,271
Boston CMSA	5,819	14,574	399	1,840	2,038
Quebec CMA	683	3,154	216	1,747	1,339
Washington MSA	7,608	24,803	307	1,733	1,517
Edmonton CMA	938	9,419	100	1,672	918
London CMA	432	2,333	185	1,635	850
Detroit CMSA	5,456	17,004	321	1,404	994
Houston CMSA	4,670	19,956	234	1,397	940
Dallas CMSA	5,222	23,579	221	1,333	831

Note AD is area-wide density (persons per square kilometer). LD<sub>2</sub> is weighted average local density measured at 2 km. radius. S<sub>2</sub> is the weighted standard deviation of local density within 2 km. radius.

Source U.S. data calculated from 2000 Census of Population and Housing Summary File 1 using summary level 091 block groups and 1990 Census STF3a using summary level 090 block groups. Canadian data calculated from the 2001 Census Geosuite database

Source: *Urban sprawl in Canada and America: just how dissimilar?* John R. Miron, 2003<sup>18</sup>

With increasing automobile congestion, a new generation of transit systems were planned and built. In the 1950s, Metropolitan Toronto planned a network of expressways

crisscrossing the city. Fortunately due to successful organized opposition by the citizens against the Spadina Expressway, only a small part of the network got built. Instead, the subway and streetcar networks were expanded, and in the 1970s Toronto became internationally recognized for transportation improvement. Vancouver had a similar struggle and neighbourhood organizing in the 1960s and 70s kept freeways out of downtown Vancouver<sup>19</sup>.

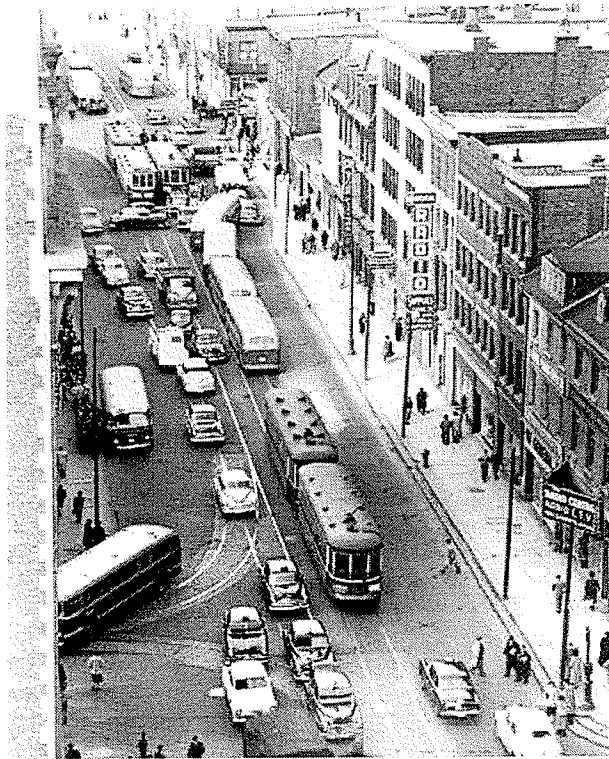
Montreal probably had the greatest Canadian success story with an air of optimism and innovation due to its hosting first, the Expo '67 – till date seen as the world's most successful fair-attracting almost 50 million visitors and then the 1976 Olympics. The hosting of Expo '67 gave a major boost to build its underground Lyon and Paris style subway system which started construction in 1962 and was inaugurated in 1966.

Commuter rail service in Canada had existed almost as long as there had been passenger railways, but the operation of rail commuter services by a *transit* agency in the Montréal region dates only from 1982. In the United States, the San Francisco Bay Area Rapid Transit (BART) system, MARTA in Atlanta, and Metro in the Washington, D.C. area were opened in the 1970s. These systems were built with an entirely different rationale than their predecessors. They were primarily built to relieve congestion and were funded almost entirely by the public sector. Little or no additional land was purchased by the transit agencies as a link between current transit investments and future development patterns was not an issue. These systems had been designed to work alongside the automobile, with the general assumption that most people would drive to the suburban train stations, rather than travel by foot, bicycle or feeder-buses. Since these systems were viewed more as serving a regional purpose and the stations seen as nodes within a macro scale, there was little regard for the local place or micro scale where each station was located. Due to this underlying notion behind their construction, many stations are now characterized by "large amounts of entrenched parking rather than intimate connections to vibrant neighbourhoods."<sup>20</sup> Even today these large expanses of surface parking or parking structures are seen, creating a dull barrier between the transit stop and the surrounding or serviced community. Even a direction or 'sense of entry' to these neighbourhoods is missing.

Although these rail transit systems are an integral part of these cities' systems and play an important and indispensable role, the limitations of their 'isolated' designs are becoming evident. Despite their success they do not take full advantage of the range of benefits that transit can potentially stimulate. Primarily, their contribution to neighbourhood revitalization along their stations, reduction of automobile dependency and an increase in more efficient regional land use patterns falls way short of their actual potential. So even with the presence of transit infrastructure, land-ownership patterns remain fragmented and the idea that development should be linked to transit is not prevalent.

The effects of car-oriented sprawl in Montreal have been more in the outer urban rings, especially in the land around the island itself. Transit and density pattern maps at the end of this section indicate the percentage use of public transit and automobile transit. The data is collected from Statistics Canada 1996. Predictably in places of higher density, use of public transit is

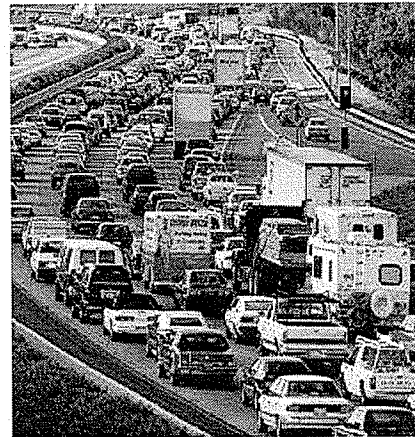
more. Also gender profiling indicates much higher usage of public transit among women than men. The total population in the greater Montreal region today is 3.5 million. The city of Montreal now encompasses all of the island of Montreal, though this is a recent development. As late as the 2001 census, the municipality was only part of the island. In 2001, the now former city had 1,040,000 residents, down from its 1971 peak of 1,214,000, but up from its 1981 low point of 980,000. Nonetheless, virtually all of the growth in the last 50 years has occurred in the suburbs.



*Fig. 10 Downtown Montreal 'congestion' 1953*



*Fig. 11 Freeway congestion 2003*



*Fig. 12 St. Julie, Quebec suburban street, 2003*

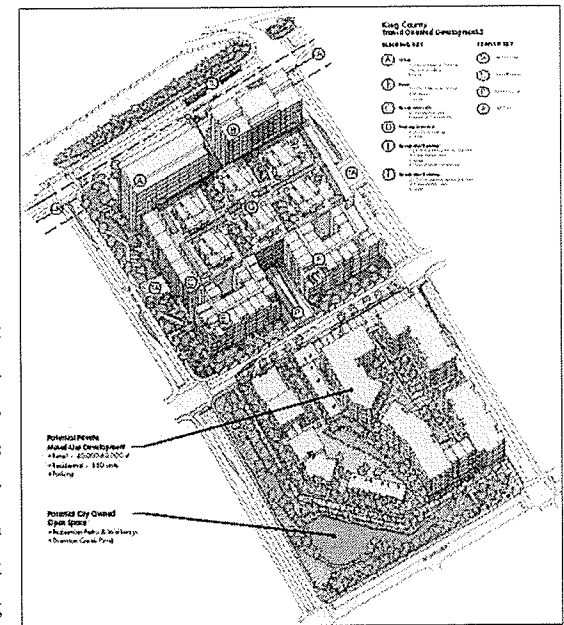


*Fig. 13 Levittown, New York State suburban street,*

*iii) Transit-Related Development*

By the 1990s the concept of capitalizing on development linked to transit had been revitalized in North America. As rail systems normally create value for adjoining land, transit agencies with the federal government started seeing large scale real estate development on transit-agency owned property as a way to 'capture' some of that value<sup>21</sup>. While this return did not completely recover the total cost of the rail investment, it was at least a partial reimbursement to public funds. Consequently, transit agencies and the federal government started having a sincere interest in promoting intense development around transit stations. This "joint development" approach has met with notable success in quite a few locations including downtown San Diego, Washington D.C., and Portland but there are also many places where these attempts have not succeeded. The reason for their not reaching full potential is that this form of joint development projects had more of a 'transit-related' approach. The emphasis was not so much as working in hand with the 'neighbourhood' or 'transit village' concept but more on dense, profitable real-estate development targeted at generating maximum revenue for the agency and government. Today the interest has broadened to encompass many more benefits from a 'better living' perspective rather than from pure financial return. Until recently, national retailers loved big box and were sceptical of TOD. "Lifestyle retail" is now the next big thing.<sup>22</sup>

Several studies and reports (as outlined on page 19 of this practicum) show increased evidence of the many benefits of transit-oriented-development than only increased land value. In the last decade with growing popularity of concepts such as 'smart growth', 'sustainable development', 'traditional neighbourhood design', frustrations with congestion and sprawl, pollution and ecological degradation, the advantages of linking transit with development emerged as another 'smart' move. There was increased transit ridership and more investment in transit, even in traditionally auto-dominated areas like Dallas and Los Angeles. Montreal too had a similar increase, as is outlined in detail in Part II of this document. Yet, on scrutinizing many new 'transit oriented' projects, it becomes evident that with existing zoning and by-laws, usage of standard parking ratios and high car usage, the housing and/or commerce still remains largely transit-adjacent or transit-related. Adjacent housing lacks a mix of income groups; either being mostly subsidized dwellings or luxury units for young singles. Many projects, although having initial higher aims, fall short of their full potential as the transit and development are built by different groups and cannot usually find an amiable 'middle path' in their joint venture due to the several layers of complexity involved in their planning and implementation.



*Fig. 14 Southlot- of the Northgate project, Washington; transit-adjacent high rises which faced public opposition for destroying an existing creek*

While this document will focus more from the North American perspective, it is important to mention that in Europe transit-agency owned real estate is a very successful market both financially and for the integration of dense mixed use. For instance the Swiss Rail Agency SBB has a branch SBB real estate which prides as having one of the largest shares of the Swiss real estate market. Their multi-functional projects aim at capitalizing on the urban station locations as “attractive meeting, purchase and service places” and provide large retail, commercial (office, educational) and residential areas.<sup>23</sup>

#### iv) Transit-Oriented Development

As author and planner of over two decades of practice, Frank Dittmar remarked - transit-oriented development has become a widely discussed and imperfectly implemented planning and development concept. Virtually every major metropolitan area is planning, designing or constructing a new transit project at this time.<sup>24</sup> Sadly, the amount of hype around transit-oriented development far exceeds the progress to date, with many transit proponents selling new transit investments on the basis of land-use changes yet to come. TODs can realize its full potential only if it emerges as a new model of development rather than a series of marginal improvements.

As Peter Calthorpe had observed in 1993, that in the debate of the proponents of a return to traditional city forms against those who praise the placeless evolution of ‘suburban megapolis’ as an inevitable and desirable expression, the important thing to realize is that building walkable neighbourhoods and designing places for a greater sense of ‘community’ might not necessarily get all people out of their cars but it still gives them the *choice* and that if the result is neither black nor white but probably mixed, then that is still *okay*. The choices should not be limited and “a diverse and inclusionary environment filled with alternative ways of getting around is inherently better than a world of private enclaves dominated by the car.”<sup>25</sup>

While TOD is not a panacea, at its best it has the potential to contribute to improvements in a diverse set of areas. Its concept should not aim for overtly unrealistic ideals but should function within the limitations of the market and realistic expectation of consumer behaviour and lifestyle choices. But only its assured success through design can help sell the idea more to the government, buyers and developers. Fortunately, changes in the market and lifestyle patterns can and do occur due to both policy changes and socio-cultural trends. Car dominance and suburban living was initially not a choice of lifestyle induced by the public at large but rather by American government policy of mortgage interest tax deduction and generous subsidies to road infrastructure at the expense of alternative forms of transportation. Although, unfortunately as happens in most zoning and policy making, it was lawyers and

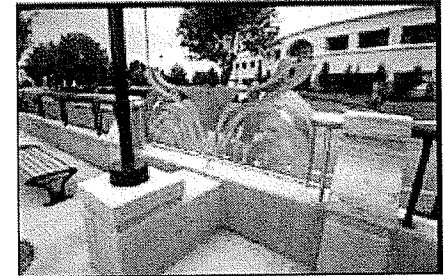
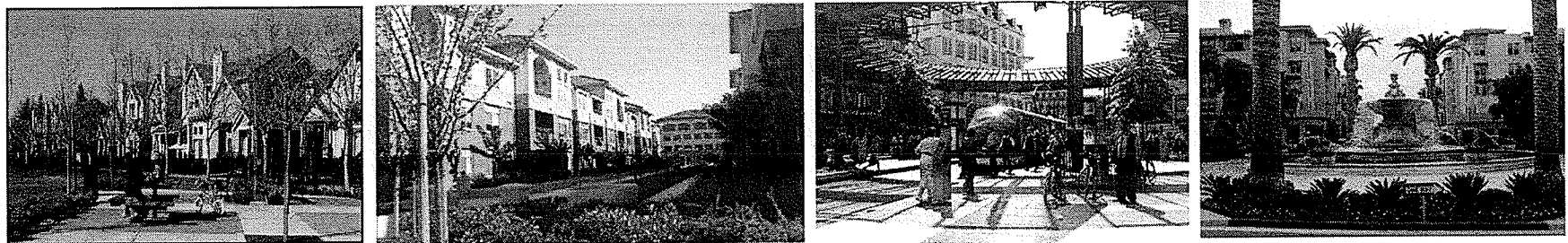


Fig.15 Cisco Systems campus in San Jose is an example of 'transit-adjacent development'

administrators and not planners and broad -visioned design professionals who were making these decisions. In addition, the fascination with mass production at the time and the house-as-a-machine concept combined with a 'piece of the countryside' was also a driving force. Today there are clear signs that these trends are not permanent. There is serious concern to the many destructive effects of sprawl on health, environment and infrastructure cost, growing public discontent as well as the acceptance to 'listen' to the wisdom of academicians and practitioners in the design profession and involve them in the planning and policy making process (although much work still needs to be done there). Increase in transit ridership and renewed interest in urban living are two indicators that preferences may be changing. Federal legislation in the 1990s has helped shift government investment priorities away from the automobile. Transit-oriented development in the 21st century can respond to these changes by offering an alternative that is both feasible in the marketplace and socially and environmentally beneficial thereby playing an integral role in the solution finding process for many present problems.

Though the term 'people-oriented-neighbourhoods' capture the spirit of the goals of the full potential of the concept and the term 'transit-oriented-neighbourhood' refers to a wide range of projects that have little in common with each other or with the more holistic vision of TOD, it still makes sense to use this term due to its widespread popularity and its clear definitions by the Intermodal Surface Transportation Efficiency Act (ISTEA) of 1991 and its successor, the Transportation Equity Act for the 21st Century (TEA-21).<sup>26</sup> Reality now has to catch up with the rhetoric of the vision into the mainstream of real estate development.



*Fig.16 Transit Oriented neighbourhoods in California and Oregon*

## The Benefits of TOD

*"Imagine public transit, that takes you where you go; In cities built for people, instead of the auto; Imagine all the rollerblades, skateboards, and wheelchairs sharing all the streets  
You may say I'm a dreamer, and I'm not the only one; I hope someday you'll join us, and the world will be more fun*

*Imagine you could get there, that "there" was not that far; No need to use up fossil fuels, fill our lungs with toxic tar; Imagine all the music streets could have, if not for cars....."*<sup>27</sup>

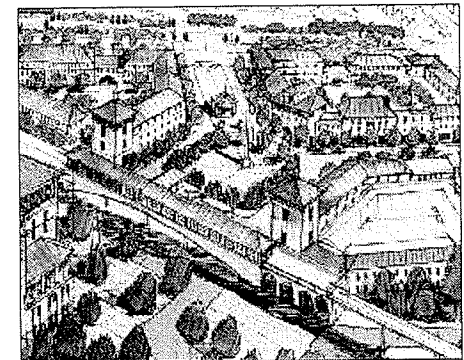
*Mark Roseland inspired by John Lennon*

The benefits of TOD have been outlined and researched by various studies, reports and publications such as in the Congress of New Urbanism (*2004 Best Practice Guides*), in 'Statewide Transit-Oriented Development Study – Factors for Success in California' (2002) by the Business, Transportation and Housing Agency and the California Department of Transportation, in 'TOD :Best Practices Handbook' by the City of Calgary Land Use Policy and Planning, in 'Transit Villages: New Urban Livable Communities' – the official website of the organization for Transit Villages, the organization of Transit-Oriented-Development headed by Shelley Poticha, articles in numerous books by authors such as Dittmar & Ohland (*The New Transit Town*), Calthorpe & Fulton (*The Regional City*), Roseland (editor of *Eco-City Dimensions : Healthy Communities, Healthy Planet*), Bernick &Cervero (*Transit Villages of the 21<sup>st</sup> century, The Transit Metropolis*) Steutville et al (publications for the New Urban News), Perl (*New Departures*), Richards (*Future Transport in Cities*), Newman & Kenworthy (*Sustainability and Cities*), Barnett (*Redesigning Cities*) among many others. Articles hailing the multiple benefits of rail travel have appeared in the Washington Post and magazines like Time (Aug 26, 2004) and Newsweek. The concept has been widely accepted and gained popular acceptance among environmentally oriented community members and people from different disciplines. In spite of all this today less than 3% of housing projects fall under this category. This is largely due to organizational complexities and a lack of larger recognition or knowledge about its concept among developers and residents with the Not-in-my-backyard (NIMBY) attitude. The major benefits of TOD can be summarized in brief as follows:

**(i) Provides mobility choices:** By creating "activity nodes" linked by transit, TOD provides important mobility options, very much needed in most congested metropolitan areas. This allows young people, the elderly, people who prefer not to drive, and those who don't own cars the ability to get around.

**(ii) Increases Public Safety :** When well designed with proper orientation of buildings and community green spaces, by creating places that are active through the day and evening and providing "eyes on the street", TOD helps increase safety for pedestrians, children, transit-users, and others

**(iii) Increases transit ridership :** TOD improves the efficiency and effectiveness of public transit service investments by increasing the use of transit near stations.



*Fig.17TOD proposal, Pleasant Hill, California*

*(iv) Reduces the rate of increase in vehicle miles traveled (VMT):* Vehicle travel surveyed in most North American cities have increased faster than the population for many years. California case studies have shown that TOD can lower annual household rates of driving by 20 to 40 percent for those living, working, and/or shopping near major transit stations.

*(v) Contributes to more affordable housing:* TOD can add to the supply of affordable housing by providing sites for lower-cost and accessible housing, and by reducing household transportation expenditures. It has been estimated that costs for land and housing structures can be significantly reduced through more compact growth patterns.

*(vi) Helps in creating an alternative 'community' through its design:* TOD seeks to align transit with a community's vision for how it wants to grow by creating mixed-use, denser, walkable 'transit villages'. By increasing pedestrian travel and emphasizing public space, TODs also improve the opportunities for personal interaction and community building. Quality of life, or 'livability', is a term that is often used to represent a host of factors that collectively describe a good place to live. The definition of livability varies from person to person, but often includes concepts such as safe neighborhoods, access to jobs and recreation, a clean environment, a sense of community, good schools, attractive and affordable housing. Current research<sup>28</sup> indicates that residents in suburban sprawl neighborhoods no longer have a strong 'Sense of Community'. However, TOD provides for and emphasizes public space that affords residents with opportunities for face-to-face contact while they walk within the TOD. Because of this fact, its design encourages personal identification with definable places, and therefore fosters stronger ties within the community.

*(vii) Reduces air pollution and energy consumption rates:* By providing safe and easy access to public transit, TOD allows households to significantly reduce their rates of air pollution and energy consumption.

*(viii) Plays a role in economic development :* TOD is increasingly used as a tool to revitalize aging downtowns and declining urban neighborhoods, and to enhance tax revenues for local jurisdictions.

*(ix) Decreases local infrastructure cost:* Depending on local circumstances, compact development such as TOD, can help reduce infrastructure costs for expanding water, sewage, and roads to local governments and property owners by up to 25 percent through more compact and infill development patterns.

*(x) TOD can help conserve resource lands and open space:* Because it consumes less land than low density, auto-oriented growth, it reduces the need to convert farmland and open spaces to development.

*(xi) Increases households' disposable income:* Housing and transportation are the first and second largest household expenses, respectively. TOD can free up households' income by reducing the amount of driving required for daily trips, which can save households up to \$3000-4,000 per year (that can be spent for housing and other uses).

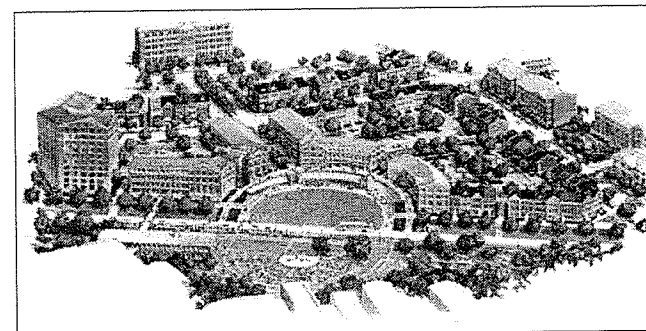


Fig. 18 TOD proposal, Charlotte county, North Carolina



## **Future Directions**

*"Landscape architects should be in the vanguard of the environmental movement, discovering ways to help design environments that at the most fundamental level 'do no harm' - and beyond that, in ways large and small, contribute to the renewal of the earth and of the human spirit." <sup>29</sup>*

*Catherine Howett*

Hank Dittmar, President and CEO of the Great American Station Foundation, Robert Cervero, Peter Calthorpe, research firms specializing in urban and regional economics and planning and publications by different Transit agencies and the Congress of New Urbanism have new ideas for the future of TOD which can be summed up as indicating progress in the directions discussed below. Their post occupancy analysis of TOD projects as well as market and consumer trends have brought about new improvements and emphasis on transit-oriented-development as indeed a sustainable concept that needs clearer definitions, goals and maximum synergy. I have also included my own observations from the readings and included them in what I believe to be pointers in future TOD directions:

### ***i) Intention :Functional Outcome and not just Physical Form***

While the 3-Ds of TOD<sup>30</sup> -density, distance and design- are important, these characteristics cannot become the main focus because the principal intention of transit-oriented-development is not to create only a particular physical form but to create places that function in an unique way to capitalize on a functional integration of land use and transit. When choices are provided through design they can lead to desired usage, for instance more pedestrian friendly access and lesser car dependency. But the connections and functional sequence of movement and use should be carefully integrated in the planning. The checklist of physical characteristics is only one of the means to achieve the end benefits of intended social, environmental and economic well-being, not the end in itself. At the end of the day, the design has to embrace both the intangible spirit of the 'sense of place' and the concrete manifestation that allows for the sequence of events.

### ***ii) Location: Site and city specificity***

The measure of success for a TOD project should be site and location specific. Just as based on demographics and socio-cultural trends, the results of a TOD will vary greatly from city to city, so will it vary from metropolitan area to suburban area. One cannot expect the same results of a TOD project in Singapore, Tokyo, Zurich, Stockholm, Sydney and Portland; nor on comparing Vancouver, San Diego, Montreal, Dallas and Chicago. Focusing on quantifiable functional outcomes accounts for both different degrees of success and the uniqueness of individual spaces. When theoretical TOD models were made, some parameters such as the 10 minute maximum walking distance and inclusion of community open green spaces is universally common across cultures and countries as they relate to a common 'human' need. But car ownership, population density, lifestyle preferences differ greatly from city to city. In

fact the danger of losing the uniqueness of a city lies more when the placeless 70s style American residential suburbs are seen as an ideal model of progress by other countries who yearn to mimic the 'American dream' based on media images rather than knowing the true story behind it. Similarly the TOD model has to reflect the uniqueness of the city, not just that of its American TOD counterpart.

Most written guidelines are suited more for the American psyche. People in Asia adopting TOD models need little convincing for living in vibrant, higher density neighbourhoods – mixed use development is a common way of life. In Europe too, lively mixed use neighbourhoods are a more desirable scenario than low density 'boring' places, although many 'sterile'<sup>31</sup> new towns also exist. The readiness to live in condominiums and apartments is way stronger in Montreal than would be in say, Dallas where a suburban TOD would aim at providing more single unit dwellings. The Building Division, Queensland Department of Public Works for instance proposes a TOD model based quite closely to the American counterpart but makes changes to suit the Australian living preference, with its lower population – even including provision of some cul-de-sacs for families with children- this being a discouraged circulation system in the American TOD models. TOD design guidelines for the 21<sup>st</sup> century have begun considering the location specific aspect and not just adopt a given physical model which has hitherto largely been the case, and the reason why many TOD projects could not reach their full potential. Just as a project can be judged as a more or less successful TOD, two projects with the same functional outcomes in very different locations can be appraised within the context of those places.

### *iii) Landscape: A deeper relation*

Many of the environmental, infrastructural, health benefits highlighted by the TOD concept are those that landscape architecture theory has always emphasized upon. Yet the holistic nature of this field and the interwoven connections between different systems that this profession so easily recognizes is not credited for in the TOD writings. Interestingly, most books on this subject have been written by either architects who tried to combine 'landscape' into their design or by urban planners specializing in transport and economics. The contribution of landscape architecture has to go beyond 'landscaping' and more into community master planning. In many of the projects little is spoken about conservation, restoration and enhancement of existing site vegetation. Were these features capitalized upon or were they bull-dozed to lay out the plans? Elizabeth Meyer in her essay : '*The expanded field of landscape architecture*' laments that the description of landscape in many modern architectural history moves from the two extreme's of 'wild' and 'distorted' to 'mute' and as a 'backdrop.' Architecture is seen as the positive object and nature as its opposition. She has even critiqued the new urbanism planners Duany and Plater-Zyberk, who described the site of one of their exhibited projects using words such as 'distorted', 'radical discontinuities' and 'awkward' to describe the adjacent wetlands, a river and its flood plains and land forms. While their proposed grid of blocks and streets indicated formal order, the landscape was seen as wild, unstructured negative space. Meyer's writing ascertains my own personal belief that landscape architecture has to take a more dominant and multi-disciplinary role in the planning process. As soon as it is conceptualized as a field that operates "in between" so many previously binary and antithetical terms

and concerns (such as nature-culture, city-country, public-private, reason-emotion, architecture-landscape, male-female, man-nature) a range of new practices can evolve.<sup>32</sup> “This concept of landscape architecture as a hybrid between architecture and landscape, culture and nature, and art and ecology can empower scholars, students, teachers and practitioners to avoid the destructive polarization that tore the field apart in the late 1970s and 1980s” due to the either-or options of becoming either a landscape artist or ecological planner or a designer or an environmentalist.<sup>33</sup> Her stress on avoiding simplistic thinking and ideological biases of binary thinking and instead thinking in terms of continuums or hybrids goes well with the all-inclusive multi-disciplinary aspect that should determine the successful interconnections of a an ecological transit neighbourhood. The overlay of systems as well as designing with the existing features and connections instead of placing a seemingly ‘ordered’ layout still has a long distance to go. We have to remember the legacy of Frederick Law Olmstead –the uniquely versatile founder of American landscape architecture- whose concept for neighbourhood community plans was not unlike a predecessor of an ‘ecological TOD’- and the contributions of Hideo Sasaki for whom interdisciplinary design began with the landscape architect as the principal planner.

*iv) Linkage: A Better Understanding of Node and Place*

An interesting recurring theme in understanding the present challenges facing TOD is the distinction between ‘places’ and ‘nodes’. The role of transit as a link between different individual places and the broader region means that transit-oriented-development, unlike other development forms, should clearly execute the dual function as both a ‘node’ within a larger regional or metropolitan system and as a good ‘place’ in its own right.<sup>34</sup> This notion has to be better understood and implemented. Station areas must provide access to transportation services and in many cases function as regional trip destinations, but the same areas must also serve as trip origins and, ideally, as coherent neighbourhoods that do more than simply serve the station. While this is, on the surface, a relatively simple insight, it proves powerful when it comes to understanding some of the reasons that transit oriented development can yield unsatisfactory outcomes. In the context of a neighbourhood TOD, a good place can be defined on the basis of measurable functional characteristics such as a choice of transportation modes, housing types, and lifestyles; access to jobs and services; fewer negative impacts of the automobile; and a high degree of satisfaction in residents and visitors.

## Building & Population Density Patterns in Montreal

### Dwellings per Square Kilometre

Montreal Census Metropolitan Area, 1996

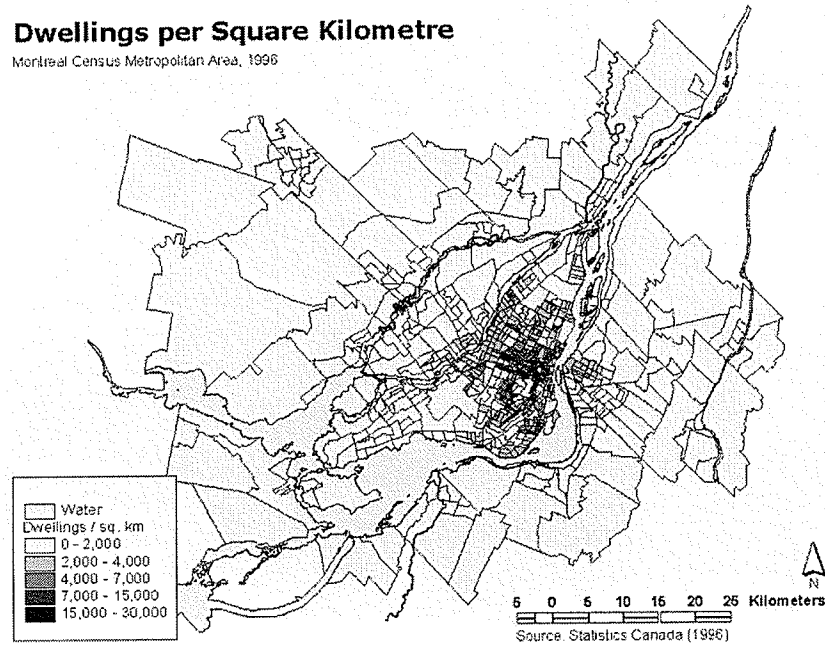


Fig.19

### Population Density (persons per square kilometre)

Montreal Census Metropolitan Area, 1996

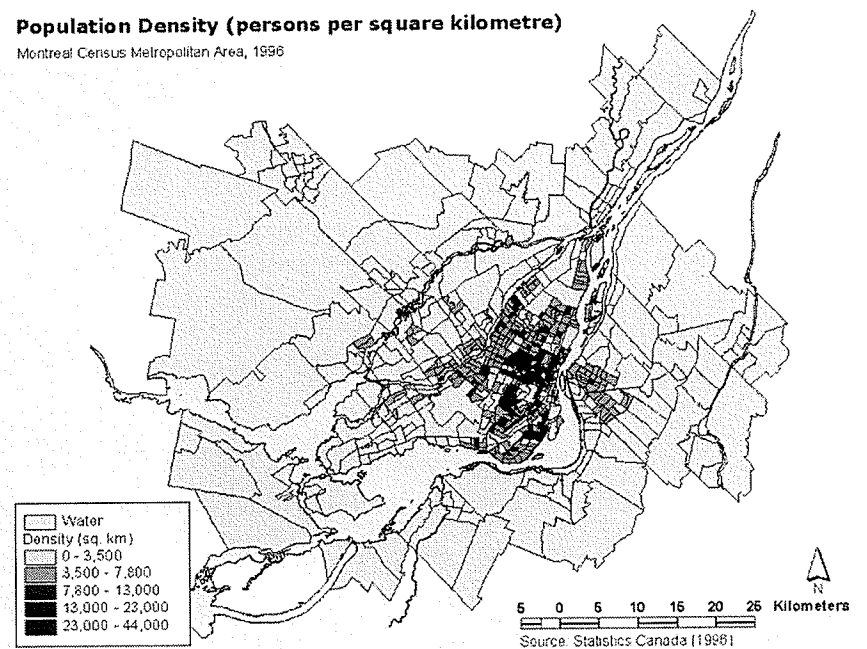


Fig.20

## Transport Patterns in Montreal

### Work Trips by Public Transit (Total)

Montreal Census Metropolitan Area, 1996

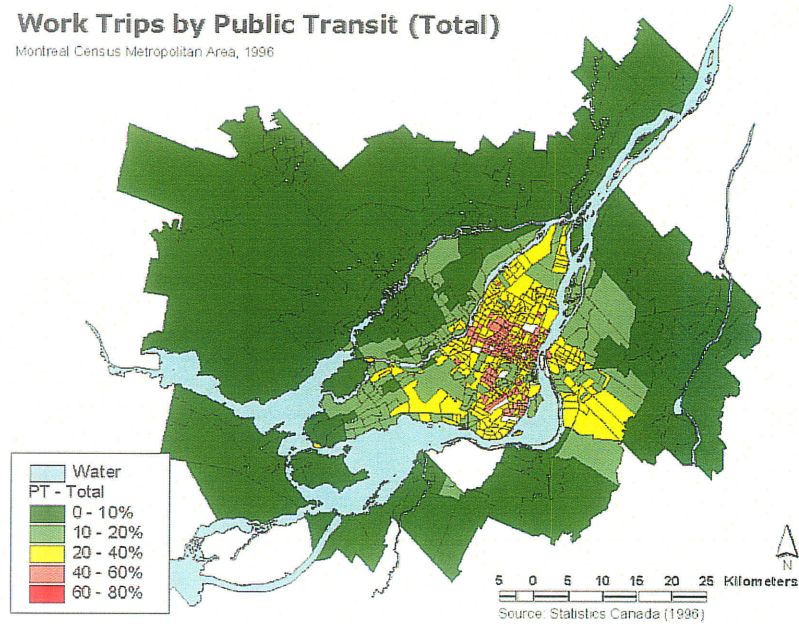


Fig. 21

### Work Trips by Car (Total)

Montreal Census Metropolitan Area, 1996

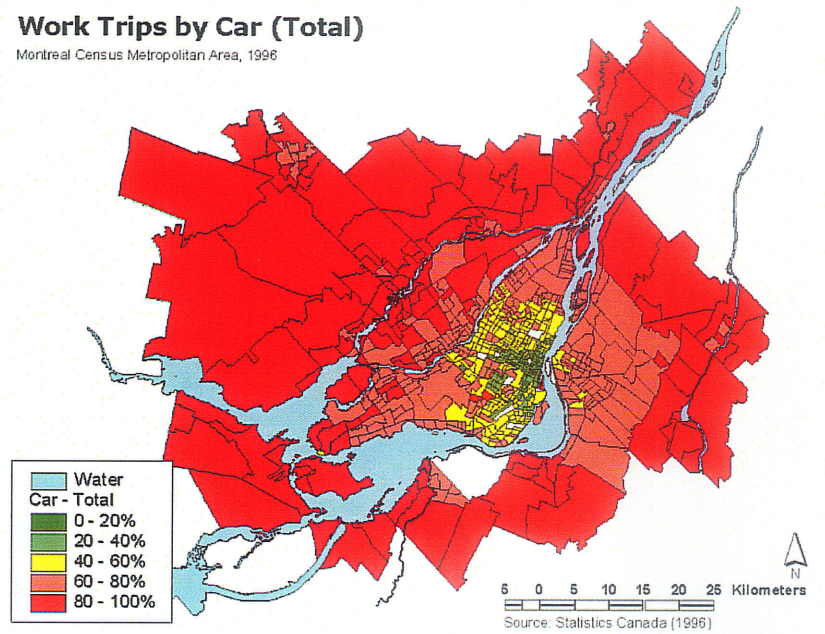


Fig. 22

### Work Trips by Public Transit (Male)

Montreal Census Metropolitan Area, 1996

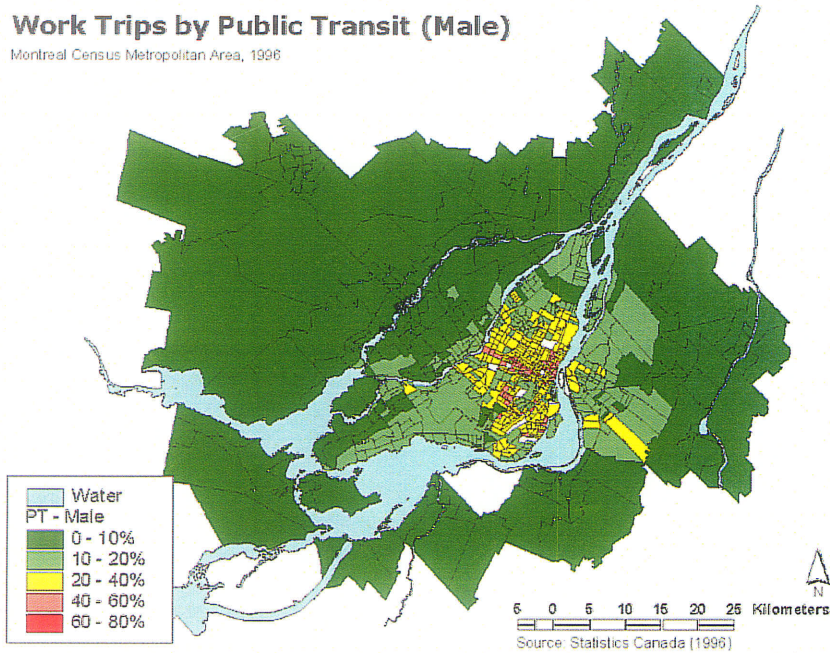


Fig.23

### Work Trips by Public Transit (Female)

Montreal Census Metropolitan Area, 1996

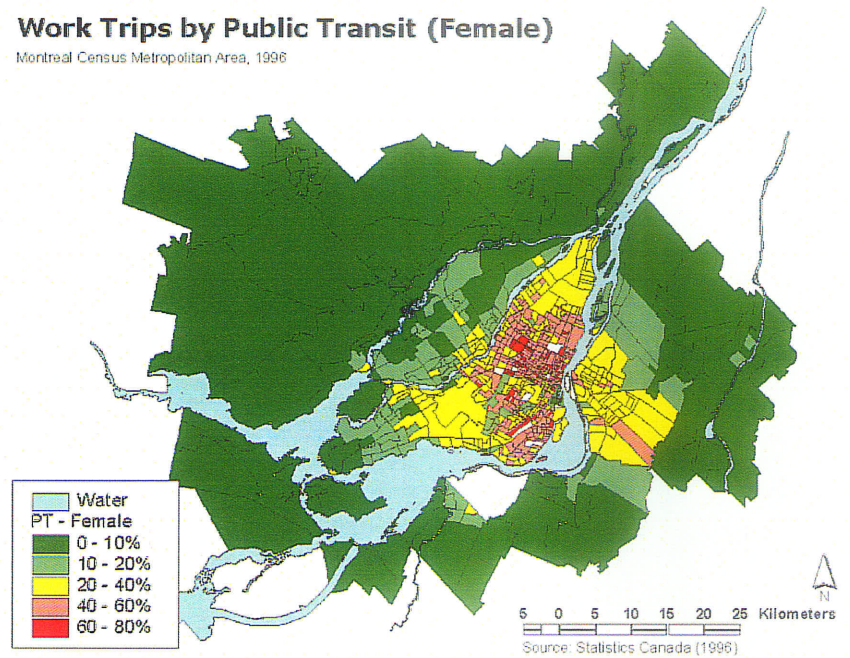


Fig.24

### Work Trips by Car (Male)

Montreal Census Metropolitan Area, 1996

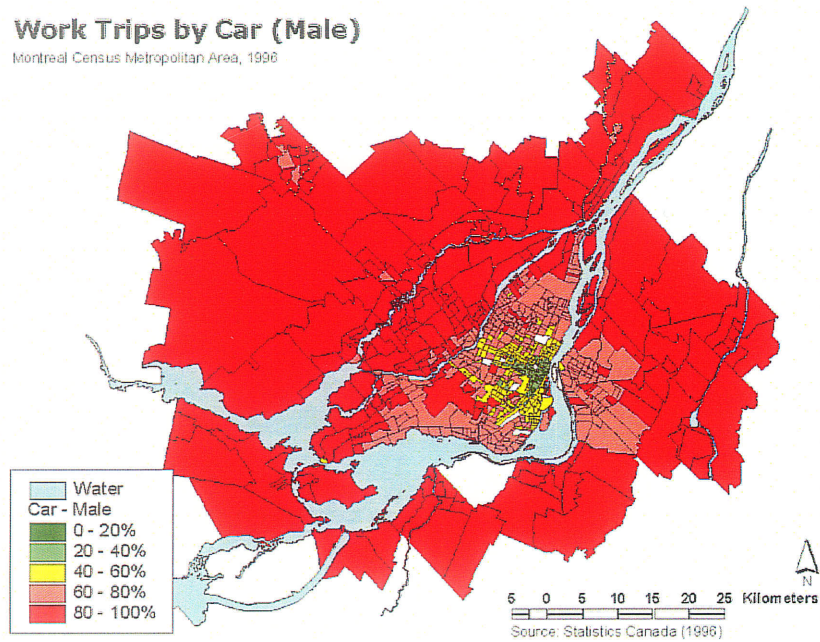


Fig.25

### Work Trips by Car (Female)

Montreal Census Metropolitan Area, 1996

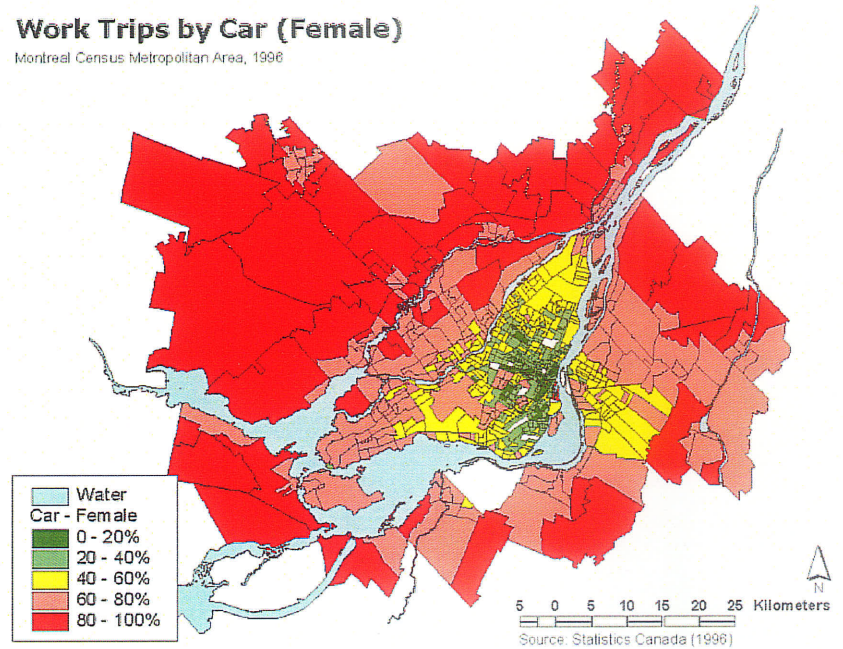


Fig.26

## **2. An 'ecological' approach to a transit-oriented-neighbourhood: A literary exploration**

"...the idea of ecology has diversified to such a point that it can no longer be used with unambiguous clarity."<sup>35</sup>

James Corner

With regards to the usage of the term '**ecological transit-oriented-neighbourhood**' the simplest way to define 'ecological' in this context is the idea of understanding the qualities of the inherent 'natural inter-relationships' of each place and its expression and integration in the design of the community to define its unique identity. Quoting Calthorpe, it is "not the literal ecology that deals with natural systems and seems to stop just short of the human habitat – but a broader, more philosophic 'ecology' which teaches that diversity, interdependence and whole systems are fundamental to health" and the attempt to translate it into specific forms of the buildings and the planning at large from this perspective.<sup>36</sup>

As Eugene Odum writes in his book *Ecology: A Bridge between Science and Society* (1977) "Ecological thinking is not just being aware of nature, it is thinking which is more organic, holistic or systems-based rather than reductionist or monocultural."

### **What does 'ecological' stand for?**

The best way to elaborate on Calthorpe's 'philosophic ecology' is to take up the argument that the inimitable James Corner makes in '*Ecology and Landscape as Agents of Creativity*' in the Thompsen & Steiner edited book *Ecological Design and Planning*. His take is that ecology, creativity and landscape architecture must be considered in terms beyond those of visual appearance, resource value, habitat structure or instrumentality.<sup>37</sup> Instead these rather restrictive traditional views might be balanced by an understanding of how the three are metaphorical and ideological representations, cultural images or 'ideas'. The ideas are not inactive but have profound effect for change in a variety of material, ideological and experiential ways. The heightened significance of ecology in the past decades in social and intellectual affairs have shown a view with an emphasis on temporal interactive processes further reinforced by new scientific findings of nonlinearity and complexities.<sup>38</sup> But the use of the term has spanned from corporate and media industries as well as by environmentalists, land artists, architects and politicians and has diversified to mean many different things. Although, as Corner points out, ecology has usually been understood as providing a scientific account of natural processes and their interrelationships, "the fact that it also both describes and constructs various ideological positions to be taken with regard to nature points to a greater significance. Ecology is never ideologically (or imaginatively) neutral, despite claims to its objectivity. It is not without values, images and effects. Instead, ecology is a social construction, one that can initiate,



inform and lend legitimacy to particular viewpoints<sup>39</sup> such as different 'green' or 'eco' movements. It conjures different 'ideas' among its advocates regarding its relation to Nature ranging from extremely rational to the most mystical or religious.<sup>40</sup> While the usage of 'ecology' has been significantly influential in landscape architecture and planning, the theory of late nineteenth –early twentieth century thinkers such as Henry David Thoreau, Ralph Waldo Emerson, Ian McHarg, Olmstead, Jens Jensen and others and their foundational traditions have often been overlooked in lieu of ecology in the sense of natural science, environmental management and ecological restoration techniques.<sup>41</sup> Corner laments this polarization of “art from science, planning from design, theory from practice and the lack of critical reflection within “ecological design” circles.”

It is interesting to see the definition of the term from well known ecological architect and the founder of the Ecological Design Institute - Sim Van der Ryn.:

“Ecological design proposes a marriage of nature and technology, using ecology as the basis for design. The strategies of conservation, regeneration, and stewardship can be applied at all levels of scale to produce revolutionary forms of buildings, landscapes, communities, cities and applied technologies.” Taking the philosophies of Louis Sullivan, Ian McHarg and the principles of 'genus loci' and sustainability a step further, EDI and Van der Ryn Architects have created innovative design solutions that link nature, culture and technology to reintegrate the needs of human society within the balance of nature. Ecological design works with the inherent integrities of a given place, recognizing that the degree to which we rely on far-flung resources is the degree to which we are no longer accountable to our own place.<sup>42</sup> According to Wes Jackson, we are “unlikely to achieve anything close to sustainability in any area unless we work for the broader goal of becoming native in the modern world, and that means becoming native to our places in a coherent community that is in turn embedded in the ecological realities of its surrounding landscape.” But James Corner critiques even the over usage of 'native' as a justifying approach in the sense that the popular conception of ecological design as reconstructing “native” environments is founded upon illusory and contradictory ideas about a monocultural “nature” and “displays a remarkably nonecological intolerance of alternative viewpoints and processes of transmutation” because terms such as 'foreign' and 'exotic' betray the exclusivity and privileging of the natives. His suggestion to contemporary landscape architects is to look at ecology less for techniques of description and prescription, even less for its apparent legitimizing of “naturalness” and more for its ideational, representational and material implications with respect to cultural process and evolutionary transformation. “It is ironic that the emancipation of human creativity through the imaginative appropriation of ecological ideas and metaphors has largely been neglected by contemporary landscape architects (and especially those who wave the flag of ecology), even though the deeper traditions of landscape architecture are founded upon such existential objectives.”<sup>43</sup> Ecology, according to Corner can be Radical. (the different 'eco' movements based on hierarchy, moral rights and ethics) Dialectical and Language Ecology (of the “other”, of thought of abstract symbolism) and the Conservationist/Resourceist and Restorative Ecology (such as McHarg's suitability analysis, other ecologically sensitive techniques and sometimes even ecocentric practices) Each category has its virtues and weaknesses. But like Henri Bergson in *Creative Evolution* (1944) writes that the role of life is to inject some “indetermination” into matter and a refusal to reduce nature to a physical, “knowable” object, “living memory is the past felt in the actualities of realities, of change.”<sup>44</sup> Such an interrelational view points towards more 'heterotopic' kinds of activity and space than singular 'utopic' acts.<sup>45</sup> The very inclusivity and open

endedness of heterotopia brings a complex prospect, it also denies singularity, determinacy and hierarchy. As a “structured heterogeneity” such a complex field is neither chaotic nor ordered but free and organic. Thus, according to James Corner perhaps a truly ecological design might be less about the construction of finished and complete works and more about the design of ‘processes’, ‘strategies’, ‘agencies’ and ‘scaffoldings’ – catalytic frameworks which can enable a diversity of relationships to “create, emerge, network, interconnect and differentiate.”

In the 1960s Ian McHarg called on landscape architects to extend ecological principles to landscape planning problems in the city.<sup>46</sup> However for a long time, until of late, landscape planning efforts have treated the city in terms of the stresses it places on rural areas for food, recreation and waste disposal. Yet the city being part of nature is not exempt from the processes that take place in rural areas. The challenge posed by the urbanscape to landscape planning as written by Anne Spirn in *The Granite Garden: Urban Nature and Human Design* is “both the greatest and the least recognised, because the human-built structure seems so dominant, because the contrast between nature’s order and the human order is particularly acute and because cultural processes are so densely interwoven and overlain.” Landscape architects such as Michael Hough, Anne Spirn and John Lyle have argued<sup>47</sup> that it is essential to regard urban landscapes as ecosystems – as a collection of living organisms interacting with each other and their natural built environment. This view is pertinent only when people are regarded as an integral and essential component of living organisms and advocate designing and planning landscapes that are rich, diverse, productive and regenerative.<sup>48</sup> In Forster Ndubisi’s essay *Landscape Ecological Planning* he argues that there are two types of theories in the process: substantive and procedural. Substantive theories of planning permit better understanding of the landscape as “an interface between human and natural processes.”<sup>49</sup> These descriptive and predictive theories originate from social and natural sciences as well as the humanities encompassing the knowledge of anthropology, biology, ecology, geology, geography, history and photography. Works of J.B Jackson, Dennis Wod, Yi-Fu Tuan, John Silgoe, Cotton Mather and so on indicate the landscape as a reflection of culture.<sup>50</sup> But when we want to understand specific systems such as those of geology, aquatic systems and so on we turn to the works of the specialists in that particular field. In contrast, procedural theories of planning focus on methodological issues such as ideology, purposes and the principles of the process. “They explicate the functional relationships that permit the application of the knowledge of human and natural processes in resolving human use and conflict in the landscape.”<sup>51</sup> A prominent example of this approach is Ian McHarg’s suitability approach. *Thus in the ‘ecological’ planning process we draw upon substantive theories for information but use procedural theories as a framework to organize the information in a format that readily permits the use of that information in addressing planning problems.* In the very ‘underlying duality’ of landscape planning lie the strengths and the weakness. This duality is also questioned by James Corner who writes that the use of ‘ecology’ in planning has prompted ‘a somewhat ambiguous and estranged disciplinary identity’ – the oft-asked question: Is it art or science.<sup>52</sup> Ndubisi elaborates that the effectiveness of using information from substantive theories depends on its organization and presentation; when differences exist in the way people from varied disciplines who develop substantive theories understand reality, differing emphasis in the interpretation of the relevant information is likely to occur. This is one the main reasons why the ‘bonding’ between planners, ecologists, and landscape architects and other disciplines

as well as the community at large is important to understand 'ecology' from the same perspective and to overcome misinterpretation.<sup>53</sup> Only when the multiplicity and plurality become intrinsic features of planning can we "condition ourselves to take advantage of the rich source of information that is offered to us by substantive theorists. The key to conditioning is interpretation.....there must be a conscious effort to understand information in terms of relationships. Indeed this is the essence of ecology: To know and understand reality in terms of relationships."<sup>54</sup>

Mark Luccarelli in *Lewis Mumford and the Ecological region* states that Mumford understood the region as a set of environmental relationships. The geographical factors of terrain, climate and soil that establish the condition to which plant and animal life must respond are essential but the region, as Mumford insisted is anything but ideal or abstract. Its existence resides in the "facts" of geography: climate, soil, and terrain constitute the "fundamental basis of existence." and the region sets the basic material conditions that underlie economic, technical and social development.<sup>55</sup> While doing the Wabash River Valley study the inter-disciplinary design team in Philip Lewis' *Tomorrow by Design* understood how identifying resource patterns revealed scales of thinking from local to regional. The inventory of corridors and their diversity of natural, scenic and cultural resources demonstrated that the individual landscape characteristics in the broadest sense identified by various interest groups are generally included in a common corridor pattern. This corridor pattern traverses the matrix of patterns of vast areas. A study of landscape ecology in the 'scientific sense' always stresses the importance of pattern, patch shape and size - pattern being the key feature where processes operate over all spatial and temporal scales and complex interactions between environmental, biological and social forces take place. It is inevitable to relate back to Christopher Alexander's *Pattern Language* and his words:

*"No pattern is an isolated entity. Each pattern can exist in the world, only to the extent that it is supported by other patterns: the larger patterns in which it is embedded, the patterns of the same size that surround it, and the smaller patterns which are embedded in it..... This is a fundamental view of the world. It says that when you build a thing you cannot merely build that thing in isolation, but must also repair the world around it, and within it, so that the larger world at that one place becomes more coherent, and more whole; and the thing which you make takes its place in the web of nature, as you make it."*

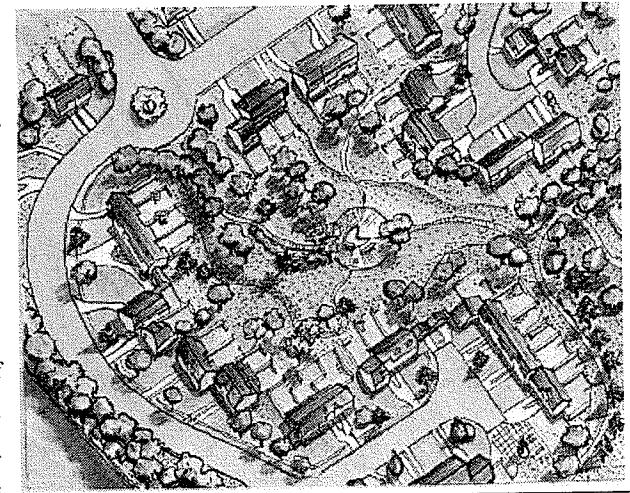


Fig.27 Cluster housing around backyard corridors

Frederick Clements in *Bio-Ecology* and Donald Worster in *Nature's Economy: A History of Ecological Thought* talk of the creation of “powerful symbols and designs that can explain the inner core of human experience and provide dreams to live by.”<sup>56</sup> And for Mumford, the ‘powerful symbols and designs’ that explained “the inner core of human experience” was regionalism. Regional consciousness which can be viewed as a cultural elaboration of the sense of place makes possible a new dialogue with the natural systems. In Mumford’s view this cultural elaboration of place created a political context for the instrumental use of science in investigating and reshaping human interaction with the region. And he therefore brought together the spheres of sciences and humanities.<sup>57</sup>

In the broader context of ‘ecology’ of the human habitat which teaches diversity and interdependence Calthorpe reiterates that understanding the qualities and physical characteristics of nature in each place, the regional connectors of nature can unify the multiplicity of neighbourhoods, communities, towns and cities of metropolitan regions. “Preservation and care for a region’s natural ecologies is the fundamental prerequisite of a sustainable and humane urbanism.” As Calthorpe notes, communities historically were embedded in nature as it helped in setting both the unique identity of each place and the limits of the community. The local climate, plants, vistas, harbours and ridgelines that defined the special qualities of each place have now been replaced by smog, concrete paving, receding ecologies and polluted soil and water. But this factual view again has to be balanced with the more ideological ‘inter-connectedness’ of ecological thinking.

The basic principles of ecological design manifested in practice as outlined by the Ecological Design Institute & Van der Ryn Architects should also not be forgotten namely:

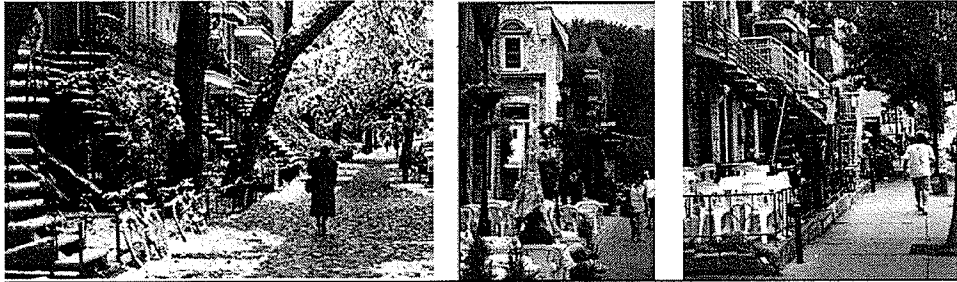
- *Solutions grow from place* – an intimate knowledge of place, small scale and direct, responsive to local conditions and people, inhabiting without destroying.
- *Make Nature visible* – making natural cycles and processes visible, and informing us of our place within nature through effective design.
- *Design with nature* – working with living processes that ensure regeneration rather than depletion
- *Ecological Accounting informs design* -tracing the environmental impacts of design and using this information to determine the ecologically viable design possibilities
- *Everyone is a designer* – listening to every voice in the design process because as people work together to heal their places they also heal themselves.

### **Neighbourhood TOD: Another rendition of community design?**

*“Like the places they inhabit, communities are bumpily layered and mixed, exposing hybrid stories that cannot be seen in a linear fashion, aside from those ‘preserved’ examples which usually stereotype and oversimplify the past.....Community doesn’t mean understanding every thing about everybody and resolving all the differences; it means knowing how to work within differences as they change and evolve.”<sup>58</sup>*

From a prosaic point transit neighbourhood amalgamates ideas from the disciplines of urban design, transportation and market economics.<sup>59</sup> It is a process of creating a built environment that encourages transit ridership. But equally and perhaps even more importantly, it embraces “goals related to neighbourhood cohesion, social diversity, conservation, public safety and community revitalization.”<sup>60</sup> The transit neighbourhood is often characterized as an alternative suburban ‘community’ and in truth embodies much of the spirit that defines a ‘good community.’ In the pluralist and multicultural society of North America, for the most part, citizens find the emotive ties of community in the myriad voluntary associations, charities, churches and local neighbourhood groups rather than in nation or place.<sup>61</sup> This is increasingly true in an age of fast-pace living and a landscape of faceless sprawl. Yet, there is a sense in which a place can be a community: where residents regard themselves as part of a cooperative enterprise sharing similar ideals and a common cause whether it is as simple as neighbourhood safety, historic or green space preservation, traffic calming and so on. It is this attachment to place and to simple human values as well as a longing to ‘belong’ that has spawned thousands of grassroots neighbourhood associations all across North America. A transit village which in itself has become an organized movement of sorts and which encourages ‘human scale’ and social interaction through design to entice people to get to know each other is consonant with the notion of “community as place.”<sup>62</sup>

It is interesting to note that some of the ideas that today constitute good transit-oriented-design such as rail connections, community parks, open courts and pocket parks, had already found expression more than 100 years back in Frederick Law Olmstead’s proposals for community plans in Georgia and Illinois. Olmsted wanted to join the best aspects of the city and country life by linking the residential suburb with the central city working place by rapid transit – railway or street cars through scenic corridors. He saw residential suburbs in which landscape architects would design residential grounds with numerous “open air apartments” by which domestic activities could be moved outside the home. Pedestrian walkways and riverside parks were part of the picture. The only difference was his large spacious plot sizes as opposed to today’s moderate density TOD proposals. When he designed ‘Riverside’ the community plan outside Chicago, he called it a suburban village, but he was not a romantic. The suburb was not to be a retreat; suburbanites were to enjoy all the refinements of town life. But in today’s ‘messy divorce’ between the suburb and the city core, Olmsted’s inclusive metropolitan vision is worth revisiting. Instead of attacking the straw man of suburban sprawl, one would do better to look for ways that make better suburbs and better cities, as their future is inextricably linked.<sup>63</sup> After many writings on Montreal’s urban fabric, in his latest book on the biography of Frederick Law Olmstead -who incidentally was the original landscape architect of Montreal’s landmark Mont Royal park- Witold Rybczynski reflects that what we can learn from Olmsted is the importance of planning; suburban growth can be made better only by (obviously) good planning – and while one cannot and should not really imagine a version of Europe in America – one can certainly strive for a much better balance between suburbs and cities and also be inspired by Olmstead’s vision of a greener environment. Rybczynski’s insight into the sprawl of urban values in the Grand Montreal area<sup>64</sup> and the emergence of new cities on the metropolitan fringe and their effect on the older core cities reflects the changing nature of city-regionalism. It reiterates Wight’s observation that the metropole-hinterland ‘dichotomy needs to give way to dialectic, and hierarchy to network.’<sup>65</sup>



*Fig.28  
Residential street in Montreal's 'Mont-Royal Plateau' area Sidewalk cafes in the city's old neighbourhoods*

In the book *Transit Villages in the 21<sup>st</sup> century*, (1997) authors Micheal Bernick, director of the San Francisco Bay Area Rapid Transit District, and Robert Cervero, professor with the Department of City and Regional Planning at U.C. Berkeley Traffic jams cover many aspects among which one is a defence to an underlying critique by some observers that transit villages are 'boutique' design and the choice of residing in them is either due to gentrification or poverty. One of the defences to this 'boutique' critique is that transit villages already exist and that they are not only viable as communities but successful in achieving a high level of transit share. To illustrate this point, the authors present findings from visual preference studies that show that North Americans prefer moderate-density mixed-use developments to

suburban sprawl (or at least they prefer slides of such developments). They also present case studies of emerging or existing transit villages in the U.S. and abroad. In the Montreal context, selling the idea of higher density neighbourhoods with a sense of community is not difficult at all – firstly due to the shortage of affordable housing and secondly due to the demand for the 'village' ambiance. Indeed, one of the hippest and most expensive areas of the city, known as the Plateau Mount Royal has one of the highest building densities and maximum transit usage in North America. The preference for the Plateau as one of the most desirable places to own an apartment, unlike the historically affluent Westmount borough, is a growing phenomenon because traditionally it had largely remained a working class neighborhood before writings about its charms in the media and a growing recognition for its human scaled pedestrian friendly design propelled it to become one of the most expensive areas of Montreal to reside in. The North West side where the site for the practicum project is located has high real estate values in spite of its largely banal suburban look. The healthy growth pattern of Montreal is reflected in its higher downtown property value; but it is of concern when 'placeless' suburban houses are also being sold at very high prices. The price of houses are also much higher on the western, more anglophone part of the island even though the design of the more francophone eastern, south central and central areas are more pleasing and full of picturesque lively pedestrian and public places. The planning outside the city's inner and outer suburban rings is quite a different story.

While the people of Quebec take great pride in their unique regional character and identity (of which no proof is required!) the lively and charming character of Montreal, Quebec City and older neighbourhoods in towns like Longueuil, Ste-Thérèse etc. are not reflected in many of the newer developments taking place in the suburbs or along freeways. Places like Repentigny (25 minutes driving east of Montreal), Ste. Julie in the south shore, new developments along the Angrignon subway station have a planning not unlike hundreds of north American bedroom communities, with wide treeless roads, bull dozed and flattened sites, rows of single family houses and big box stores like Wal-Mart, Zellers etc. in close proximity. The joie-de-

vivre of their city streets and cafés that French-Canadians are so proud of or even the picturesque community sense of the eastern townships are absent. While complaints of this loss of character are many there is little public action taken on it. These ‘neighbourhoods’ have become not unlike their American clones albeit with French signboards much like the plethora of ‘dubbed’ Hollywood films lining the shelves of the adjoining Blockbuster video store and the children listening to the ‘dubbed’ versions of the latest U.S billboard hits. It is ironic therefore when these children or their parents talk passionately about Quebec’s identity and the protection of the French language while leading ‘dubbed’ American or any other similar western Canadian suburban lives and retaining little of the rich architectural heritage or regional identity that their cities stood for. While one might not debate the pros and cons of the political beliefs shared by many in these neighbourhoods, one can only feel sorry for the loss of character in the design of these neighbourhoods and many like these which are off shooting at an alarming rate both on and off the island. This is not just a provincial problem, but as many critics have written, a continental North American problem. But pro-sprawl and anti-smart growth advocates like Wendell Cox, with his influential government and university connections, with his vicious and fanatic critique of smart-growth ideas and his propagation that “the American dream has become the Universal dream” proudly presents pictures on his ‘Demographia’ website of the homogenous 2-car garage houses in Americanized suburbs of Quebec as the ‘Québécois dream’. Developers who promote these copy-cat suburbs, with little regard to environmental degradation and loss of ‘la belle province’s’ cultural identity surely do Mr. Cox proud.



*Fig.29 New suburban residential development in Ste.Julie, south of Montreal Commercial mall along freeway*

John Sewell, while addressing the Canadian Association of Planning Students National Conference in Winnipeg in 1996 commented that the “journey to where we are today” had been pointed out by the Garden city concept of Ebenezer Howard which resulted in the notion of combining the city with the countryside, Frank Lloyd Wright’s Suburban vision of the broadacre city and Le Corbusier’s concentrated high rise solution whose “Canadian example (is) Hwy. # 427 in Toronto heading towards the airport.” While it is true that all three thinkers were idealistic and highly talented in their own rights, when future generations interpreted their visions, their powerful influence was synthesized into a reductionist solution rather than embrace the complexity that should determine the urban regional form. Today’s sprawl, derelict downtowns and environmental degradation has a lot to do with the reductionist approach where a

one-solution-fits-all is the norm and essentially the basic problem. And yet in today's context it is no longer valid to cry over spilt milk or pass the buck around, nor get stuck in a comatose inertia. One almost has to take the attitude of "Deal with it!" and challenge the problem head on to move on in a more constructive way.

According to Lewis Mumford the purpose of transportation was not only to bring people or goods to places where they were needed but to concentrate the greatest variety of activities and people within a limited area, in order to widen the possibility of choice without making it necessary to travel. "A good transportation system minimizes unnecessary transportation; and in any event, it offers a change of speed and mode to fit a diversity of human purposes" Transportation is a *means* of facilitating social and economic interaction for people, not an *end* in itself. Mumford (1953) and Jane Jacobs (1961) warned that unfettered mobility is actually antithetical to the purpose of the city in that it interrupts the basic city functions of proximity for contact and production as well as multiplicity of choice. In *The Death and Life of Great American Cities* Jane Jacobs states: "Good transportation and communication are not only among the most difficult things to achieve; they are also a basic necessity...But multiplicity of choice and intensive city trading depend also on immense concentrations of people, and on intricate mingling of uses and complex interweaving paths." In *The Highway and the City* Mumford writes: "The paradoxical result of this concentration on motorcars is a curbing of freedom of movement, a removal of alternate choices of transportation, the steady reduction of the speed of local travel, and the total defeat of the city itself as a place that offers the maximum possibilities for face-to-face meeting, social cooperation, and transactions of every kind." In this light it can be argued that a community when linked to the larger region by public transit and when carefully designed brings together more human interaction or a 'coming together' than the autocratic subdivision would.

So what exactly defines this 'sense of community' and how can transit-oriented-neighbourhoods bring this back? To find the answers it seems pertinent to see the opinions of members of the communities themselves who live around Montreal's West Island and whose community action group 'The Green Coalition' was the party largely responsible to halt construction on the entire 'Cheval Blanc' site and conserve the west side as an eco-park. On their website are many papers written by the group's members. In one titled 'The Common Sense Neighbourhood' an anonymous member writes what was seen as their 'manifesto' of what an appropriately designed community should be and look like on asking a large group and range of citizens around neighbourhoods in the western part of Montreal. Here are some excerpts<sup>66</sup>:

*"We realized that the community will be composed not only of physical features - roads, homes and trees—but also of social structures that foster good relations and provide opportunity for interaction between citizens. We therefore argued that a good community should successfully integrate people, land, and structures. People of different backgrounds, sharing different values and life experiences, should be able to successfully make their life together in a community. The features of the land should be worked with, not around, and natural systems of ecological or aesthetic significance should not be injured by development. Buildings should harmonize with pre-existing nearby structures, reflect the history and spirit of the community, and successfully relate to one another. Patterns of development should be shaped around natural systems and features, which in turn should be set in a context that encourages residents to come out and enjoy the outdoors."*



*"A typical feature of many West Island new developments is the homogeneity of housing types. We recognized it as inhibiting the creation of a socially balanced community. The way in which the physical structure of housing accommodates or discourages differences and changes in lifestyle and income was therefore explored. Another bad planning feature in the West Island is the segregation of activities. A mix of commercial and residential uses is prohibited by zoning and the need to rely on car trips is evident. An attractive community close to an urban workplace and an efficient public transit system could be turned into a great incentive to get people off the road. Those commuters stuck in traffic are only generating the sort of conditions in their neighbourhoods that they were seeking to escape by moving out into the sprawl anyway."*

*"A good community should foster civic citizenship. Public debate in North America has been dominated by themes of alienation and powerlessness in recent years, contributing to a common feeling of rootlessness and a climate of fear. While architecture and planning cannot solve political problems, they can certainly design streets and neighborhoods that permit neighbors to chat and encourage a sense of friendly sociability and civic engagement. Spaces that are shared and enjoyed by the community as a whole require a sense of ownership and pride on the part of the residents if they are to be well-used and well-maintained. Common spaces can help develop a sense of common purpose; when neighbors feel that they can solve problems by working together, it encourages the sense of connection and effectiveness that makes civic action possible."*

*"A good community should feel like a place or a series of places. Many residential developments have been laid out in such a way as to disorient drivers, intimidate pedestrians, and cut neighbors off from one another in the name of "exclusivity" and privacy. Moving through a community by car, on foot, or on a bicycle, a visitor or resident should feel that they have come from somewhere and are going somewhere else. While boundaries should not be severe, one should feel that a community is distinct from adjacent areas, a place unto itself with a particular style and feeling of its own. Similarly, larger communities should be structured (by function, visual appearance, or housing type) as a series of distinct smaller places to maintain a readily understandable sense of internal coherence."*

In the 'Green Coalition Brief'<sup>67</sup> by the community members presented in June 2004 to the City of Montreal in response to master Plan proposal which involved the Cheval Blanc site, it is good to see their consent to TOD as a sustainable alternative:

"The Green Coalition is completely in accord with TOD or Transit Oriented Development - the principle of intensifying residential and commercial development, as well as community services, close to metro and rail public transit nodes. This can promote sustainable development practice, reducing the eating up of natural and other land in uncontrolled urban sprawl. Creating new, denser communities close to transit hubs can reduce the dependency on the automobile."

It is easy to see why the concept of a transit neighbourhood seems like an appealing option in the models of community design. A well designed TOD provides for and emphasizes public space that affords residents with opportunities for face to-face contact while they walk within the neighbourhood. Because of this fact, it encourages personal identification with definable places, and therefore fosters stronger ties within the community. In his book *Bowling Alone*, social scholar Robert Putnam has documented the breakdown of civil society in America as people become more disconnected from their neighbours, communities, and families. Putnam contends that this fragmentation threatens our health, safety, and even our very democracy. He contends that the fragmentation is caused by several factors, one of which is the usual suspect of urban sprawl, with its emphasis on private living space in fringe areas and travel that is conducted almost exclusively by personal automobile. Furthermore, this fragmentation occurs not only at the community level, but also within households. His body of research indicates that workers who live in sprawl-type neighbourhoods have more travel stress, absenteeism and turnover than workers who live in denser, transit-supported neighbourhoods. TOD, therefore, can strengthen family connections or at least aim to, because workers are more rested after work due to a lower travel related stress load. In his work, Putnam describes the basic, but

important, principle that, as people associate with one another in various capacities, whether it be on the sidewalk, at the grocery store, or at the transit stop, they form relationships that can be relied upon to provide for personal needs (e.g., walking the dog, babysitting) and to address broader community problems, thereby sustaining a higher quality of life for everyone. Additionally, according to Putnam, each relationship is an asset, and the accumulation of these assets forms each person's or communities' "social capital." TODs can therefore, promote community building and the development of social capital. Other factors such as personal values, residential turnover, and other demographic variables will also affect social cohesion and community building. In the design of a community comes the aspect of social behaviour and environmental psychology. One has to pay attention to the design and orientation of the buildings themselves where there exists authentic green spaces and corridors (and by this I don't mean the patch of lawn grass) in their clusters and at the same time brings back the lively character of the street and sidewalks which as so eloquently observed by Jane Jacobs in *The Death and Life of Great American Cities* serve the use of assimilating children. As she had observed and analysed, simply following the early Garden city concept of providing indoor courts (which serve only younger children) and having blank walls face the street does not work as does the isolated playground and streetscapes without adult eyes not work. At the neighbourhood scale, very often parks and open spaces are pushed into residual spaces and buffer zones between segregated uses. Instead careful planning can put them in more focal and effective locations – as meeting grounds rather than apologetic afterthoughts. Thankfully, Montreal being an excellent city to observe some of the most successful urban public spaces, much can be drawn from the principles that do work with regards to street widths, sidewalks and street frontage and as usual the tried and tested methods in the older city which developed through the culture of the place and work far better than the placeless suburbs off shooting on many sites.

Sherry Ahrentzen's advice in her research article "*The Prospect of Community and Housing Design for a Home-Based Work Force*" are quite pertinent to TOD design too:

- A stronger public ritual for colonizing of local communities and city extensions should be adopted which spiritually binds and commits future residents to a sense and image of their future community.
- An incremental formation of communities should be nurtured and encouraged at modest scale rather than pushed aside as obsolete. Development direction and entrepreneurial nurturing should belong to a multitude of higher risk but locally organized efforts forged into a process.
- Design concerns are one part of that process and should be coded at a regional level so that evocative notions of rootedness and images become an articulated part of a subdivision planning. Some of our simple enduring rules that tie our places to the past as well as the future are required. Human scale must be the yardstick for all new development. A fine grained pedestrian scale must have equal rating with the automobile (or preferably mass transit).
- Public life in the form of third places (cafés, pubs and small provision stores) should be zoned in rather than zoned out of residential areas.
- The news zone or residential enterprise zone might become a means of mixing work and the variety of emerging lifestyles and family needs. New semi-communities which form primary group affiliation like the cohousing models should be watched carefully as potential ways of regaining group affiliations and easing the pressures on two income families.

“...What is missing is the marriage of the man-made landscape with the natural landscape (and by this I don’t mean a lack of street trees or foundation planting). Ecology is the intermediary of many diverse systems, and in our suburbia today, we are mono-cropping - the 30 year mortgage crop” writes William Turnbull Jr. in “*Buildings in the Landscape*”. He rightly asks: what if we added a natural landscape requirement to our myriad zoning and building regulations?

In the chapter ‘The Transit-Oriented Development Drama and its Actors’ from the book *The New Transit Town: Best Practices in Transit-Oriented-Development* Belzer, Autler, Espinosa, Feigon and Ohland state that the community is the most variable and sometimes volatile actor of the process. While transit agencies, local government and developers have a comparatively clear set of interest, no single organization or individual or set of interests represents a community.<sup>68</sup> Since TOD projects are already inherently complicated with many parties involved, the latter are often reluctant to involve the community at the initial stage. They feel that the surrounding residents do not have the same ‘vested’ interests – financial investment or property ownership- and very often see any new development as a competition to existing commerce, services and resources. The range of reactions of the community to proposed TOD projects has varied from enthusiastic participation (Arlington County, Virginia) or controversial approval to law suits (Lindbergh Station, Atlanta) and decade long delays to construction (Pleasant Hill BART station). But the involvement of the community and most definitely their approval is one of the essential necessities to ensure the smooth implementation of the projects and the optimal performance of the design. Transit agencies care most about ridership and developers on profit. But it is the members of the community who work to ensure that the project captures value for the community by raising the standard of design. This includes providing more housing, transportation choices, retail choices and public amenities like plazas, pocket parks or community centres.<sup>69</sup> Often, in documented case studies of TOD projects, the surrounding community has been the most forceful arguer of reduced parking standards – as large parking structures are significant generators of traffic. This is a positive aspect in light of the fact that transit agencies themselves push for large parking structures to increase park-and-ride. Excessive parking is often one of the biggest impediments to pedestrian place-making, in spite of it being a ‘necessary evil.’ The most vital contribution of community involvement is it being the best and most important source of local knowledge that helps “attain the intangible ‘sense of place’ that will capture value for all partners.”<sup>70</sup> In the 1990s public attitudes changed more positively towards the TOD concept as opposed to its public scepticism in the 1970s and 1980s. Indeed many projects that had received stiff opposition by the community members initially have now not only surpassed set financial targets but raised the property value of surrounding residential areas.<sup>71</sup>

## Community, Ecology and Multi-disciplinarity in the TOD concept: Symbiosis not Segregation

*"This work is an attempt to show that community design must be multi-disciplinary and that combining problems often leads to simple solutions while segregating problems typically leads to frustration."*<sup>72</sup>

*Peter Calthorpe*

While Canadian projects should search for their own identity instead of looking to the south or across the Atlantic and the Pacific, it is interesting to explore this notion of community, ecology and multidisciplinary in light of its symbiosis in other places and other times. In his essay 'Ecology and Community Design: Lessons from Northern European Ecological Communities' Todd Saunders laments that in North America, architectural and planning theorists, not practitioners, develop most ecology and community design concepts.<sup>73</sup> While these works are important contributors to alternative approaches, they tend to become so theoretical that they get detached from practical concerns. In contrast, Northern Europe supports a long tradition and increasingly expanding practice of ecological community design with a variety of academic and practical research.<sup>74</sup> In his case studies conducted in the Netherlands, Germany, Sweden and Norway he observed that the communities were much better aware of resource management, waste water treatment, the benefits of mass transit and car pooling and environmental stewardship than their American suburban counterparts. Topics of ecology were not abstract notions but directly connected to the decision making process in the design, management and construction of projects. In the northern European ecological communities explored, the dominant form was multi family and cooperative housing. The large lot single family house was largely viewed an anti-ecological. The higher densities and cluster forms reduced sprawl, infrastructure costs, car-dependency and increased bicycle, pedestrian and public transit use. Tighter housing arrangements also left more land for community gardening and children's play areas and for more natural treatment of wastewater and storm water. Another important commonality amongst the communities studied was the easy access to public transportation. The car was viewed more as a tool of choice rather than necessity. Car sharing was common and organized. In some cases, residents like those of Fraenweg in Kassel, Germany parked their cars in a carport near the neighbourhood entrance making it an auto-free community. In other communities such as in Ecolonia in the Netherlands the roads were designed to control and slow traffic through speed bumps and narrower widths. Many of these northern ecological communities also included natural areas within their boundaries, protecting them during construction. The presence of these natural areas – included not excluded from the buildings – allowed people to observe, experience and appreciate the cyclical processes of nature and prevented the loss of sensual perceptions and identifications.<sup>75</sup> There is much to be learnt from these examples including the integrated team approach to these community designs. Yet, as Saunders observes, sometimes the danger lies when designers misconceive ecological communities as single-purpose exercises and approach the task with a single goal – for example only alternative energy or some other feature and neglect important aspects as community, economics and lifestyle.<sup>76</sup> Eivor Bucht in 'Green Spaces in Urban Structure,' from the 1991 Danish report *Management and Implementation of Ecological Measures in Human Settlements* suggests that many ecological communities in Scandinavia might suffer from too much single-purpose thinking which has also led architecture and planning movements to create many problems. Bucht argues that if only certain purist ecological criteria are allowed to dominate design it gets deprived of the basic principle of good urban

planning and design – namely comprehensive thinking.<sup>77</sup> And therefore, as Saunders concludes, that although ecology can undoubtedly become the cornerstone of the community, ecological responsibility is by no means a single remedy for success. In fact too much single minded devotion to its issues may lead to neglect the very residents who are needed for the persistence of the community. Therefore although ecological factors are crucial, so is the human aspect – for which the community was constructed in the first place. It relates back finally to the very definition of ‘ecological’ and accepting it as a set of multifarious ‘inter-relationships’ between different ideas, disciplines and theories and not simply to monodirectional ‘eco-planning.’

Moving from one end of the overtly ‘ecology dominant’ community of Scandinavia to the overtly ‘human dominant’ community of South East Asia it is worthwhile to make some observations. In India, for instance, in spite of the near total absence of urban ecological communities and a constant increase of pollution and environmental degradation, there is no dearth of the human element of an elevated ‘sense of community.’ In spite of its extreme socio-economic, cultural, racial and geographical diversities, whether it is in urban centres, in rural villages or isolated settlements in remote parts of pristine mountains and forests, there is an overt sense of community spirit and bonding – of a ‘unity in diversity’. On closer inspection it becomes evident that this is not just a socio-cultural phenomenon, but is largely induced as a support-system for mutual help due to an unreliable infrastructure and frequent delays and inefficiencies in government-run public services. In North America one can lay the blame on the design of the suburbs for a number of social issues, but at the same time realize that efficient infrastructure and prompt public services lessen the *need* to rely on one’s neighbours in daily life. The coming together of community in everyday life therefore becomes an act of *choice, design* and optional need for interaction, not a *necessity* as a guard against emergencies, which is the case in the Indian subcontinent. Today the majority of distorted versions of Corbusier-inspired houses or quirky ‘futuristic’ models and even American suburban models (complete with sloping roofs and two car garages) dot much of middle class suburbs of Indian cities at a rate of construction that parallels China. Little is visible, except in the works of some well known architects or theorists, or in a new resurgence of superficial ‘fad’ revival of the intensely multi-disciplinary base of the 4000 year old doctrine of the ‘Vastu-Shastra’ (dwelling-doctrine) whose ‘mandala’ (module diagram) concept is now touched upon by Sean Hargens in his writings on ‘integral ecology.’ Integral Ecology, an offshoot of Ken Wilbur’s Integral Theory, draws upon the fact that there are different approaches to the environment – philosophical, spiritual, scientific, psychological—and each one highlights an essential component while remaining largely silent concerning other dimensions. “To overcome this fragmentation, Integral Ecology provides a way of weaving all approaches into an environmental mandala, an ecology of ecologies. It therefore allows for a comprehensive understanding of how the many ecological approaches can be brought together, informing and complementing each other, in a complex and coherent way.”<sup>78</sup> This ‘integral approach’ to architectural and planning philosophy is reflected in the science of Vastu Shastra known as the ancient East Indian ‘architectural science of time and space harmonizing humanity and nature.’<sup>79</sup> The original author of the text known as the father of ancient Indian architecture was Vishwakarma, also called Maya. The science was based on the concept of space as a dynamic element relating to cosmic and yogic vibrations. Its main intent was to create buildings which harmonized with nature and followed elaborate instructions of how climate and plant species should

be part of the design and the system of 'mandala' or modular diagrams relating to mathematical equations. The 'mandala' came from the 'Vastu-Purush mandala' or literally 'architecture-man-module.' The science combined sculpture, mathematics, material science, herbology and philosophy. The courtyard as a thermal insulator corresponded to zero or 'shunya' meaning empty space. Astronomy and especially mathematics was combined with spirituality and every building type followed equations relating to their length, breadth and height according to sun and wind orientations and the surrounding landscape. The decimal system and quadratic equations for determining form was very important. These had been invented hundreds of years earlier with the science of Vastu – several hundred centuries before Arab invaders in India introduced it to the West.<sup>80</sup> Remnants of these integrated designs are still found in many parts of Southern India, and in Bali where it spread through Hindu kings and in the far East where it was adopted through Buddhism, although in most of Northern India, subsequent Islamic invasions destroyed much of this building science till its multidisciplinary theory has been revived again in recent times by architecture theoreticians and historians.

It is also interesting to note the definition of architecture by its European 'father' 1<sup>st</sup> century B.C.'s Marcus Vitruvius. This excerpt from his treatise *De Architectura*<sup>81</sup> states: "Architecture is a science arising out of many other sciences, and adorned with much and varied learning; by the help of which a judgment is formed of those works which are the result of other arts. Practice and theory are its parents. Practice is the frequent and continued contemplation of the mode of executing any given work, or of the mere operation of the hands, for the conversion of the material in the best and readiest way. Theory is the result of that reasoning which demonstrates and explains that the material wrought has been so converted as to answer the end proposed. Wherefore the mere practical architect is not able to assign sufficient reasons for the forms he adopts; and the theoretic architect also fails, grasping the shadow instead of the substance. He who is theoretic as well as practical, is therefore doubly armed; able not only to prove the propriety of his design, but equally so to carry it into execution" He then elaborates of the different disciplines which the architect should know which includes philosophy, the laws of nature, physics, music, mathematics, sculpture, law, contracts and astronomy. In today's egotistic specializations, it is amusing to go back and look at Vitruvius's justification for moral philosophy : "Moral philosophy will teach the architect to be above meanness in his dealings, and to avoid arrogance." And his stress on the integration of landscape and building : "...for the air and water of different situations, being matters of the highest importance, no building will be healthy without attention to those points." Most telling is his justification for the reason a 'true' architect should be well versed in so many disciplines : "Perhaps, to the uninformed, it may appear unaccountable that a man should be able to retain in his memory such a variety of learning; but the close alliance with each other, of the different branches of science, will explain the difficulty. For as a body is composed of various concordant members, so does the whole circle of learning consist in one harmonious system."

It seems, therefore that the essential multi-disciplinarity in the very definition of the 'architect' in its origins in both Eastern and Western cultures has undergone immense and obvious changes through time. In practice it has undergone a process of reductionism and specialization over the last several centuries. And interestingly, time and again, in the domain of theory it has tried to reassert this multi-disciplinary interweaving – be it Mumford or Calthorpe. But so much justification is needed to reiterate this simple notion of interconnecting the network of

different disciplines that more time is wasted in the effort itself. It is sadly ironic then that a new term 'network architect' which has nothing to do with building nor landscape architecture but rather with internet electronics management steals our profession's title but captures its lost basic requirement of making the interconnections.

Can this interconnection of disciplines be brought in under the banner of the new catchword of 'ecology'? As Ndubisi suggests, incorporating 'ecology' as a way of knowing relationships forces us to inquire into the nature of cultural and scientific information to ask its meaning in terms of the inhabitants of a place, local character and the social heritage of the region. It enables a higher level of appreciation to acknowledge the intricate web of interactions between human and natural processes. "People, a rock outcrop, grasses and wildflowers all become understood as integral and interdependent parts of a larger system, at varying scales. In ecological thinking and understanding, the distinction between "I" and "They" breaks down."<sup>82</sup> In his 1999 CIP conference paper *The City and its Region or The Region and its City* Ian Wight brings up the need for dialectic and network as opposed to dichotomy and hierarchy. He writes that we live in a "highly pluralistic and multicultural society, replete with interrelationships that demand constant mediation while offering little expectation of easy resolution" such as global/local, corporate/community and nature/culture<sup>83</sup> which is why this 'network' becomes even more essential. Quoting Leonie Sanderbuck's idea of rethinking city-region planning through a dialectic perspective, Wight suggests the "crossing back and forth, of blurring boundaries, of deconstructing ('community', 'the state') and reconstructing new possibilities." This entails a shift in not just redefining the notion of 'region' with the qualities of fusion, flux, blurred edges and boundless possibilities<sup>84</sup> but also 're-placing' the profession as planner/mediator/ orchestrator at the heart of the territory/function dialectic.

Mumford's strength as a thinker lay in his holistic approach.<sup>85</sup> The most important element of his vision was that an authentic regionalism began in the experience of place that generates and must find appropriate cultural or symbolic expression. As Michael Hough indicates in *Out of Place*, technology has increasingly overcome the limitations imposed by nature. The question of the character of place is that of choice and, therefore, of design rather than of necessity. The development of a design philosophy that recognizes diversity and the differences between places is central to the maintenance and enhancement of social and environmental health since the two are linked. "Yet, while traditional vernacular landscapes usually represent the diverse character of different places, conscious planning and design tend to negate those differences."<sup>86</sup> Echoing the same concern in the chapter *Solutions Grow from Place* from Syn Van der Ryn and Stuart Cowen's book *Ecological Design*, it is reiterated how tried and tested design adaptations to place that arose out of climate and culture have been abandoned in favour of standardized modern templates "designed to be conveniently dropped into any situation and any location." These templates, requiring extravagant amounts of energy and materials, destroy landscapes wholesale and also erode local and regional differences to the extent that places and cultures are being bulldozed into a planetary geography of nowhere.<sup>87</sup> This is so true in the context of the selected site where the surveyor working for the developer in the initial proposal had produced exactly such a 'bulldozed' plan which proposed cutting off all the mature vegetation on the site, destroying the adjoining marsh and the old field stone walls present on the site and putting a 'template' of roads and single family homes. Their

explanation was that they did not have any existing data of site conditions and vegetation other than the adjoining road and rail track! Going back to the Ryn and Cowen the task of ecological design is to recreate solutions adapted to place. "Both the lessons of indigenous design and sophisticated new ecological technologies are critical to this task." Patrick Geddes' coining of 'Eutopia' (good place) and his comparisons to Thomas Moore's Utopia (derived from the Greek 'no place') summed up a fundamental tenet of the this imperative: that it makes sense to design with the forms and cultural and ecological processes already present in a location rather than to force an idealized, preconceived plan upon a site.<sup>88</sup> Only when culture and ecology become an integral part of design thinking can Eutopia be assured. Unfortunately the trend for conscious design to perpetuate the conditions of no place is as strong as the present day forces that are shaping cities and the regional landscape.

TOD cannot be and should not be a utopian vision although it can try its best to be a eutopic 'good place.' It must operate within the constraints of the market and realistic expectations of behavior and lifestyle patterns.<sup>89</sup> However, the market and lifestyle patterns can and do change as a result of both policy choices and socio-cultural trends. More importantly as mentioned in section A, site and location specificity should mark its design to function to its full potential and not just a standard set of guidelines. It is only with a sensitive layering of data from different disciplines, integrating them in a way that respects the health of the place and articulating new relationships that preserve the relevant intrinsic structure that a design can work. It is also time that the body of 'regional planners' becomes compulsorily a program of interdisciplinary subjects. In *The next American Metropolis : Ecology, Community and the American Dream* Calthorpe ascertains that in his work there is no possibility of being a specialist. Every project has a political, economic, ecological, social, technical, aesthetic and ideological dimension and while designing communities these concerns should be inseparable. "But," he writes "architects, planners, landscape architects, traffic engineers, civil engineers, biologists, developers, environmentalists, bankers and even neighbourhood groups too often seek to optimize only a segment, an issue, or an individual system." Community design must be multi-disciplinary as simple solutions come from combining problems rather than segregating them. In my own years of experience I have found this to be all too true. When an appraisal of constraints and expectations imposed by each interest group or each branch is done together and layers are created, one can look into the problem holistically. Instead what often happens in practice is that the design process occurs in a linear fashion rather than in a multi-dimensional way. Our professions, registration boards and often even senior peers stress on specialization, segregation and engage in a battle of egos. Specialized groups go through a problem separately and want a series of changes at each stage - narrowly focusing on only its own discipline and blocking out the others. At the end it leads to an incongruous solution. Instead if all the issues of the different disciplines were out on the table at the same time in the initial stage, there are better chances at compromise and exhaustive data input and a more balanced or harmonious solution can be reached.

With context to the present topic the philosophy of planning behind the TOD neighbourhood should be pro-active, done on the basis of vision, with longer foresight, a fully coordinated approach, a balance between human utility and conservation of nature and one that includes public involvement : in short, a multi-disciplinary approach. Sustainability depends on



understanding the rules that govern nature. In understanding the natural landscape come the benefits of sensible and sensitive land-use decisions as well as individually and socially gratifying benefits of enjoying our surroundings as well as the satisfaction of deeper comprehension of an 'incredibly complex, dynamic and beautiful whole.'<sup>90</sup>

It is not surprising to see that's some of the best, most co-ordinated planning has come from planners who have taken the interdisciplinary approach. While much praise is showered on architects who have successfully combined nature in their work like Lloyd, Van der Ryn etc., one of the most inspirational and successful synthesis of all the different design disciplines comes from Harvard academician and landscape architect Hideo Sasaki. He instilled the firm he founded with a spirit of critical thinking and open inquiry and pioneered the concept of interdisciplinary planning and design. Hideo insisted that every project be put in its cultural, historical, geographical, environmental, social and economic context – a concept which is even more important today than it was when he founded it.<sup>91</sup> This is not a new concept in parts of the Orient where the study of architecture, landscape, engineering, art, urban planning and interior design are fused together and inseparable and have not reached the degree of over-specialization of North America. (While quite holistic academically it no doubt leads to longer delays in implementation and bureaucratic 'smoothening' than in the western world and often ends up unresolved) This fusion was also a part of European Renaissance but it is hard to find in today's practicing arena in North America. Indeed as Sasaki himself said, "Nothing planned, designed, or built exists in isolation. We make the essential connections."

Soaring down from the poetry of theory to the prose of reality, it can be said that today the struggles facing TOD implementation is precisely due to the delay in accepting that only through increasing interconnections, interdependence and a symbiotic relation can a proper synthesis be achieved and success guaranteed. If we think of continuums or hybrids – of spaces in between- instead of opposing dualities, we view the ideas in *relationships* and not inherently value one term over another.<sup>92</sup> TOD seeks to align transit with a community's vision for how it wants to grow by creating mixed-use, denser, walkable transit villages with a 'sense of place'. The base for a framework of diverse networks can be found through the substantive and procedural theories of a holistic ecology and its 'integral' nature. This in turn informs the real inter-relationships within the design of a community linked to the larger region through transit and accepts the organicist idea of unity in a multi-disciplinary process.

### **3.Problems & Solutions to the planning of ecological neighbourhood TODs**

The factors *obstructing* the building of TODs are often outlined in several writings but the factors that keep TOD projects from *succeeding* are rarely examined. This is because usually a TOD is normally declared successful or unsuccessful without comparing the actual outcomes or functional aspects of a project to a performance standard. If the project is built, it is deemed successful, and if it is not built, that is generally attributed to any one of a variety of problems. Generally, the literature focusing on the difficulties of building TOD projects tends to focus on a limited number of barriers to success. These barriers include: local neighbours' fears new TOD will harm the character of their neighbourhood or depress property values; developers' and lenders' perceptions that TOD entails higher risks and costs; the failure of existing land-use patterns to support TOD; a lack of a market for it; difficulties of financing; poor transit design; and an unsupportive regulatory framework. These barriers suggest the range of factors that can stop a project from being built. They are less useful for explaining why many of the projects billed as transit-oriented development fall short of their potential. The solutions cited are very general too – those that would apply to any smart growth development. Moreover, although all of these barriers represent significant issues, few are specific to transit-oriented development. Most apply to any form of urban infill and as such they do not necessarily reflect the special challenges and opportunities of transit-oriented development. Finally, each interest group has its own emphasis: the design team focus on built form (e.g., dense mixed-use projects adjacent to transit) the transport agency on outcome, such as the level of internal trip capture, increased mode splits, the developer on profits, the city council on zoning change possibilities and the conservationists (if present) on reduced or no presence of construction at all.

The following is a list of the challenges facing specifically neighbourhood TODs and the solutions to the same:

#### ***(i) Changing the mind set to 'choice' not 'challenge'***

Problem: Even before the government can be convinced to adopt zoning changes what is most necessary is to give an effective view of the TOD concept to all the key players. Pro-sprawl advocates (like UCLA economics professors Peter Gordon and Harry W. Richardson and Wendell Cox who served on the Los Angeles County Transportation Commission and is a visiting professor in CNAM – a French national University) literally give presentations in the U.S senate to prove that smart growth is coercive, has no benefits and is against the American dream. One of the challenges facing TOD is that critiques of automobile dependency are sometimes accused of being “anti-automobile,” which represents this as an ideological rather than an economic or environmental issue. Quoting Littman (2002), reducing excessive automobile dependency is no more anti-automobile than healthy diets are anti-food. This investigation does not mean that automobiles are “bad,” or that governments should forbid driving. It simply suggests that communities could benefit from more balanced transportation systems and fewer market distortions that favor automobile travel. However, many conventional approaches designed to deal with auto dependence tend to focus on narrow efficiency-focused goals in

a micro and meso level - such as simply using technology to better a car's exhaust pipe - as the primary problem rather than macroscopic, holistic policies which consider a wider range of criteria. While necessary, these approaches are reductionist in nature isolating singular causes and impacts such that they are amenable to easy treatment. They do not consider the regional or greater good by reducing car usage through positive campaigning of TODs as opposed to negative campaigning of the car. To a layman, without visual aid, TOD with its verbal description, suggesting a train station and higher density might seem like run - down apartments on the proverbial 'wrong side of the tracks.'

Solution: TOD propagation needs more 'image' advertising and not just lip service. Just like the sleekness of car advertising sells, the postcard images of lively communities induced through TOD is needed at all levels. TOD as a 'community vision' has to be sold to the public instead of its being projected as a 'planner's version' by big retailers with political support. There has to be supporting of public relations and advertising to promote the desired projects<sup>93</sup> and publicizing of successful TODs. Educational programs at the local level for lenders, developers and borough levels should also be conducted. We also, unfortunately, live in a very 'visual' world where the television and computer screen are often our only medium to the 'outside.' To use this very visual bias to our advantage, one can show how the street and community can be revitalized. Visualization tools with 'before' and 'after' scenarios should be used to help making decide what people would choose. This is one of the most effective tools as is seen both in research and as I personally experienced during group meetings.

In Montreal: Flyers of the AMT sponsored Mount St. Hillaire transit stop showing a picturesque lively pedestrian scaled transit-retail stop are already being distributed in many public places and is being seen as a positive step to the agency's pro TOD stance. TOD is a concept accepted by many 'environmental' organisations and community supporters of public transit. However developers have to be made aware of this concept.

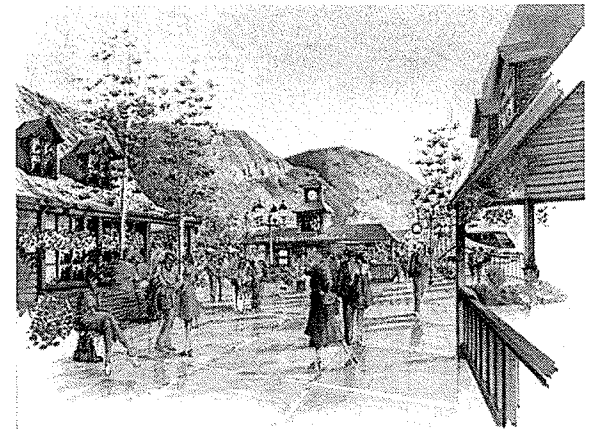


Fig.30



*Fig. 31 TOD Visualisation Tools  
From 'Urban Advantages' showing before and after scenarios.*

*(ii) Need for a common minimum program' for a working definition of TOD*

Problem: With many groups involved in TOD design, different goals are brought to the table and different strategies pursued which sometimes work at cross-purposes to one another and lack unifying policy objectives. According to the Congress for New Urbanism, a reason for the slow adoption of its principles is that it requires developers to have a 'more holistic approach to community-building than the real estate industry is currently structured to deliver.' Unfortunately, the development industry is compartmentalized into those that construct housing, retail or commercial developments, but normally not all three. Similarly, the banks adopt this strategy in term of lending criteria. In today's typical TOD project the public sector builds the transit (often with the involvement of multiple agencies), local governments try to control development, and developers look for opportunities to make profits. Transit agencies also become involved as property owners in joint development projects. All these entities-not to mention transit riders, neighbours, and the public at large-have different ideas about what the project should accomplish. This lack of clarity in the definition of TOD may exacerbate legitimate disagreements about what constitutes "good" TOD. Should TOD aim to maximize revenue to the transit agency through lucrative ground leases or seek to minimize the use of automobiles?<sup>94</sup> Should TOD be designed to maximize ridership or to help revitalize the station area? Should it try to maximize economic success or urban values? Should it only focus on the longer time taken through community involvement or should it delay this until other inter-agency hassles are settled? All of these are legitimate but sometimes mutually incompatible goals that may result in policies that work at cross-purposes to one another. And resolving them is made harder by the lack of a settled framework for assessment. In short, too often, projects are implemented without a clear vision of the desired outcomes, the different goals of the players, and the ways in which those goals may work at cross-purposes and lead to a project that,<sup>95</sup> while perhaps superior to traditional development, falls short of the potential of TOD.

Solution: One of the best ways to proceed is to get all the needs of the different interest groups at the table in the initial stage itself. After that, there has to be a balance – a give and take-of demands till a middle ground is reached. The following table indicates the usual goals attached to the interest groups.

This middle ground can be through a 'minimum common program' which tries to reach an optimal level in the more human scaled aspect of the design. This is where it is important for the designer to maintain a strong sense of integration, functionality and aesthetics. Landscape architecture can be the intermediary that binds the other groups because 'conservation, preservation and enhancement' seem to be one of the common aims that no one seems to oppose to (except usually the developer who prefers 'landscaping' – but can be usually convinced when shown that preserving 'nature' will rather increase the property's value; besides the cost of losing buildable ground area can be compensated either by shorter and better road design and higher density) Even strong anti-sprawl proponents seem more open to 'preserving nature' than they are to mass transit, fewer automobiles and higher density – the last being the major punching bag of anti-smart growth advocates. As mentioned in the previous chapter, owing to their expertise in both natural and man-made environments, landscape architects can find a balance of different needs for TOD design.

**TOD PLAYERS AND GOALS**

PLAYER	POSSIBLE GOALS
Transit Agency	<ul style="list-style-type: none"> <li>• Maximize monetary return on land</li> <li>• Maximize ridership</li> <li>• Capture value in long term</li> </ul>
Riders	<ul style="list-style-type: none"> <li>• Create/maintain high levels of parking for park and ride</li> <li>• Improve transit service &amp; station access</li> <li>• Convenient mix of uses near station</li> </ul>
Developer/Lender	<ul style="list-style-type: none"> <li>• Maximize return on investment</li> <li>• Minimize risk, complexity</li> <li>• Ensure value in long term</li> </ul>
Future residents	<ul style="list-style-type: none"> <li>• Safe, beautiful, livable neighbourhood</li> <li>• Best value for money</li> <li>• Easy access to amenities</li> <li>• Increase mobility choices</li> </ul>
Neighbours	<ul style="list-style-type: none"> <li>• Maintain/increase property values</li> <li>• Suspicious of new construction</li> <li>• Minimize traffic impact</li> <li>• Increase mobility choices</li> <li>• Enhance neighbourhood livability</li> </ul>
Local Government	<ul style="list-style-type: none"> <li>• Maximize tax revenues</li> <li>• Foster economic vitality</li> <li>• Please boroughs and constituents</li> <li>• Redevelop underutilized land</li> </ul>
Federal Government	<ul style="list-style-type: none"> <li>• Protect 'public-interest' and set limits on how federally-funded investments can be used</li> </ul>
Environment Agency/ Parks or Conservation agencies (if involved as government or NGO)	<ul style="list-style-type: none"> <li>• Preserve eco-zones</li> <li>• Minimize impact on existing flora and fauna</li> <li>• Respect flood lines</li> <li>• Pollution control</li> </ul>
Civil and Traffic engineers	<ul style="list-style-type: none"> <li>• Minimize changes to existing line works for water, telephone etc.</li> <li>• Check on road widths and curves</li> </ul>
Landscape architects, Urban planners, Architects	<ul style="list-style-type: none"> <li>• Design to meet all needs and aesthetics</li> <li>• Ensure firm profit by putting minimum man hours possible for maximum work</li> <li>• Try and please all client groups</li> <li>• Easily market the design through functional design and strong visuals</li> <li>• Meet design and construction deadlines</li> </ul>

All parties must better understand what TOD projects can and should accomplish, how those goals can dovetail with each group's own interests, and the role of each player within the larger decision-making and development process. The "jointness" in joint development has to be real and based on the recognition that in the case of TOD doing things together is better than doing them separately.<sup>96</sup>

The appointment of an intermediary TOD body is suggested by some proponents to play a key role by collecting and disseminating information on good projects and strategies, providing or facilitating funding, and working to turn TOD into a mainstream real estate product recognized by developers and lenders. Another function for an intermediary would be to develop a process for interagency coordination with the transit operator(s) who will be involved in transit-oriented development projects to ensure that such projects will both achieve the goals of transit-oriented development and move forward expeditiously.

In Montreal: Groups within the AMT are strong advocates of TOD, but while there is a much higher general acceptance (than in the U.S) to higher density, narrower streets, pedestrian friendly communities, knowledge about TODs and its need to be multi-disciplinary is by and large absent among developers, lenders, policy makers and even among most architects. The AMT's key propagation steps<sup>97</sup> include:

- Include TOD as a key element of new Regional Strategic Planning
- Conduct studies to validate benefits, market demand and feasibility
- Formalise a TOD policy
- Support local communities in developing TOD projects:
  - Technical expertise
  - Promotion and communications
  - Fare incentives
- Establish partnerships with municipalities and developers
- Ideally, transit-oriented development should become a key criteria in the prioritization of new transit projects

The involvement of different 'specialists' is a departure from usual reductionist subdivision planning but by this very broadening of the arena of interest groups and their issues of formal structure and policies, often the basic questions such as 'what constitutes a good community' or the ideal of 'people place-making' are forgotten. If the planning process is viewed in light of 'place-making' it is important that "all participants come together with their respective knowledge, and collaboratively construct a world through confirming and interrogating each other's experiences."<sup>98</sup> The interventions arise from a joint understanding of the benefits and the losses, through collaborations where "knowledge of the professionals, the place and the local people are shared, disputed, negotiated and considered."<sup>99</sup>

*(iii) Financial, demographic and zoning justifications*

Problem: While much evidence confirms that presence of a transit stop increases adjoining land values, there is still confusion about the market demand for real estate close to transit. Then again, the question arises about the demographic and income section that would prefer to live in moderate density cluster housing. Do only singles, young childless couples, lower income people and/or seniors prefer this type of development? Or do prospective homebuyers with children prefer detached low density suburban homes? As a local planning official in Washington DC noted: "People do not choose where to live to minimize their commute. They do so to improve their overall quality of life."<sup>100</sup> The environmental benefits of reduced car usage and increased transit use are oft-repeated by environmental groups. But when people buy or rent a place, the driving force is best location for available money and the long term or overall pollution and congestion that transit helps relieve is not the driving force. Very few people take the conscious decision to use transit, even if they can afford to own a car, out of idealistic reasons. They do so more out of practical necessity.

Zoning and bylaws are a very important issue while designing TODs as even with every good intention on the part of the interest groups, if zoning changes for mixed usage or higher density are not made at the city level the whole purpose of designing neighbourhood TODs faces huge impediments. Zoning is usually very strict with plot frontage, right-of ways, set backs etc. and to work within many existing codes and still create an intimate community ambience is quite a challenge.

Solution/ In Montreal : Ideally TODs should be designed with a variety of housing types, though this is not always possible due to different socio-cultural trends in different cities and regions and different zoning regulations. As discussed earlier in the preceding chapter, in order to make TODs site and city specific the demographic and income trends of that region should be studied – in this case Montreal. The following maps from Statistics Canada reveal that due to the limited space in the island of Montreal, higher density houses are not only marginalized, but they are in great demand and depending on the location, their values are also quite high. This is a very positive trend for the housing market in Montreal, where recent projects have not only started infill housing in the city's Old Port warehouses, but even condominiums constructed in low density suburbs get sold fast.

Zoning laws unfortunately have not kept pace with this demand and although those within the city of Montreal have been modified, the zoning outside the island is still very restrictive to higher density housing. One of the worst affected areas is Ile Bizard – a tiny island in the north west sector of Montreal. A lack of foresight has reduced this island into a sprawl-fest leading to clear-cutting and placing huge two-car garage single family units which have a huge price tag as well. Instead of capitalizing on the island's natural features and potentials the development pattern has taken American models and has become home to the 'nouveau-riche.' However a recent housing project 'Val-de-Bois' (in which I acted as project manager for the design) was hailed by the borough as a new positive direction leading to proposed slight zoning changes. The layout relied on increasing property value of the proposed single family



houses by designing around and preserving a large stretch of beautiful old growth maple forest (that the developer initially wanted to clear cut) and by introducing tree-scaped greenbelts to scale down the unnecessarily wide streets (as per zoning laws). Instead of clear cutting and introducing more units, the same number of units was maintained through lessening road lengths, slightly smaller plots and capitalizing on the existing woods. If the middle path is attained as mentioned in (ii) a minimum common program is reached and visualization tools as mentioned in (i) are used to convey the point, city councils are easier to convince to make effective zoning changes.

As for the environmental issue, when a TOD is planned based on functional outcome, as well as pleasing aesthetics, if it can lure buyers, the first step towards propagating 'healthy communities' has already been taken. Designers have a very important role to play in this matter because it is at the drawing board that the seed to better planning germinates. Those who are entrusted with the responsibility of design have to do their research well before commencing.

**Average Dwelling Value**  
Montreal Census Metropolitan Area, 1996

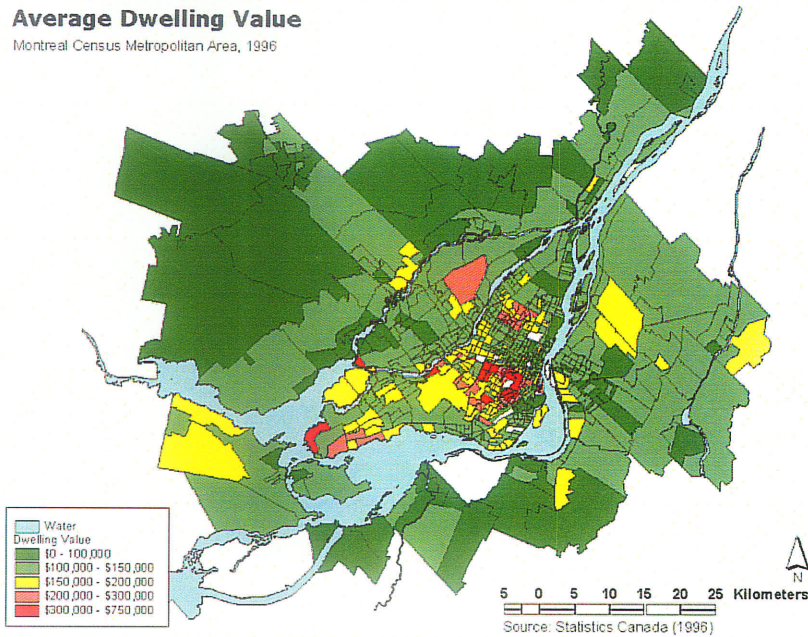


Fig. 32

**Average Family Income**  
Montreal Census Metropolitan Area, 1996

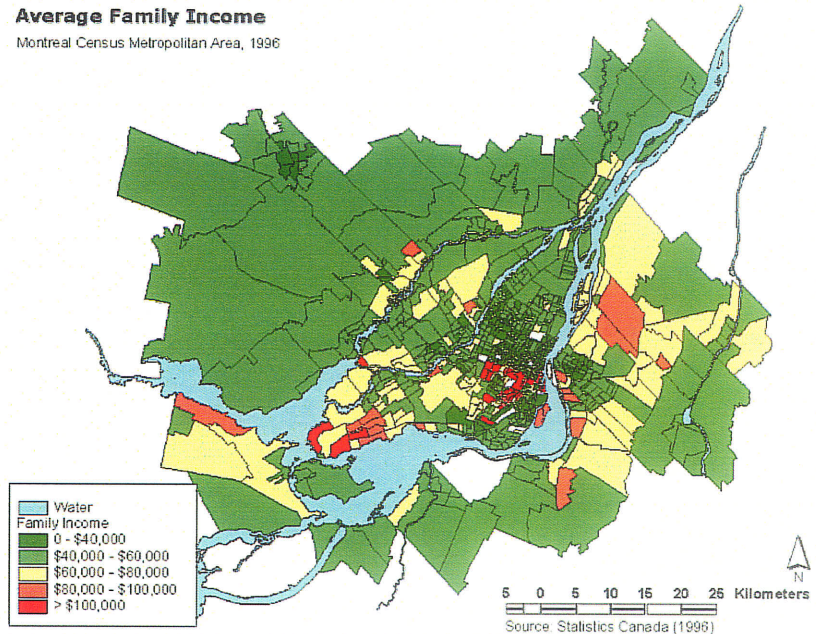


Fig.33

### Proportion of Single Family Dwellings

Montreal Census Metropolitan Area, 1996

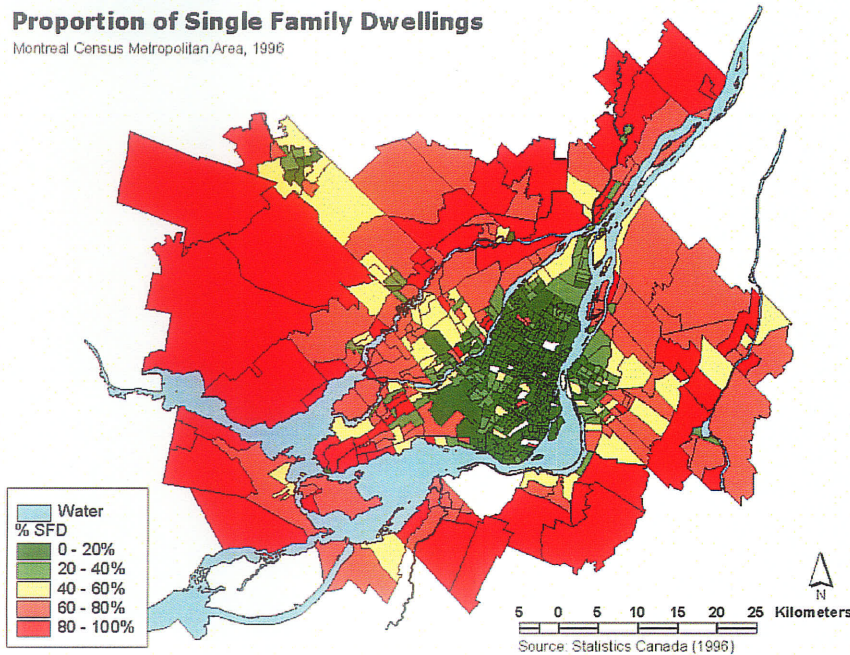


Fig. 34

### Two Person Households

Montreal Census Metropolitan Area, 1996

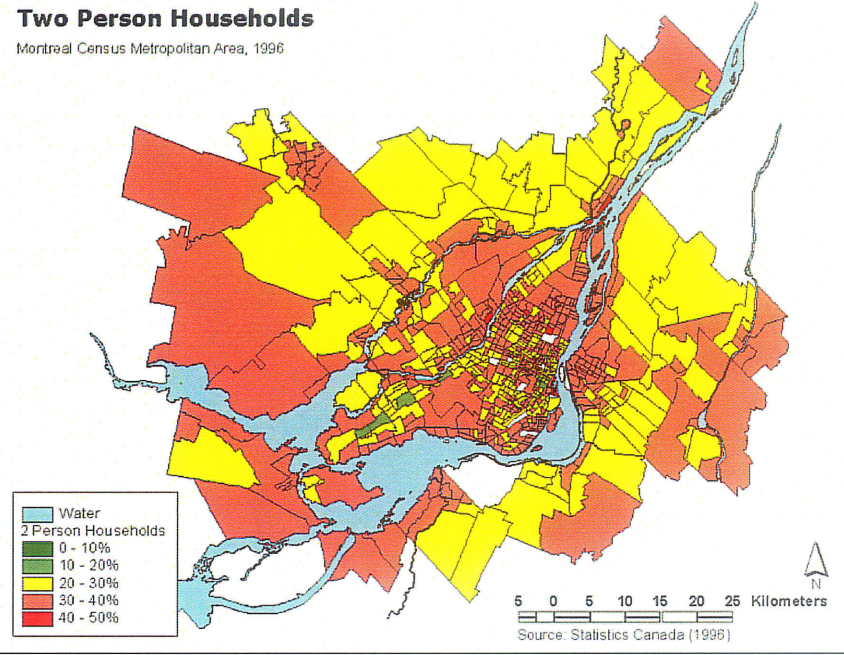


Fig.35

The maps indicate the following results:

- Apartments, condominiums and higher density buildings dominate the Montreal urban core but dwelling values for this area vary from low to high. The value seems to relate more to location than only on family income.
- Certain boroughs of the West Island (Westmount, Senneville, Bae d'Urfe) some centre north (Outremont, Mount Royal), areas in the south shore (Old Longueuil, St.Leonard, Longueuil) north shore (Laval) show much higher dwelling value and these areas have big single family home and spacious apartments.

- Two person households show a near even distribution throughout Montreal
- Single family detached dwellings (SFD) make up the great majority of the house forms outside the urban core.
- Residents in the downtown urban core – consisting more of renters – with a lower income level compared to other boroughs. Statistics of renters and income level have shown that the proportion of those paying 30% or more of their income in rent is extremely high, which is a cause for concern and once again highlights the shortage of affordable housing.

*(iv) Tension between 'node' and 'place'<sup>101</sup>*

Problem: One of the distinctive and most challenging features of a TOD from other developmental forms is its dual function of serving as both a 'node' within the regional context and a 'place' that fosters liveability and community sense its own right. The lack of achieving this balance is one of the main problems afflicting less than optimal projects. It is largely due to the conflicting interests of the various interest groups involved and the tug-of-war that hinders a sensitive balanced resolution. Transit agencies which often put in a lot of investment primarily push for the 'node' and 'density' factor while citizens and neighbours push for the 'place' factor.

For instance the issue of parking around the station is a big question. Parking is tied to a station's role as a node in a larger regional system, and there is tremendous pressure on transit agencies to provide ample parking for riders. Parking can become a political, financial, and design issue, and the goal of providing parking conflicts with place-related goals in many ways. Neighbours and future residents would want reduced station parking as it causes traffic increase and noise.(a quality of place concern) But then neighbourhoods further than walking proximity wishing to use the transit stop as a park-and-ride facility demand more parking. Since transit agencies typically charge very little or nothing to park, the cost has to be subsidized internally from other project components and the developer must then make the project profitable enough to cover these costs. Prioritizing commercial spaces and increasing housing then usually becomes the way to create profit. But here too, once again, balance becomes the key. Going for vertical expansion and the temptation to replace 'clusters' with high rise towers can often remove the very humane, pedestrian-friendly and intimate scale that a transit community is trying to create in the first place. The factors that create the 'sense of place' which is one of the most intangible qualities of a 'good' community require both carefully integrated design and detailed implementation. But mostly in the financial battle the voices of the advocates for the quality of place find a losing grip in the agenda of the 'investing' players.

Solution: For TOD to function both as a node and a place, all its components –trains, buses, cabs, cars, bicycles, pedestrians, housing, stores, community centres, green spaces – must interact with one another to allow synergy. This allows the TOD to provide location efficiency and other desired outcomes but the "process necessary to integrate these parts into a single, well-functioning unit is extremely complex."<sup>102</sup> Getting the land uses right is one of the first goal but equally important is to involve all the players and users in the planning process itself and to get them to cooperate to translate the goals into reality. The multi-disciplinary inter-connection becomes crucial to achieve the synthesis seamlessly. Also the principles of 'place-making' should be an inherent part of the design brief and the grassroots basis right from the start. Only then can its essence be continued instead of slapping it at the end after other

priorities have been resolved – when time and money might sideline it. The keyword is ‘network’ and ‘interconnectedness’ of function, form and ideology to resolve the dual purpose of ‘node’ and ‘place’ so that the duality itself merges into a unified whole and does not compete with each other.

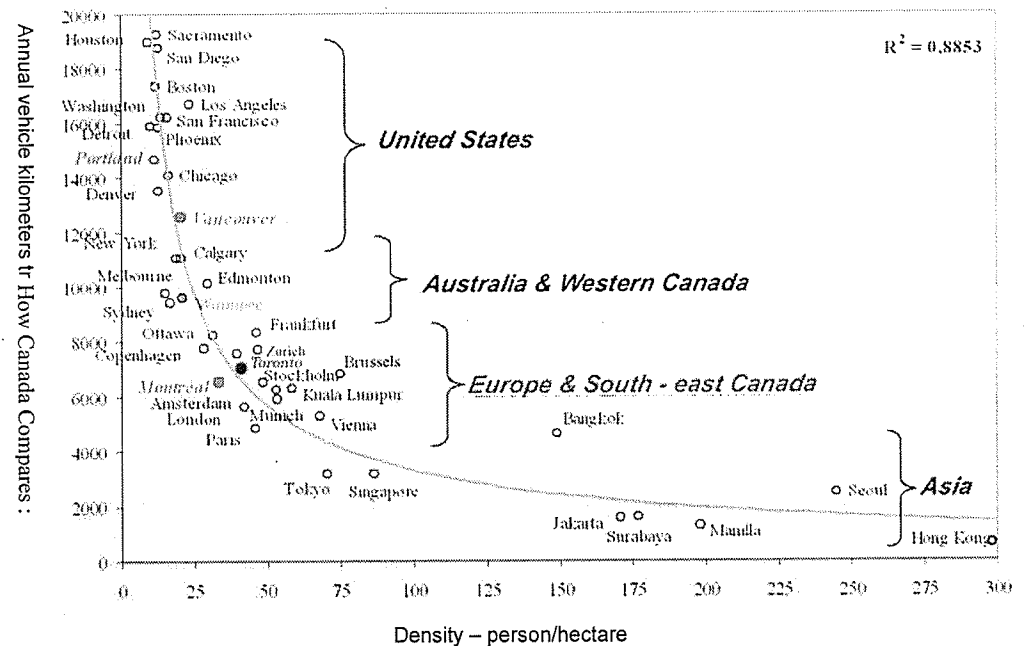
In Montreal : With context to the chosen site, this apparent tension was all too evident, not just among the investing parties but also among the community groups. The developer did not want to set aside his land for public parking, the AMT wanted as much parking as possible – to the extent of over-estimation, the Parks department wanted their own ‘node-place’ demands and the community members naturally wanted only the ‘place’ factor but did not mind the train stop as long as the vegetation was preserved. The City wanted everything – that is the housing, train station, park, river access etc. Resolving this was only possible by bringing a balance of the demands, integrating node-place as a conjoint twin not a fragmented duality and using a planning approach that followed place-making principles. I have tried to use this synthesis in the design alternatives presented in this practicum and not the one finalized by the firm because the latter tended towards the duality rather than the twin bonding.

*(v) Fostering a sense of Canadian city - regional identity*

Problem: Comparative analysis within Canada, and between Canadian and with higher urban densities, higher transit service provision and lower levels of transit use. These cities also have better utilized transit systems, have European cities in their auto and transit orientation

A comparison of transit use across world cities indicates that Canada’s public Canadian cities appear to have the potential of achieving much higher levels problem lies in the fact that in spite of showing a healthier direction than suburban model instead of searching for their own identities. Due to climatic country’s vast land area. Therefore the planning of more compact and majority of the population prefers to live as south of the country’s limit as 2002 Survey done for Transport Canada indicates that transit usage 10% of work trips in Canada are made on public transit. In some larger market is more difficult to serve effectively. Some of the more important demographics, land use, congestion levels, and the cost of car ownership.

Fig. 36. Average Transit Share of motorized world travel in 46 world cities by region 1990-1991



The other aspect is a loss of regional uniqueness in the layout of the suburbs in every province of Canada which show little of a celebration of its natural floral or landform heritage. It seems that Canadian design is most often trying to look for American inspiration. In spite of its better social qualities as a nation, higher city densities and increased transit use it continues to play second fiddle to its neighbour, like a 'goody' Ned Flanders to a loud Homer Simpson in the popular cartoon series in a suburban setting – *The Simpsons*.

**Solution:** Newman and Kenworthy's much acclaimed research in *Sustainability and Cities* (1999) indicates that Canadian cities show comparatively healthier patterns of density and transit use and would do better to capitalize on this aspect instead of copying and curbing the American sprawl fest. Population density facilitates transit usage in several ways and is one of the greatest influences on transit ridership. Population density allows for economic viability of transit service, in that the more

**How Canada Compares :**

- similar to Australia, higher than the U.S.A and lower than in Europe.

**Boardings per capita (a measure of transit use) in Canada:**

- slightly higher than Australia
- much higher than in the US
- but significantly lower than in Europe.

**Transit's mode share (percentage of travel by transit) for higher pop.cities**

- slightly higher than Australia
- higher than the US
- lower than Europe
- Smaller Canadian cities closer in mode share to U.S cities of similar pop. density

**Revenue to cost ratio (i.e recovery of more of the operating costs from fares)**

- higher than most other cities in the comparison groups, including the European cities for large Canadian cities.
- As Canadian city size decreases, revenue to cost performance decreases.

Fig.37

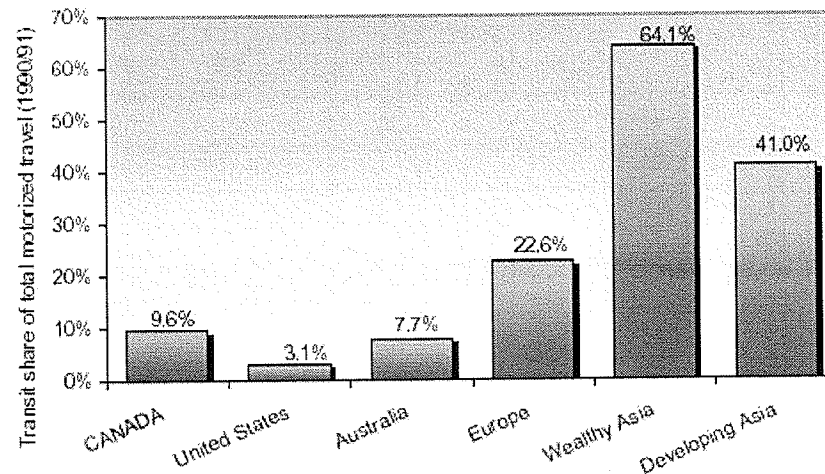
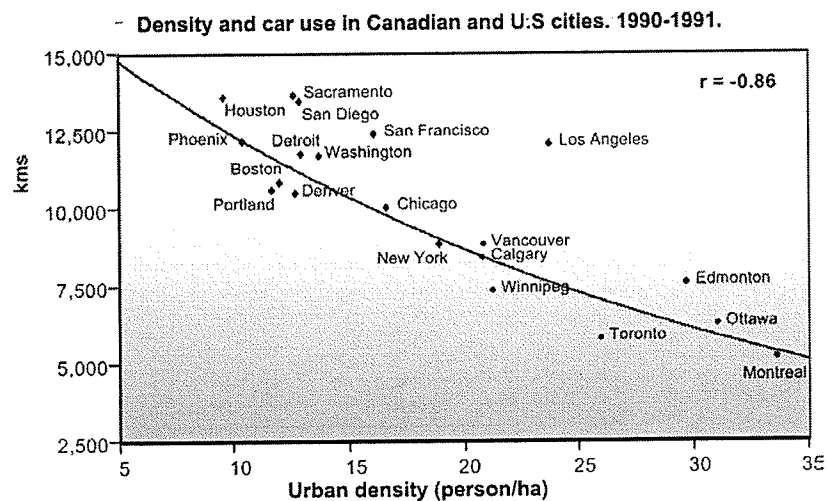


Fig.38

people who use it regularly, the better the service standards can be provided in a cost effective manner. When considering density as an influencing factor, it must be considered that good transit service is an influencing factor on population density. Compact TOD type developments can not only keep increased transit usage and lower the pollution and car accident levels down (Fowler) but also try to base the designs on the different regional identities. The natural landscape features of every province of Canada are unique yet they are annihilated in the typical template planning of the suburbs. Designing to respect the eco-regional identity of each province would stop this placeless growth pattern. The very inherent sensitivity and respect for social community services that Canada exhibits in politics, safety and civil liberty which according to every annual United Nations survey always proves it to be a better country to live in than the United States (along with the contrast exhibited quite tellingly in documentaries like Michael Moore's *Bowling for Columbine*) proves that this 'better' identity should also be reflected in the design of its residential areas.

Fig.39 Trips per province

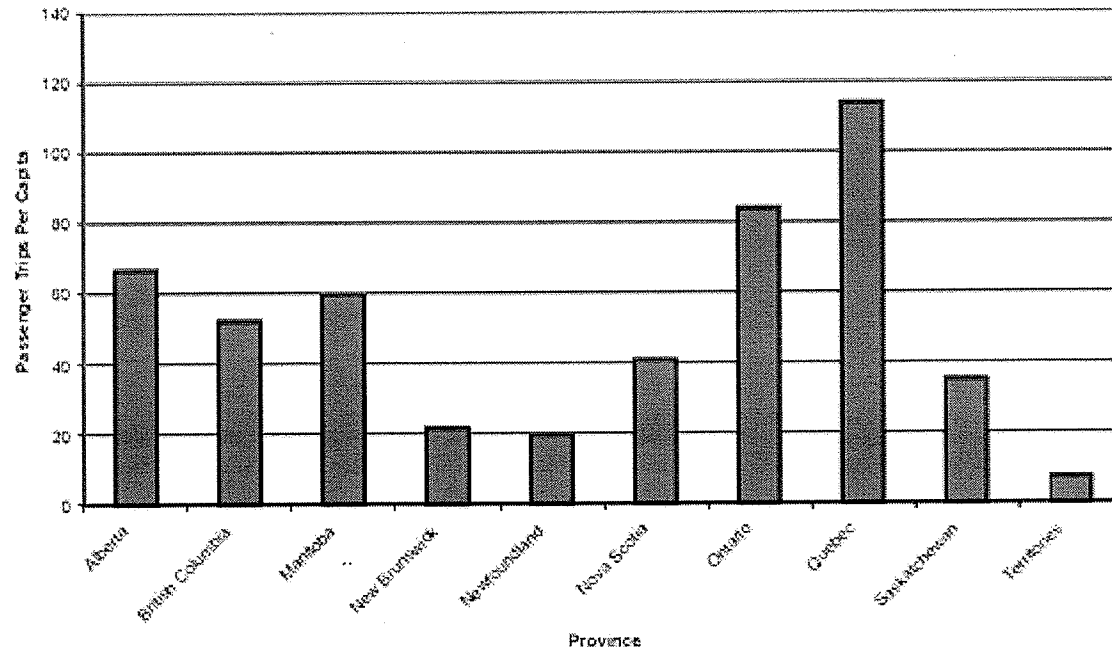
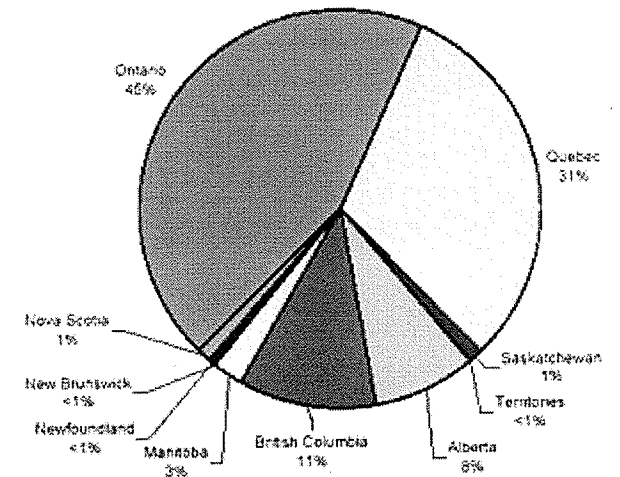


Fig.40 Trips per capita per province



In Montreal: In terms of transit usage and density Montreal has the best balance among Canadian cities. Also, Quebec has higher trips per capita trips than Ontario due to the lower cost of monthly passes in Montreal relative to Toronto although Ontario services more passengers. Yet Montreal developers, and especially those on the West Island, not only copy the layouts but even the house design from American models and websites. They even proudly market them as 'Las Vegas' and 'Florida' prototypes, the latter gaining increasing popularity even among buyers. In fact the original plan for the Cheval Blanc site which was thankfully stopped by the Green Coalition was to have 'Miami style' highrises upto the water's edge. In this search for 'style' the developer accepted the TOD model partly because while marketing it the other interest groups and we designers were able to show that its human scale and landscape integration could relate to 'Italian' charm which struck home to the developer. Regional political identity needs no further instilling in Quebec. But this regional identity has to take root in its suburban design too. The sugar maples and other indigenous flora and fauna are as much a part of Quebec's regional identity as its political views. Much greater community action is needed to preserve this heritage too – the common provincial identity that transcends language, politics and ethnicity.

#### **4. Guiding Design Principles for planning an ecological neighbourhood transit-oriented-development**

Based on the analysis in the preceding chapters, the framework of the guiding principles of designing an ecological neighbourhood TOD are presented here. Before proceeding to the design guidelines and the detailed site analysis in Part II of this document the following givens are taken based on the project site:

- A. Out of the total 85 acres of the 'Rapides-du-Cheval-Blanc' site 40 acres were reserved for construction purposes. The site is along a river and forested parkland. This fits both Calthorpe's and the Congress of New Urbanism's guideline of the 30-125 acres size range for both an inner urban/suburban pocket and an outer suburban TOD.
- B. The AMT 'Deux-Montagnes' line commuter train track runs along the south side of the site. Also, as per the borough of Pierrefonds by-law no. 1050 enacted in 1989 a future train station was proposed to be built near the site
- C. As per amendment no.1 made to the by-law 1050 in 2000 the future use of the site was seen as a multi-functional mixed use zone which would include dwellings of high, average and low density, commercial use, urban parks and public and institutional use

This clears up the issue of 'what could be designed in the future given favourable conditions of zoning, transit line, size etc.' to 'what can be designed at present'. The design guidelines relate to the following principles of transit-oriented-development:

- Organize growth on a regional level to be compact and transit-supportive
- Place a mix of commercial, housing, recreational and civic uses within walking distance of the transit stop
- Encourage a mix of residential types and costs
- Create pedestrian-friendly street networks which directly connect local destinations; accessibility choice by foot, bicycle, car is present
- Preserve sensitive habitats, wetlands, riparian zones, and high quality open space through compact development
- Preserve/enhance distinct character of the place
- Make public spaces the focus of building orientation and neighbourhood activity
- Encourage infill and redevelopment along transit corridors within existing neighbourhoods

Although nothing extraordinarily novel, these principles simply reflect the timeless goals of urbanism in its best sense. They are principles which over time "have created our most treasured man-made environments and which, although constantly evolving with culture and technology, remain true to the human dimension and our deepest social aspirations."<sup>103</sup> The divergence lies in their fundamental difference from the ideas that have guided planning for the last two generations.



In the last decade a number of books, community organizations, research papers and City council publications have sprung up recommending the “Best Practices” or guidelines that help to create a transit community. For cities which have or are seriously considering adopting TOD principles (such as a recent TOD publication for the City of Calgary, Alberta) these resources are very useful. But often, at the design end of the table if the guidelines are not considered, either out of lack of time for research, or conversely followed as yet another template without regarding site specific characteristics, the final outcome will not be the optimal solution. To create the framework of the design principles in this chapter, it is important to mention that the following references were considered:

Books:

- Transit Villages in the 21st Century*, 1997 by Michael Bernick and Robert Cervero.
- The Next American Metropolis: Ecology, Community, and Planning* 1994 by Peter Calthorpe.
- New Urbanism: Comprehensive Report & Best Practices Guides*, 2002 edited by Robert Steutville and the Staff of New Urban News
- The New Transit Town : best Practices in transit-Oriented-Development*, 2004 by Hank Dittmar and Gloria Ohland
- Landscape Ecology Principles in Landscape Architecture and Land –Use Planning*, 1996 by W. Dramstead, J. Olson and R. Forman.
- Eco-City Dimensions : Healthy Communities, Healthy Planet*, 1997, edited by Mark Roseland

Comprehensive TOD Publications & Best Practices Documents:

- Statewide Transit-Oriented Development Study - Factors for Success in California*, 2002, California Department of Transportation,
- Transit Supportive Development Guidebook*, 2001. Mid-America Regional Council (MARC),
- Creating Transit Station Communities in the Central Puget Sound Region: A Transit-Oriented Development Workbook*. 1999 Puget Sound Regional Council
- Planning for Transit-Friendly Land Use: A Handbook for New Jersey Communities*, 1994, New Jersey Transit
- Transit Supportive Land Use Planning Guidelines*, 1992, Ontario Ministry of Transportation, Ministry of Municipal Affairs
- Creating Transit Station Communities in the Central Puget Sound Region: A Transit-Oriented Development Workbook*, Seattle, WA, 1999, Puget Sound Regional Council,
- Community Design & Transportation: A Manual of Best Practices for Integrating Transportation and Land Use* (2003) Santa Clara (California) Valley Transit Authority
- Development and Rapid Transit Stations*, 2002, City of Toronto
- The Role of Transit in Creating Livable Metropolitan Communities*, 1997, United States Federal Transportation Authority (FTA)

Community Groups and forums

- Montreal West Island Ecoplan

Montreal Green Coalition

Professional Associations and Interest Group Publications

*Creating Transit Supportive Land-Use Regulations*, 1996, American Planning Association.

*Transit Oriented Development: Moving from Rhetoric to Reality*, 2002. Brookings Institution Center on Urban and Metropolitan Policy and The Great Station Foundation,

*A New Planning Template for Transit-Oriented Development*, 2001, Mineta Transportation Institute

*Light Rail Transit Phoenix, Arizona: Economic Development along the Planned Light-Rail Line*, 2001, Urban Land Institute.

*Ten Principles for Successful Development Around Transit*, 2003

Web-based Data Sources and Organizations promoting Transit Oriented Development and Smart Growth

Center for Transit Oriented Development [www.reconnectingamerica.org](http://www.reconnectingamerica.org)

Smart Growth Network [www.smartgrowth.org](http://www.smartgrowth.org)

Congress for the New Urbanism [www.CNU.org](http://www.CNU.org)

Transit Villages [www.transitvillages.org](http://www.transitvillages.org)

Urban Land Institute [www.uli.org](http://www.uli.org)

**Principles for an ecosystem approach to planning**

The ecosystem approach to planning depends on the fundamental recognition of the mutual interdependence between social, economic, human, non-human, 'ecological', and political objectives and their implications on land-use decisions. Instead of a hierarchy based system, it relies on an interconnected network of balanced relationships. From a TOD perspective, much of its interdisciplinary emphasis can be integrated by embracing the parameters of the ecosystem approach in its guidelines. The following principles are inspired from the work of the Crombie Commission and other later experiments in southern Ontario but echo the alternative planning approach that can relate to other Canadian urban areas.<sup>104</sup>

***An interdisciplinary approach to information:*** In traditional planning methods, demographic, economic and social information has been stressed upon mostly without assessing ecological capacity or how efforts to satisfy anticipated socio-economic demands may affect ecological functions. In the ecological planning approach there is a broader scale of information gathering, stronger integration of information and greater cooperation between information providers, both amateur and expert.<sup>105</sup> It also acknowledges that just knowledge alone will not erase uncertainty in the planning process and important information will continue to become available as the process expands. The challenge is not to find just the fairest and most reasonable balance among ecological, social and economic objectives but to recognize that they are all linked and must be pursued together.<sup>106</sup> The approach to development should be

precautionary but positive to not just avoid further damage but also to reduce stresses and enhance the integrity of systems and communities.

**Base planning units on natural boundaries:** In conventional planning a politically –oriented hierarchy of smaller-to-larger planning units are used whose boundaries rarely recognize ecological factors. In the ecosystem approach this hierarchy is replaced with “nested units that are established at least in part to respect ecological functions and follow natural boundaries.”<sup>107</sup>

**Design with nature:** Planning human activity and occupation should be part of the larger environment and the limits of resource availability and ecological resilience should be respected not exploited. But in typical template planning, open land has been looked upon as a blank slate ready for human manipulation and consumption. Complex ecological processes have been replaced with engineered systems which are linear rather than cyclical in nature. As an alternative approach, ecological planning and design favours more creative solutions that are based on biological productivity of natural systems, demand management to reduce unnecessary service cost and integrated solutions in planning which benefit both human use and natural processes.

**Consider multi-scale implications:** Instead of the focus on short term and local goals that defines conventional planning, in ecosystem planning there is complete recognition of the necessity for the ‘working together’ of the different scales of the process. Local successes will not work without larger regional and global improvements, so the overall picture takes a longer and broader perspective which includes off-site, macro-regional, cross –boundary, inter-generational<sup>108</sup> and an interdependent view and not just the local area.

**Facilitate cooperation and partnerships and encourage inter jurisdictional decision making:** In conventional planning land use decisions are mostly made in a technocratic exclusionary manner after discharging any legal obligation for perfunctionary public involvement. Also, the process commonly occurs with separate planning and management authorities acting in isolation from each other. In contrast, the ideal aim in the ecological approach to planning is for effective and open involvement of the widest range of stakeholders and interest groups. The fragmentation of decision makers is replaced by encouraging new planning units, agencies and methods that promote integrated, inter-jurisdictional dialogue. (Naturally this is easier said than done, however it still serves as an ideal which needs stronger application and is by no means an unrealistic goal.)

**Initiate long term monitoring and adaptation of plans:** Ecosystem planning and similar approaches are exercises in social learning with no finite answers. It is a cyclical and iterative process, dedicated to learning from experience. Communities and proponents have to monitor their progress to provide a reliable basis for making adaptations to changing conditions. Ecological planning should be linked with other aspects of democratic change, social learning, community building and environmental knowledge.<sup>109</sup>

#### **Principles for Place-Making<sup>110</sup> :**

As TODs serve both as a node and a place, it is important to look into the elements that quantify a good place. While the ‘sense of place’ is an intangible quality which ultimately relates to careful design as well as individual perception and feeling of belonging and identification, it still relates back to what in essence makes a ‘good liveable, viable, community’. Designers

have to induce the simple universal human experience of pleasantness and belonging that relate to our psychological and physical comfort while designing the TOD – a necessity aimed for while designing any project for that matter – but which essentially comes down to making better choices during the design process. In essence all the previous design guidelines relate back to making a workable ‘good place’ but it makes sense to overview some of the quantifiable aspects that should be kept in mind during ‘place-making’:

**People places:** To make places for people that can be enjoyed and well used, there must be safe, comfortable, attractive and varied.<sup>111</sup> They should offer choices, be distinctive and vibrant to allow opportunities for meeting people, watching ‘the world go by’ and playing near the street.

**Enrichment of the existing:** New developments should enrich and enliven the existing and surrounding urban places. They should distinctively respond to and complement the surrounding setting through the series of scales – from street, neighbourhood, city to region.

**Connectivity:** Physical and visual connections between different areas of the site and its surroundings as well as a continuity of unifying elements is essential in creating connectivity between the parts and whole of a neighbourhood. The choice of easy access by foot, bicycle, public transit and car should be present at every opportunity.

**Working with the landscape:** A harmonious integration between the natural and the man-made environment is essential in the search for a sense of place. The unique character of every site – climate, landform, views, vegetation, historic remnants – should be maximized upon for defining a distinctive identity.

**Mix of uses and forms :** The best way to break ‘sameness’ and monotony and provide amenities for diverse activities in a compact area is to play with varying building forms, densities, uses and strive for a ‘unity in diversity.’

**Embracing change:** Acknowledging that every place responds to future changes in economy, demographics, lifestyle and growth patterns, a neighbourhood cannot try to be an island immune to the process of change. This sense of non-acceptance to change is what causes residents to have a psychological bias and suspicion towards any new development and indeed if certain changes threaten the overall natural and man-made well-being of a place and is driven only by sheer mercenary profit, residents should oppose them. But when the design of neighbourhoods keeps room for flexibility in the functional use of properties, public spaces and starts with compact area usage and street networks to permit expansion (both horizontal and vertical and especially in new growth areas if the available land allows so) it makes way for a continuum of the basic footprint for place-making that it has incorporated. This setting of long term goals, paying attention to the future effects of planning decisions and incorporating mechanisms which are flexible enough to respond to unanticipated problems and opportunities is an underlying basis for the ecosystem approach to planning as well.

### **Design Guidelines for Transit-neighbourhoods**

#### ***(i) Land use:***

The underlying principle for proper land use is to organize growth on a regional level to be compact and transit-supportive. The distribution of TODs in redevelopment, infill and new growth areas must be balanced and analyzed from a regional perspective in environmental, economic and social terms. Regional land use governance is critical in applying land use patterns that create viable transit systems, open

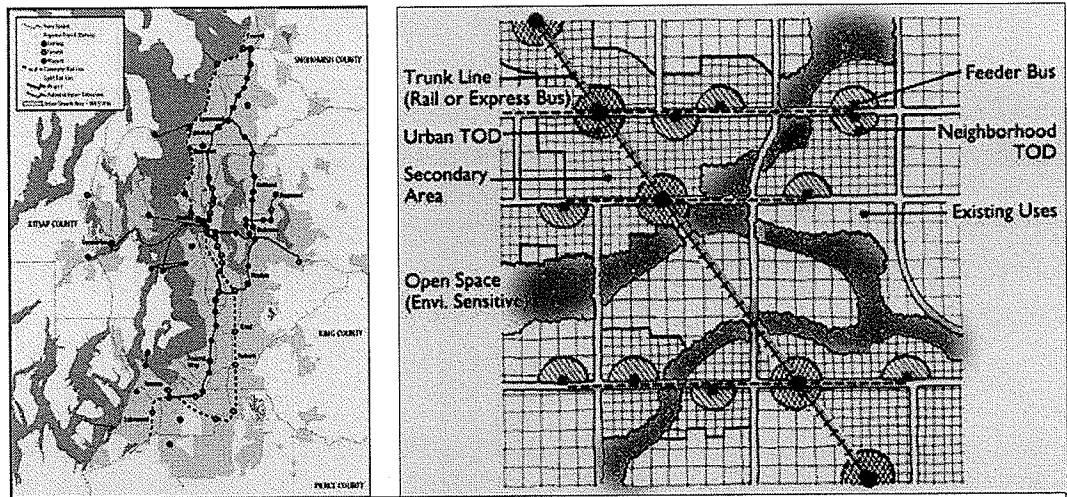


Fig 41, Fig. 42 Transit regional corridors

still contains the universal assertion of human scale, the psychological need of increasing choices and working within environmental limits.

**(ii) Location, Proximity, Size and Boundary**

Location :The location of TODs should maximize access to their core commercial areas from neighbouring areas without relying solely on arterials. Those with major competing retail centres should be spaced upto a minimum of one mile<sup>113</sup> apart and distributed to serve different neighbourhoods. When located on fixed rail transit systems, their location should allow efficient station spacing. TODs can be located in Infill Sites, Redevelopable sites or in New Growth areas. Infill sites are vacant parcels surrounded by existing urban development. Redevelopable sites are those that can be intensified or revitalized with need-based uses and linked by transit. Underutilized parcels can get new uses that allow them to function as walkable, mixed-use ditricts. Existing uses which are complementary, economical and physically viable should be integrated into the form and function of the new

space networks, inner city reinvestment and a vital regional economy.<sup>112</sup> Using transit expansion as a framework in organizing at the regional scale, inner city areas and older neighbourhoods can be intensified and revitalized with sensitive development which concentrates on creating pedestrian oriented community spaces and affordable housing. In new growth areas, the post World War II codes that exist based on segregation of uses, circulation systems designed only for the car and loss of public orientation to community parks, buildings and gathering spaces have to be revisited and changed. The TOD guidelines are a base on which the unique character and special conditions of each place can be modified, enhanced or expanded – but the undercurrent of every specific space

**Transit supportive land uses**

- Multi-dwelling residential
- Affordable housing
- Small lot single-family
- Offices
- Health care facilities
- High schools and colleges
- Daycare facilities
- Cultural institutions
- Athletic/recreational facilities
- Health Clubs
- Personal services
- Retail shops
- Restaurants
- Grocery Stores
- Coffee shops
- Local pubs
- Outdoor cafes
- Financial institutions
- Dry cleaners
- Neighbourhood oriented businesses

**Non-transit supportive land uses**

- Automotive sales & display
- Automotive services & repair
- Car washes
- Large format/warehouse retail
- Large format food stores
- Drive-in/drive-through services
- Warehouse distribution
- Outdoor storage
- Sports stadium
- Funeral homes
- Large format faith facilities
- Parking lots
- Low density single-family housing
- Low intensity industrial uses

neighbourhood.<sup>114</sup> Existing low intensity and auto-oriented templates should be modified or linked with a continuum to be consistent with the TOD's compact pedestrian-oriented character. New growth areas are normally larger undeveloped land on the city's periphery. They may be large enough to create a network of urban and neighbourhood TODs and its surrounding secondary areas and should be planned in coordination with proposed extensions to a transit network in an urban growth boundary. However, care should be taken that such growth is not used to justify "leap frog development or degrade sensitive environmental habitat or valuable agriculture lands."<sup>115</sup> Constraints arising from topography and sensitive habitats can be harmoniously integrated into the design by configuring streets and clusters to relate to them. Development with a fundamental tenet underlying the design must be to limit sprawl by clustering development.

Size, boundary and proximity: The spatial extent of a TOD project should be defined by the maximum comfortable walking distance (400 metres or a quarter mile relates to a five metre walk) to the existing or planned transit stop or station area.<sup>116</sup> People are more inclined to use transit if it is within a convenient walking distance from where they live, work or shop and if direct pedestrian access exists.<sup>117</sup> Moderate to higher densities increases ridership and the spatial extent of a TOD ensures that such riders are within an easy walking distance of the transit station. In Section A, in the definition of transit-oriented-neighbourhoods the sizes of TODs in different context have already been outlined. To allow a basic mix of uses, the TOD area should be a minimum of 40,500 sq. mts. (10 acres) for Redevelopable and Infill sites and 121,400 to 161,875 sq. mts (30-40 acres) for new growth areas. In general the 400 – 600 metre proximity of residential and/or community parks and buildings to the train station makes transit the most convenient and attractive mode of travel. Parcels within the average 10 minute walking distance of the stop should be included if direct access by a local street or path can be established without using the arterial. Topography and other intervening features are important area determinants. Symmetry is not the issue, accessibility and integration is. For oddly shaped or off-centred parcels the extent of the site boundary should still accommodate upto 600 metres where possible.

Transit supportive uses: When new uses are introduced to a mixed use site (assuming that mixed use zoning here is either an ideal or existing, the latter in the case of the R-C-B site), such uses should be transit and pedestrian supportive. Transit supportive uses provide opportunities for multi-purpose trips that can be made as a pedestrian. Medium to high density residential, offices, high schools and colleges (in larger areas) are significant transit supportive uses. Appropriate retail, restaurants, personal service and civic functions will support these major uses and generate activity in both peak and off-peak hours. Uses which rely solely on auto trips are not likely to contribute to pedestrian activity and should be discouraged. Non-transit supportive uses are those that require low density development and large parking lots such as wholesale stores, warehouse storage, car dealerships, auto service centres or large regional sports fields. Intensification and redevelopment should be balanced though with a sensitivity to protect existing neighbourhoods and to the problems of gentrification.<sup>118</sup> The following is a list of transit supportive uses and non-transit supportive uses.

*(iii) A balanced mix of uses :*

This follows the basic principle of providing a mix of commercial, housing, recreational and civic uses within walking distance of the transit stop. A mix of residential, retail and supporting services in station areas can generate transit trips throughout the day for a neighbourhood TOD. The central core area can have convenience retail and services, small offices, day care and civic amenities such as libraries or post offices. Transit riders can access convenient services while at the station. Residents and visitors can continue a variety of activities in off-peak times. A certain minimum proportion of uses is essential to encourage pedestrian activity and to give economic incentives for developing mixed-use patterns. The proportion of uses is based on site area, not density or building density.<sup>119</sup> The minimum mixed use requirement of all neighbourhood TODs is housing, retail and public spaces. Employment uses depend on market, urban location and demographics. Public use areas should include land devoted to parks, plazas, open space and public facilities.<sup>120</sup>



Fig 43

It is necessary to clarify the mix of land uses and densities in a community or site-specific planning process as it is very important to respect the context of the site in relation to existing surrounding neighborhoods and natural features. Site related issues such as market demand, transit service frequency, topography, existing infrastructure, road accessibility have to be addressed even before the design process begins. While vertical mixed use buildings traditionally contribute to a healthier pedestrian environment, there are practical limitations in their implementation in current real estate practices. Therefore vertical mixed use should not be solely relied upon, rather basic horizontal mixed use should be followed as far as possible. The mix of uses includes the mode of transport as well. While emphasis is definitely on the train, bicycle and foot, the practical reality of car usage is integrated in the circulation system in a way that it is not the exclusive and dominant way of getting around.

*(iv) Development Density :*

Development densities should relate to the particular catchment area and surrounding community. Minimum residential densities around rail stations should be high enough to support higher frequency transit service and to foster lively neighbourhoods. It is usually recommended to have higher densities closer to the transit stop and medium to low on the outer edges of the TOD radius. However this should not be the sole guiding form, as surrounding neighbourhoods and/or natural features will also determine appropriate building concentration. Residential density is discussed in more detail in the guidelines for housing. Buildings that are grouped together, or clustered, offer a “one-stop” opportunity to conveniently access a variety of destinations on foot. Clustered buildings can frame distinct character areas and create an easily navigable walking environment.

***(v) Ecological identity & preserving natural habitats***

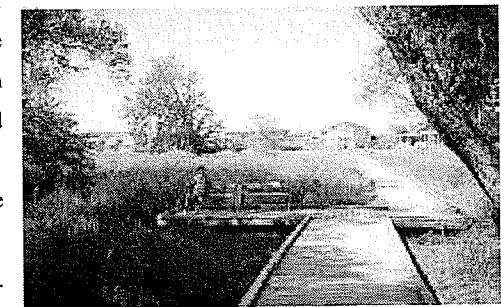
One of the most dominant features that gives a community its 'sense of place' is the inherent landscape of the site. (In the case of the R-C-B site, it is definitely its greatest defining identity) It is imperative that during the planning process of new neighbourhoods, major creeks, riparian corridors, wetlands, slopes and mature vegetation be conserved and protected as open space amenities and harmoniously incorporated into the design of the TOD and its secondary areas. These resources should be treated as key unifying elements rather than pushed to edges and made into residual spaces. Fencing and piping of creeks and woods should be avoided and channelization should be minimized.<sup>121</sup> The principles of landscape and regional ecology and the elements of 'patches', 'corridors' and 'matrix' should help in guiding the spatial language of ecological viability of a given space. In light of continuing habitat loss and irreversible fragmentation, providing landscape network connectivity becomes key in facilitating movement through corridors and stepping stones for different species.<sup>122</sup> It is also essential to maintain the ecological integrity of river corridors, which are of exceptional importance in a landscape, in spite of the pressure of intensified human use and this should be treated as both a challenge and as an opportunity. While designing built areas in clusters it is important to take care of the connectivity of patches. Small patches or nodes along an existing network are effective in providing habitat in which species can rest which in turn helps in their survival rate and increases their dispersion in the network. When placing new buildings on the site care should be taken to not cause unnecessary breakage of existing corridor systems. Bringing building activities into sensitive areas can either altogether destroy them with insensitive clearing, changes in slope and by dumping pollutants or cause invasion of exotic species into previously undisturbed large forested patches.

Public access to open spaces should be allowed through trails and bicycle paths in a planned manner such as not to disturb sensitive areas but to encourage linear public movement along edges and linking community facilities to these paths.

More efficient water treatment and re-use at the scale of neighbourhoods and communities are made possible with new technologies.

On site wastewater treatment facilities which use biological systems to reclaim water should be the first preference where possible.

The reclaimed water can be used for on site irrigation. While slopes in sensitive areas should be maintained or enhanced and integrated while designing the buildings, where possible swales and surface systems instead of storm drains should be used to recharge site ground water.



*Fig 44, 45, 46*



There are instances (such as Village Homes in Davis California) where the storm water run off is collected into a creek system along which landscaped walking paths exist and small detention areas also serve as children’s play spaces. As Joan Nassauer points out in her article *Messy Ecosystems, Orderly Frame*, in the everyday landscape, rather than simply design only to enhance ecological quality or even to express ecological function as form, we must “design to frame ecological function within a recognizable system of form.”<sup>123</sup> When ecological function is framed by cultural language, it is not obliterated or covered up or compromised; rather it is set up for viewing so that people can see it in a new way.<sup>124</sup> Likewise, existing patches or corridors on a site can be incorporated into the design as an option to be enjoyed and celebrated. Rather than work against the conceived culture of viewing neat orderly ‘naturalness’ that is mistaken as an indication of ‘ecological’ quality as opposed to the ‘untidy unkempt wilderness’ which is misinterpreted as lack of human care – while designing one should acknowledge the distinction between ecological function and natural appearance. Only then can one critically analyze the cultural language of naturalness and use it as a language to intentionally communicate ecological function.<sup>125</sup> When landscape patches and corridors are brought into the building clusters, certain signs of human ‘care’ can become a tool not to resort to traditional gardening forms but rather a means for adapting cultural expectations to recognize new landscape forms that include greater biodiversity. A few culturally accepted signs of ‘taking care’ can make such patches look more familiar and help residents to associate ‘messy-looking’ landscapes with strong inferences that they are part of a larger ecosystem pattern. When it comes to the ‘landscaping’ of streets, trees used on public and private lands should be indigenous, hardy and adaptable to local climate. Streets lined with shade trees, parking lots which have carefully integrated trees and buffers, small and frequent pocket parks and preserved heritage trees and green corridors all contribute to compact neighbourhoods more liveable.<sup>126</sup>

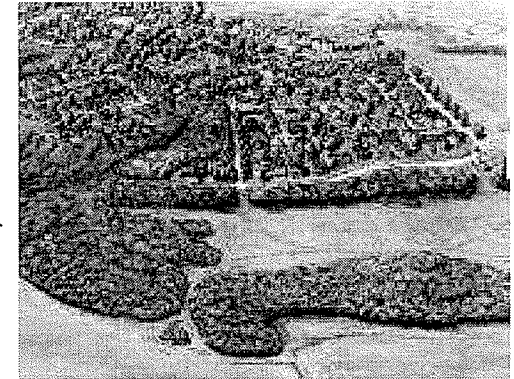


Fig 47

In addition to preserving ecological identity, another important aspect is microclimate design. Building orientation, climate responsive clusters with courtyards or central green spaces for thermal buffering or clear glass for daylighting, can add interest and safety for pedestrians and avoid the negative microclimate impacts of reflected glare and wind tunnel effects.<sup>127</sup>

**(vi) Parks, Plazas, Greenways**

This guideline relates to the TOD principle of making public spaces the focus of building orientation and neighbourhood activity. Parks and plazas should be treated as fundamental elements of liveable and enjoyable high density communities. They should provide a public focus for each neighbourhood. They should act as informal meeting places, recreational activity centres, children’s play spaces and picnic spots. They should reinforce and liven retail and residential areas. Therefore it is important that they are located next to public streets, residential areas and retail/community buildings – even act as focal points. Parks should not be formed in residual areas, oddly shaped edge pockets that could not be suitably used, in buffer zones to

surrounding developments or as linear separators between buildings from streets. Instead central or adjacent locations to residential and commercial buildings and direct visibility are preferable. Their sizes should meet on-site population needs and minimum 5-10% of the site area.<sup>128</sup> Small or frequent pocket parks dispersed throughout the neighbourhood with eyes to watch from buildings and streets are great play areas for children. To preserve the compact, mixed use character of the TOD, larger parks or playfields are better located in the secondary areas. If surrounding neighbourhoods or an existing school within a walkable distance already have playfields for soccer or baseball they can be shared by residents of the TOD instead of these being replicated and competed against. Since many cities now plan for large 10-30-acre community parks, it is important that they are strategically placed to provide access to the broader community along both street and bicycle networks.

The transit plaza or the modern day take-off of the 'village green' should be treated as a prominent civic element in the core commercial area. Recreation, community or retail buildings should normally surround the plaza area. Its finished treatment should be of hardscape material like stone or brick and benches, streetscape details etc. should be around it to make it a pleasant people-watching area. The transit plaza should have drop off zones in its adjoining streets. Clear pedestrian access and texture or signage detail should demarcate the travel path of users as they commute between the plaza to the station at points where they cross roads.

*(vii) Street & Circulation systems:*

All circulation systems should embody the general aim of creating pedestrian-friendly street networks which directly connect local destinations and accessibility choice by foot, bicycle, car is present. Street design for a transit-oriented-neighbourhood should be simple, direct, memorable and interconnected.<sup>129</sup> Street networks should not be hierarchal and circuitous but rather should provide direct and inviting routes to local destinations. The streets should converge to transit stops, core commercial areas, schools and parks. Where possible, the streets should frame vistas of the core area, natural features or parks.<sup>130</sup> Neighbourhood streets should be narrow to slow down traffic (around 15 miles per hour) Travel lanes are kept to a minimum to allow for space to be kept for landscape design, bicycle paths and on-street parking. Calthorpe recommends travel lanes as narrow as 2.7 to 3 metres (8 to 10 feet) In Montreal minimum 6metres for a two way street and 4 metres for a one way street is usually recommended by urban design and landscape firms practicing new urbanism guidelines. They

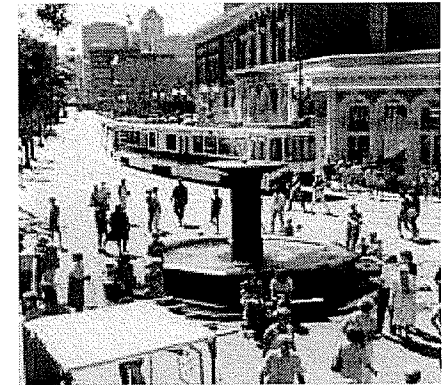


Fig 48, 49, 50

also recommend 4 to 5 metres as the minimum width of a greenbelt divider in order for shade trees and grass to grow well. Street connections should be designed to keep through trips on arterial streets and local trips within the neighbourhood. An arterial street alone should not be the only route to and from the different land uses of a TOD. This is usually what happens in the tortuous cul-de-sac street design and should be avoided. Calthorpe points out that curved streets and some cul-de-sacs become necessary in the event of topographical features or sensitive natural resources. Instead of the usual system of 'collector' streets that focus traffic and direct it to the arterial, 'connectors' are more preferable. This is due to the fact that 'connectors' provide multiple routes to local destinations and help distribute traffic. Connectors should also be aligned along the edge of parks or open scenic spaces to enhance the character of the route and give greater shared public access to the view instead of 'privatising' such scenic views for only those residences which are adjoining them.<sup>131</sup>

Bicycle and pedestrian paths parallel to the street are also more preferable than off street segregated paths. Minimum street dimensions which also allow for municipal access vehicles make the scale more intimate, reduce crosswalk distances and increase safety by traffic slowing. In the quarter mile radius of a TOD, it seems unnecessary for travelling faster than 15 miles an hour. Besides with reduced street surface, there is a saving of infrastructure cost which can be put into pedestrian amenities.

Commercial streets locate around the core area of a TOD should be designed to accommodate pedestrians, slow traffic, provide drop-offs and short term parking. (Increased parking will be discussed in the 'parking' section) Wider sidewalks, limited curb cuts, street trees, awnings, patios, lively street lights and shops with minimal setbacks showcasing their front should be used to encourage an active pedestrian and mixed transit use environment.<sup>132</sup>

*(viii) Pedestrian walkways & Bicycle paths*

The primary pedestrian path system should coincide with the street system. It should be visible, direct and visible from the streets and houses. Many times designers tend to create an 'assumed' connectivity through big parking lots, behind backyards and in between plots which as pedestrian networks which end up becoming derelict 'no-man's lands.' Instead pedestrian routes should be clear, comfortable and provide direct access to the core area, transit stop and other community green spaces. They should be bordered by residential fronts, parks, plazas and commercial uses.<sup>133</sup> In larger parks, alternate pedestrian walkways are desirable. Urban and landscape design features which encourage an enjoyable walking experience should be implemented. Tree lined streets, landscape design features, seating areas and

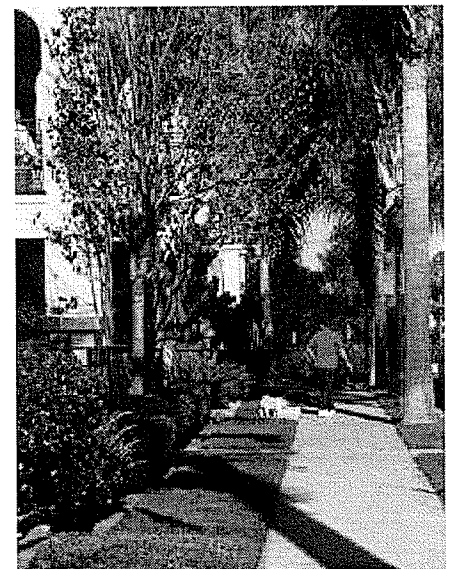


Fig 51, 52

gathering spaces or parks that are connected through a pedestrian network are encouraged. Combining retail with the transit stop allows people to take care of several tasks in one trip. Interruption or discontinuous routes and amenities discourage pedestrians from walking to a retail area or activity zone – therefore pedestrian access is critical to the displacement of auto trips and to encourage more transit use.<sup>134</sup> If a 5 – 10 minute walking distance is seen as the ideal of a transit neighbourhood, providing direct routes to the core area encourages concentrating more people in it which helps the businesses in the area. It also helps create a lively area for people running errands as the human tendency is to go where other people go and watch others in public spaces. Also, the routes should be universally accessible to wheelchairs, strollers, scooters and other mobility aids. It is preferable to keep pedestrian routes are at ground level, with minimal stairs and grade changes. Adjacent buildings provide “eyes on the street” and informal security. The routes should be located on public streets unless there are good opportunities to tie in to a safe, existing above-grade system. All intersections should have crosswalks. But underpasses or pedestrian bridges are discouraged as they are not only expensive for suburban residential zones, but also are generally long, circuitous routes which tend to get underused. Only if existing development patterns or topography prevent any other convenient street crossings, an underpass or overpass may be appropriate with direct stairs and ramps for easy accessibility.

An efficient, coordinated system of bikeways is another aspect while providing the choices for alternate transport. The bike routes can be provided in conjunction with the TODs or a series of TODs. It goes without saying that all important areas should be linked by bike routes. Designated bike lanes can be provided on selected connector streets but smaller residential streets do not need this. Along greenways, open space corridors and arterials separate bike paths can be provided. Parking facilities and bike racks should be provided at all transit stops, community buildings, parks and commercial areas.

***(ix) Transit stop and core area***

Transit networks help to define the density, location and quality of growth in a region. Very often transit lines are located in areas which are not transit-oriented-development supportive due to very low density, pedestrian quality or redevelopment opportunity. They are often isolated from existing neighbourhoods and become large park and ride automobile dominant spaces. Instead transit lines should be located to allow maximum area for new TODs, access prime redevelopable or infill sites and to serve existing dense residential and employment centres.<sup>135</sup>

For the transit stop, accessibility is one of the key issues. It should adjacent to the core commercial area with direct linkage if possible and more or less centrally located within the spatial extent of the TOD so as to be within the 10 minute walking distance from residential areas. Along with the transit line arterial dissecting it, there should also be road access to the stop for drop offs, park-and-rides and emergency

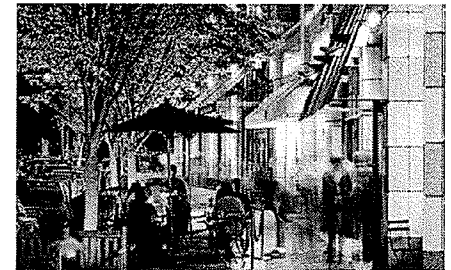


Fig 53

vehicles. Sheltered waiting areas for all-year weather conditions must be designed. The station building can be either a single focal one or a series of booths depending on the overall pattern of land use, accessibility to residential areas and connection to the core commercial area. In order to channelize more people to pass through the core area for the viability of the businesses there, it is preferable to have the station building orientation relate to this core.

*(x) Residential area*

Density : Residential densities for TODs have been established by its proponents and by case studies of TOD projects built in the United States. The intent of a range of permissible densities is to encourage transit ridership as well as offer a variety of housing types. Depending on the area available and the location of TODs residential mixes can vary from small lot single family houses to row houses, condominiums, duplexes to three to five story apartments. Single family lots can vary from 12 to 17 units per acre, townhouses from 18 to 29 units per acre and apartment buildings upto three stories can have densities from 35-50 units per acre (ref) Cluster forms which reduce infrastructure costs and leave more environmentally sensitive open spaces safe are a better option.

Articulated building facades should be varied and visually interesting, with frequent building entries and windows facing the street. Balconies, front porches, upper floor setbacks are preferred to break monotony. The façade should never consist of a continuous blank wall or a continuous series of garage doors. The ground floor of buildings should orient to street fronts or green pocket parks, not to interior blocks or parking lots. Residential setbacks should be minimized while maintaining adequate privacy. While most new urbanism TOD guidelines recommend between 3 to 4.5 metres from the sidewalk the present by-laws at the R-C-B site recommend 4.5 – 6 metres. Street trees, either on one side or both sides of the sidewalk can create a pleasant pedestrian experience when setbacks allow this space. The front door to duplexes, townhouses, condominiums must be visible from the street.

*(xi) Parking*

By design, a TOD should lessen the need for automobile use in a station area. However, accommodating vehicles is still critical and a necessary practical consideration to the success of a vibrant TOD district. Convenient parking and drop-off zones need to be planned for in all station area plans. The parking available should be at an optimal level, neither too much nor too less. Parking should not be forcibly reduced simply to necessitate car pooling and transit use but at the same time should not exceed the maximum comfortable requirement.

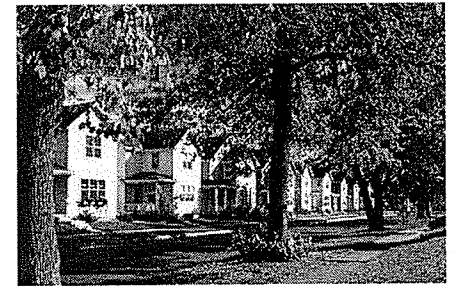


Fig 54, 55

Parking lots should be located at the periphery of the station area and to the rear or sides of buildings. This keeps the station and building entrances oriented to the sidewalk and to pedestrian users. Parking lots should not dominate the frontage of pedestrian-oriented streets, interrupt pedestrian routes or negatively impact surrounding neighbourhoods. Structured and below grade parking in multi-family residences is strongly encouraged while following reduced and reasonable parking standards for visitors. Surface parking lots should not be large (like those seen around big box stores); rather they should be a series of smaller lots integrated with good landscape design or placed on either side of a long street. (c, p111) Trees planted along parking lots should be shade giving and in sufficient number so that within 10 years 70 percent of the surface area is shaded. Perimeter landscape treatment of linear parking lots is an important means to soften the visual impact and heat generation of asphalt as well as create a pleasant sidewalk.

Park-and-ride lots are usually a necessity imposed by transit agencies especially if they are putting in a large share of the investment into a TOD. These should not be made into large surface parking lots – rather they should be kept in the secondary area of the TOD boundary adjacent or along the arterial to the transit stop instead of in prime public areas. The park-and-ride area could also function as parking for commercial or park areas during off-peak hours or when train frequencies are low.

**Bicycle parking:** Bicycles can extend the local commuting range beyond the typical 600 m. Ample, convenient and secured bicycle storage locations should be provided at each station, close to the entrance of the transit station and near all community facilities.

## SECTION B

### Relevant Case studies and Precedents

#### 1. Fruitvale Oakland Transit Community – A story of partnerships and community involvement bearing fruit

*"Transportation planning should be about more than concrete and steel. It should be about building communities and we are all looking to Fruitvale as an example of how that can happen."<sup>136</sup>*  
Rodney Slater

The Fruitvale Transit Village project in San Francisco's Bay area is the result of a broad-based partnership among public, private, and nonprofit organizations working together to revitalize a community using transit-oriented development. The Fruitvale community, especially around its East 14<sup>th</sup> Street used to be a vibrant commercial centre through the 1960s but became derelict soon after when suburban shopping malls and big box stores luring patrons away.<sup>137</sup> Many expensive and unsuccessful urban renewal strategies followed through the 1970s and 1980s with little payoff. In 1991, the Spanish-Speaking Unity Council (SSUC) a local community group headed by a former housing and urban design official Arabella Martinez took a new revitalization approach using Fruitvale's biggest resource, the adjoining Bay Area Rapid Transit (BART) station. The initial idea of an innovative mixed use transit-oriented community came in part due to a neighbourhood opposition to an earlier BART proposal when it announced plans to construct a multi-layered parking facility next to the Fruitvale station. Although the community agreed that new parking was necessary, the design and location of the facility did not sit well with Fruitvale residents and business owners. Members of the community were concerned that the proposed structure would increase traffic and pollution and further separate the Fruitvale neighborhood from the BART station. The Unity Council galvanized neighborhood protest against the parking structure design and location, arguing that any development around the BART station should be guided by a broad-based community planning process. Faced with this strong community opposition, BART withdrew its proposal and agreed to work with the Unity Council on a plan for the area. During the next several years, the Unity Council engaged local stakeholders in a comprehensive visioning and planning process that laid out the parameters of the Fruitvale Transit Village with active community participation. A long and arduous

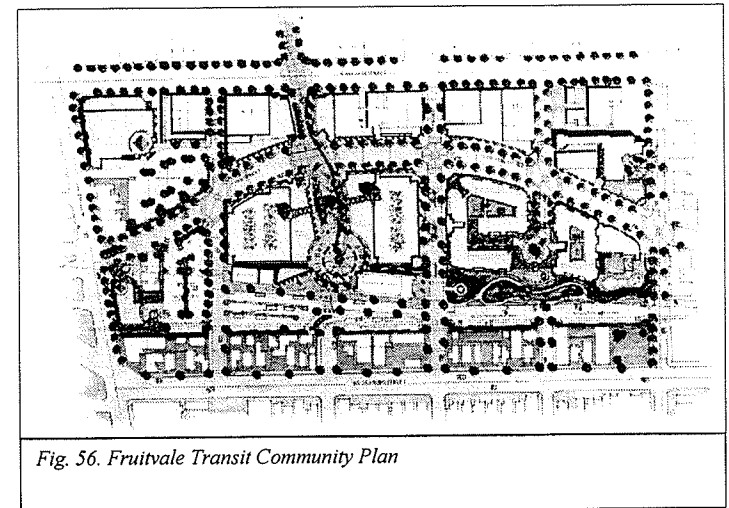
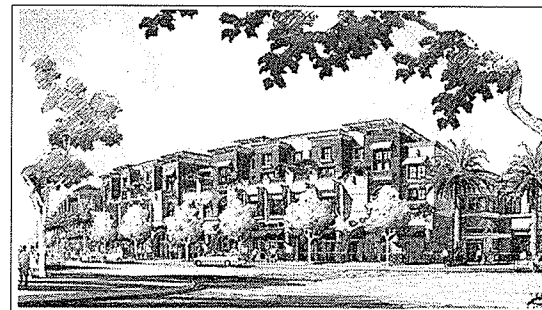


Fig. 56. Fruitvale Transit Community Plan

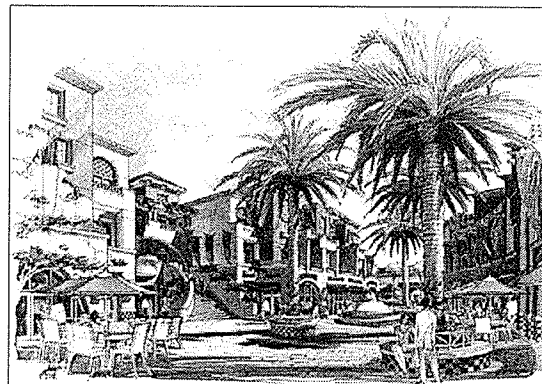
process continued with the passionate involvement of the SSUC and incorporating all the interests of the different interest groups by architect Ernesto Vasquez. Intention to groundbreaking took from 1991 to 1999 and the project is scheduled to be over by the end of 2004.

Plans for the Transit Village include a mixture of housing, shops, offices, a library, a child care facility, a pedestrian plaza, and other community services all surrounding the BART station. The project is expected to reduce traffic and pollution in and around Fruitvale because community residents will have access to a range of goods and services within easy walking distance of the transit station.<sup>138</sup> The total area of the project site is 20 acres, with 10 acres in the first phase. Housing is prominent and spread throughout the site, primarily as second and third floor units above shops. The aim is to accommodate upto 280 housing units and mixed activities at a walkable distance from the transit station to ensure that the plazas and public spaces would be used as community spaces even after business hours and on weekends. A public plaza adorns the BART entrance with a palm tree lined walkway. The community features include an open-air Mercado, a branch of the Mexican museum and a Latin American library. The project also includes housing for seniors, a multi-purpose senior centre and a child development centre. Estimated projections include 500 to 1000 community jobs and 11,300 daily transit riders. Two structured 1500 capacity car parks are located near the station.

By 1996 the Fruitvale Transit village project had started being heralded as one of the best known and most promising inner-city transit villages in the USA. Its dogged determination and success in obtaining funds and strengthening the link between transit and community planning including land use policies and urban design has been highly commended. It has become a good example of site-specific community and cultural identity as well as the broader linkage of diverse systems and interest groups' demands. The project illustrates a number of key themes and effective practices that are central to incorporating the principles of environmental justice into transportation planning and design.<sup>139</sup> First, it demonstrates an effective use of partnerships to generate funding and other resources necessary to plan and implement a costly and complex project. The Unity Council's success in building relationships with a wide range of key players helped overcome the formidable legal, regulatory, and financial hurdles the project initially faced. In addition, the project illustrates a strong commitment to public involvement by the lead agencies involved instead of the typical representation only by the city officials or private developers. In this case, not only did the community have the usual



*Fig.57, 58. Fruitvale housing and core area*





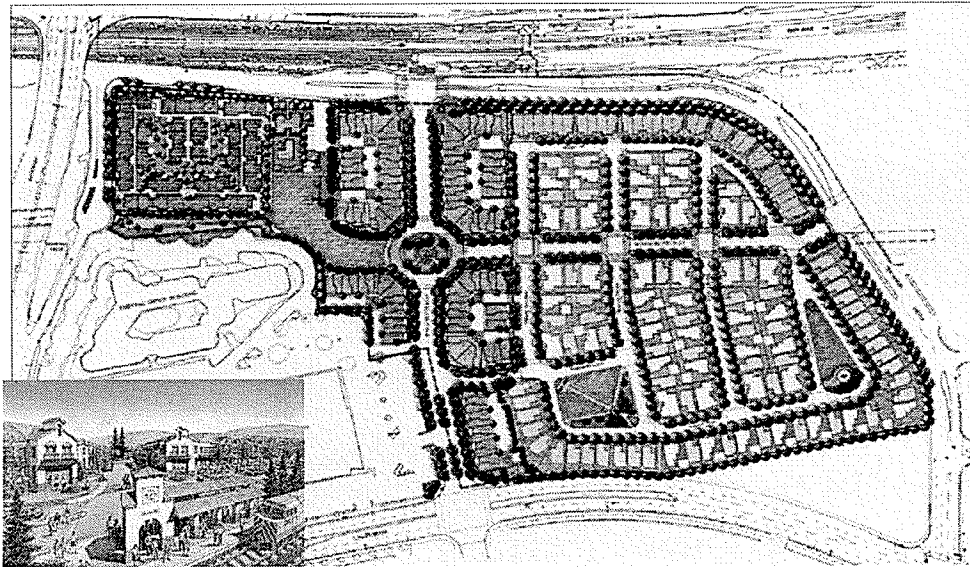
situation of responding to the plans after they were done but the Unity Council's leadership role in the project helped ensure that the community's own vision for the transit station and its surrounding area served as guiding principles for the planning and design process. Finally, the planning effort behind the Fruitvale Transit Village represents an innovative strategy for using mass transit as a lever for revitalizing an urban community. While transit-oriented development has been successful in a growing number of affluent suburban locations, the Fruitvale Transit Village sets a precedent for such projects in lower-income, inner-city communities with a tighter land area.

### Lessons Learned

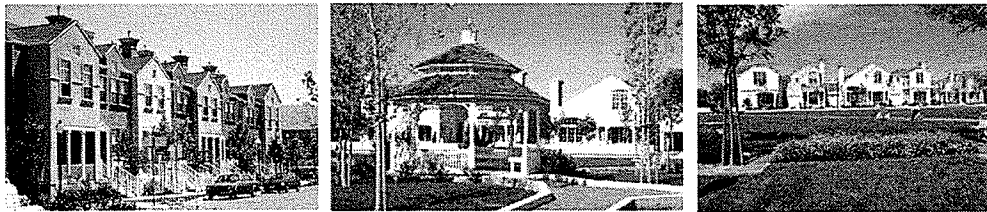
- Community-based organizations are typically well positioned to identify community preferences, needs, and concerns. They are often better equipped than government agencies to determine whether or not a project is appropriate for a given community and how well it is likely to be received. The idea for the Fruitvale Transit Village originated within the Fruitvale community, following a proposal by BART to construct a parking garage at the Fruitvale BART station. That proposal generated little community support. To BART's credit, it changed course quickly once it recognized the community's desire for a different type of project developed through a more inclusive planning process.
- Partnerships can be an effective tool for overcoming barriers posed by the expense and complexity of certain projects. The Fruitvale Transit Village survived various legal, financial, and regulatory challenges in large part because of the leadership of the Unity Council and the willingness of key players like BART and the City of Oakland to actively participate in the project.
- Public transit facilities are valuable assets for certain low-income, minority communities in urban locations. Such facilities already play an important role in providing inner-city residents with access to jobs, shopping, and other key destinations. To the extent that projects like the Fruitvale Transit Village prove successful, transit facilities may also be used increasingly as anchors for neighborhood revitalization.

### **2. Crossings, Mountainview – From underutilized strip mall to vibrant TOD**

The Crossings project in Mountain View, California is viewed as a successful example of a mixed use transit oriented neighbourhood with excellent pedestrian networks and community green spaces. It is a recent addition to CalTrain commuter rail line's collection of transit oriented housing. Converted from a 1960s auto-oriented strip mall site on an older neighbourhood, the Crossings project provides a range of housing and retail opportunities with single family homes, townhouses, rowhouses and apartments all located within a short walk of shopping and transit. The area of the project is 18 acres. 397 housing units built along narrow tree lined streets and interconnected pedestrian paths. The street network provides a direct connection to an existing Safeway grocery store allowing residents to reach it without crossing arterial streets. Community parks, open spaces, band stands and tot lots are distributed equitably throughout



*Fig. 59 Images of Crossings, Mountainview TOD*



the site. The plan of the project was completed in 1995 and construction in 1999. The planning process was integrated by Calthorpe associates who designed every aspect of the project from site layout, architectural design and landscape.

Post occupancy evaluation done for the Crossings neighbourhood by the California TOD database in 2001 indicates that in this middle and upper middle class community, more than 40% walk to the public transit stop and 20 % bike to the stop. The largest group of occupants belong to the age group of 25 to 35 years (25%) followed by the 35-44 years group (20%) and ages 45 to 54 (12%) 30% of the occupants are under the age of 24 and 14% above 55 years of age. The average density of the project is nearly 30 units per acre.<sup>140</sup>

Unlike the Fruitvale project where changes were brought about by community pressure, the policy and political foundation in the case of the Crossings was brought about by actions of public officials and staff at the municipal and city level who championed the concept of TOD. Apparently planners crafted multiple specific plans that collectively displayed a solid vision of a transit-oriented-community.<sup>141</sup> The City Council and the Environmental Planning Commission came up with the San Antonio Station Precise Plan to link regional issues to city goals and tying both to plans for a specific property. Their goal was to facilitate development of “appropriately situated and planned residential communities, especially those integrated with existing

transit networks.” And “to combine housing, transit, and proximity of shopping services that make it ideal for higher density residential development.”

The design of the Crossings followed the framework of TOD principles outlined by Peter Calthorpe. Usage of pedestrian paths, crossings, attractive street lighting, furniture, bicycle paths etc. have all been adhered to. Although there is designated parking around the station, designated drop offs are not present as recommended in the guidelines.<sup>142</sup> Since the entire project has been built on a previously paved site, all the vegetation and landscape interventions are man-made and planted from a scratch with successful results.

To compare whether TODs really contribute to reducing sprawl and vehicle miles, John Holtzclaw, Chair of Sierra Club Transportation and consultant of the Natural Resources Defense Council in San Francisco, compiled the data of all built TOD and other similar new urbanism projects. The Crossings evaluation indicates that, on comparing it with surrounding conventional single family neighborhoods with the same population, the former shows a difference of 29% less car ownership and a difference of 31% less average annual auto mileage per household. Sprawl Conditions measured as the average for the 25 percent of neighborhoods in the metropolitan area with the lowest residential densities indicates that with regards to average car ownership per household, there is a 51% difference between Crossings and sprawled neighborhoods and a 62% difference in average annual auto mileage.

#### Lessons Learned

- Redevelopable sites such as derelict malls and parking lots can be revitalized into interesting communities. When the planning and initiative to create workable transit-oriented livable communities is taken at the regional, city and inter-agency level, a lot of time and money is saved. A sustainable and sensitive proposition at the initial stage itself receives wide spread local community approval in lieu of opposition. The lesson for communities interested in a future with more transit-oriented development is straightforward. In order to succeed with a TOD strategy, they need to start TOD planning much earlier in the project development process.
- Following a set of TOD supportive guidelines and zoning changes made accordingly removes the tedious bureaucracy required for making these transitions. The four year period to conceptualize and construct the Crossings neighborhood is testimony to that. Caltrain, the commuter rail system that links San Francisco to San Jose and Gilroy, is operated under a Joint Powers Agreement among the counties of San Francisco, San Mateo, and Santa Clara. In October 1997, the Caltrain Board of Directors approved a resolution in support of Transit-Oriented Development (TOD), and instructed staff to produce a document containing design guidelines and strategies for infill, redevelopment and new growth along the Caltrain Corridor. As a result, Caltrain partners in numerous TOD plans with more than 17 local jurisdictions in its tri-county service area. The Crossings is one such partnership.

- The project indicated that infill and redevelopable sites are not necessarily associated with inner city revitalization and low income affordable but can be equally appealing to the upper middle class market. The post occupancy analysis of the Crossings TOD has indeed shown that carefully designed community spaces, pedestrian access, high density housing and mixed uses can create a convivial, lively and elegant neighbourhood and a much more sustainable alternative to automobile dependent sprawling residential areas.

### 3. Three proposed TOD projects in Canada – an overt adherence to form.

#### (a) Mont St. Hillaire, Quebec

The transit village at Mount St. Hillaire, a sleepy hilly suburb south of Montreal, is being claimed as the first of its kind in Quebec and receiving a lot of media attention and advertising. It intends to recreate the historic character of the old town with the surrounding hillside. The new train network which will connect it to downtown Montreal in less than 40 minutes is being seen as an important step to boost tourism, transport, investment and housing. The compact development surrounding the transit stop is also being hailed as an important step towards curbing sprawl and avoiding development spreading to the sensitive hilly areas. The proposal includes cafes, bakeries, a day care and even a primary school around the commercial and institutional core area. Mixed residential units include single family, condominiums and apartments which number 1000 and are around a radius of 750 metres from the transit stop. A large free 600 lot surface parking is positioned between the stop and the commercial core, which obviously is pushed for by the AMT which is heavily investing into this project. While ‘ideal’ TOD guidelines would not recommend such a large surface parking lot and would opt for structured parking, given the location of the suburb and the fact that it is proposing free parking, it can be viewed as a bland practical issue. A look at the land use plan indicates that the intermediate green corridor on the site could have had better focus and integration instead of being aligned along the backs of residences, although its continuity is a better option for species connectivity than a series of fragmented patches. In the grid form and density pattern there seems to be a strict adherence to new urbanism TOD guidelines rather than site specific orientation of views and focal points. The total site area is around 60 acres. The positive aspects about the project are the optimism it has generated among professional agencies, environmental groups and local residents alike, namely due to its ‘image’ marketing and rhetoric of pedestrian and bicycle friendly design. While it is still at the proposal stage, it certainly has proven that the transit village concept has gained popular acceptance as an alternative development option. The problem may lie if there is too much adherence to form rather than functional outcome and a recreation of clichéd

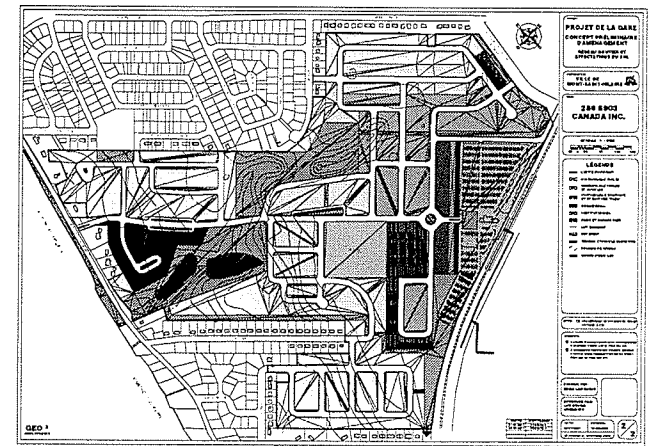
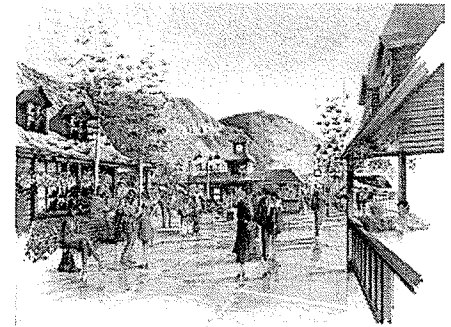


Fig. 60 Mont St. Hillaire TOD

traditional architectural forms – thereby making the TOD form yet another albeit less sprawl like template.

(b) **St. Catherine, Quebec** Another inter agency project with joint partnership with the AMT is a transit neighbourhood proposal in an empty pocket in the town of St. Catherine. It is easy to see from the land use plan that once again too much attention has been paid to the building density pattern and grid form. While a positive aspect is capitalizing on the existing water body near the core commercial area, other community areas and parks have been compromised for building more houses which leads to a shortage of green connectivity except for a linear strip overlooking the freeway.

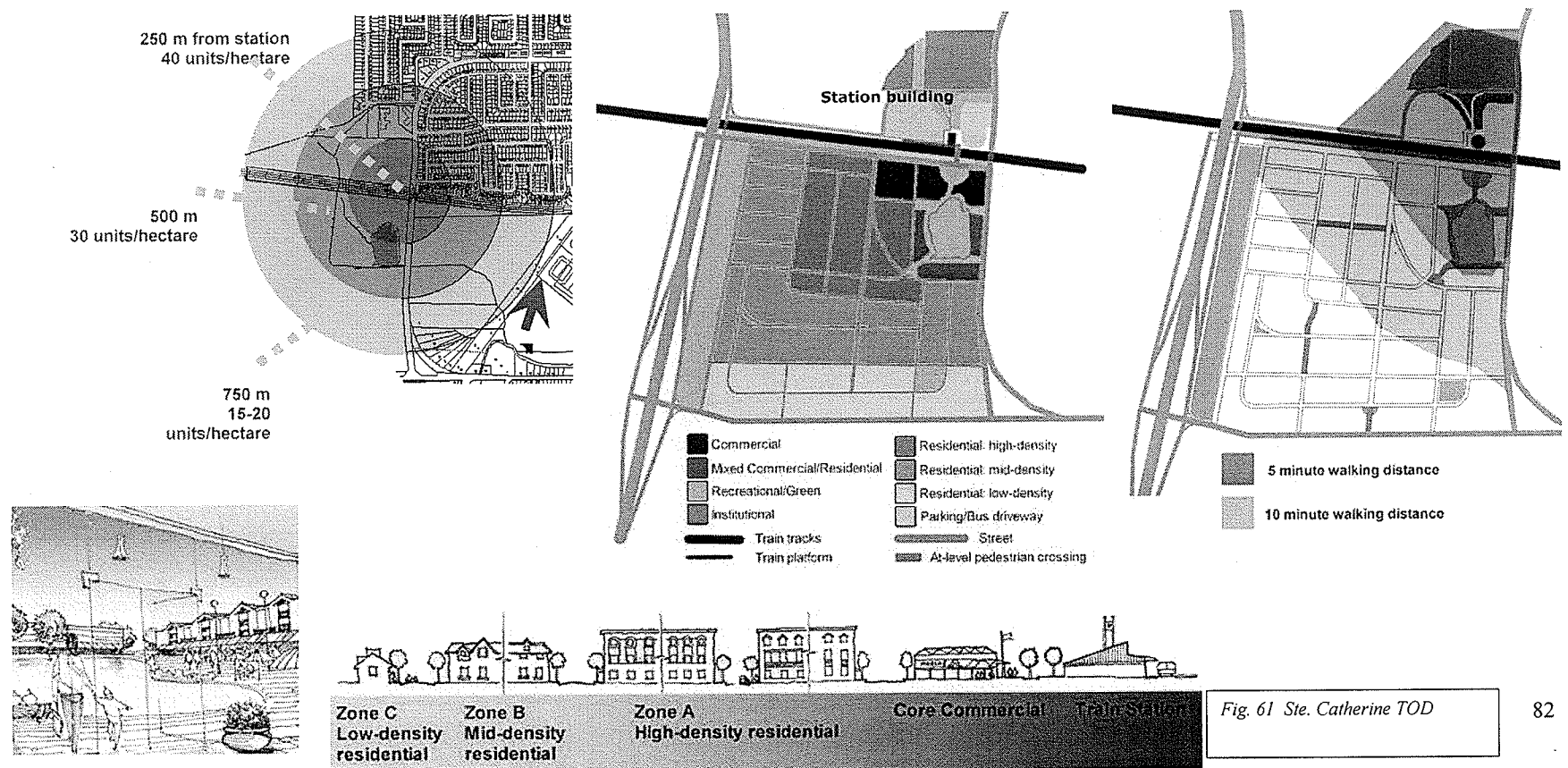


Fig. 61 Ste. Catherine TOD

**(c) "The Bridges" at Calgary, Alberta.**

The Calgary City Council has endorsed Advancing Smart Growth as a key priority in its 2002-2004 mandate. Sensible use of land around LRT stations and high volume bus stops is one approach it has taken to achieve its smart growth objectives. The City's Land Use Planning and Practice have outlined TOD guidelines in a 'Best Practices Handbook' as an information resource for Council, developers, builders, planners, urban designers, communities and the general public. Its purpose is to explain TOD, its characteristics, its benefits and its challenges and to serve as a background document for future City of Calgary policies which will guide TOD land uses, urban design and implementation strategies at LRT stations.

Following these guidelines is the project 'Bridges' at Bridgeland Station, a 37 acre redevelopment site immediately adjacent to the Bridgeland Station. Major objectives of the comprehensive redevelopment study were to intensify development in proximity to the LRT station, plan in context with the existing community, support existing businesses and create a high quality urban environment. Residential densities up to 130 units per acre are planned for lands immediately around the Station, transitioning to the existing community. Over 1500 residential units are planned, which will add up to 2500 persons to the community. Construction began in the spring of 2004. One of the key objectives of the development is to take full advantage of the presence of the Bridgeland LRT Station and encourage more ridership of the C-Train.

The vision for The Bridges is to create an urban village that respects, enhances and takes cues from the surrounding neighbourhood, while creating a distinct environment of its own. In 2002 amendments to the by-laws were done by the city to follow a highly detailed set of guidelines which adhered to the TOD concept. This is a very encouraging step in a City which has more automobiles in relation to population density among other Canadian cities.

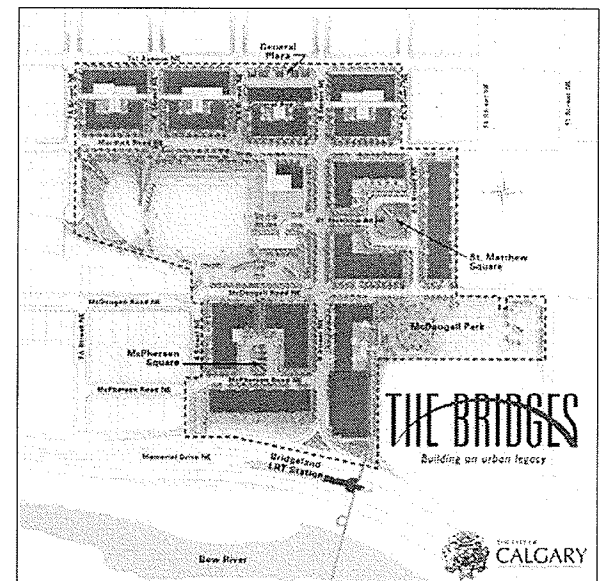
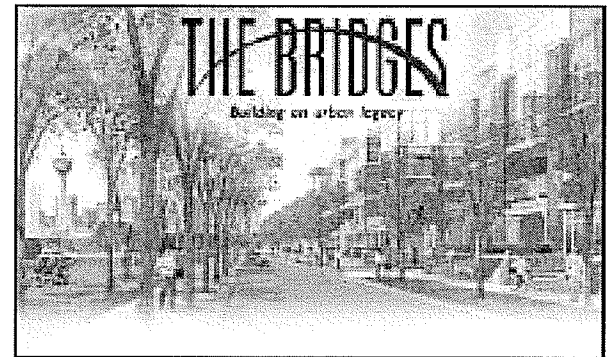


Fig. 62

The pedestrian-friendly design of the project combined with tree-lined boulevards and distinctive street lighting are meant to encourage residents to walk to public transit, work, stores and recreational amenities. The Bridges is within walking distance to downtown Calgary, the Calgary Zoo, the Bow River, pedestrian pathways and the Bridgeland LRT (Light Rail Transit) station. Multi-family units, retail commercial and recreational facilities, vertical mixed use areas, public squares and playgrounds have been designed. Apartment heights range from 4 to 10 storeys The concept emphasizes street-oriented residential units with apartments on the upper floors.

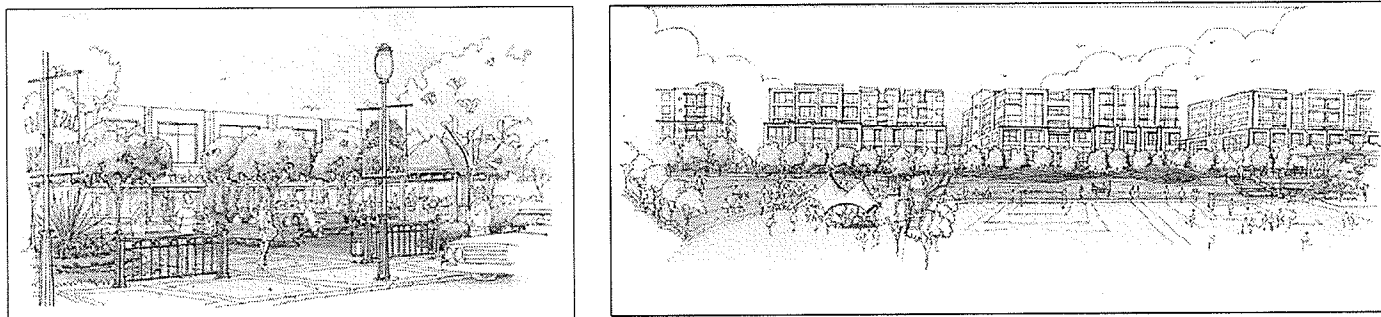


Fig. 63. 'Bridges' Housing perspectives

#### 4. Prairie Crossings, Illinois – an award winning 'conservationist' ecological housing project

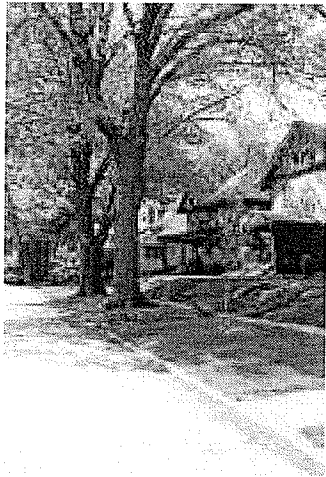
Prairie Crossing has received widespread acclaim as one of America's leading conservation communities and for its innovations in planning and community design. These reviews include dozens of articles and editorials in periodicals such as The New York Times, The Wall Street Journal, The Chicago Tribune, Crain's Chicago Business, The Daily Herald, Landscape Architecture, and The National Geographic. The project has also received repeated coverage on television news and broadcast. But Prairie Crossing according to its founder George Ranney is also about economic vitality who saw it not as a philanthropic project but a business venture. He hoped that the project would have social outcomes that were "noteworthy and affect public policy and business practice. We hope other builders will say, 'Someone else has done it, let's get into the market.'"

Much of Prairie Crossing's quality comes from its "conservation community" design, which is manifested through its commitment to preserving the environment. The land was purchased primarily to safeguard its open spaces. The total project area is 667 acres containing 370 houses. 150 acres of the site's farmland have been placed into a permanent conservation easement. Greenways have been constructed and houses placed to protect native vegetation and wildlife corridors, and the land has been contoured to properly manage stormwater without the use of concrete culverts and other manmade stormwater discharge systems. Many community activities center on protecting and managing the land, and environmental and ecological issues are



featured in fact sheets distributed throughout Prairie Crossing. There are a number of Prairie Crossing environmental design standards, including narrow streets, the replacement of concrete sidewalks with ten miles of crushed-limestone trails, and vegetated swales and detention basins to allow stormwater to drain slowly rather than being whisked away through a pipe. The Lake and wetlands provide stormwater management and animal habitats. The quality of the stormwater management is high enough that the lake is also used for swimming.

While energy efficiency is part of the conservation ethic at this neighbourhood, what initially attracts homebuyers is the style of houses and the nearly pastoral setting, all with views of the lake, wetlands, prairie, or onsite organic farm. Prairie Crossing offers two home series: Homestead and Settler. The seven styles of the larger Homestead series feature wraparound porches, nine-foot ceilings, and hand-crafted details. The nine styles of the smaller Settler series includes a "traditional" foursquare. The housing variety is neo traditional. A series of more urban homes with smaller 5000 sq. ft (465 sq. metres) will be added as well as a new town center area called Station Village, based around the Metra train station, in a lower price range. The town center will also feature living space above office and retail, while some current houses offer living or studio space above garages. The landscape around the entire project features indigenous vegetation and native species are encouraged in yards. The homes have the garage either in front, facing the street, or in the rear, on an alley, and are clustered to preserve open space. Due to the success of the project already the prices have gone up 20 to 30% of the value of surrounding communities.



*Fig. 64. 'Prairie Crossings' residential streets*

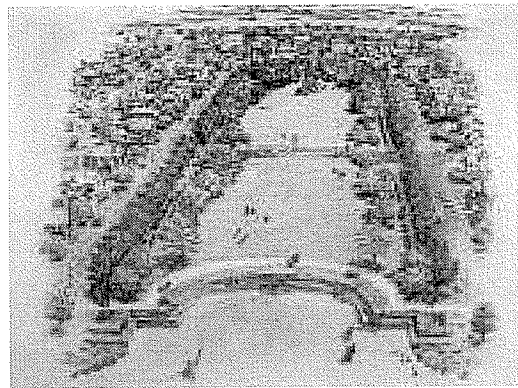
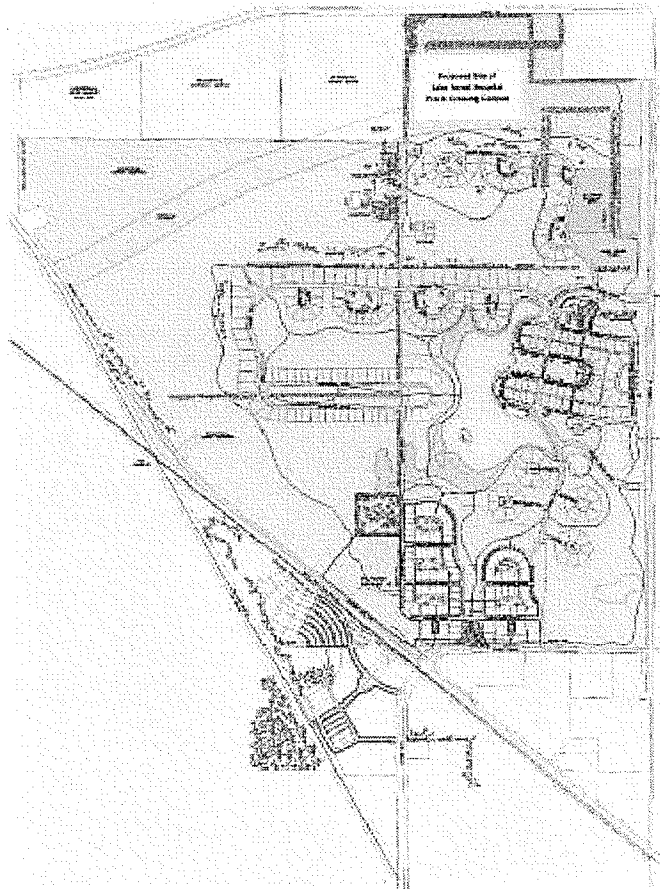


Fig. 65. 'Prairie Crossings', Illinois

### 5. Chino Hills, California – a multi-faceted ecological affordable housing project

Sim Van der Ryn and Peter Calthorpe's design of the master planned community at Chino Hills is designed to rebuild the native landscape and create a new sustainable pattern at the rural/urban fringe.<sup>143</sup> The project was on an infill site with sprawl development surrounding it on one side and an agricultural belt on the other. The plan incorporated cluster housing, permanent organic agriculture, restoration of wildlife habitat and an integrated infrastructure system. The housing density was 22 residences per acre with 107 new single family townhouses and 10 rehabilitated apartments. This was an affordable housing project with mixed income residents and the architecture related to the character of the surrounding neighbourhoods. Housing was clustered mainly to provide a strong sense of community<sup>144</sup> and leave as much land as possible for open space and sustainable agriculture. The underlying principles also included reducing auto trips by providing commercial and institutional facilities in close proximity to a transit stop. Principles of sustainability went in a detailed way – reducing storm water runoff, facilitating thermal insulation by orienting units for passive solar heat gain, reducing oil and electric consumption and conserving land for water infiltration. The design team worked with the local community during the design process.

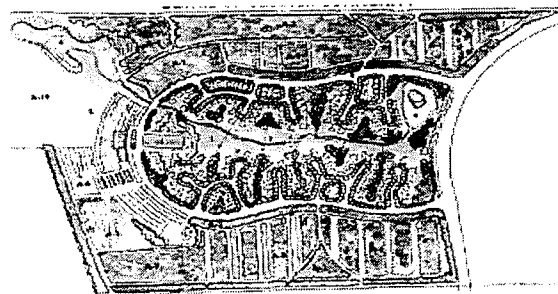
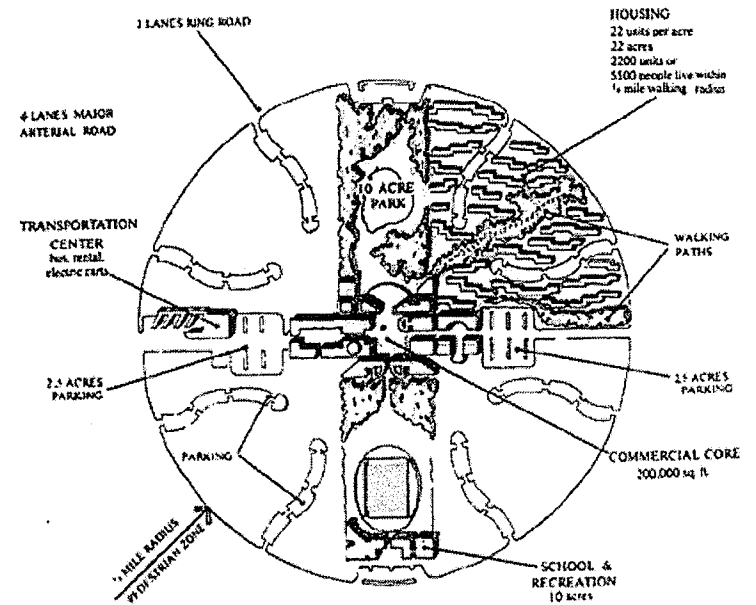


Fig. 66. Chino Hills, California. Plans and perspectives

6. Val-de-Bois, Ile Bizard, Quebec – protecting a maple forest through alternative layouts and convincing the developer through visual simulation

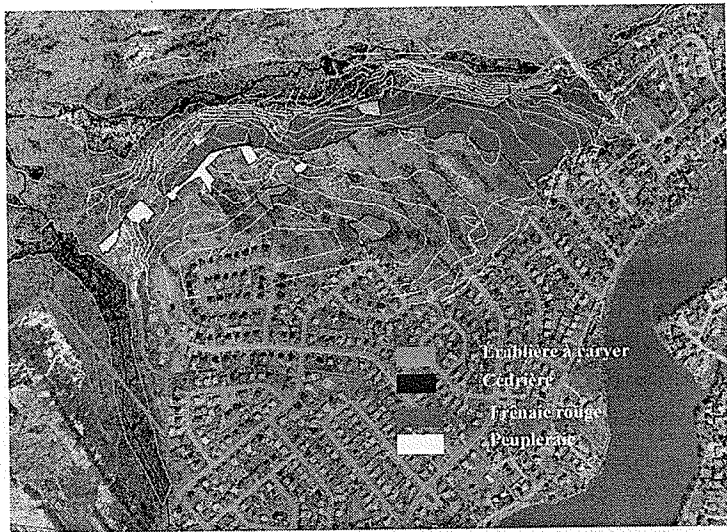


Fig. 67. Tree types on existing site  
 Fig. 68. Developer's layout clear cutting into maple forest  
 Fig. 69. Line of threatened woods.

In the Val-de-bois project on Ile Bizard in the northwest sector of the island of Montreal the initial single family conventional planning template proposed by the developer's surveyor for large lot single

family houses faced opposition by conservationists, the Montreal Green Coalition and the biologists of the Ville de Montreal. Some of the lower patches had already been clear cut and the opposition mounted when the mature sugar maple forest became the next target for the bulldozer. I acted as the project in charge for my firm to produce an alternative layout which would maintain more or less the same number of housing units and preserve the woods as well along with the buffer zone. Since part of the initial layout was already in the construction stage, for the remaining units several alternatives were produced which created more green space. The single family lots were reduced slightly in size and alternate house plans falling within the developer's price range were proposed. The collector road was taken along the forest, its right-of-way within the buffer zone. Green belts were introduced in the broad zoning –dependent residential streets like 'fingers' of the forest extending into the residences. The lots were arranged around green belts and pocket parks. With visual simulations, the developer and city



Fig. 70. Alternate plans preserving the woods and introducing green belts



Fig. 71 Simulation of road along the woods

officials were shown how the targeted price could be maintained by capitalizing on the scenic drive as well as by the ‘greening’ of the street. Protecting the endangered woods would only raise the value of the site rather than the short-term goal of annihilating them for a few extra insensitively designed units. The design was commended for its practical, conservationist and ‘pleasing all parties’ solution. The representative from the Ministry of Environment remarked that this could be a new approach on this little island where much of its old maple forests had been bull dozed by ‘placeless’ suburban sprawl. Unfortunately much of the damage had already been done over the years and this was one of the last corridor patches which could be saved as part of a larger protected corridor.

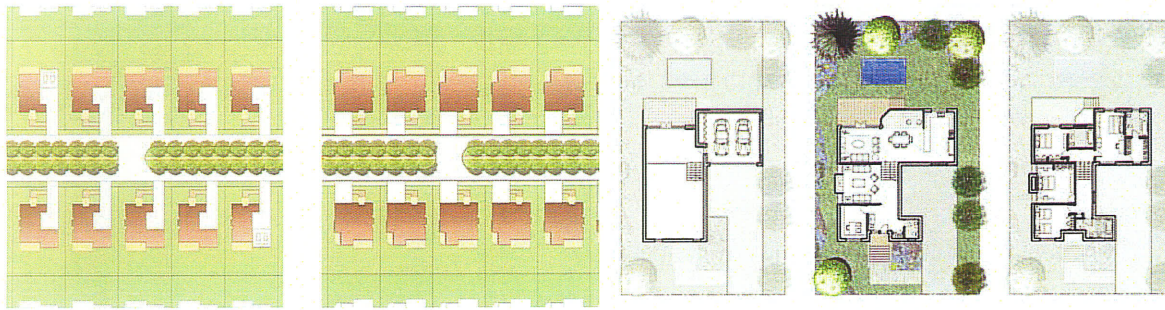
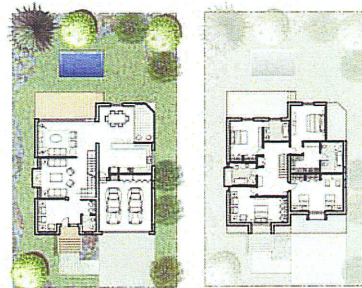


Fig. 72. Four bedroom Housing layouts to fit in proposed smaller single lots

Fig. 73. Visual simulation showing difference in introduction of green belts into the large(as per the by-laws) residential streets



## **Part II : Practice**

## SECTION A

### 1. The Case of designing a transit-oriented-neighbourhood at the 'Eco-Territory of Rapides du Cheval Blanc' in Pierrefonds, Montreal

#### Demographics, Politics, Site History

The 2001 Census of Canada showed that although Toronto has a higher overall population than Montreal, with more than 45% of people living in its urban core area, Montreal ranks the first in Canada and comes after New York, Chicago, Philadelphia, San Francisco and Washington in terms of downtown density. Between 1965-1995 most of the population and employment increase occurred in the suburbs while the downtown population showed little change. According to the 2003 Statistics Canada figures, featured in the Montreal Gazette (April 29, 2004) for the first time in more than three decades, more people moved to Quebec from elsewhere in

Canada than left the province. Today the overall population of the urban community of Montreal stands at approximately 3.4 million.

The central island of Montreal of the CUM (Commune urbaine de Montreal) is located on the Saint Lawrence River. Approximately 50 kilometers long, 16 kilometers in width, with a 230 meter mountain occupying its center, it was originally inhabited by the Iroquois aborigines who had lived in Quebec for thousands of years. In 1535, Jacques Cartier, the French explorer was amongst the first Europeans to set foot on the island. He and his men climbed up the mountain to place a cross and claim the land in the name of France. Cartier named the mountain "Mont-Royal".

In the early 1600's, the island was colonized by the French and the city of Montreal (originally named Ville Marie) was founded in 1642 by Paul de Chomedey Maisonneuve. The name "Montreal" was derived from the French name Mont Royal.

After the defeat of the French colonists by the British in battle of the plains of Abraham in Quebec city in 1759, Montreal was later occupied and administered by Great Britain. The French had to live on the island as subjects of the British empire till the more recent 'Silent Revolution.' Colonists from England, Scotland and

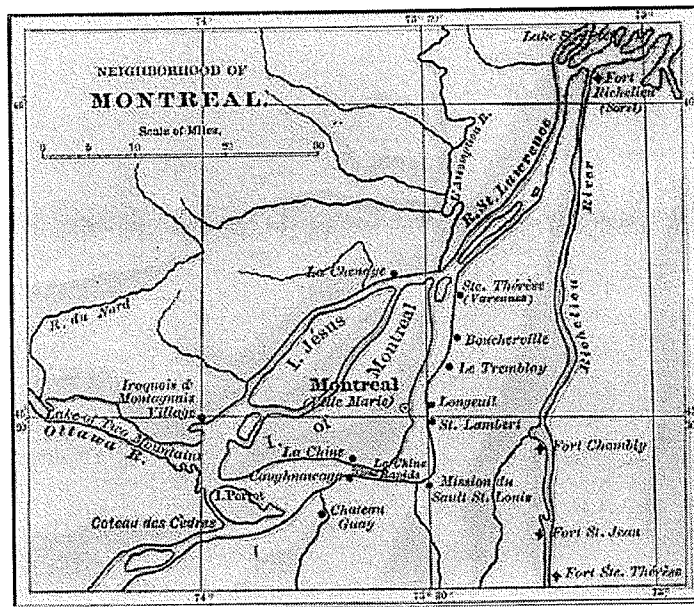
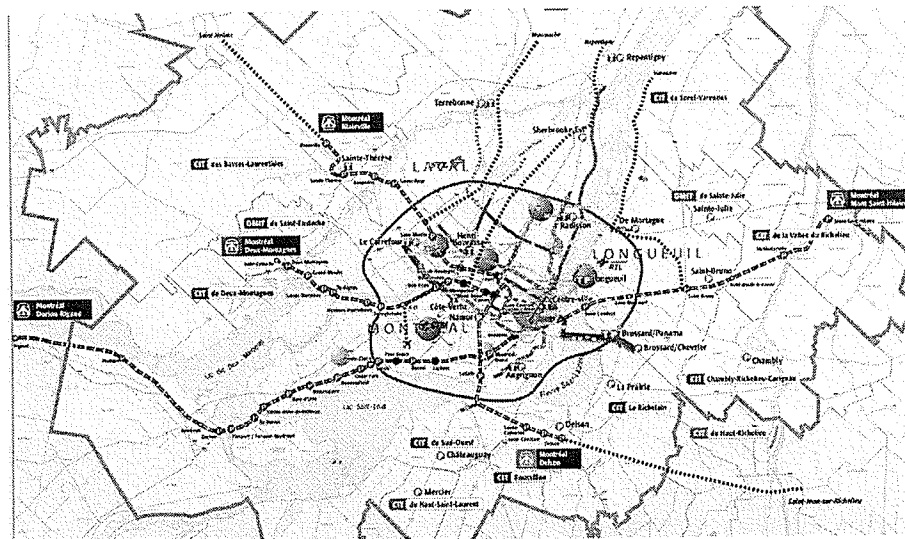


Fig. 74 Early map of Montreal 1610-1791



Ireland subsequently arrived afterwards to live alongside the French. Over the 3 centuries since Montreal's original foundation, settlements and towns were established in many different areas of the island. Immigrants from many other parts of the world also moved onto the island. These towns and their populations had continued to grow right up to the present day. Their borders had expanded and connected to adjacent towns, eventually connecting to Montreal City itself. As of 2001, the island was home to 27 towns plus the city itself. The island city's

population stood at 1.4 million and the entire island at 3.9 million (Source: UN Population Division 2000 estimate).



In order to reduce city deficits, balance budgets and evenly distribute town wealth, the government of Quebec (under the control of the Parti Quebecois) passed legislation in 2001 to merge a number of cities and towns in the province of Quebec. As a result, on January 1st, 2002 the suburb towns on the island of Montreal became boroughs and merged with the city of Montreal.

There was intense opposition and protests to the forced merger but it went ahead. At the time, the political opposition party (the Quebec Liberals) had promised that if voted into power in the next election then they would begin demerger plans to bring the city and its towns (now called boroughs) back to their original status.

In 2003, the Quebec Liberals were elected into government. On June 2004 following de-merger referendum votes in May, formal demerger voting resulted in 15 boroughs deciding to opt out from the Montreal mega-city. All but one (Longueuil on the south shore) of these 15 were from the largely Anglophone west side of the island. The borough of Pierrefonds chose to remain a part of the mega city, with its interesting mix of linguistic percentage – English is the mother tongue of 38% of the residents, French

- 3,800 km<sup>2</sup> (about 70 km x 55 km)
- 63 Municipalities (103 prior to the mergers) 78 after demerger – effective 2006
- 11 Regional Municipalities
- 3,400,000 Population

of another 38% and other European, Caribbean and Asian languages feature as the mother tongues of the remaining 24% of the residents – the highest being Italian. While the formal demerging will become effective only from January 2006, there will be some changes to the mega-city master planning process which began in June 2002 and is nearing completion in the

Fall of 2004. However these will not affect Pierrefonds and most of the island and will especially not at all affect the proposal for a transit-oriented-neighbourhood and eco-park at the project's site.

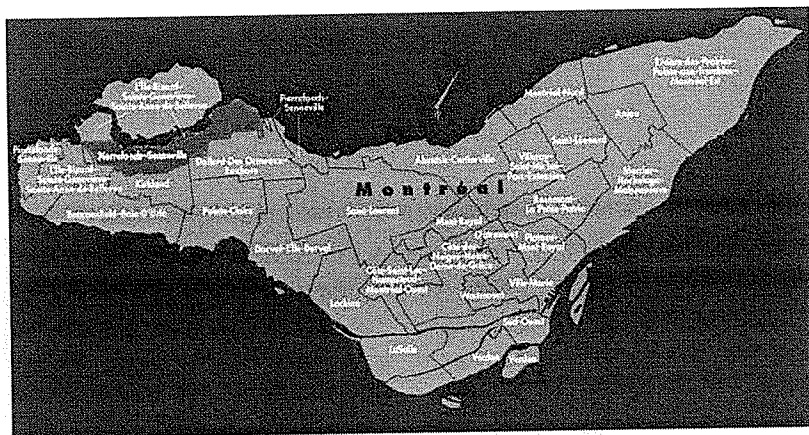


Fig. 75 The green area represents the borough of Pierrefonds – which will be separate from Pierrefonds-Senneville as of January 2006

The wide boulevards and modern residential developments that characterize today's Pierrefonds do little to recall its history, which dates back to the early 18th century. The original municipality was the Parish of Sainte-Genieve which in 1845 comprised of Pierrefonds, Ile-Bizard, Sainte-Genieve, Roxboro and Dollard-des-Ormeaux. Parish of St.Genevieve became a municipality in 1845. Consequent splits led to the village of St. Genevieve-de-Pierrefonds in 1904. The split was largely influenced by a fiery notary by the name of Joseph Adolphe Chauret who in 1902 had a mansion built for himself and named it 'Chateau Pierrefonds' inspired by the feudal castle of Pierrefonds in Oise, France. After another merger in 1935 and a name change to St.Genevieve, the final City of Pierrefonds emerged on Decemebr 18, 1958 separate from the other villages of the old parish.

**Borough Statistics at a glance<sup>145</sup>:**

- The rounded population of the borough is 53,000 – 3% of the population of Montreal (1996 Statistics)
- Between 1991 and 1996, the population of the borough increased by 8.4% whereas the population of the city of Montréal as a whole grew by 0.01%.
- One person households represent 21% of all the borough households
- Population density of the district is 1,699 inhabitants per square kilometre over an area of 31.72 square kilometres. In comparison, population density of the city of Montréal is 3,678 inhabitants per square kilometre.
- Average household size is 2.7 persons in the electoral district as compared to 2.2 in

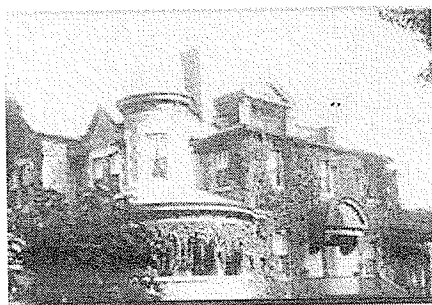


Fig 76 Chateau Pierrefonds and



The old parish of Pierrefonds

Montreal.

- Single-parents head 15% of the families. Young people make up 29% of the population whereas people 65 years old and over account for 9%. One-person households represent 21% of all households, while two-person households account for 30% of the total. 23% of individuals 65 and over live alone in Pierrefonds.
- 30% of families have no children, as compared with 36% in Montréal. Among families with children, 41% have only one child. Lone-parent families constitute 21% of families with children and 32% of families with a single child. 83% of these families are headed by women.
- 65% of residents in the borough are homeowners, as compared with 34% in Montréal.
- The most significant construction phase in the borough was between 1961 and 1970 and between 1981 and 1990; almost 26% of dwellings were built during each of these periods. Nearly 3% of dwellings date from before 1946, as compared with 21% in the city of Montréal.
- Population in the district is distributed 65% owners and 35% tenants, an ownership rate 31 points higher than the city of Montréal.
- 63% of residents are bilingual in both official languages, while 22% speak only English and 13% only French. Barely 1% speak neither French nor English.
- Population in the district is 26% immigrants the same percentage for the whole of Montreal. The largest numbers of immigrants are from the United Kingdom, followed by Haiti and Asian countries.
- Average households income is higher than Montréal's average. In the same way, the district has a higher share of university graduates. More than 25% of the labour force works in sales and service occupations.

#### **Identification of the Eco-territory of Rapides-du-Cheval-Blanc in the Montreal master plan.**

In June 2002, at the Montreal Summit, the Ville de Montreal announced the intention of developing a master plan for the mega city with an emphasis on 27 of its boroughs. The Master Plan was a social contract between the Ville de Montréal, governments, private and community partners and Montrealers in general. More than 1,400 people responded to the Call for Ideas, which was held from November 2002 to June 2003. The objective was to survey Montrealers about what they would like to improve in their neighbourhood and city. The main issues raised by respondents were quality of life, transportation problems, presence of a healthy natural environment, protection and enhancement of the built heritage and community facilities.

Students from fourteen elementary schools also took part in the children's section of the Call for Ideas. The children generally raised the same issues as the adults, and used drawings to illustrate the urban environment of their dreams. A lengthy process of consultation with citizen groups, local issues in each borough along with a regional perspective continued right till

the spring of 2004. Draft version plans were presented at community meetings for public consultation. These were conducted by the Montreal Public Consultation Office in more than a dozen public presentations at different locations.

By the fall of 2004, the public consultation report is to be documented and the finalization of the plan will occur. Besides the public, at each stage the city and borough councillors as well as representatives of citizens' and special interest groups (Environment, Archaeology, Agriculture, Transport, Parks etc.) and investing partners were consulted. There was also an advisory committee of well known community advocates, planners, urbanists, landscape architects, architects and artists and a professional and technical team.

In the public document published by the Ville de Montreal in April 2004, among several other areas, the site of the Rapides-du-Cheval Blanc (R-C-B) was marked as an important area selected for 'intensification' and future housing, a site for a proposed new station and also as a natural heritage site. Part of the site had been earlier sold to a private developer and any proposal made by him immediately went under scrutiny by the city, the borough and the Montreal master plan team consisting of both professionals and community members and especially by citizen groups like the Green Coalition. Had it not become part of such a mega-undertaking, it might well have escaped scrutiny except by a few interest groups. Its identification as an important place and node ensured that its design had to combine several different layers of planning. The TOD concept helped to bind together these diverse layers. At the same time the 'planning approach' undertaken by the city had committed itself to 'sustainable development' and to the Kyoto protocol. In its mandate for each identified site it proposed to maintain ecological integrity that "requires that development respects the renewal or depletion rate of natural resources and minimizes the impact of human activities on the environment." The master plan was seen as a "powerful instrument for shifting the City to sustainable development practices that will provide a better "quality of city" for both residents and visitors. A sustainable urban environment will be more compact, less dependent on individual automobiles and organized in such a way as to promote public transportation and non-motorized travel. It will offer diverse activities and services, close to residential areas composed of a range of housing types. It will provide easy access to green spaces and waterways, as well as public spaces that are safe, comfortable and enjoyable." The Plan set forth their main objectives as:

(1) High –quality, diversified and complete living environments which included the promotion to construct 60,000 to 75,000 housing units between 2004 and 2014 (Includes the R-C-B site)

## Planning approach

### SUSTAINABLE DEVELOPMENT

Sustainable development meets present needs without compromising the ability of future generations to meet their own. It is a balanced approach that incorporates environmental, social and economic dimensions. It aims for ecological integrity and social equity among nations, individuals and generations, as well as economic efficiency.

- Maintaining ecological integrity requires that development respects the renewal or depletion rate of natural resources and minimizes the impact of human activities on the environment.
- Socially equitable development means that existing human communities as well as future generations can meet their basic needs, have access to employment and social, health and educational services and can participate in decisions that affect them.
- Finally, an efficient economy optimizes human, natural and financial resources. It presupposes that economic actors assume responsibility for the impacts of their activities on the environment, society and resources.

These principles are of concern to local communities, particularly in promoting a viable model for human settlements. Recognizing the importance of 'thinking globally, acting locally', the City is currently preparing a *Stratégie de développement durable* (Sustainable Development Strategic Plan) that will be adopted by late 2004.

The Master Plan is a powerful instrument for shifting the City to sustainable development practices that will provide a better "quality of city" for both residents and visitors. A sustainable urban environment will be more compact, less dependent on individual automobiles and organized in such a way as to promote public transportation and non-motorized travel. It will offer diverse activities and services, close to residential areas composed of a range of housing types. It will provide easy access to green spaces and waterways, as well as public spaces that are safe, comfortable and enjoyable.

Fig 77. Mandate in the Montreal Master Plan document

- (2) Structuring efficient transportation that is fully integrated into the urban fabric. - Consolidating and developing Montreal's territory in relation to existing and planned transportation networks. (Includes the R-C-B site)
- (3) A prestigious, convivial and inhabited centre (downtown area).
- (4) Dynamic, accessible and diversified employment areas.
- (5) High quality architecture and urban landscapes.
- (6) Preserve and enhance architectural, archaeological and natural heritage (Includes the R-C-B site)
- (7) A healthy environment – relating to pollution, decontamination and wastewater infrastructure

**R-C-B Site- Location Facts**

Area : approx. 85 hectares  
 Geographical co-ordinates : 45° 30'55" N latitude and 73 °50'10" W longitude. North of Ave. Riverdale extension South of the 'de Prairies' river Divided in 2 sectors :  
 East sector –TOD, West Sector – Conserved Eco Park

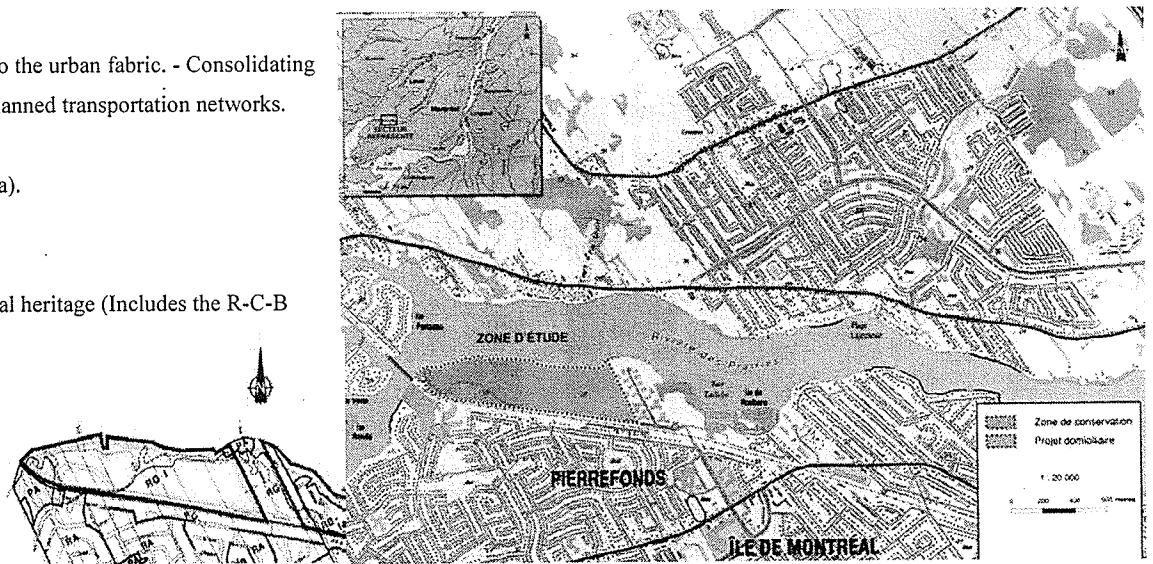
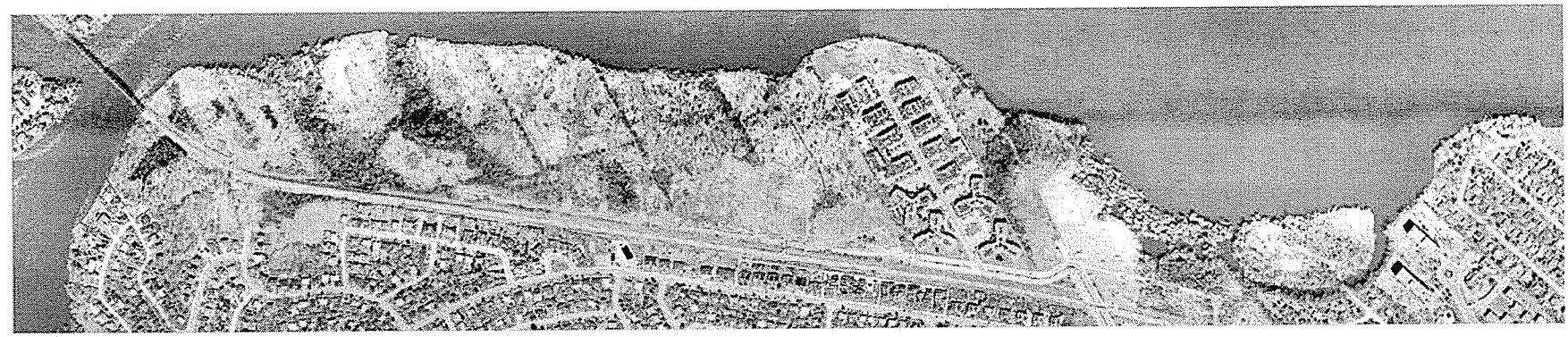


Fig. 78 Map of the rapides du Cheval Blanc site

Fig. 79. Aerial photo of the site





*Fig. 80 Axonometric photographs of the Rapides-du-Cheval Blanc site.*  
1. Existing buildings at east corner of site, looking towards west  
2. Looking from south-west towards north east.  
3. Looking towards east from west corner.  
4. Angle taken from the north west.

### **The Mandate of the Interest Groups**

It is impossible to look into the specific vested interests of the involved parties exclusively without regarding the shifting scales and implications of the project. The site takes a regional significance due to its identification as an eco-territory. It is part of a continuous riverfront perimeter of the island of Montreal. It also becomes an important node in an existing transit network within a larger urban community. At the same time it has to function as a residential neighbourhood that maintains its own identity, sense of community and its unique characteristics. But it cannot become an island in itself as it has to also relate to the surrounding built environment. Its core area has to cater to not just the immediate proposed residential area but also to the neighbourhoods adjoining it and to an even larger catchment area to attract both transit users and visitors for commercial, recreational and utility purposes.

These interconnections between scale, purpose, network and place-making had to be remembered at each stage of the design process. But first off, in order to reach a minimum common program between all the involved professional bodies and community members it was important to see what were the demands brought out on the discussion table by each of them. The following is an outline of this process. It is a summary of the key issues which evolved through a series of group meetings, deliberations and give and takes.

#### *(i) The Ville de Montreal (Regional, City-specific and site-specific interest)*

As mentioned earlier, the main interest of the Ville de Montreal in the R-C-B site lay in its integration with the Montreal Master Plan. The interest areas were threefold for the site: its relevance as (a) part of a transportation network (b) part of an eco-territory and (c) as a designated area for intensification under 'high-quality diversified healthy living environment.'

(a) Under its current mandate, the Montreal Master Plan recognizes transportation networks as fundamental components of the City's spatial organization. Accordingly, the Plan emphasizes the consolidation of the various districts of Montréal that are already served by major transportation networks. The Plan also recommends improving certain areas of the City that require a different approach in light of the complexity of their planning challenges. These areas were identified as Detailed Planning Areas. Given the decisive role of transportation networks in influencing urban form, many of these Detailed Planning Areas required major interventions in terms of public transportation and road work. In keeping with its planning approach, the Plan supports the preservation and optimal use of existing transportation networks and consequently calls for more intensive and strategic land uses, with a greater emphasis on public transportation, in order to reduce greenhouse gas emissions. In its 2004 Master Plan draft proposal, the city indicated its strong support for public transportation and considers it to be Montréal's transportation mode for the future.

Substantial investments both by the Government of Québec and the City would be required, either for their maintenance or development. In this regard, the City believes that it would be appropriate for the Québec government to rethink its priorities and to use grants from the federal government's Canadian Strategic Infrastructure Fund for public transportation instead of road building. In addition, by promoting more complete and diversified living environments, the Plan also encourages travel by foot and bicycle, in accordance with an urban planning approach that is sensitive to the requirements of a healthy environment.

Among its proposed interventions for commuter train lines the master plan identified 8 major areas of improvement for the immediate future. These areas were identified based on the call for ideas, the public discussion forums and the transport agencies surveys and research. As outlined in its publication: “ Build a new station on the Deux-Montagnes line in the Rapides-du-Cheval-Blanc area of the borough of Pierrefonds / Senneville.” The reason for this is justified by the explanation that “Historically, several commuter train stations have contributed to the development of Montréal’s living environments. With the development of the metro network and the construction of new stations, the original effect of stations was progressively eroded in favour of the purely functional role of providing access to networks or modal transfer. The City recommends increasing the intensity and density of urban activities, particularly in the vicinity of metro and commuter train stations and major public transportation corridors that offer potential for consolidation due to the presence of vacant or underused land.” Vacant lots, shopping centre parking lots, park-and-ride centres and other underused lots within reasonable walking distance from train and metro stations are specifically targeted. However, it indicates that guidelines for increasing the intensity and density of activities in order to maximize positive impacts, both on the surrounding urban environment and on the use of the public transportation network are yet to be developed. Also, the areas surrounding new metro and commuter train stations and new public transportation corridors had to meet the criteria for the intensification and densification of activities. Of note here is another relevant recommendation made in terms of parking which directly relates back to TOD guidelines for parking : “ Reduce the requirements of urban planning by-laws concerning the number of parking spaces required when constructing or expanding real estate properties (stores, offices, institutions, large public facilities and low-cost housing) located within a radius of 300 metres or less from a metro or commuter train station.”

(b) In the Montreal Master Plan’s proposal for preservation of architectural, archaeological and natural heritage sites the R-C-B site was identified as one among 10 eco- territories identified under the natural heritage sites. Its outline for the site read as under:

- Preserve a viable ecosystem around a unique scenic site overlooking Rivière des Prairies that has the potential to be a regional park.
- Preserve the extensive wildlife and plant biodiversity in the area while maximizing access to riverbanks.
- Maintain a link between the conservation areas and three riverside parks (Île Roxboro, Cheval Blanc and Des Arbres).

Recognizing that the scarcity of sites available for development puts pressure on the preservation and improvement of existing natural environments and the survival of ecosystems, the City intends to permanently designate certain areas as endangered eco-territories and “foster their harmonious integration into urban development.” Its ecoterritory conservation and development objective entails “protecting environments of interest by taking them into account when planning development projects.” Going with the ecological integrity and sustainable development promises made at the concept of the master plan, the Policy respecting the Protection and Enhancement of the Natural Environment is to be adopted. The City intends to pay



special attention to ensuring a sustainable management of stormwater runoff on its territory and maintaining the integrity of the water regime of its streams. The implementation measures proposed for preserving and enhancing natural environments by ensuring their harmonious integration into urban development put a stress to :

- Implement the Policy respecting the Protection and Enhancement of the Natural Environment.
- Encourage, using appropriate regulatory measures, the protection and enhancement of natural environments, especially those located within the identified ecoterritories and woodlands in order to meet the conservation and development objectives
- Create ecological and recreational corridors using existing natural environments.
- Provide visitor facilities at the Bois-de-Saraguay and Bois-d'Anjou nature parks as well as the Bois-de-la-Roche agricultural park.
- Determine the ecological value of the riverbanks, wetlands and aquatic environments on Montréal's territory and develop adequate protective measures as part of the
- Policy respecting the Protection and Enhancement of the Natural Environment
- Maintain streams and watersheds within the territory by overseeing the planning of development project so as to:
- Build retaining ponds or other catch basins;
- Limit impermeable surfaces, particularly by reducing the size of parking lots and the width of roadways;
- Avoid channelling and redirecting streams.
- Implement a program aimed at restoring and replanting riverbanks to reduce erosion problems, clean up runoff water and restore ecosystem diversity and productivity.
- Protect and create vistas on riverbanks, streams and islands
- Take appropriate corrective action on storm and sanitary sewer systems.

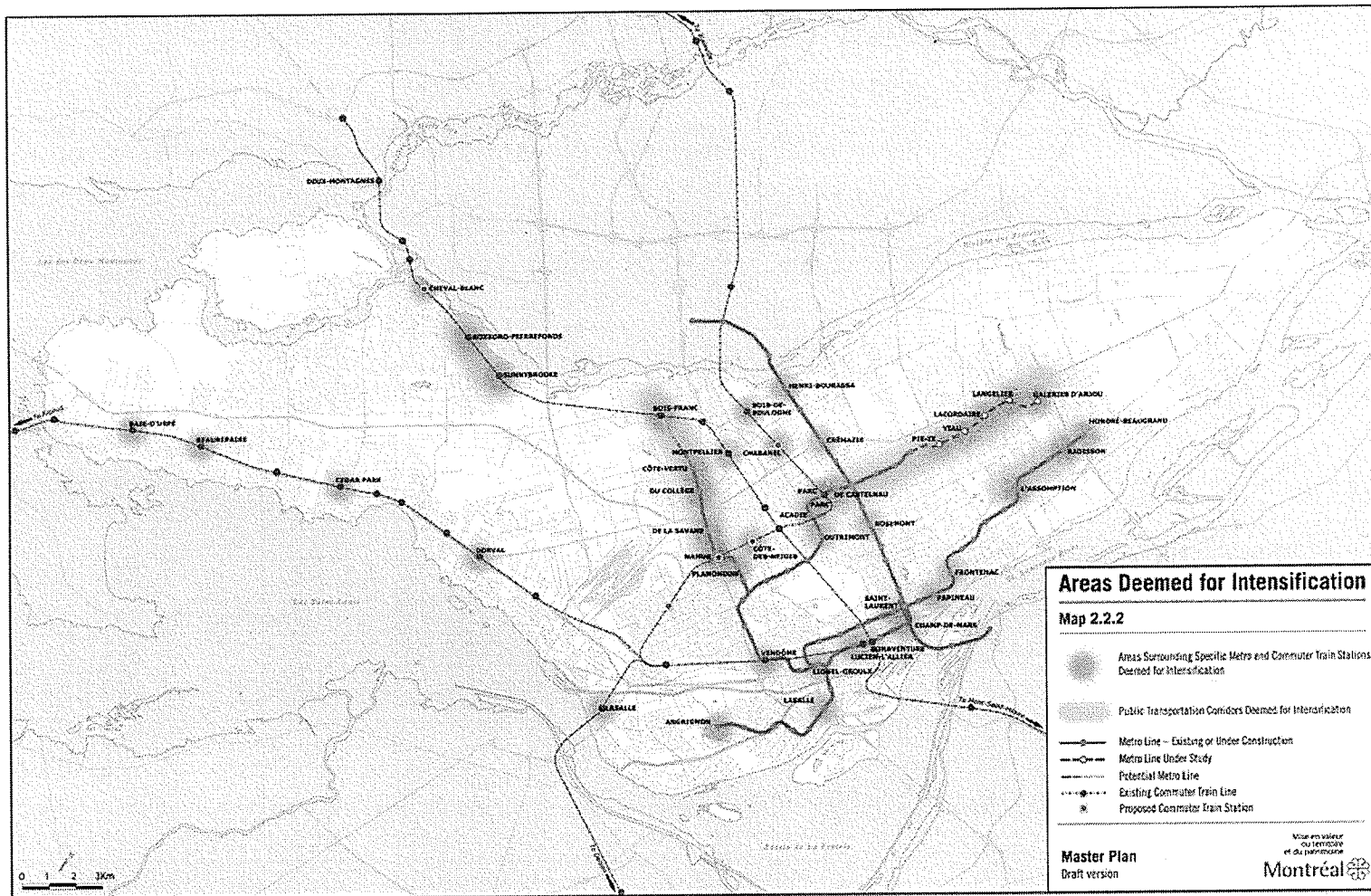


Fig. 81

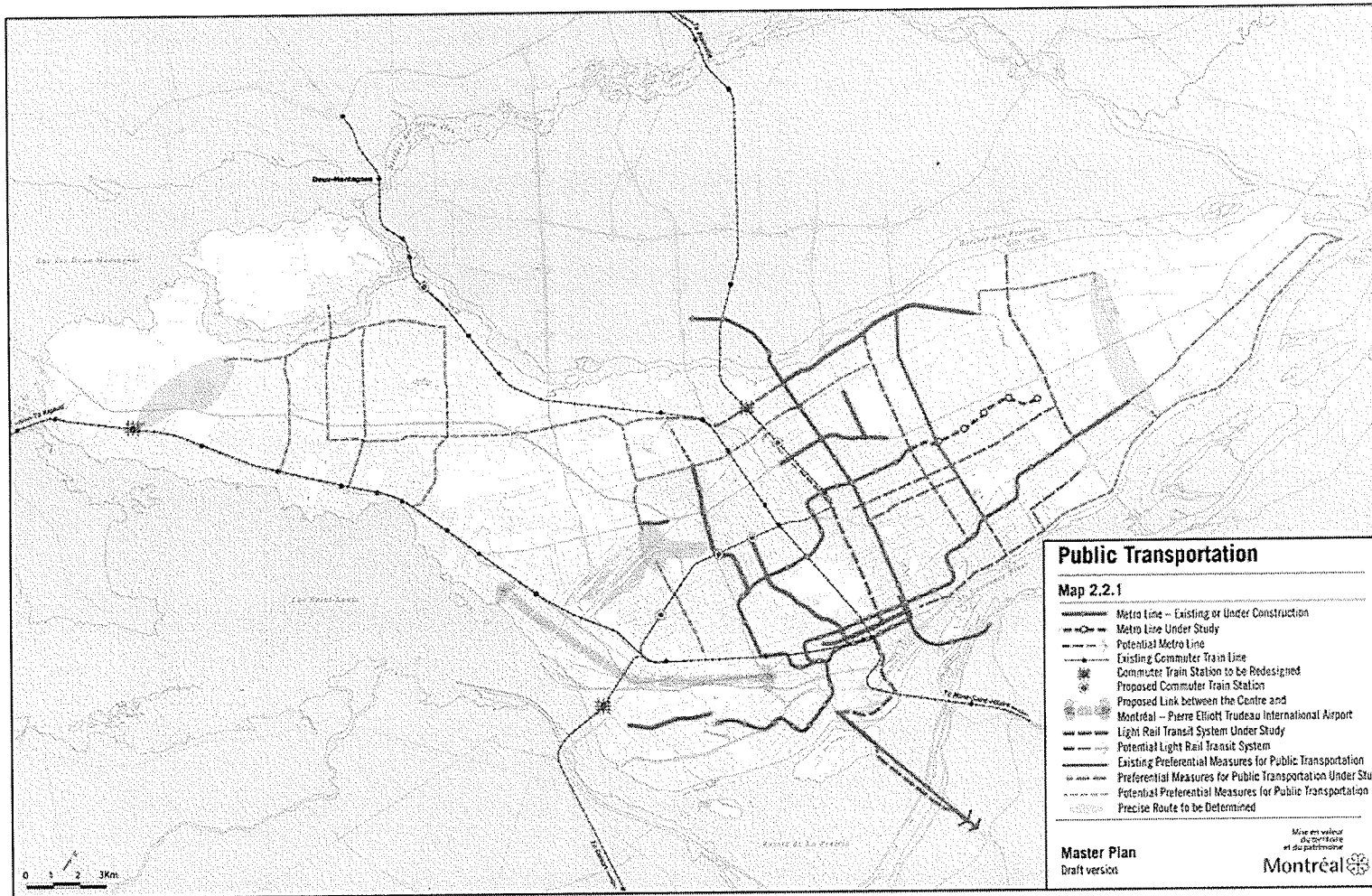


Fig.82

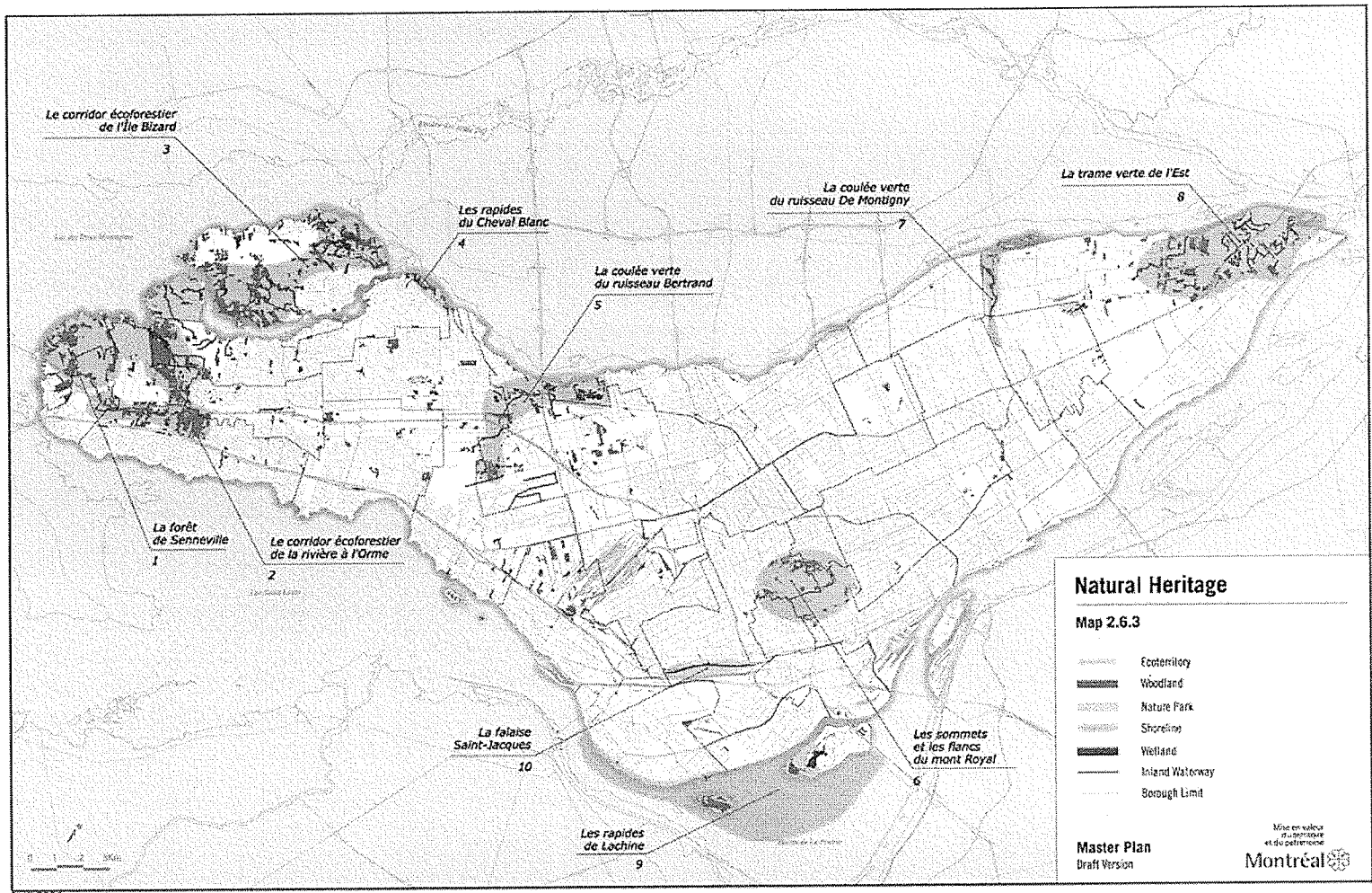


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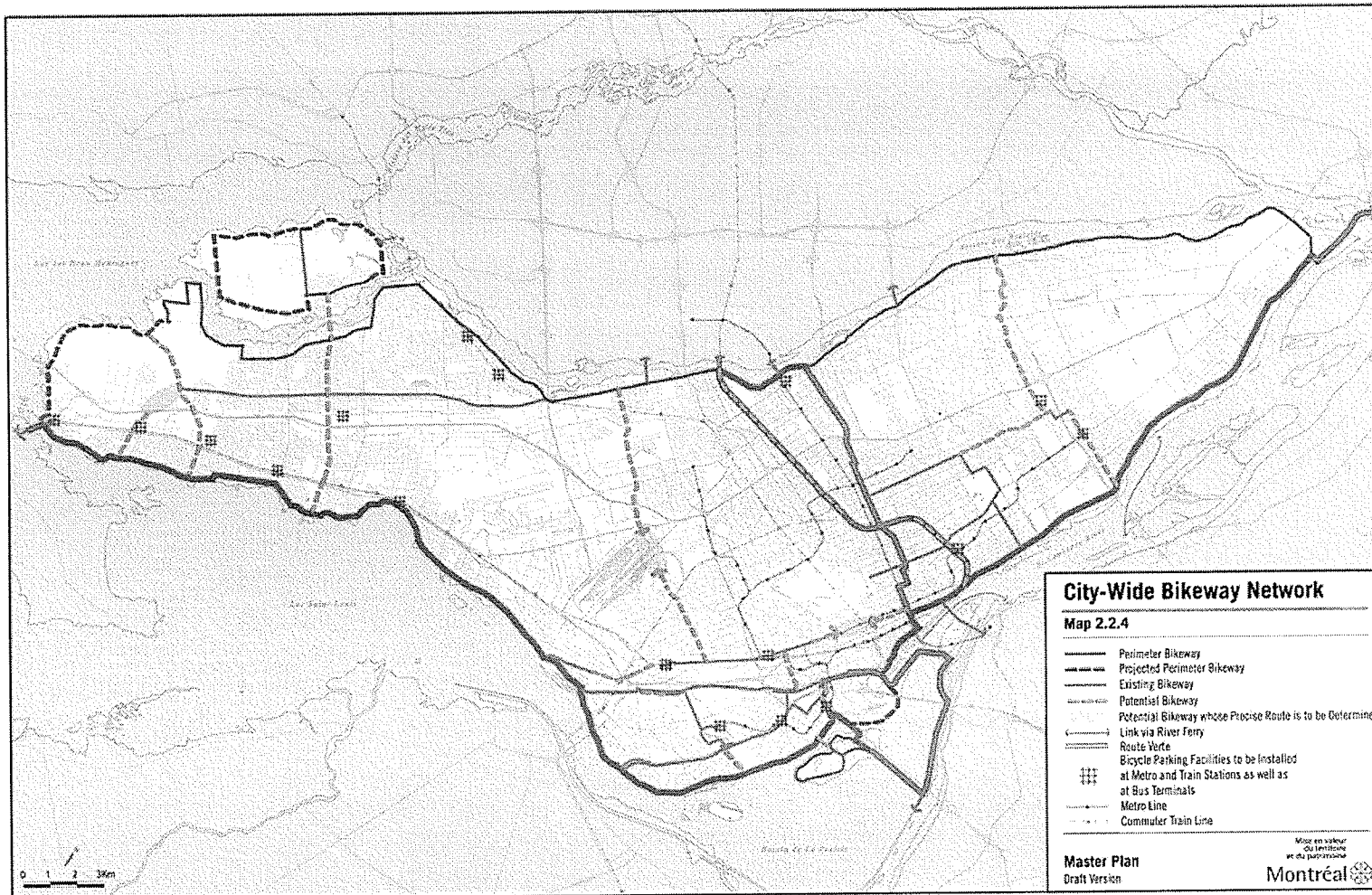


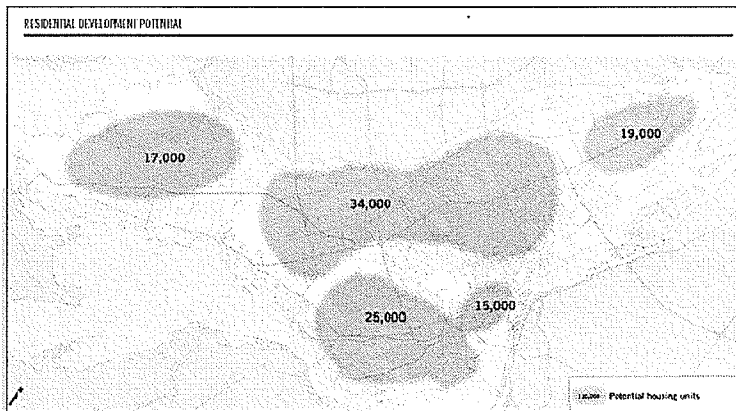
Fig. 84

(c) The R-C-B site has been identified by the Montreal master Plan as part of the many sectors that have the potential for infill, brownfield and multi-family housing. The City intends to promote the consolidation of development within its territory “while fully respecting existing urban and architectural characteristics.” Residential growth over the past few decades has mainly taken place on the outskirts of Montréal. In fact, Montréal, which accounts for approximately 53% of the population of the metropolitan area (CMA), attracted an average of only 27% of new households between 1991 and 2001. It is estimated that the number of households in the Montréal CMA will increase by 150,000 during the 2004-2014 period. The City sets an ambitious but realistic objective of supporting the construction of 60,000 to 75,000 new housing units, which would accommodate 40% to 50% of these 150,000 new households. The R-C-B site is part of the projected potential of the north-west sector of the city to house 17,000 residential units.

**MONTRÉAL LIVING ENVIRONMENTS CHARTER**

The Master Plan identifies nine criteria for evaluating the quality of Montréal's living environments:

1. **A varied range of housing units**, covering a range of types and prices, that meet the profile and specific needs of Montréal households, in order to promote social harmony;
2. **High-quality architecture** that helps to enrich the urban landscape and the identity of boroughs;
3. **Comfortable, safe and universally accessible public spaces** that promote pedestrian and bicycle travel and include vegetation;
4. **A quality living and urban environment** that ensures the safety, well-being and tranquility of residents, and promotes individual development and social harmony;
5. **Public spaces and parks** that help to enrich the quality of the urban environment, provide access to green and natural spaces and meet the needs of all age groups, by encouraging the practice of sports, relaxation and outdoor activities;
6. **Real estate projects incorporating natural features of interest** in order to protect and enhance them and to enrich the living environments;
7. **Neighbourhood stores, services and public facilities** that meet local needs and are accessible on foot;
8. **An emphasis on public transportation supported by adequate service, ease of access and sufficient density and diversity of uses** in the vicinity of the major points of entry to the public transportation network;
9. **Diversified employment** that is harmoniously integrated into living environments.



*Fig.85 Montreal master plan's mandate for housing and living environments*

*(ii) The Agence Metropolitain de Transport (AMT) (Regional, City-specific and site-specific interest)*

According to the AMT, the R-C-B site is a very good location for a future TOD. It lies on the Montreal Deux – Montagne line which has a long history of transit use beginning from 1912 when a tunnel was dug under Mount Royal to connect the town of Mount Royal to the city centre and carry on the track to Ottawa through Deux-Montagnes. This came into effect in December 1918. As early as 1925 electric trains started running on this line. Vacationers in the 30s, 40s and 50s, heading for the beaches of Lac des Deux-Montagnes or the Mille-Iles river, would regularly turn the train into a real travelling side show. The train was not just a mode of transportation; it was a meeting ground, a place where workers on their way home from Montreal whiled away the hour the train took to cover the distance between Central Station and Deux-Montagnes by playing cards, talking, reading or simply relaxing.<sup>146</sup> By the early 1960s, the train was facing not just declining ridership due to increasing highways and cars, the Canadian National Railways (C.N.R) which operated it made changes in fares, frequency

and budgets which led to its decline and near abandonment. The Montreal Urban Transit Authority made an agreement with C.N.R to keep it running till 1992. But despite action by pressure groups and the town councils of cities served by the train, as well as public opinion, the government was seriously considering abandoning the line when the deadline approached. Finally, the former mayor of Deux-Montagnes and an avid supporter of public transit who got elected as a Liberal MP, with the train line upgrade financing as his main election agenda got things moving. In 1992 the financing needed for a major line upgrade and modernization was obtained. The old locomotives and cars found a place in various museums instead of at the scrap yard as remnants of one of the oldest running commuter train line. In 1996 management of all of Montréal's commuter train line was handed to the AMT (fig. 96)

The Montreal Metropolitan Transit Agency (AMT) has become a strong advocate of TODs since 2000. Many of its representatives give TOD awareness presentations at universities and public symposiums. They advocate a need for better land use planning : to organize growth on a regional level to be compact and transit supportive The AMT hopes that the new train

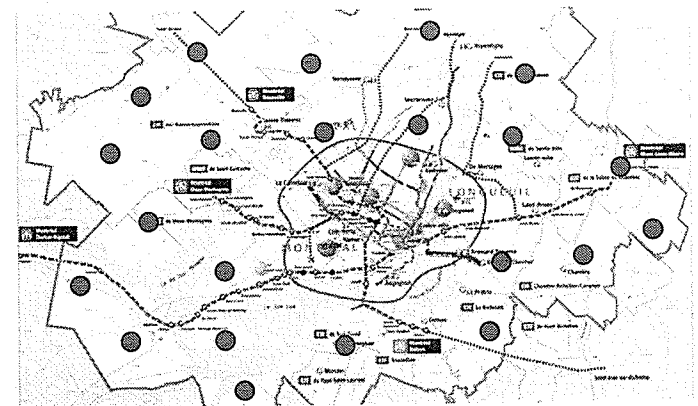
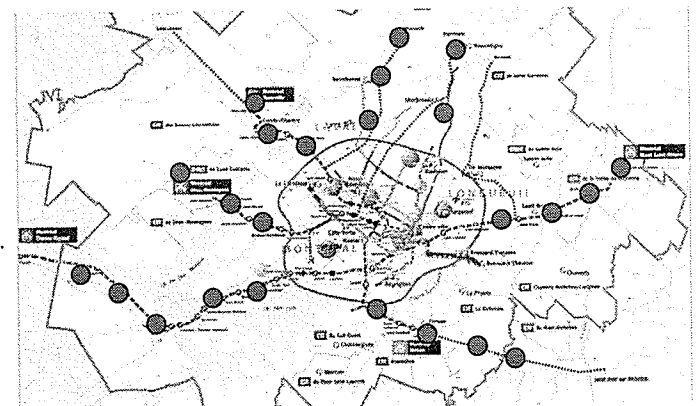
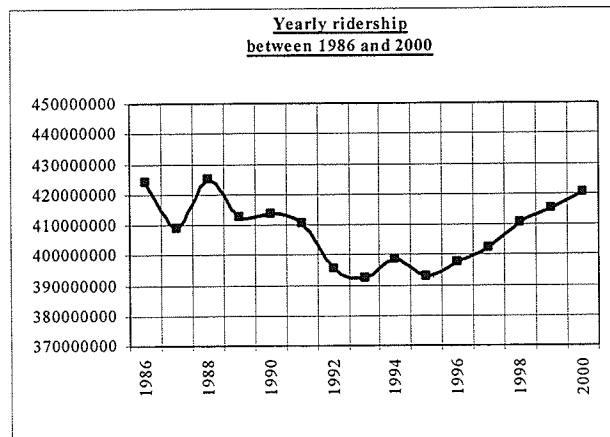
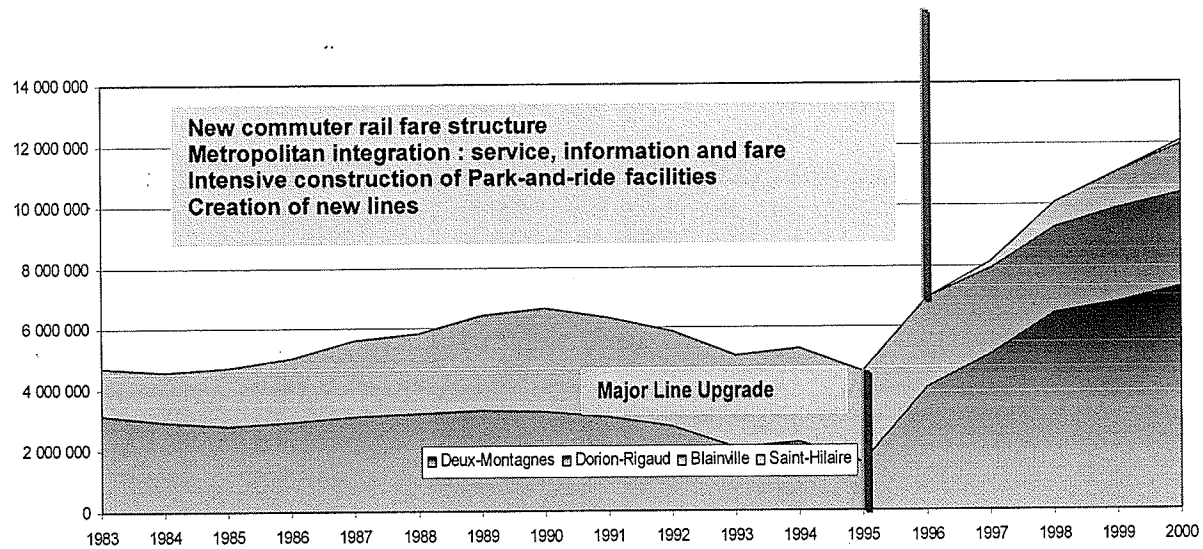


Fig. 86 The AMT's vision for compact transit – oriented growth: current unplanned trend and proposed ideal trend.





1982-95 = - 1% / yr  
 1996 = + 1,2 %  
 1997 = + 1,2 %  
 1998 = + 2,0 %  
 1999 = + 1,3 %  
 2000 = + 2,7 %

Fig. 87 The AMT's contribution to Montreal's commuter train ridership

station proposed at the site will not just serve surrounding residents but also visitors to the eco-territory park. According to studies carried out by the AMT, the demographics, location and demand for affordable housing around the site made it a good location for a TOD. Representatives of the AMT were undecided about whether the station should be a single "cottage type structure or a series of separate quays." They wanted a large amount of parking around the station to support park-and-rides. While they were undecided about what other commercial activities should occupy the core area, they were certain of one thing : they wanted plenty of cafes to create a market for transit users and attract more customers to a lively pedestrian-public transit zone.



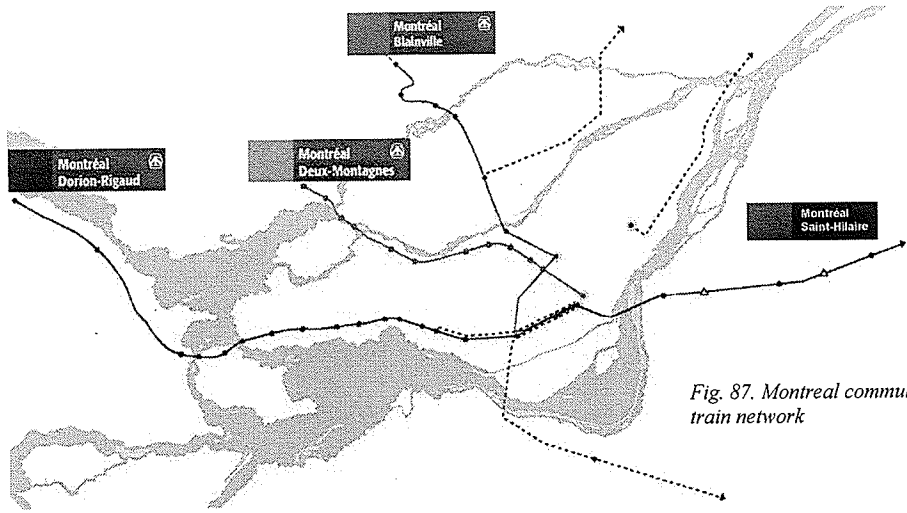


Fig. 87. Montreal commuter train network

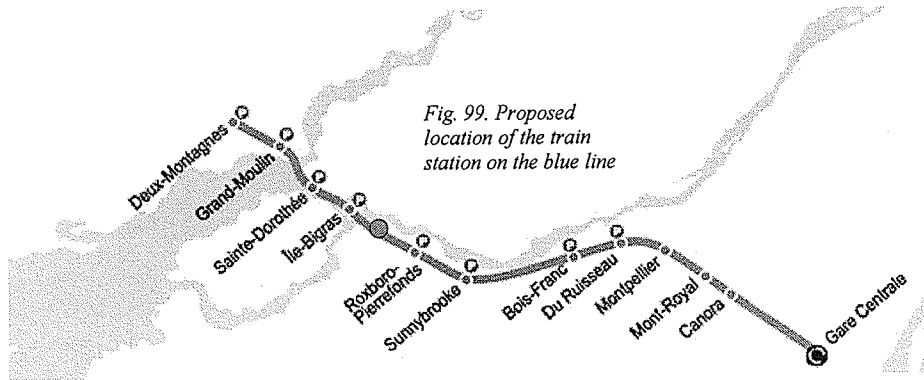


Fig. 99. Proposed location of the train station on the blue line

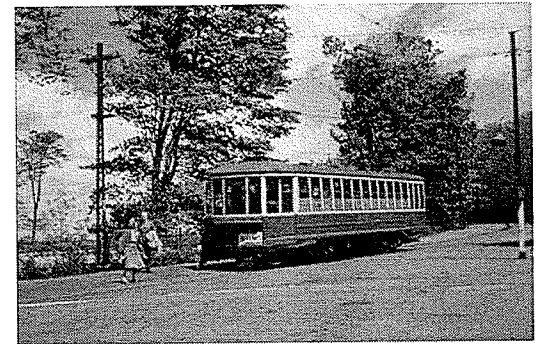
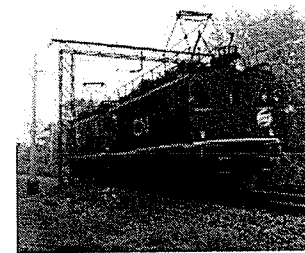


Fig. 88 1959 Inter-urbainat Deux Montagnes line



*(iii) The Borough of Pierrefonds (Borough and site-specific interest)*

In the view of the borough of Pierrefonds the development of the Eco-Territory as a borough park and the addition of a new train stop was highly desired. It was part of the campaign mandate of the elected officials. The site was an important part in the Montreal master plan. Before the design process began the borough representatives stressed on the adherence to the existing by-laws of the site – namely mixed-use and moderate to high density usage and other regulations relating to architectural treatment, landscape design, rights-of-way, parking ratio and floor space index. ( see appendix) An existing municipal service line on the east perimeter of the site was asked to be kept and fitted into the design. At the time of initial proposals and discussions in October the question of connecting the R-C-B site to the existing neighbourhood on the other side of the tracks came up. A level crossing

from the existing south side neighbourhood to the site over the existing track was validated by the district with CN . Also, in order to do so the the obsolete swimming pool from the south side neighbourhood had to be moved to the proposed TOD. The borough agreed to take public opinion about this move during the public presentation. The process of analysis and design (during which I worked with the team as project designer) lasted from September to late November. The borough continued its meetings to bring into effect certain changes that the design entailed. These were taken up at their council meetings, excerpts of which are shown below which indicate that the necessary changes to suit the design were being put

into effect.

<p><b>RESOLUTION NUMBER CA03 020380</b></p> <p>MODIFICATION TO PIERREFONDS/ SENNEVILLE BOROUGH PLANNING PROGRAMME</p> <p>CREATE AN "AVERAGE-DENSITY OCCUPANCY" LAND USE AREA FROM THE "NEIGHBOURHOOD COMMERCE" LAND USE AREA LOCATED ON PART OF LOT 2 950 900 FROM THE CADASTRE OF QUEBEC</p> <p>CREATE A "HIGH-DENSITY OCCUPANCY" LAND USE AREA FROM THE "LOW-DENSITY OCCUPANCY" LAND USE AREA LOCATED ON LOT LOT 1 978 722 FROM THE CADASTRE OF QUEBEC</p> <p>CREATE AN "URBAN PARK" LAND USE AREA FROM THE "AVERAGE-DENSITY OCCUPANCY" LAND USE AREA LOCATED ON LOTS 3 085 858 AND 3 123 602 FROM THE CADASTRE OF QUEBEC</p>	<p><b>RESOLUTION NUMBER CA03 020415</b></p> <p>DRAFT BY-LAW 1047-180</p> <hr/> <p>It was moved by councillor Bertrand A. Ward seconded by councillor René E. LeBlanc</p> <p>THAT draft by-law 1047-180, modifying zoning by-law 1047 in order to in order to create a PA zone (education, cultural and community, public services and urban park) from a part of RB-14 zone (detached, semi-detached or contiguous one-family dwelling units of 1 to 2 storeys), a part of RG zone (detached or semi-detached multifamily dwelling units of 3 or 4 storeys) and on a part of RH zone (detached or semi-detached multifamily dwelling units of 5 storeys or more) on lots 1 171 663, 1 171 907, 1 172 386, 2 744 631, 2 744 632, 2 744 639, 2 744 682, 2 744 683, 2 744 684 et 2 744 688 located on Debours Street and on Riverdale and des Sources Boulevards, be approved as submitted.</p> <p>UNANIMOUSLY ADOPTED</p>	<p><b>RESOLUTION NUMBER CA04 020018</b></p> <p>SECOND DRAFT BY-LAW 1047-180</p> <hr/> <p>It was moved by Councillor René E. LeBlanc seconded by Councillor Monique Worth</p> <p>THAT second draft by-law 1047-180, modifying zoning by-law 1047 in order to create a PA zone (education, cultural and community, public services and urban park) from a part of RB-14 zone (detached, semi-detached or contiguous one-family dwelling units of 1 to 2 storeys), a part of RG zone (detached or semi-detached multifamily dwelling units of 3 or 4 storeys) and on a part of RH zone (detached or semi-detached multifamily dwelling units of 5 storeys or more) on lots 1 171 663, 1 171 907, 1 172 386, 2 744 631, 2 744 632, 2 744 639, 2 744 682, 2 744 683, 2 744 684 and 2 744 688 located on Debours Street and on Riverdale and des Sources Boulevards, be approved as submitted.</p> <p>UNANIMOUSLY ADOPTED</p>	<p><b>RESOLUTION NUMBER CA04 020016</b></p> <p>AGREEMENT IN PRINCIPLE WITH THE AMT REGARDING THE IMPLEMENTATION OF THE COMMUTER TRAIN STATION CONTIGUOUS TO THE FUTURE RAPIDES-DU-CHEVAL-BLANC RESIDENTIAL DEVELOPMENT</p> <hr/> <p>It was moved by Councillor René E. LeBlanc seconded by Councillor Monique Worth</p> <p>THAT the council agree in principle with the AMT regarding the implementation of the Montreal/Deux-Montagnes commuter train station contiguous to the future Rapides-du-Cheval-Blanc residential development located at the west of des Sources Boulevard, in the extension of Riverdale Boulevard.</p> <p>UNANIMOUSLY ADOPTED</p>
<p><i>From minutes of Pierrefonds Borough Council meeting held on Nov. 30, 2003</i></p>	<p><i>From minutes of Pierrefonds Borough Council meeting held on Decemebr 1, 2003</i></p>	<p><i>From minutes of Pierrefonds Borough Council meeting held on January 12,, 2004</i></p>	<p><i>From minutes of Pierrefonds Borough Council meeting held on January 12, 2004 and May 3, 2004</i></p>

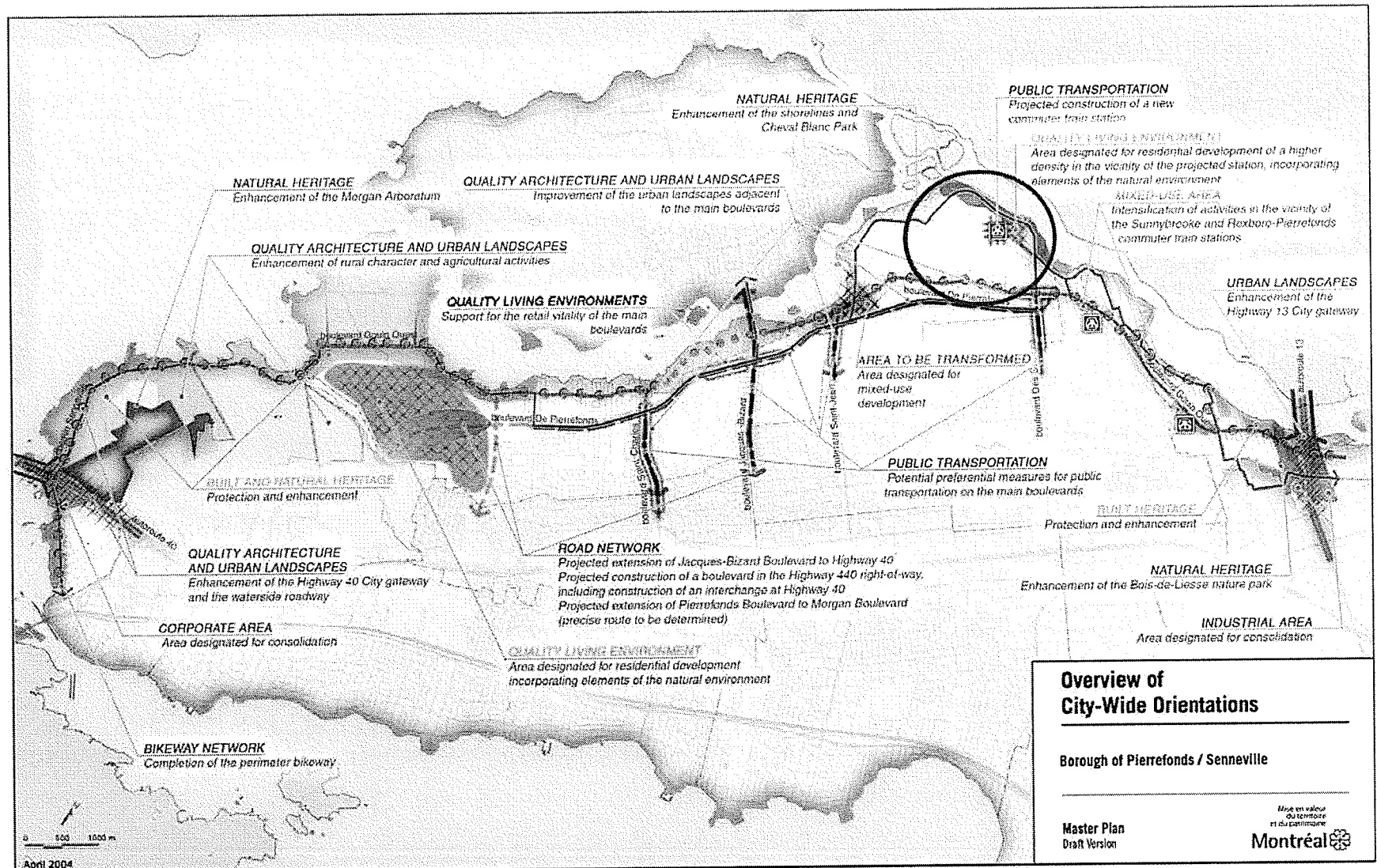
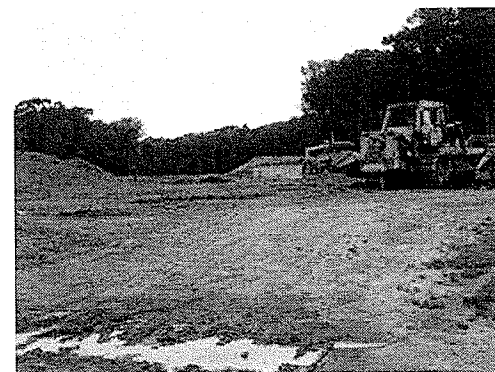


Fig. 89

*(iv) Biologists and environmentalists from the Ville de Montreal (Global, Region and Site-specific interest)*

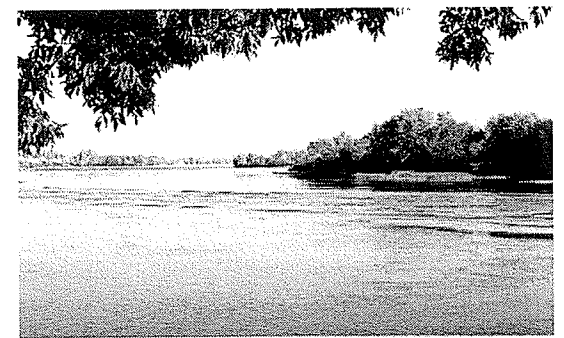
The biologists of the Ville de Montreal who were the most vociferous opponents to the builder's initial layout plan had identified several zones of ecological interest on the site. The western sector of the R-C-B site which was to be preserved as the eco-park had the maximum areas of interest, but the eastern part the site where the development would occur also had important patches worth preserving. The marshy wetland in the centre of the site was an attractant of migratory birds as well as waterfowl and amphibians and no development was preferred on it. The clumps of mature ash and sugar maple trees and the riparian corridor on the buildable site were preferred to be preserved instead of being subjugated to clear cutting. Building on the site was subjugated in article 22 of the Law on environmental quality (L.R.Q., C Q-2) and required an authorization of the Department of the Environment of Quebec. The biologist and conservationists stressed on the preservation of all zones of interest on the site with respect to flora and fauna and identified rare and threatened species which would lose their habitat if clearcutting, as proposed in the initial layout was carried out. Among the rare species found in the existing vegetation on the buildable site was the pubescent agrimoine which had not been observed for 50 years in Quebec. Other rare species observed included the lycopods (of Virginia and laurentien), the micocoulier and the staphilier with three leaflets. The latter two were found in particular along the lines of trees present on near the brownfield site. The stone walls and tree lines on the brownfield had species corridor. Of particular interest was the brown grass snake which is on the list of threatened species. Other animals observed around the eco-park area were the long tailed weasel, marmots, hermines, field campagnols and the russet red fox. It was very important for any future development to respect buffer zones, maintain slopes and run offs and try to preserve the existing vegetation and wetlands. In the absence of buffer zones or bad orientation of housing, many developers had destroyed slopes, vegetation corridors or had resorted to all out clear cutting. The R-C-B site having been identified as an eco-territory by the Montreal master plan, the issues of conservation received much more attention and the biologists had important roles to play unlike in many other projects where their voices and wisdom are often drowned by a rush of mercenary justification or thoughtless template planning.

*Fig. 90. Usual trends during housing construction in the Montreal region: Clear-cutting and absence of buffer zones damaging existing slopes*



*(v) Service des Parcs de la Ville de Montréal(Region, city and site-specific interest)*

The Parks services primarily wants to concentrate on the western sector of the site but advocates preservation of the existing mature trees on the site and the stone walls which reflect the agricultural history of the site. In fact their representatives feel that this element can be repeated in the park area too as a unifying and continuing feature. The riparian corridor and other vegetation was looked upon in its entirety with the waterfront of the Montreal island and its continuation to the island of Roxboro on the north west corner of the site across the de Prairies river. The project designer had to design the continuity of trails in a way that they could originate from the future reception area of the eco-park and combine those along the river. Buffers suggested by the biologist had to be respected. Initially the Parks Services wanted to separate from the AMT and the developer's area. They preferred their own separate parking, entry, and reception area further west than the principal TOD site. This would have entailed prolonging Riverdale Boulevard further into the western side of the park. After much deliberation it was decided that it made more sense to share infrastructure – to have the park reception area closer to or as part of the TOD core area, at a walkable distance from the transit stop. The food services, souvenir shops and Cafes of the core commercial area could serve the park visitors as well so that the clientele would be unified rather than segregated. Since the logical projection based on other existing parks was that the largest number of visitors would be during the weekend when the trains are less frequent than week days and very few park and ride visitors come, the parking designated for AMT park-and- ride users would service the park visitors who came by automobile. This would decrease infrastructure cost and unnecessary duplicated paving over parkland to accommodate parking which might well be underused on weekdays.

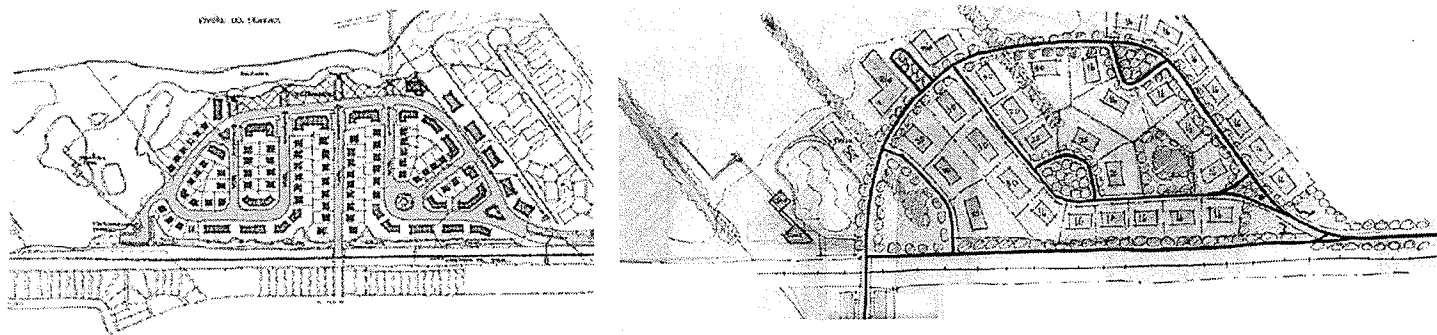


*Fig. 91 Riverfront of Riviere-des-Prairies*

*(vi) The developer group (Site-specific interest)*

The developer group – one of the largest in the Montreal west island – had bought half of the site including the wetland area. The Parks Services had decided to purchase the marshy wetland zone from him so that no buildings could be placed on it. The initial concept,(fig. ) as mentioned earlier, presented by his surveyor team had been rejected due to its insensitive planning respecting neither the existing vegetation and wetland nor the TOD concept. A second proposal by his surveyor was also rejected by the interest groups as it proposed ‘safeguarding’ the existing vegetation by isolating them in patches and moving both the train station and new swimming pool to flank the marshy wetland. (fig. ) When the project was given to the firm I worked for, the principal mandate of the developer group was to design a neighbourhood whose marketability was built upon the image of the river, park and transit access. The moderate to higher density emphasis of the TOD structure matched the existing zoning laws of the sector which came as a big relief to all the concerned parties. The developer wanted to limit the parking demanded by the AMT and the Parks Services to avoid disturbance to the residents of his future residential project. A strong ‘sense of entry’ while entering the

development from Avenue. Riverdale was also desired. The minimum project selling price was kept from 6 million to 8 million dollars so the desirable number of units was placed at 350. There was major concern about how the investment in the neighbourhood's core area would be shared with the City, the AMT, the Parks services and private investors. From the developer's and his financial representatives' point of view the major concern was to 'sell' a quality community on the riverbanks. The additional features such as the train station, core area and park were viewed more as additional perks which could aid in the future increase of the property.



*Fig. 92 Concept layouts put forward by an urbanist working at the developer's office. The first one was rejected by the city, the second was done after considering the existing vegetation.*

***(vii) Ministre de l'environnement, Direction générale de Montréal (Region and site-specific interest)***

In the group meetings the representative from the Ministry of Environment declared that "This process of 'valorisation concertée' proves to be very interesting for the ministry due to the involvement of many different parties for development on one project site". They reinforced that absolutely no construction would be allowed on the 20-100 year flood zones along the river. The developer had to carry out bio-restoration and elimination of contaminants from the partial brownfield on the buildable site. The main intent for the R-C-B site was to preserve a viable ecosystem and create a unique scenic environment overlooking Rivière des Prairies, preserve the the extensive wildlife and plant biodiversity in the area while maximizing access to riverbanks and maintain a link between the conservation areas and three riverside parks of Île Roxboro, Cheval Blanc and Des Arbres.

***(vii) Local residents (Borough, neighbourhood and site-specific interest) Community members & The Green Coalition***

The first introduction to proposed development on the R-C-B site to the local residents occurred during the Montreal Master Plan process at the time of the call for ideas and participation by school children. The development of the eco-park and the new transit stop was part of the election mandate and the residents were well aware and supported the fact. However the factors leading to part of the site being conserved as an eco-park has an interesting story. Local resident interest in the R-C-B site has had a long history and is largely responsible for part

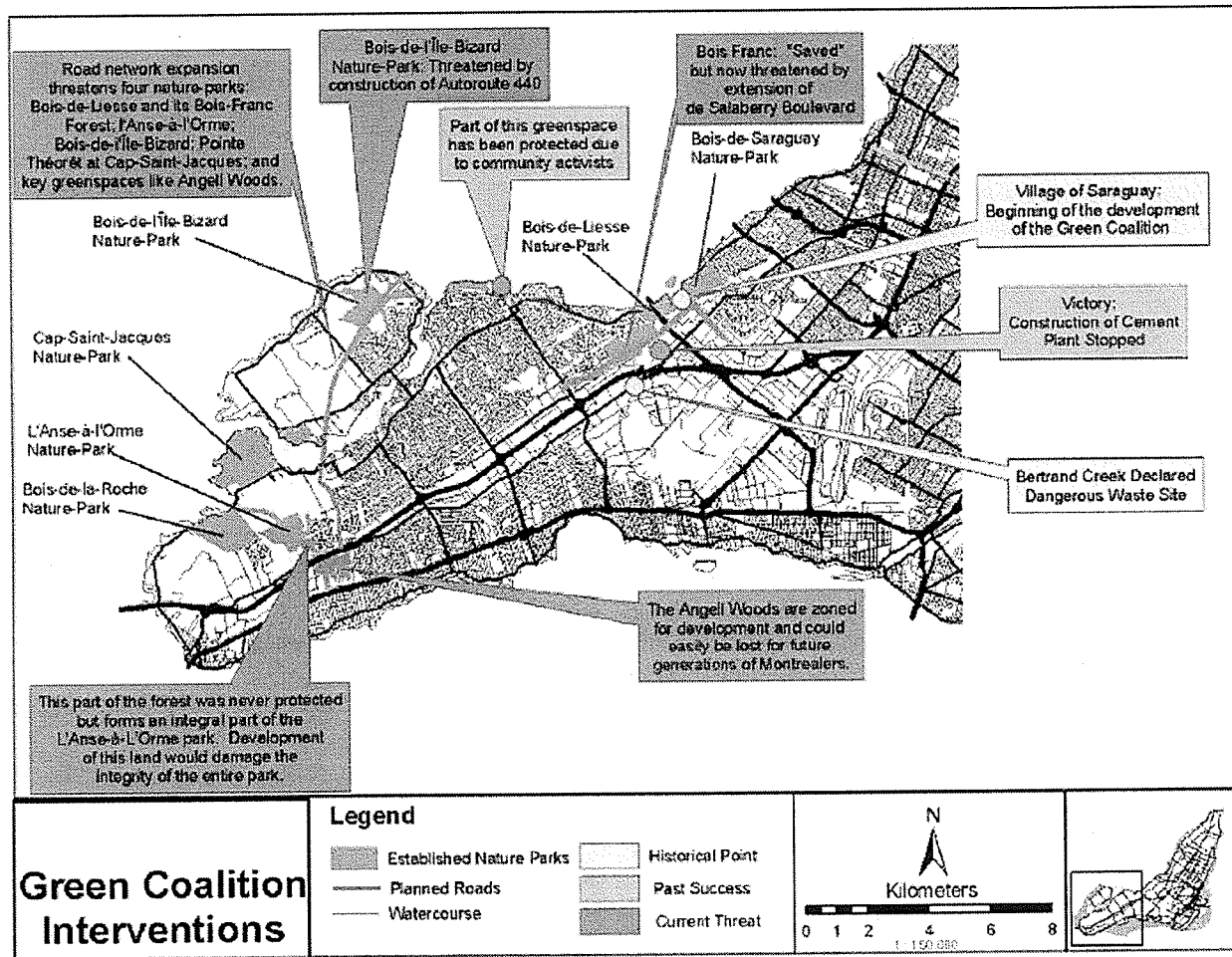


Fig. 93 showing preservation of the RCB eco-territory through the Green Coalition interventions

of the site to be reserved as an eco-territory. In the late 1970s and early 1980s, 'The Green Coalition' was formed by concerned citizens of Montreal's west island to preserve its dwindling natural green spaces. This body was an amalgamation of smaller action groups that had sprung up in separate boroughs. Elsewhere, other vocal and determined initiatives to control unbridled development followed. Among them, "Préservation Environnement Pierrefonds" was formed under the leadership of Diane Fauteux. The Green Paper, outlining its tenets and objectives, and also drafting the articles for its Charter was published. Though best known for its green space efforts, the Coalition's member-groups were working on a broad range of environmental issues - such as recycling and waste management, alternatives to pesticides, improved public transit, water pollution and the need for strong application of the polluter-pay principle.

In May 2002, the Green Coalition and Conseil régional de l'environnement de Montréal joined

forces to rally citizens for Council question period to call upon Mayor Gérald Tremblay to save the green spaces of the Bois-Franc Forest, Bois-de-Liesse Nature-Park and the R-C-B forested area as well as stop a six lane road network through the Bois-de-Liesse park. Replying that he liked green spaces too the Mayor announced that he would lift the 10-year-old Moratorium on spending for green space acquisition and that he, along with Councillor Alan DeSousa, Executive Committee Member for Environment, would create a new framework to protect Montreal's green space. The response delighted the two coalitions. The Mayor and Alan DeSousa also accepted the Green Coalition's invitation to visit all the sites to see the concerns first hand. Lifting the moratorium was promising and in June 2002, Montreal Summit participants were permitted to shape the text of policies that would guide the New City. However, citizens were told there was to be no discussion on budgets. The comparatively small sum of \$25 million, to be possibly matched by the Quebec government for green space acquisition over 10 years, was pre-determined by bureaucrats behind closed doors with no public input. The Green Coalition's David Fletcher was granted only 2 minutes before the assembled dignitaries at the Summit Plenary to make his impassioned plea that there was an urgent need to invest a minimum of \$200 million to acquire Montreal's last irreplaceable natural green spaces. When the Moratorium on green space spending was imposed in 1992 there was an unspent amount of \$100 million with which the Montreal Urban Community (MUC) could have bought a lot of land to preserve but had chosen not to, which is why in 10 years the cost of the same land had doubled. At the city council meeting later in June 2002, the Pierrefonds' Rapides-du-Cheval-Blanc waterfront controversy boiled over. The issue served to focus City Hall's attention on the green space crisis. Robert Libman and Cosmo Maciocia, Executive Committee members for Urban Planning and Parks, respectively, were mandated to join Alan DeSousa in fast-tracking the new program to protect green space and shorelines. The dispute over the massive 'Miami' style high rise development, later followed by the spread out options planned for Montreal's largest remaining undeveloped waterfront, continued to rage through the summer. Close to one hundred citizens with placards, banners and buttons were at City Hall for the council meeting in August, calling for the site to be saved. Le comité pour la préservation du secteur des Rapides du Cheval Blanc, a member group of the Green Coalition, pleaded their case during question period. Mayor Tremblay responded to Cheval Blanc defenders and as the first step in the "Natural Spaces Policy", promised by the end of 2002, the City entered a 120-day negotiation period with a view to purchasing the Cheval Blanc shoreline property, eliminating the planned construction of ten story towers on the riverbank. Housing construction on part of the site to the east would proceed. The compromise was hailed as a green space victory. Since the Green Coalition was an advocate of public transit and compact new urbanism models as well, a TOD was seen as a harmonious proposal that would please both City, Transport and citizen interest groups.

Below are some comments made in regard to development patterns in the area by community members:

"Improved public transit is essential for sustainable development in the West Island. Public mass transit must be prioritized, and developed to the point where there is at least sufficient traffic congestion relief to preclude further large road construction through valuable public, natural spaces. Public subsidization of a horrendously wasteful practice, the use of single



passenger vehicles during the most congested parts of the day to deliver commuters to and from their workplaces, must be seen as anathema.” - *David Fletcher, West Island community member*

“Though Pierrefonds has erected a lot of dense, high impact residential structures in the recent past, planners are keen on implementing “new urbanism” in neighbourhood districts. The new concept bears in mind that development is not necessarily an evil if it is done properly. If environmental impact is given fair consideration then development can proceed without severe repercussions on the landscape. Cluster housing is a lower impact alternative for residential development that keeps the essential integrity of the landscape intact and puts a higher priority on beautification. This method has been proposed for future housing projects in Pierrefonds Ouest. It is characterized by sections of 3, 4 or 5 attached units, where all units are within a short walking distance of the project’s central/focal point. Included in these types of development is the strategic placement of parks and green space. “Cluster programs work with the underlying zoning density, reducing minimum lot sizes and requiring that a portion of the site remain as open space” (*Brabec & Smith, 2002*). This type of development could consider the inclusion of community gardening programs that implicate aspects of both parks and green spaces with recreation within residential areas.” - *Sylvia Oljemark, Past president of the Green Coalition*

“The need to densify can therefore be explained from a sustainability point of view. Plans also need to consider communities where residential and non-residential activities are integrated in order to reduce the number of trips that residents make.

We realize that the community will be composed not only of physical features— roads, homes and trees—but also of social structures that foster good relations and provide opportunity for interaction between citizens. We therefore argued that a good community should successfully integrate people, land, and structures. The features of the land should be worked with, not around, and natural systems of ecological or aesthetic significance should not be injured by development. Buildings should harmonize with pre-existing nearby structures, reflect the history and spirit of the community, and successfully relate to one another. Patterns of development should be shaped around natural systems and features, which in turn should be set in a context that encourages residents to come out and enjoy the outdoors.” - *Anonymous West Island community member on the Montreal EcoPlan website*

When it came to residents living in adjoining neighbourhoods of the R-C-B site, the park site was seen as located more on the ‘other side of the tracks’ with no direct access except through Riverdale avenue. Residents in the apartments to the east of the site used it as a dog park and walking site, though the walking was restricted more along the river banks and forested area. At the public presentation for the new proposal, local residents were shown a powerpoint presentation co-arranged with AMT employees of the meaning and concept of transit-oriented-development with photographs of examples from projects in the United States. This was very well received, especially the idea of the core area with its local shops and cafes. The apartments and single family houses adjoining the R-C-B site were not integrated buildings and had been constructed by separate builders and the idea of having a unified neighbourhood

seemed more appealing. The borough and the city in its push for affordable housing still wanted to go for high rise apartments exceeding 8 stories which was not favoured by the neighbours who were closer to the rail track although they themselves lived in low rise apartments which stood out oddly among the mainly single family residences on the south side of the track. The Green Coalition especially did not support the 'Miami' style high rises of the first 2002 proposal of the developer. And as mentioned earlier, the second and third proposal was rejected by the City because it did not support the TOD concept. Residents from other areas who mainly used the wide des Sources boulevard which was the principle access road to the site were not too concerned about entry points and how the project looked as long as they had direct access to the park and parking around the train stop without having to go through all the residential street. At the same time all surrounding residents seemed to prefer an option where they could drive along the riverside. One of the complaints against the adjoining apartments east of the site was that the street ended in a semi-private residential street and walking up to the river front felt like encroaching on private property. Although the river side was intended for all users its current access did not 'feel' that way. The major factor that affected the residents closer to the R-C-B site was the proposal to have a level crossing and connect one of the streets from the south side neighbourhood to the core area of the TOD. Naturally the earlier suggestion by the borough and the developer's surveyor to make a connection though a single vacant lot flanked by two apartments was frowned upon by the apartment residents. The probable location for the connection was at the site of the obsolete pool. This brought about some debate with positive results. The suggestion by the AMT and Parks services to include more parking in this larger vacant lot was vetoed out by the residents who strongly disapproved of having the pool replaced by both a road and especially by parking. They favoured the option of at least turning it into a garden on green pocket if the pool had to be moved. The shifting of the pool was received with mixed feelings, especially by those who had resided in the area since the 1970s when most of the houses were built. But the idea that the swimming pool would be combined with a gym and along shops and cafes in a lively zone appealed to the residents. However it was decided that there should be a drop-off zone near this area should the pool be displaced so that those dropping off their partners or friends by car to catch the train could do so at the south side itself without having to cross over to the other side. What local residents seemed to want most were more options and choices for transportation mode, land use, accessibility to the park and riverfront and facilities. There was near unanimous agreement that the train station, eco-park and proximity to the core area would bring up their property value. While there were favourable remarks to photographs of existing TODs, when it came down to the site some of the residents preferred that the new houses should be low density and single family rather than condominiums so that there would be less people. But when informed that single family houses would mean that more had to be built to recover the project cost and increase the clientele to the transit station and this would mean that the vegetation would be threatened, there was general consensus that protecting the woods was more important. A few though did not see this as an issue – they felt that new trees could be planted and they would grow in a few years time. There also did not seem to be too much concern by most residents except the conservation groups for the brown grass snakes (in spite of it being a threatened species), weasels and foxes though preserving the wetlands on account of its birds was seen as a good step. Visualization tools and photo simulations to indicate before and after scenarios were highly effective and drove the point home much more easily than words. The concern naturally seemed to be more on how the local residents would themselves benefit from the new development rather than the quality of life of the future residents. Like the developer the neighbours saw parking as an important issue – just

enough for efficient use but not 'too much' as it would increase traffic and be contradictory to train usage. The major hope was that they could directly reach the riverfront and park without having to go behind 'people's backyards.'

## **2. Beyond the Experts' Arena – The designer's challenge**

*"We are calling for a process that neither colonizes local knowledge and places nor removes and appropriates them into expert discourses. Rather placemaking makes expert culture porous and infuses it with experiences, hopes, dreams and struggles of places and local placemakers."<sup>147</sup>*

*Lynda Schneekloth and Robert Shibley*

What is interesting in the design process of the TOD in the Rapides-du-Cheval-Blanc site is that a number of groups were involved and had vested interests. This was a better step than the usual mono directional planning where only the developer and a single firm are involved. Yet by the very presence of many 'experts' from different disciplines and organizational bodies the boundaries of individual vested interests started clashing and considerable effort was needed to blur these boundaries. In the editorial 'Beyond Expert Culture' in the *Journal of Architectural Education* (Feb 2000) Barbara Allen and Roberta Feldman mention the warning of Nan Ellin who calls for vigilance against the hidden intrusion of authoritarian expert voices in what is termed participatory design. Although the writing itself leans somewhat on the 'expertise' of the role of architects and fails to mention that the profession itself should become more holistic and embrace its other related branches, it nevertheless stresses that we need to recognize that we have the option as being viewed by the public either as obstacles to design liveable places or as necessary mediators and consultants. Instead of assuming that the public is uninformed and in need of the specialist's 'proper' ideas we must engage in a collaborative process of the exchange of knowledge between the professional and the public.<sup>148</sup> In *Implacing Architecture into the Practice of Placemaking* Lynda Schneekloth and Robert Shibley put forward the argument of making the profession more relevant, responsible, complex and moving the practice into borders between modern and postmodern theories of knowledge and social/cultural practices that require but do not privilege expert knowledges. As they write : "Moving beyond expert culture is not about the destruction of expert knowledges and practice, but rather about positioning and situating them in a larger context of placemaking, that is, the everyday practice of making and transforming the world."

As a project designer my job was to listen to all the voices and come up with my own design solution through substantive and procedural theories. In the scenario of the firm there were practice driven restrictions, maintaining public relations with the client groups and a tendency to be 'diplomatic' that is not to displease anyone, including my seniors. But in this practicum I have presented a speculation of how things could be if given exactly the same amount of information that I have on the interest groups, I had the freedom to raise my own questions and critically review the very process itself. My intent here is to see if the edges between the rhetoric of emblematic ideas and the reality of practice can be blurred to form dialectic instead of dichotomy. At the discussion table the AMT, the Parks Agency, the biologists and the developer's financial analysts seemed to hold the maximum sway. The City had already done its bit and indeed was the key positive player in the sense that had they not implemented so many zoning changes in the first place, all this could not have happened. The voices of community members because of their long history with the site was important and in spite of their 'blessings' there was still a hint of NIMBY-ism in their approach that created hostility between them and the developer group against whom there had been past clashes. Yet, not surprisingly, the public concerns – such as not replacing their old swimming pool with a parking lot (an aspect

which the developer too agreed upon) and having access to the waterfront – were issues which were more sensitive than some that the AMT and the surveyors would have thought of. As the youngest member of the team, and not quite sure whether to call myself any or all of an architect or a landscape architect, a planner or a designer (the last seeming the best option) it was easy to see how the older ‘experts’ on the team had already been entrenched in their expertise. The node/place aspect of an ‘ecological TOD’ seemed to be the best starting point to see how the different interests could blend and harmonise. If I could view all of us as ‘node/placemakers’ I could put forward the argument that Schneekloth and Shibley make : that crossing borders and dancing in the in-between with the constituents of place locates our experience relationally. It connects it to specific situations and sustains our potential to contribute to inclusive, democratic and civic projects. In this process one could not look for clean cut easy demarcated answers although there was a constant pressure for that. “Easy answers trivialize the complexity of working in the messy world of multiple knowledges beyond expert culture.”<sup>149</sup> If one has to analyze the data, the vested interests and the different layers with a multidisciplinary, inter-relational approach it is necessary for the professionals involved to make their knowledge vulnerable to each other creating a dialogic space within expert culture.<sup>150</sup> If the problem is treated as a placemaking practice – then all participants should come together with their respective viewpoints and collaboratively construct ideas by confirming and integrating each other’s experience. As Schneekloth and Shibley suggest such interventions are developed from a joint understanding of what is at stake, recognize what benefits will accrue to whom and what will be lost. The knowledge of the professional, the place and of local people are shared, disputed, negotiated and considered through a collaboratively constructed space. Instead of following a system of hierarchy expert culture is brought to the place and makes its knowledge and methods vulnerable to the influence of the specific circumstances of place and place constituents. In the case of the R-C-B site bringing the knowledge to the ‘place’ was definitely present, it was the vulnerability that needed working. My individual design that follows in a later section searches for this vulnerability of borders. However my ‘firm-based-design’ that appeased all the groups, although open on many fronts was made to compromise some of its ideals for the monetary returns.

Philip Lewis in *Tomorrow by Design* gives an example of a private interdisciplinary environmental consulting endeavour known as the ‘Overview Corporation’ founded by Stewart Udall in 1969. He chose as his team members people who were talented, had social concerns, showed a disposition for multidisciplinary synthesis and at the leading edge of creativity in their respective fields. But most importantly those who saw themselves as generalists. The group’s multi-disciplinary approach emphasized on public relations and communication skills necessary to get the community involved. The focus of the group was not to plan *for* clients – rather the clients were part of the interdisciplinary team, so the group would do the projects *with* the client using local insights of the community at large as well.<sup>151</sup> In another instance, while working on the Upper Wyoming Valley project for Philip Lewis the advanced undergraduate student group (who were effective in completing first-approximation studies to identify critical areas of focus before handing them to specialists) felt that as they were not yet firmly entrenched within the boundaries of their chosen fields they were able to work together as an interdisciplinary team. In their own words they felt that the project had set precedent in broadening undergraduate education and providing greater access to university research through applied extensional activities. The “common detractors of academic bias, ego,

and arrogance were not ingrained among them. These taboos are thought to result from over-specialization and occlusion of broader, open and more generalized approaches to problem solving."<sup>152</sup> By not having yet become too specialized, they felt they had a unique advantage over some faculty in the quest for the interdisciplinary. I have often pondered on the fact that probably the lack of an unclear definition of the scope of work of a particular profession comes as a blessing in multi-disciplinary planning. In the same breath it can be said that landscape architecture encompasses so many scales and has such a broad definition, it can become the perfect platform for multidisciplinary community design. And this is a notion that should be shared by its related disciplines as well.

The layout which I produced (under supervision of the senior partners) after numerous alternatives and which was largely approved by all the interest groups still has shortcomings when it is critically studied. It was done to please all parties and the clients and compromised for economic means – especially proposing some 10 story towers. Sure enough, although the West Island Green Coalition, is a strong proponent of TOD, the concern raised was of the five 10 story towers on the riverfront side in June 2004. The special concern was the ‘Miami style’ towers to enhance water views of its residents. This was my personal concern too, but as an employee of the firm, the final decision did not lie on me and the principal partners gave in to the demands of the developer’s representative to ‘get it over and done with’, collect the fees and move to new projects. But was this the best possible solution as far as the building design was concerned even though the location of different activity areas seemed appropriate? My individual designs presented in the practicum are therefore a departure of this ‘economic and scheduling’ restriction. They are my own logical conclusions and resulting synthesis based on this entire process of research and theoretical analysis as well as the input of knowledge from the concerned groups. Their synthesis can be said to be an attempt to not only move beyond only the experts’ opinions but also to blend the related disciplines of architecture, landscape architecture and planning. It is also to care more about the process by which places can be made and not just about the product that emerges out of the collaboration. A theory-driven-practice project or vice versa can use the holistic and inter-relational network of ecology and be multi-disciplinary in the true sense only when we can accept that a specific and rationalized version of knowledge is no longer privileged ; that “knowledge from everyone and everywhere is equal.”<sup>153</sup> As Lewis remarks while outlining the fundamentals of multidisciplinary cooperation, no team can succeed unless the interdisciplinary blinders are removed – unless it is recognized that the work of each member is related to the work of others and that ‘experts’ must work as ‘generalists’ as well.<sup>154</sup>

Site Inventory and Analysis

Fig. 94 Division of ownership of the Site

**Site Vegetation and Flora**

The vegetation inventory has been divided into different zones as per fig. 108 The inventory was aided along with qualified botanists. The aim was to identify the different types present and to identify those species that were threatened. The interest of each type of settlement from the ecological point of view was allotted according to the number of rare plants found, the health of the species and the presence of wet mediums. The ecological scale of interest is as followed a system of gradation of: very weak, weak, average, important, very important interest. As an example, a settlement of several thousands of seedlings of *Celtis occidentalis* is of lesser interest than a mature forest comprising of a hundred healthy species. A marsh will have a higher ecological interest because of its potential to have greater faunal and floristic diversity.

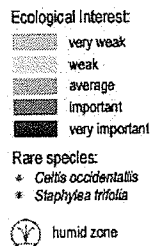
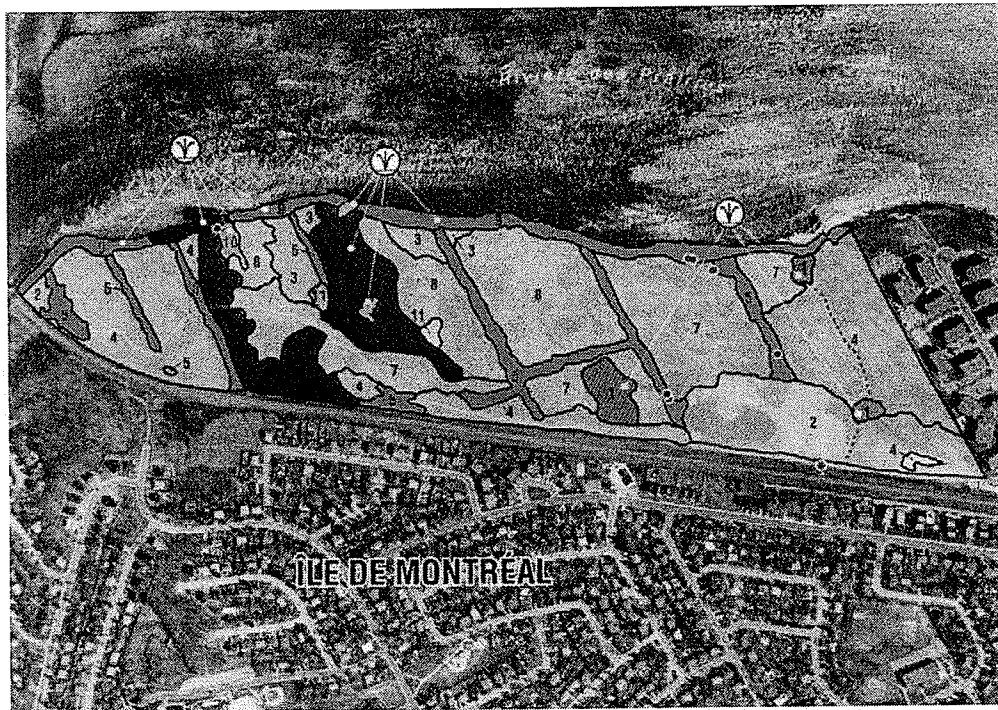


Fig. 95. Site vegetation

#### Zone 1: The marshlands

This group is visible in three areas, one close to the River des Prairies, the other at the centre-south area of the site and the third a smaller clump in the western side. The first two are marshlands. The little diversified ash plantation is dominated by *Fraxinus pennsylvanica* with some *Ulmus americana* in the periphery. Their younger plant layer also includes some *Acer saccharinum*. This little diversified ash plantation is dominated by The ash plantation at the edge of the river, resembles the two first, but its woody plant layer includes some *Acer saccharinum*. The shrubby layer in the three zones is dominated by *Rhamnus catharticus* and *Rhus radicans*, accompanied by some species of *Vitis riparia*. There is also a presence of *Aster cordifolius*. These ash plantations are periodically flooded.

Interest ratio : important

Rare plants present : none

#### Zone 2 : The fields

This zone extends from the mid western end of the ground (close to the railway bridge) and towards the south. The presence of recent disturbances prevents the establishment of an arborees cent and shrubby layer. Dominant elements of the herbaceous layer that were visible included *Daucus carota*, *Aster lanceolatus*, *Aster novae-angliae*, *Kochia scoparia*, *Artemesia biennis*, *Echium vulgare*, *Tussilago will farfara*, *Tragopogon pratensis*, *Asclepias syriaca*, *Phleum pratense*, *Solidago altissima*, *Aster lateriflorus* and



*Cichorium intybus*. The herbaceous layer was not of significant importance.

Interest ratio: very weak.

Rare plants present: none.

#### Zone 3 : The Physocarpaie

This zone juxtaposed in patches below the riparian zone 9 is intersected by stone fences along which woody plant vegetation is present. This layer is very open and composed mainly of *Ulmus americana*. The shrubby layer is very dense and is composed almost only of *Physocarpus opulifolius*.

Interest ratio : very weak

Rare plants present : none

#### 08. Site vegetation zones

#### Zone 4 : Woody plant waste land with poplars:

This large zone is primarily seen on the old brownfield site. The zone is frequently intersected by stone walls along which woody plant vegetation has developed. This layer is very open and its composition varies according to the presence of the first seed-bearer species that gets established in this grouping. Generally, *Populus deltoides* is the most frequent tree, but one finds an occasional presence of *Ulmus americana*. The woody plant layer is also made up of some *Acer saccharum*, species like *Populus tremuloides* and *Fraxinus pennsylvanica*, of trees planted like *Pinus strobus* near the silver maple or a few scattered species of *Elaeagnus angustifolia* present at the east of the ground. This layer is very open, except for the sectors bordering the older forest groupings like the lines of trees on the stone walls or the silver maple (zone 12). The shrubby layer is composed mainly of thickets of *Rhus typhina*, *Rhamnus catharticus*, of *Physocarpus opulifolius* and of *Crataegus* sp. One also notes the presence of *Cornus* sp. in the surroundings of the wetter zones like the silver maple and of *Celastrus scandens* in some places. The herbaceous layer is rich and is composed mainly of *Solidago altissima*, *Pastinaca sativa*, *Lactuca biennis*, *Aster novae-angliae*, *Potentilla recta*, *Apocynum androsaemifolium*, *Melilotus alba*, *Anemone virginiana*, *Cirsium vulgare* and of *Vitiated cracca*. *Alliaria petiolata* is sometimes visible in the more shaded zones.

Interest ratio : weak

Rare plants present : none

#### Zone 5: The lines of trees

These narrow linear zones are found along the stone faces along which woody plant shelterbelts of old agricultural land was established. The composition of this layer is now diversified,

but *Fraxinus pennsylvanica* is the dominant of this group with lesser dominance of trees with nuts such as *Carya cordiformis*, *Quercus rubra*, *Quercus macrocarpa* and *Tilia americana*. One also finds in the woody plant layer of these lines, some species like *Celtis Western*, *Juglans cinerea*, *Carpinus caroliniana*, *Malus pumila*, *Thuja occidentalis*, *Populus tremuloides* and *Acer negundo*. The shrubby layer is dense and is composed mainly of *Rhamnus catharticus*, *Crataegus sp.*, *Rhus radicans*, *Zanthoxylum americanum* and of *Physocarpus opulifolius*. One notes also the presence of *Horned alternifolia*, *Cornus will stolonifera*, *Lonicera tatarica*, *Staphylea trifolia* and *Vitis riparia* in the wetter zones. The herbaceous layer was not inventoried, but one notes the presence of *Aster cordifolius* and *Anemone virginiana*. Three old trees of *Celtis occidentalis*, one of which was located at the border of the riparian corridor (zone 9), were observed and around thirty specimens of fruit bearing *Staphylea trifolia* were visible in a light depression in the west zone.

Interest ratio: medium high but quite important due to the presence of rare plants

Rare plants present: *Celtis occidentalis*, *Staphylea trifolia*, *Microcoulier*, *Agrimoine pubescente*.

#### Zone 6 : The Cephalantaie

The small shrubby group located inside the silver maple group is characterized by the absence of a woody plant layer. This layer is composed mainly of *Cephalanthus occidentalis* and of some *Cornus stolonifera*. The herbaceous layer also showed the presence of some *Osmunda regalis*. This zone corresponds more to a shrubby marsh.

Interest ratio: medium

Rare plants present: no, but high potential for water plants.

#### Zone 7 : Bushy area with elms.

This large area is found primarily in the on the old abandoned agricultural land. It is often intersected by the stone walls along which is mature bushy vegetation. It is practically identical to zone 4 in composition, but the presence of *Ulmus americana* is dominant and one notes lesser numbers of *Populus deltoides*. One also finds younger members of pioneer species like *Fraxinus pennsylvanica*. The layer is very open, except for the older forest groupings bordering along the stone walls of silver maple. The shrubby layer is composed mainly of *Rhus thyphina*, *Rhamnus catharticus*, *Physocarpus opulifolius* and *Crataegus sp.* One also notes the presence of *Cornus sp.* around humid zones and *Celastrus scandens* at some places. The herbaceous layer is vigorous and is composed mainly of *Solidago altissima*, *Pastinaca sativa*, *Lactuca biennis*, *Aster novae-angliae*, *Potentilla recta*, *Apocynum androsaemifolium*, *Melilotus alba*, *Anemone virginiana*, *Cirsium vulgare* and of *Vitiated cracca*.

Interest ratio: very weak

Rare plants present : none

Zone 8: Shrubby wasteland

This zone is found primarily on the old agricultural land. It is bordered by silver maple and stone walls in the east and the south. There is a scattered presence of *Ulmus americana*. The shrubby layer is dominated by a massive presence of *Rhus typhina* over a large surface and of *Physocarpus opulifolius* in the northern part of the zone. In the herbaceous layer *Solidago altissima* is the dominant species.

Interest ratio : very weak

Rare plants: none

Zone 9 : The shoreline

This zone begins along the riverfront and continues towards the west on a major part of the ground. It is comprised of several lines of trees mainly *Fraxinus pennsylvanica* and *Ulmus americana*. In the lower zones which receive natural drainage of the surrounding grounds there are some *Acer saccharinum*. In addition, one notes the presence of old species of *Populus grandidentata*. The shrubby layer is vigorous with many thickets of *Physocarpus opulifolius*, *Zanthoxylum americanum*, *Rhus typhina*, *Rhamnus catharticus*, *Rhus radicans* and of *Crataegus* sp. There are also some species of *Vitis riparia* and *Lonicera tatarica*. The herbaceous layer is varied with *Spartina pectinata*, *Phalaris arundinacea*, *Lythrum salicaria* on the river bank and *Solidago altissima* and *Elymus virginicus* within this patch. Two old specimens of *Celtis occidentalis* were observed at the end towards zone 5 at the east. The lower part which borders the river des Prairies constitutes a wet medium subjected to spring flooding

Interest ratio: important

Rare plants present: *Celtis occidentalis*, *microcoulier* and *lycopes*

Zone 10: Humid North West clump.

In this patch close to the river near the western riparian corridor, shrubs are non-existent. The herbaceous layer is dominated by *Phalaris arundinacea*, *Eupatorium maculatum*, *Bidens frondosa* and *Boehmeria cylindrica*. It is a humid patch dominated by water plants

Interest ratio: medium

Rare plants present: *Arisaema dracontium*

Zone 11: The trembling aspen zone

This zone is divided into three small patches each of 15 mt. diameter. The thick layer is relatively dense and dominated by *Populus tremuloides* accompanied by *Ulmus americana* and *Fraxinus pennsylvanica*. The shrubby layer is poor inside the patch but on the periphery are several members of *Cornus stolonifera*, *Vitis riparia* and *Rubus odoratus*. The herbaceous layer has the presence of *Geum aleppicum*.

Interest ratio: weak

Rare plants present: none

Zone 12 : Sugar maple zone

This layer is made up of approximately 75 % of *Acer saccharinum*, 15 % of *Fraxinus pennsylvanica* and the rest of *Populus grandidentata* and *Ulmus Americana*. There is also a presence of *Carya ovata* and *Celtis occidentalis* on edges of this patch close to the river. The shrubby layer is composed of *Cornus stolonifera* and *Vitis riparia*. In the drier zones surrounding the depression, one finds *Rhamnus catharticus* and *Zanthoxylum americanum*. The principal element of the herbaceous layer is *Onoclea sensibilis*. An individual *Celtis occidentalis* was observed in the west end of this patch. But most importantly, *Quercus bicolor*, a species that is threatened, is found in this patch. Oaks of the species *macrocarpa* and *bicolor* were also observed. There also exists an interesting floristic diversity.

Interest ratio: Very important

Rare plants present: *Celtis occidentalis*, probably *Quercus bicolor*

Zone 13 : North west patch of maple.

This is a small patch at the north end of zone 12 at the edge of the river. The principal species is *Acer saccharinum*. The shrubby layer is slightly represented by *Cornus stolonifera*. The herbaceous layer is abundant with *Phalaris arundinacea*, *Lythrum salicaria*, *Aster lanceolatus*, *Onoclea sensibilis* and *Scirpus flu via Luis*. This patch is humid and corresponds to wet zone vegetable species.

Interest ratio: Medium

Rare plants present: none

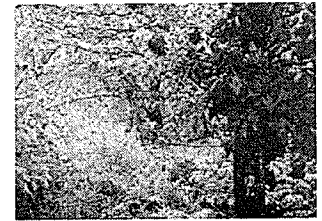


Fig. 96. Site trees

Synopsis related to construction: The major patches of ecological interest in terms of rare plants, wetlands and mature vegetation lie on the western sector and the riparian corridor. However the line of mature trees along the stone walls are worthy of maintaining due to their size as well as the presence of rare species in one of them. The rest of the shrubby brownfield site does not hold too great an ecological value and can be used for development.

### Fauna

At the faunal level, the proximity of the river, as well as the presence of the marshland and wetland allows for a rich habitat of amphibians, reptiles and water fowl. The stone walls along the line of trees in the brownfield site offer a habitat to the brown grass snake – an endangered species. The site is also used by hermines, weasels, marmots, grey squirrels, field mice, shrews and russet-red foxes. This site is also used by the hermine, the weasel with long tail, the marmot, the campagnols of the fields and the fox russet-red. This last prefers the woodlands at the open zones. Birds included black heads, black birds and several other kinds common to the St. Lawrence valley.

Naturally, the greater zone of faunal inventory was on the western sector of the site. No significant observation of avifauna in the buildable site was available from the data bank of the EPOQ (Study of bird populations in Quebec) managed by the Association Quebecoise of the group of ornithologists (AQGO) Species of amphibians likely to be present included were the striped salamander (*Plethodon cinereus*), the clamping plate of America (*Bufo americanus*), the tree frog crucifère (*Pseudacris crucifer*), the wood frog (*Rana sylvatica*), the geographical tortoise (*Graptemys geographica*), the brown grass snake (*Storeria dekayi*) and the striped grass snake (*Thamnophis sirtalis*). The geographical tortoise is another vulnerable species – its presence largely due to the River des Prairies. If the vegetation strips in the site are not protected, the species will likely disappear from the site. The brown grass snakes present in the site are so rare in the province that to conserve them the biologist from the Ville de Montreal suggested that they should be relocated.

Due to the wooded areas being in 'slimmer' corridors and the total size of the territory being 85 acres animals like deer and coyotes which require a larger patch size are absent. The



Fig. 97 Site fauna and stone walls

buildable area of the brownfield site has trees of varied ages. Except for certain sectors the shrubby layer is not very dense. There is an absence of coniferous trees due to which rabbits and hares do not favour this area due to a lack of winter cover. The dominant animal species are smaller mammals as the mature trees and patch sizes favour their habitation.

**Overlay of Systems**

1. Existing and proposed subdivisions and Right-of-ways



*Fig. 98*

## 2. Humid zones

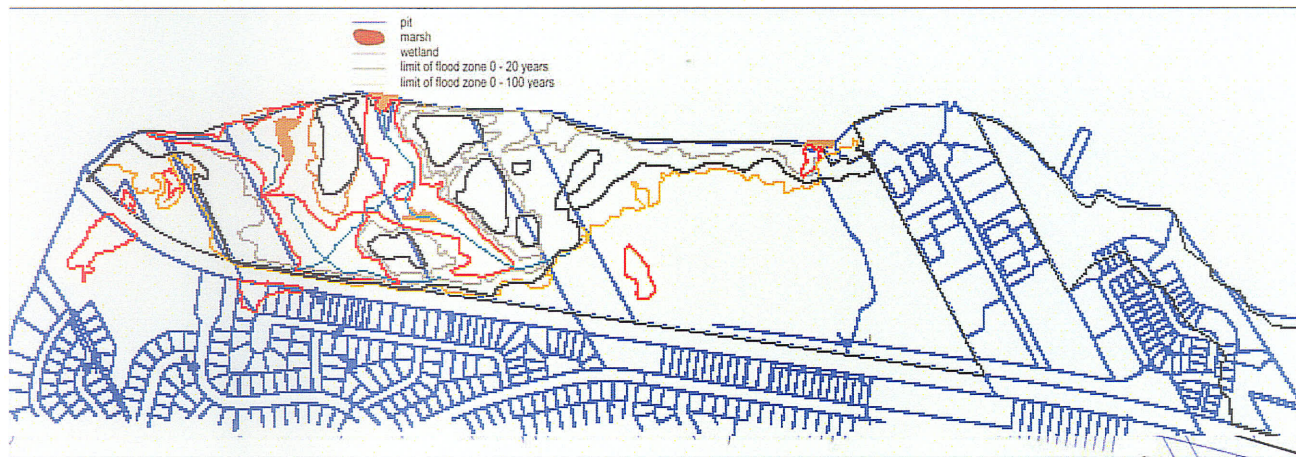


Fig. 99

## 3. Topography and slopes

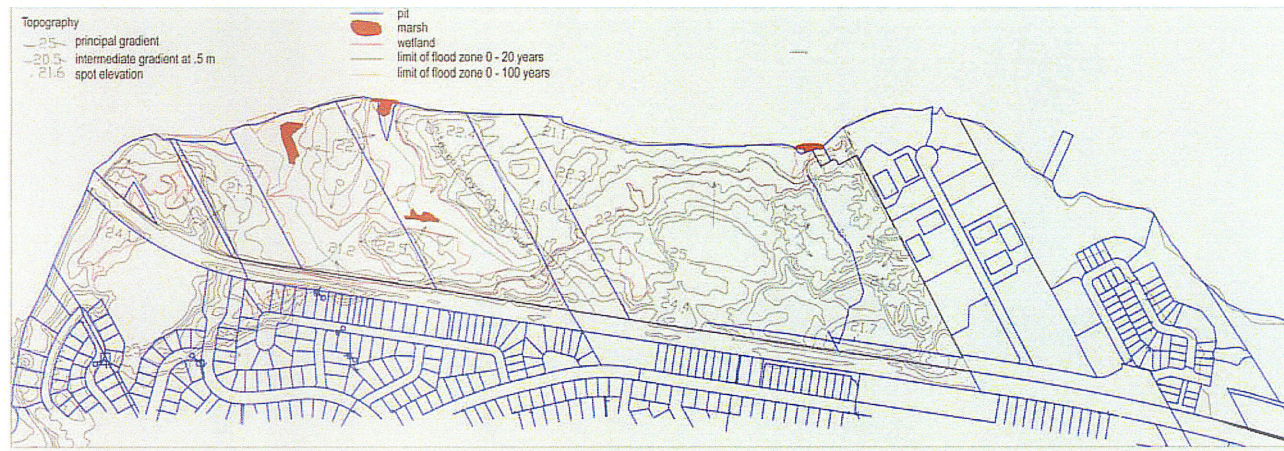


Fig. 100

#### 4. Vegetation Types



Fig. 101

#### 5. Rare Plants



Fig. 102



## 6. Buffer Zone and ecological viability



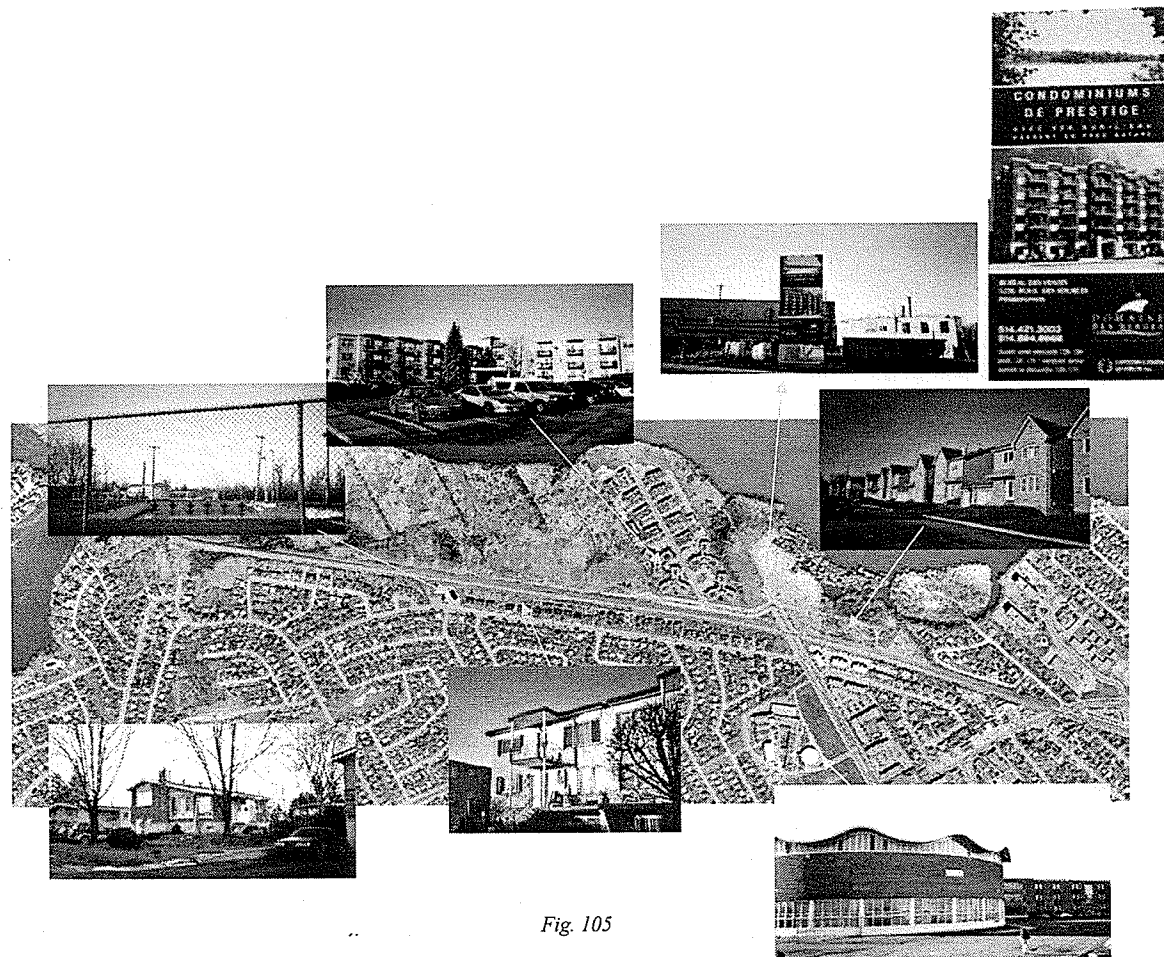
Fig. 103

## 7. Important zones of interest



Fig. 104

**Structures in surrounding areas**



*Fig. 105*

On the east side of the site are a series of disparate buildings including condominiums, single family houses and new six storey high apartments.

On the south side on the other side of the tracks are houses and apartments dating from the 1970s. A derelict swimming pool occupies a larger parcel of land through where the proposed connection to the existing neighbourhood is to be made. The main entry to the site is through the 'des Sources' boulevard which turns into Riverdale avenue as it enters from the east.

Located within a 15 minute walking distance from the site is also a school building. As is obvious the surrounding development has a lot of incongruity in its form and structure. Along the wide des Sources boulevard are located strip malls and big box stores. The residential streets are typically 15 metre wide without sidewalks. At the north east corner of the site the apartments leading to an open space carrying a sign board 'Parc Rapides-du-Cheval-Blanc' indicate a barren lawn where the earlier existing riparian corridor has been clear cut.

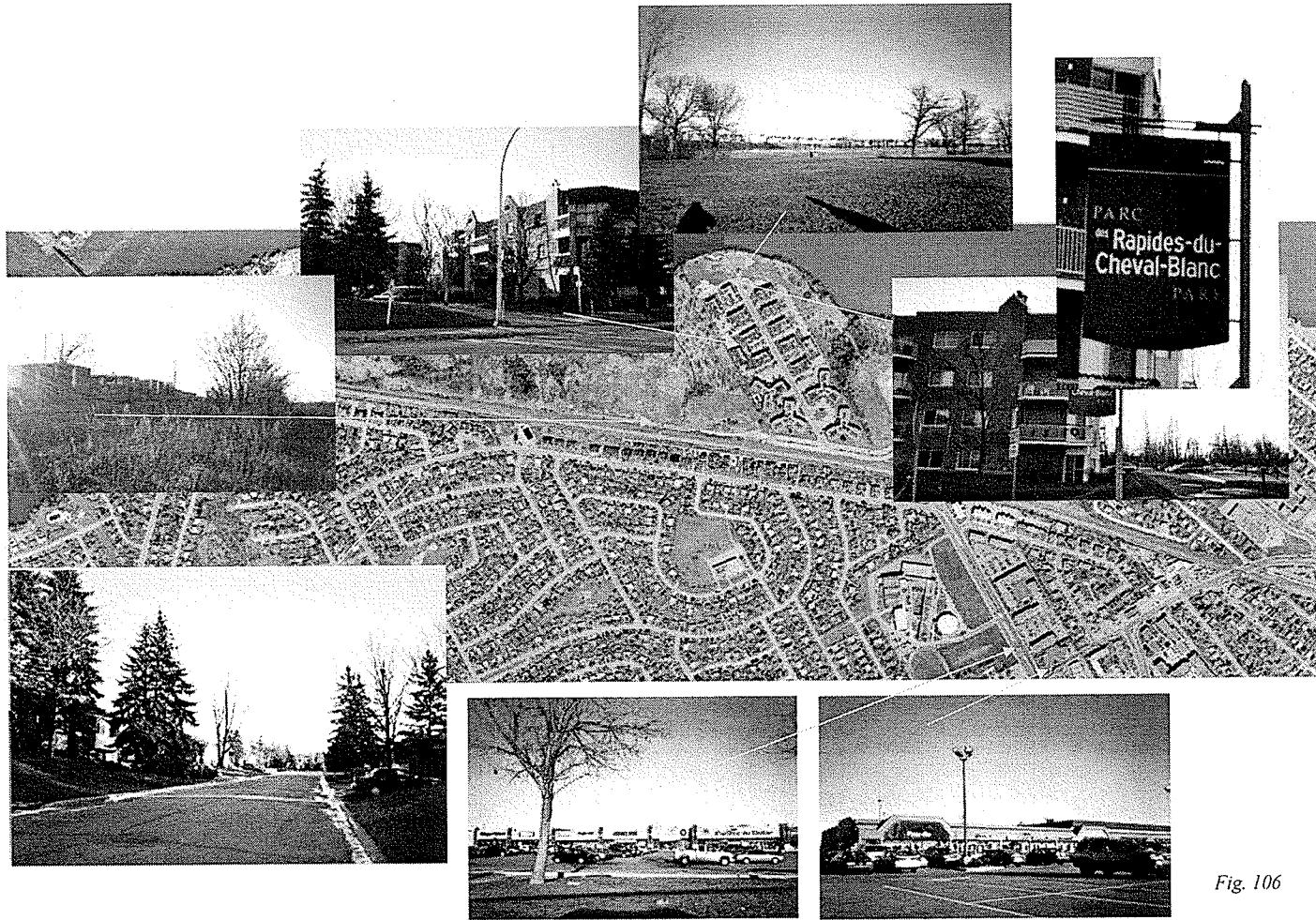


Fig. 106

Aesthetic views from on the site



Fig. 107

## SECTION C

### Design

The design options were developed through a system of layering data. The concepts, land-use and landscape patterns were drawn upon by following the principles of the ecosystems approach, place-making parameters and guidelines for transit-oriented-neighbourhoods and made to comply with the specific and unique conditions existing on this site. Existing by-laws as attached in the Appendix were adhered to. For the program development a common minimum programme as outlined below which followed the mandate of the interest groups was adopted.

#### Common Minimum Programme:

- development with a strong unified image and sense of community.
- Solve access, entry problem from boul. Riviera & old neighbourhood
- Emphasis on characteristics of the site, visual attraction of River des Praires, woods and natural environment
- Evaluation of the impact of the train station, circulation on the site, parking, noise.
- Viability of the project. Potential of development of \$ 60, 000 000 to \$ 80,000 000 average density ± 350 housing units .
- Housing for residents, Core area for residents, commuters, park visitors & surrounding neighbourhoods : Public - private balance.
- preserve water drainage , slopes, wetland, rare plants as much as possible
- Buffers, screens and unifying natural elements
- Min 25 mts. Beyond or within R-O-Ws of road edge reserved for bicycle paths and pedestrian paths on park and river side of buildable zone

Options through the firm:

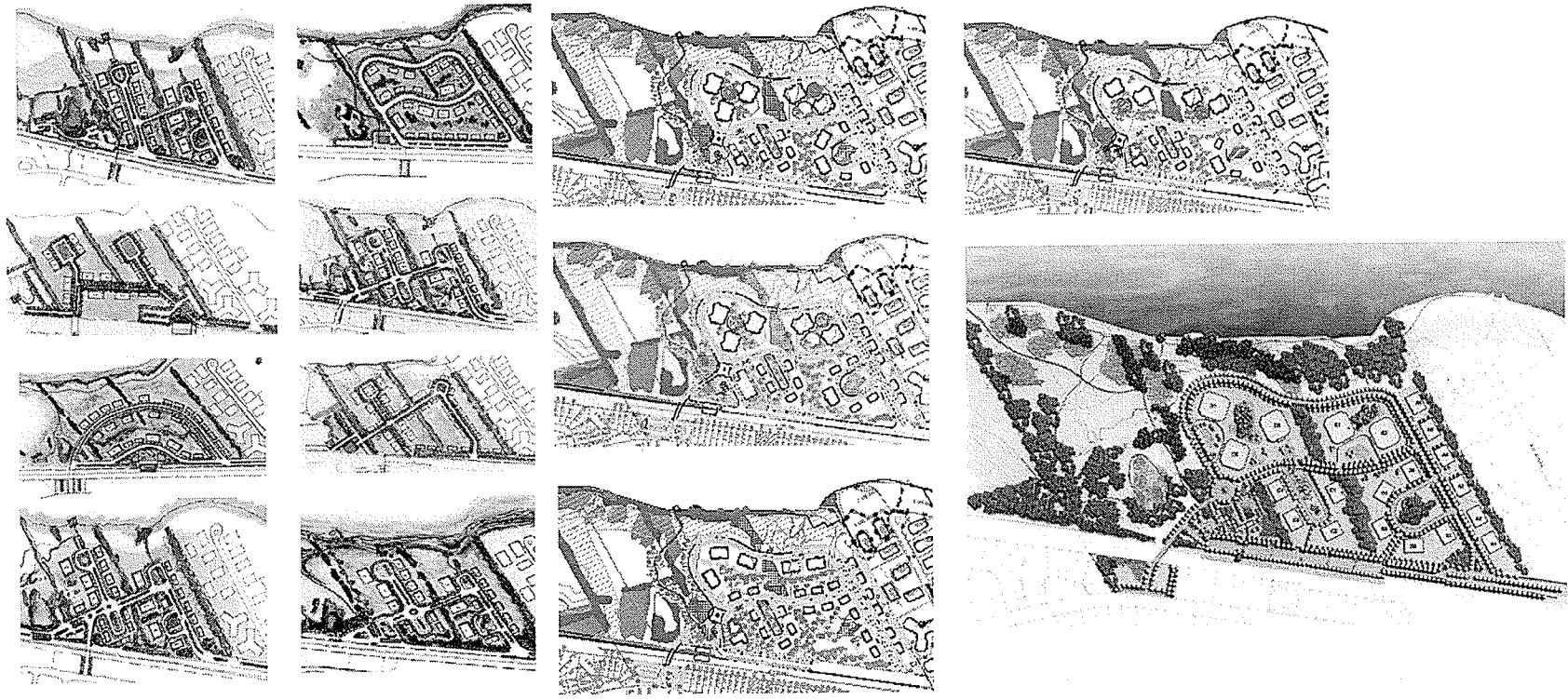


Fig. 108

Individual Design Options for the practicum:



This option uses the cluster configuration while trying to maintain network connectivity and preserving the natural corridors and wetlands. The basic difference here is the addition of the riverfront access road so that non-residents can cruise along it and have direct access to the waterfront without having to pass through residential areas. There is better balance of the public-private 'feel'. The core area with the transit stop has a larger space than the second option and the access to the site by road is twofold – one from the east side by prolonging the existing road and the second – connecting the older neighbourhood through the proposed relocation of the derelict swimming pool and moving it along with the gym and café-commerce area on the other side. There are a total of 360 units.

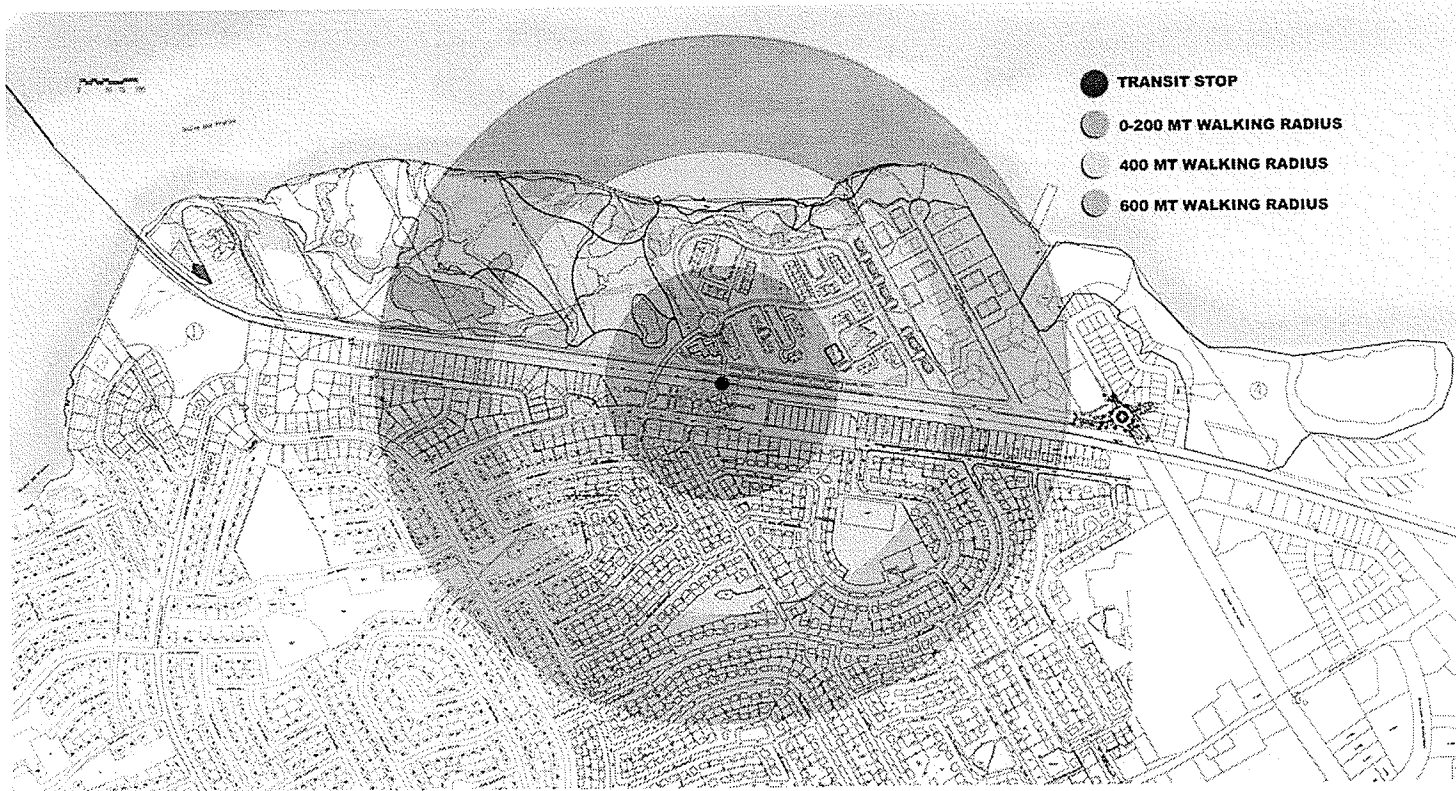
Fig. 108 Option 1



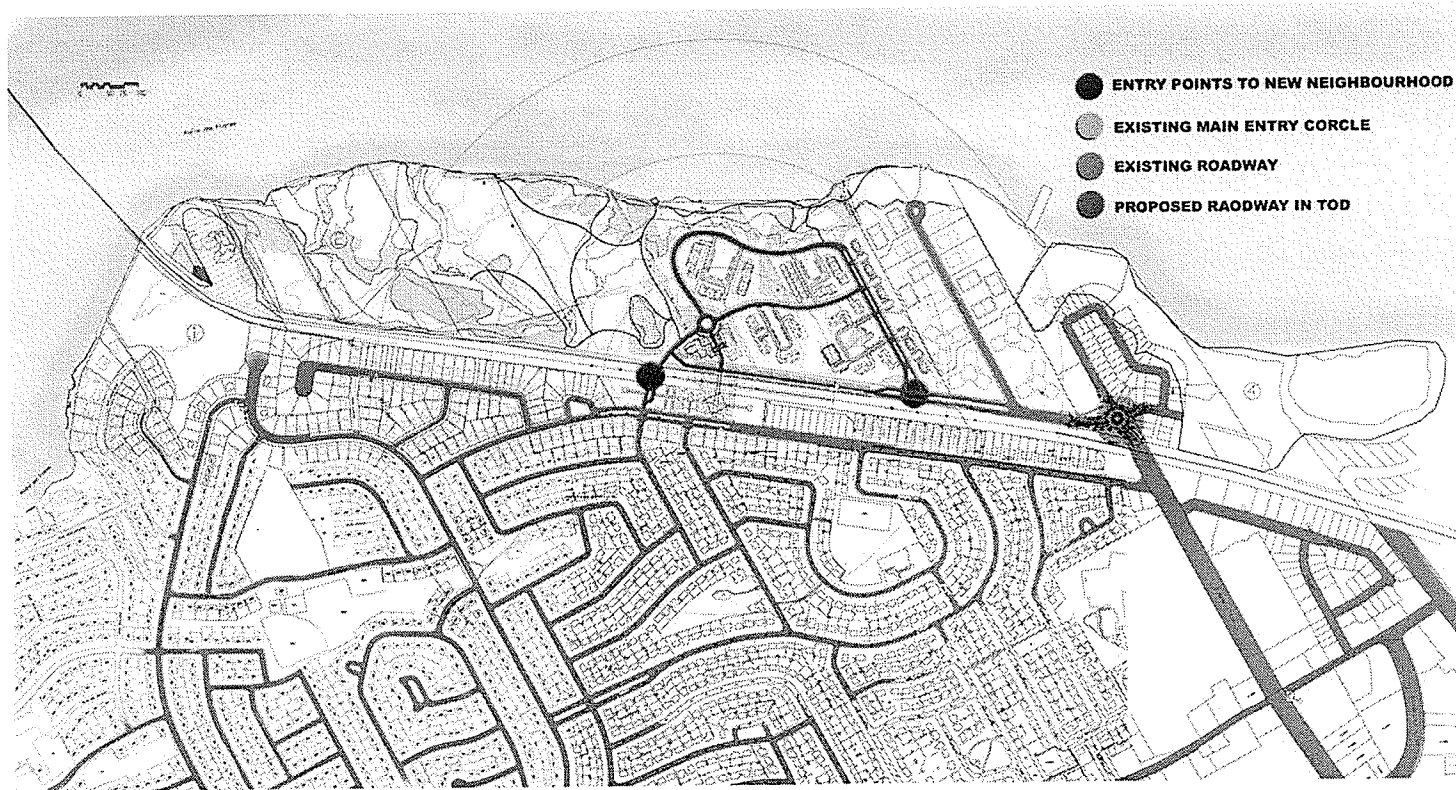
This option is more economic in terms of road length and linear network connectivity. The open space at the end clusters lead to public areas accessible to visitors as well. The core area has slightly lesser area than the previous option. The train stop like the previous option is at the transit core area accessible from both sides of the tracks with parking and drop-offs located conveniently. Road access also has two principal entries to the site. But the one in the older neighbourhood follows a more prominent arterial in the existing neighbourhood's road network. Here too, there are a total of 360 units comprising of 1, 2 and 3 bedroom condominiums and four bedroom row houses.

Fig. 109 Option 2

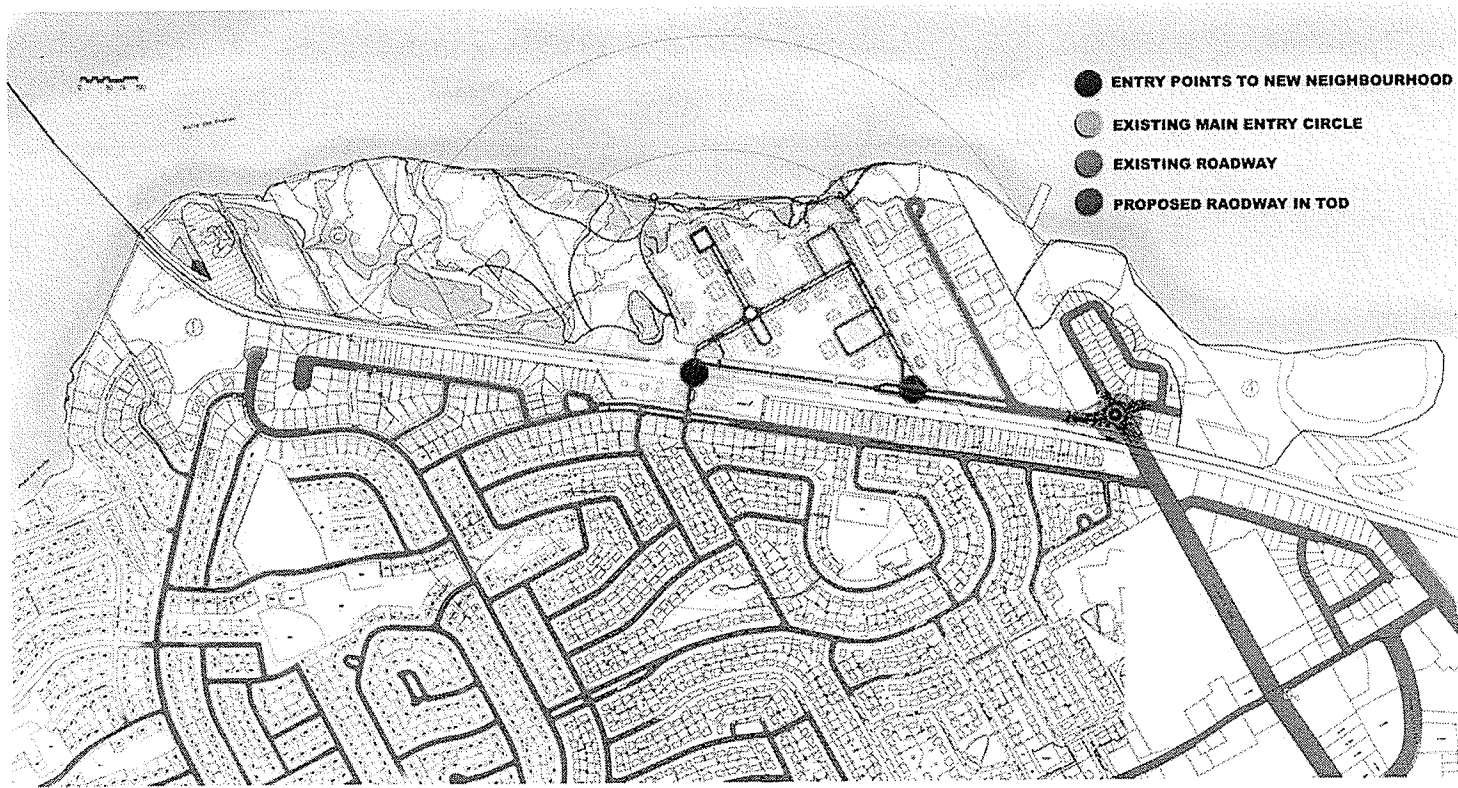




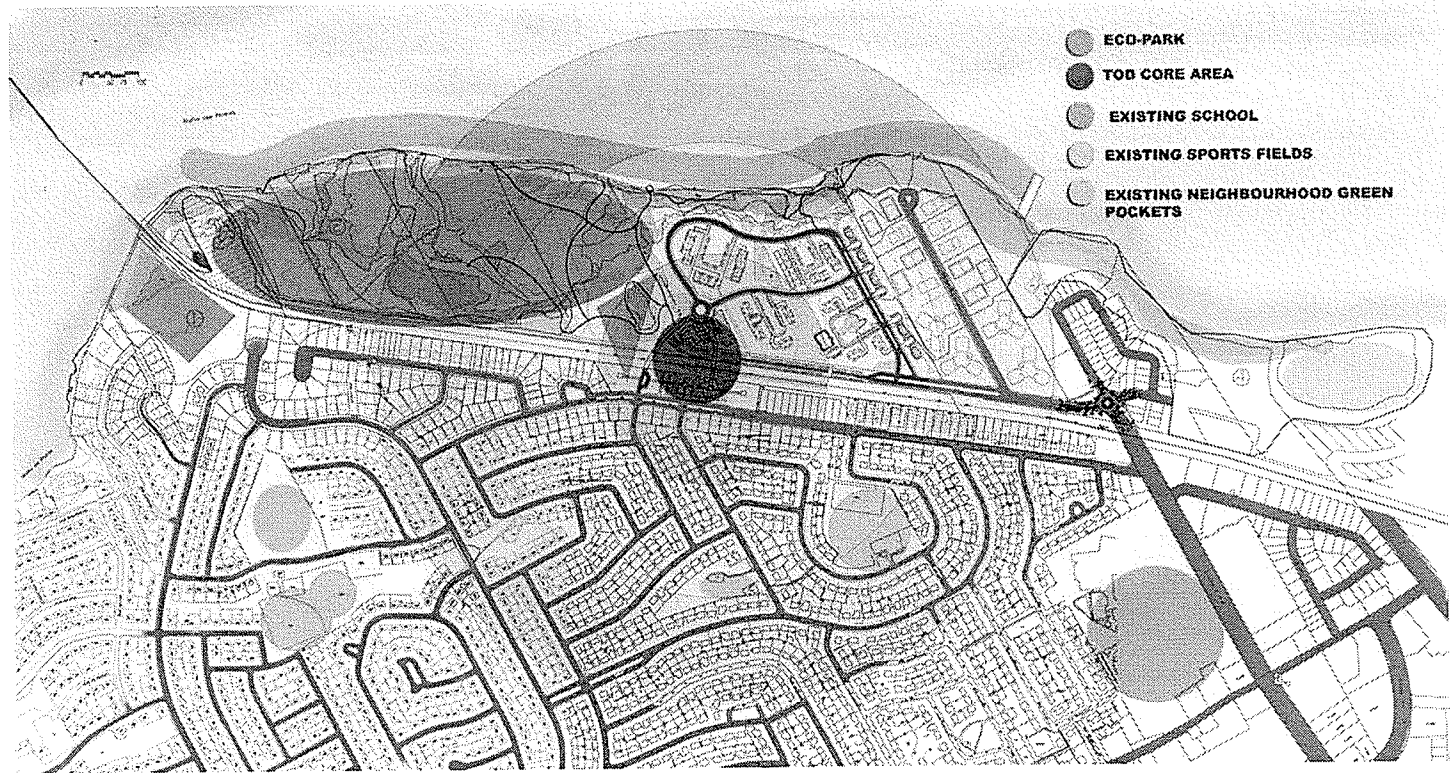
*Fig. 110* RCB Transit core – radial access within 10 minute walking distance



**Fig. 111 RCB TOD – entry points from existing neighbourhoods – plan option 1**



**Fig. 112 RCB TOD – entry points from existing neighbourhoods – plan option 2**



*Fig. 113 RCB TOD – shared activity nodes between proposed and existing neighbourhoods*

Plan option 1 – process and layers

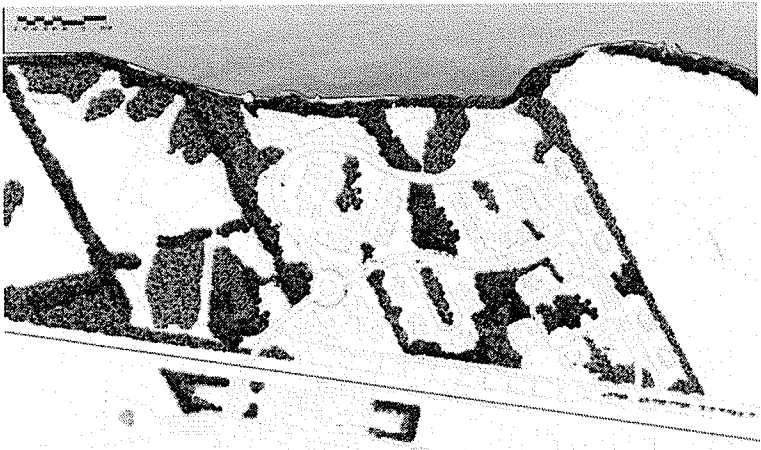
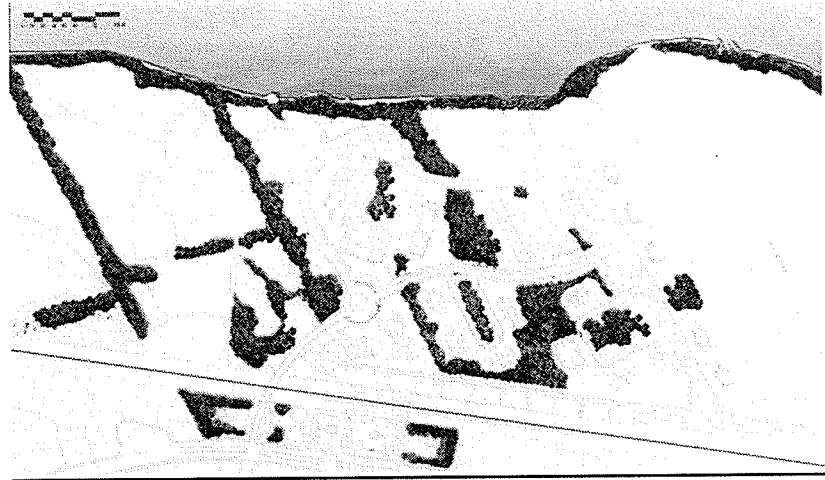
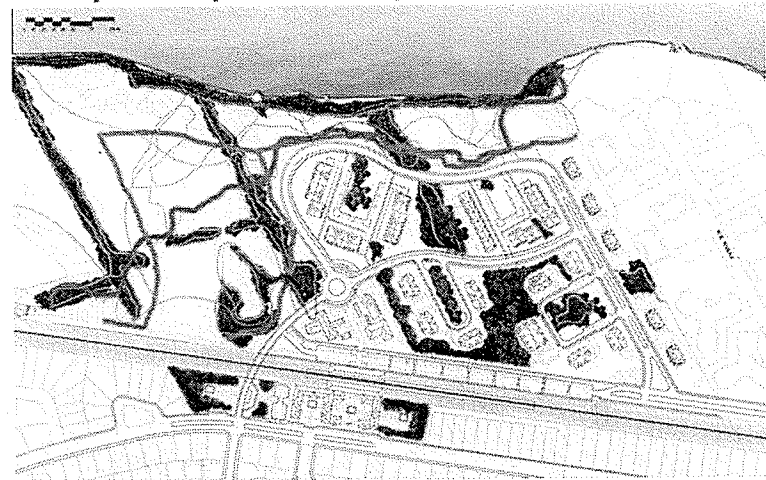


Fig. 114

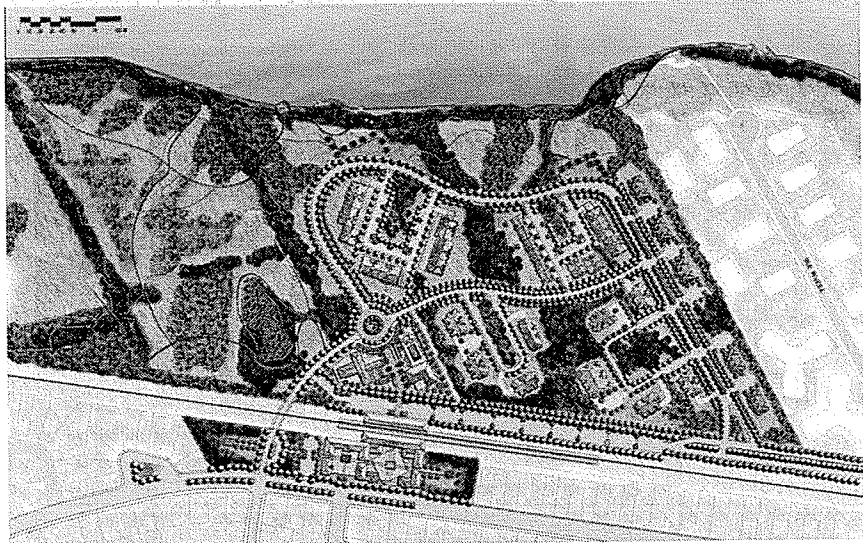
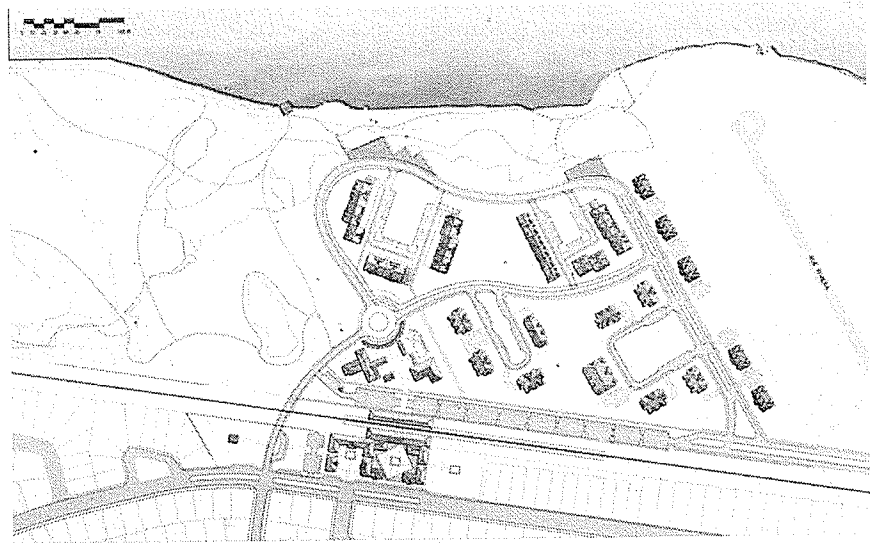
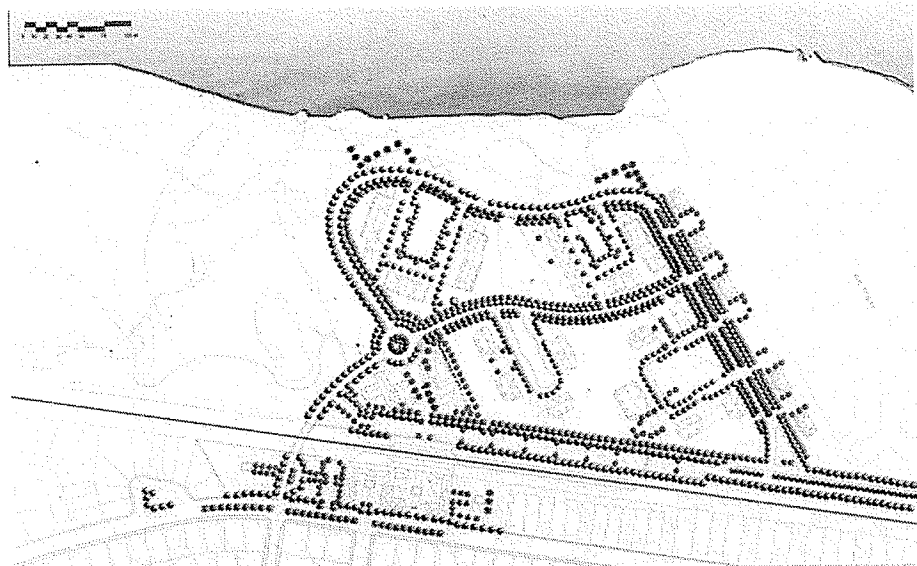


Fig. 115

Fig. 116 Plan option 1 – cluster A

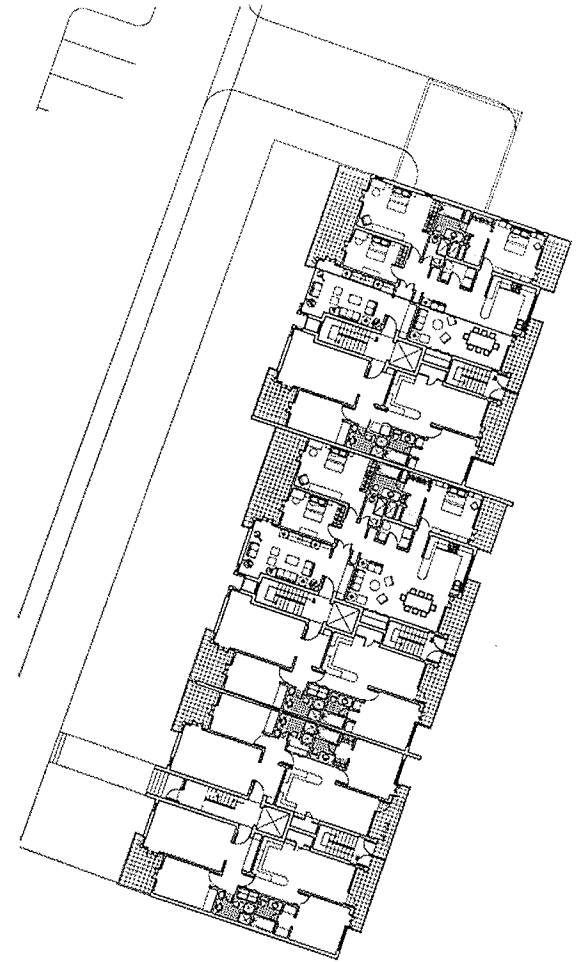
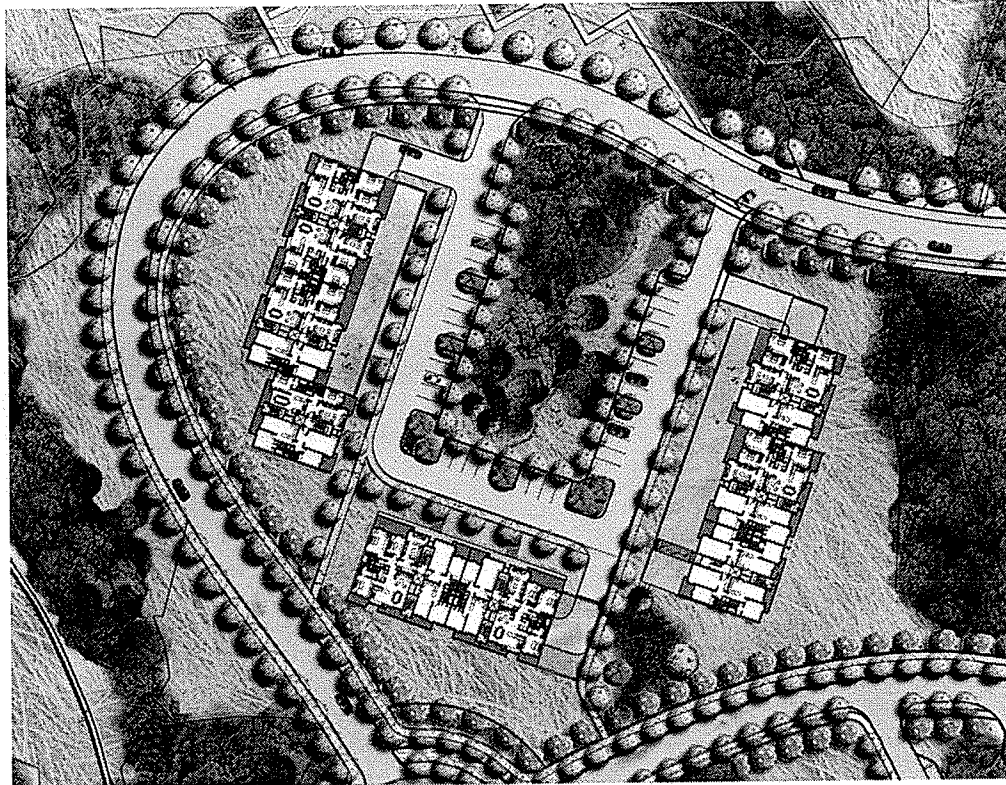


Fig 117 Plan option 1 – cluster B

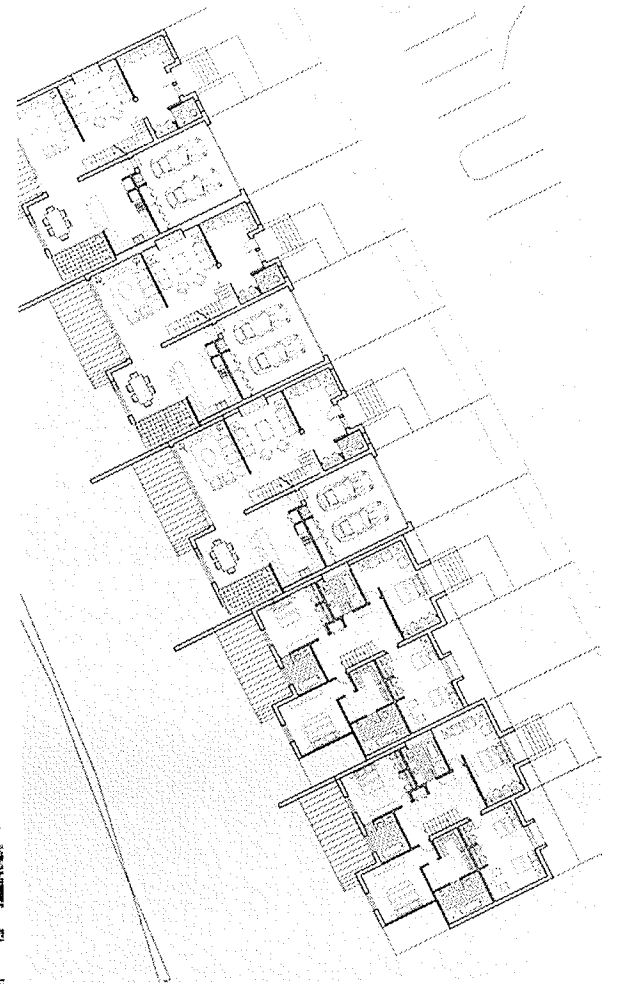
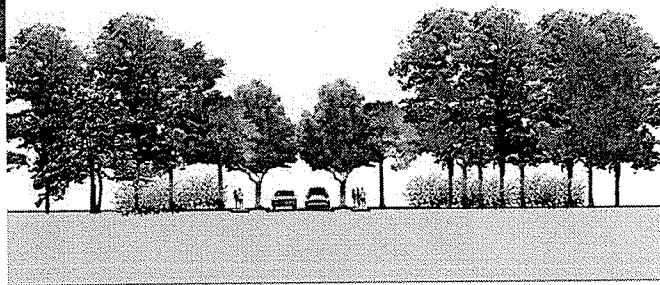
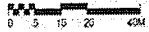
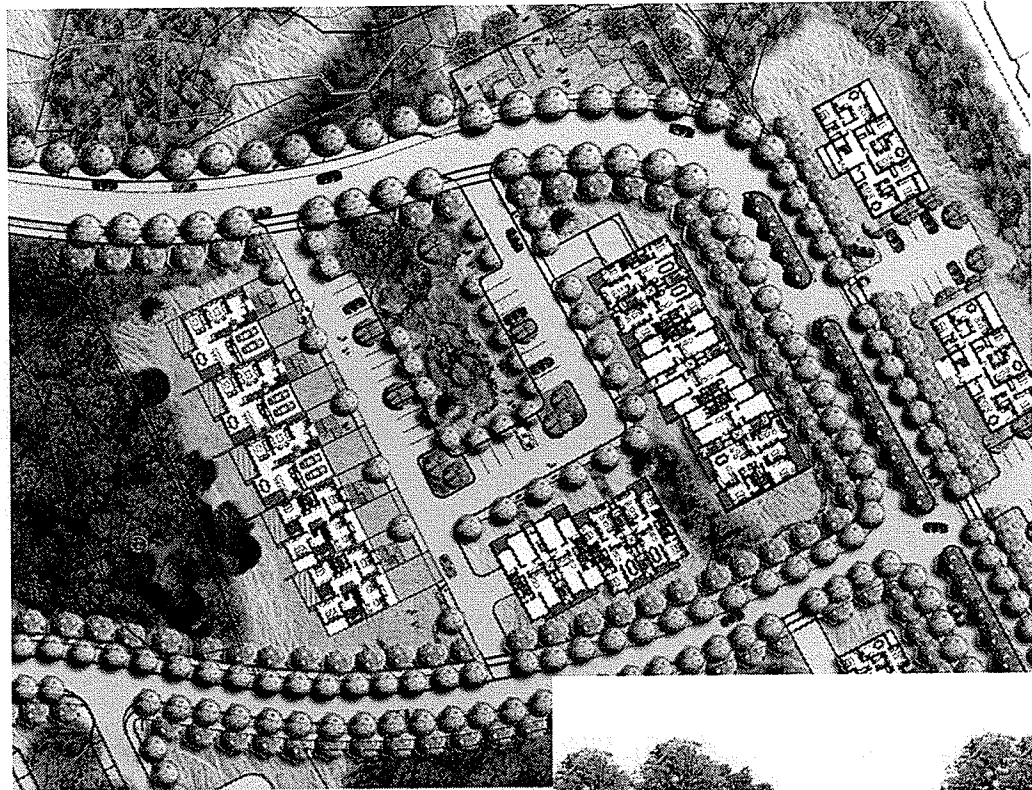
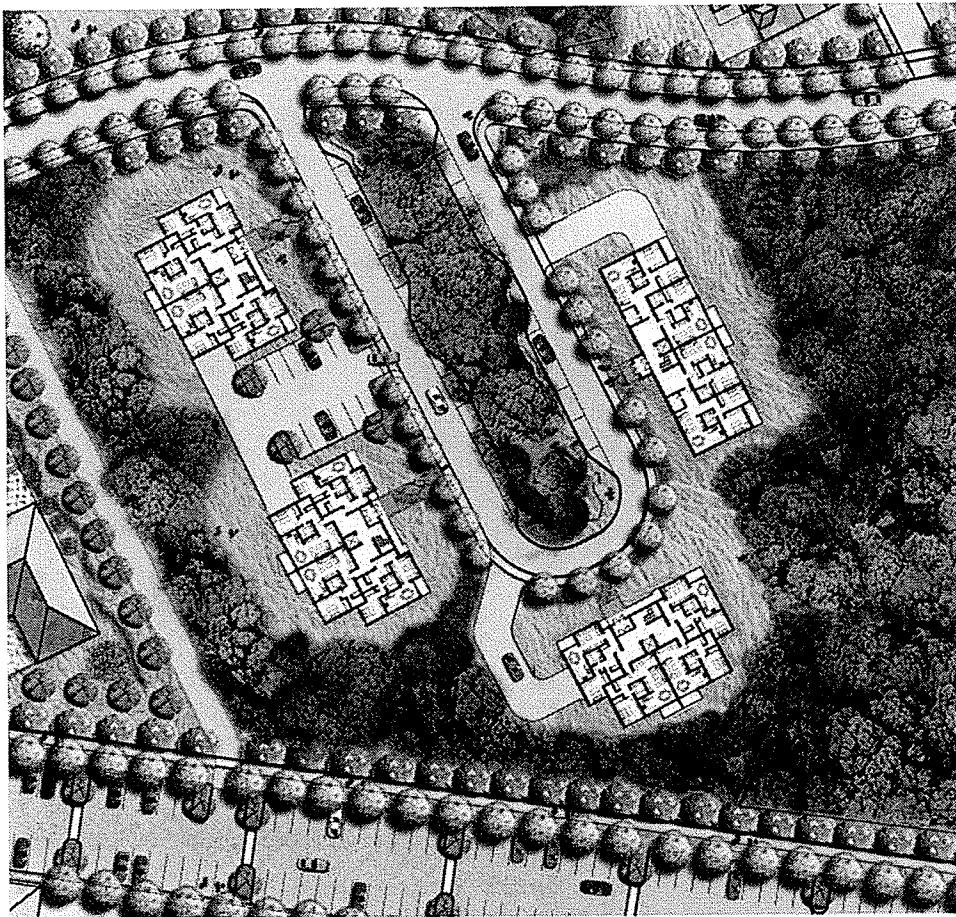




Fig. 118 Plan option 1 – cluster C



0 5 10 20 40M

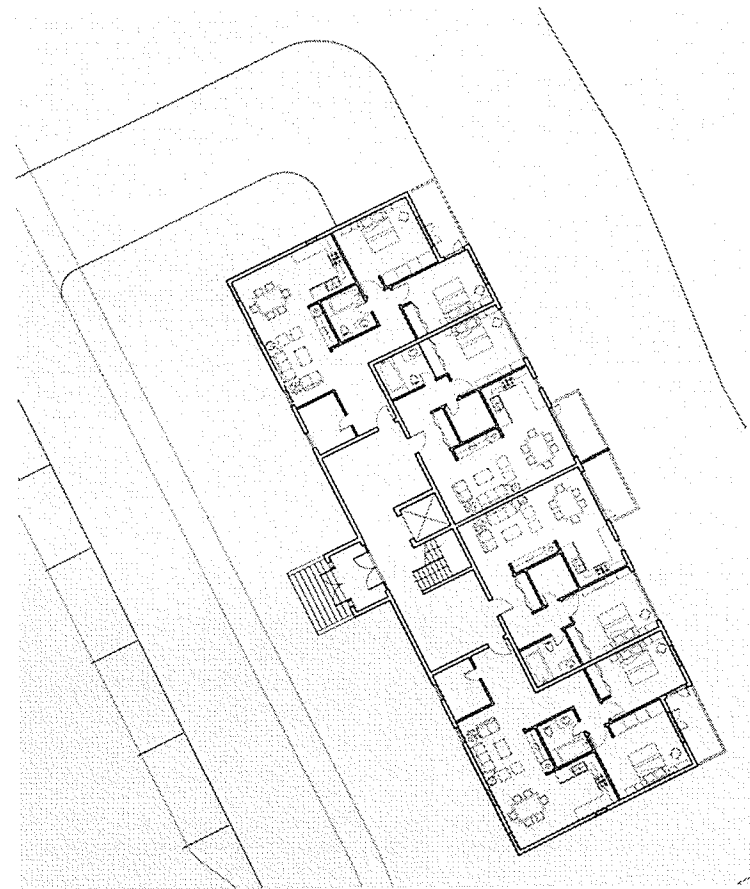
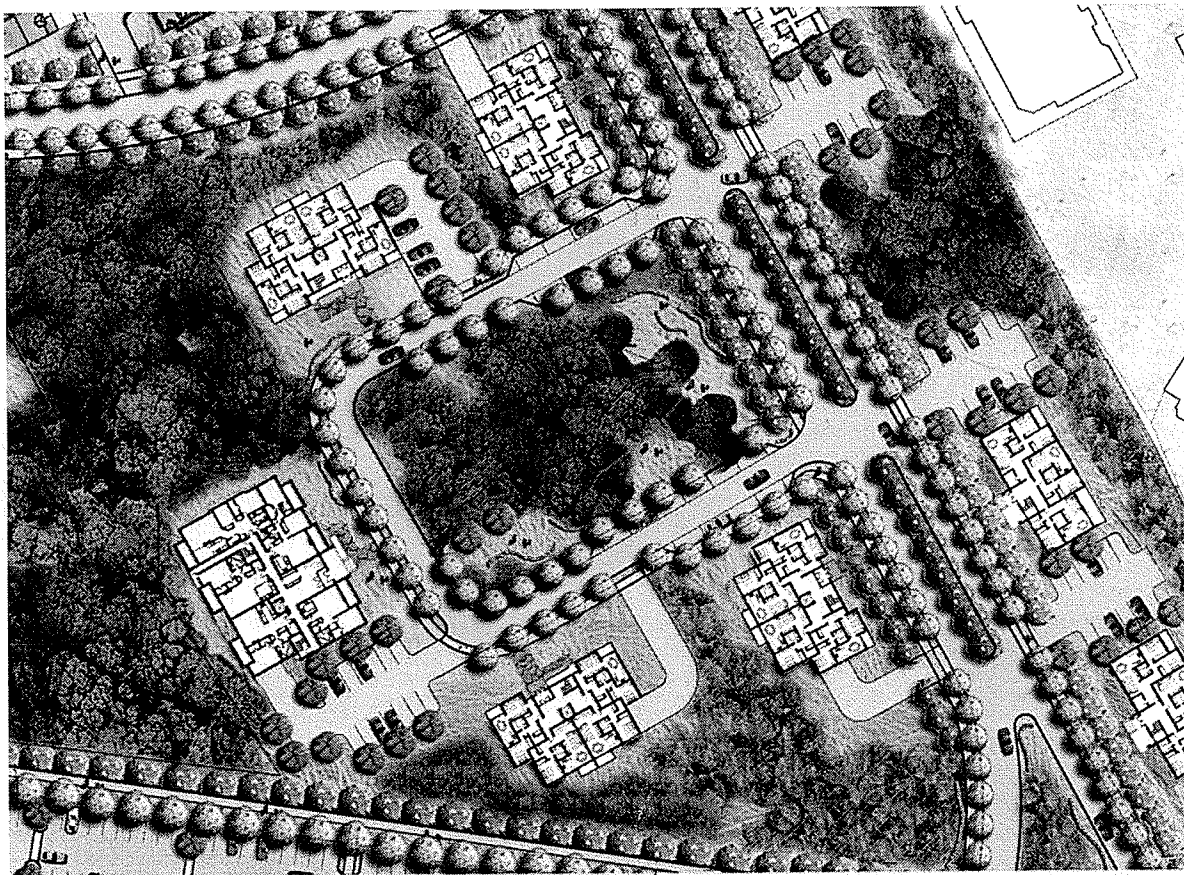
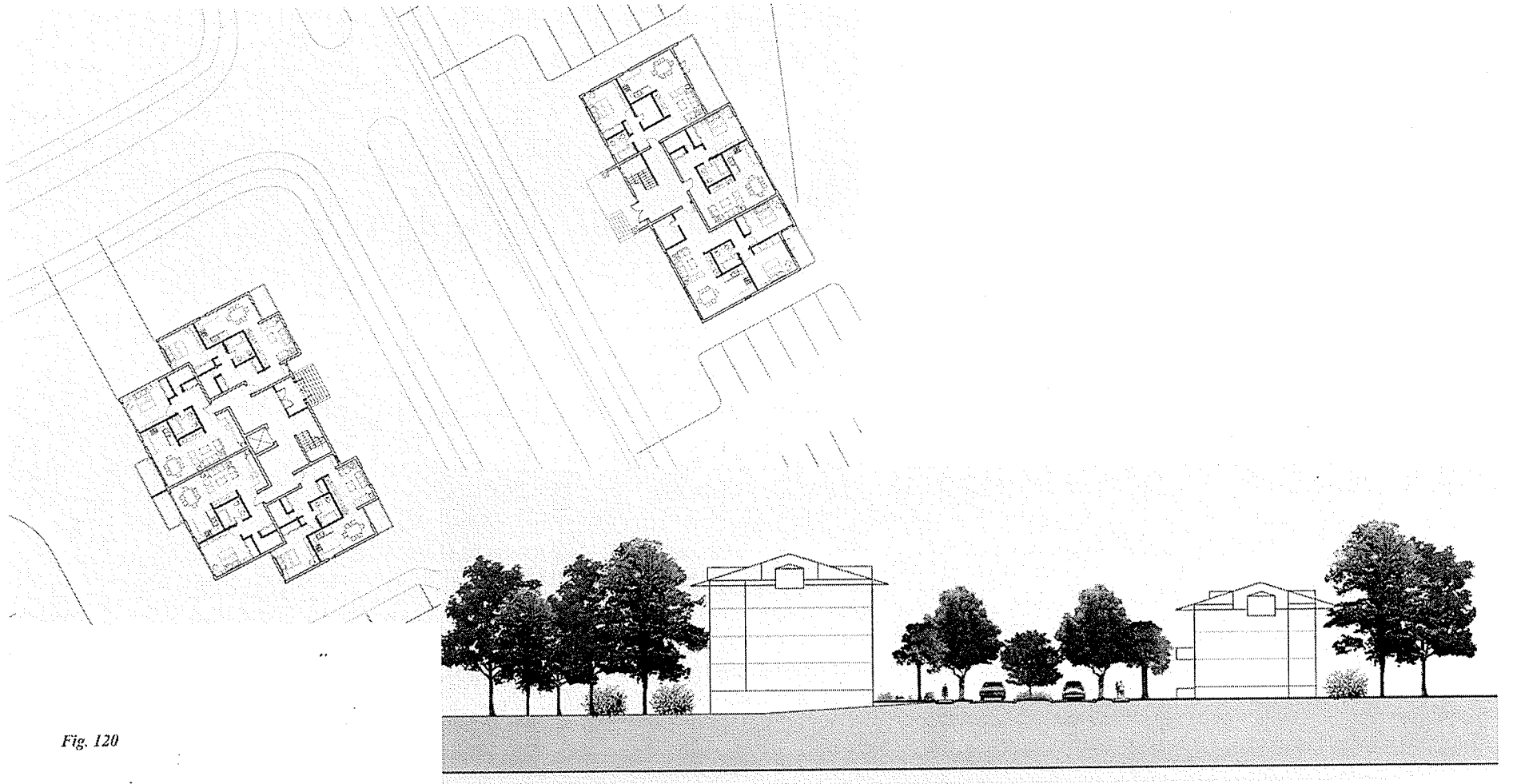


Fig. 119 Plan option 1 – cluster D





*Fig. 120*

Fig. 121 Plan option 1 – core area

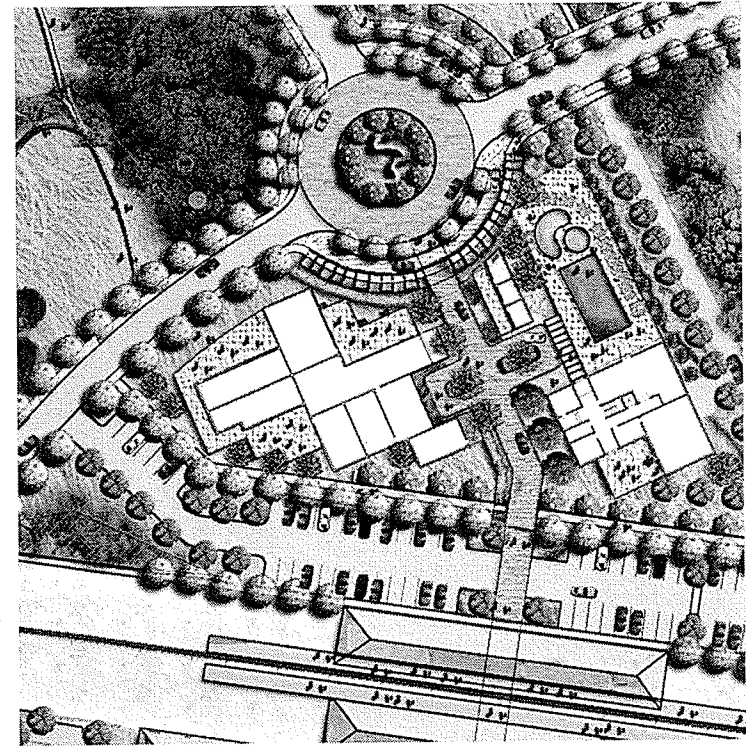
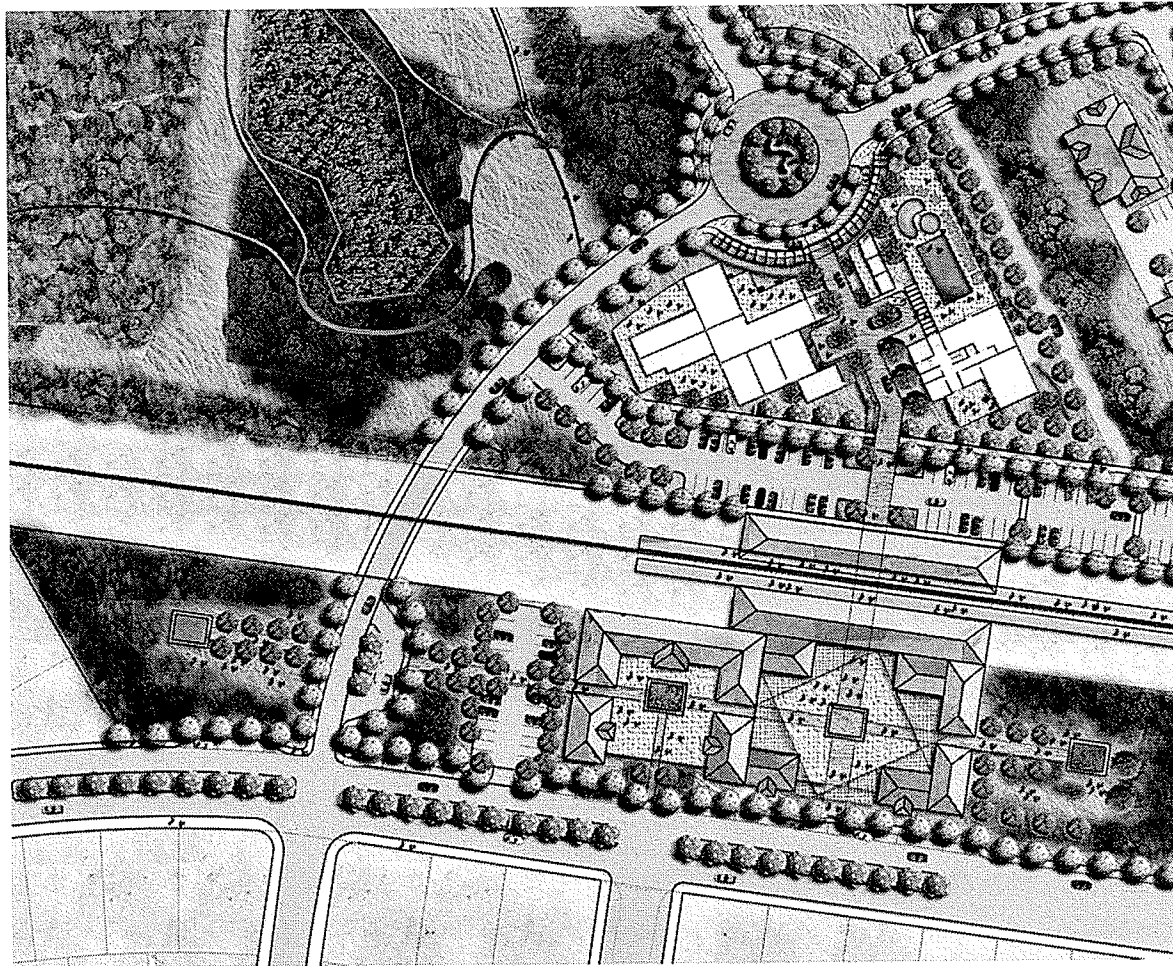


Fig. 122 Plan option 2 – Process and layers

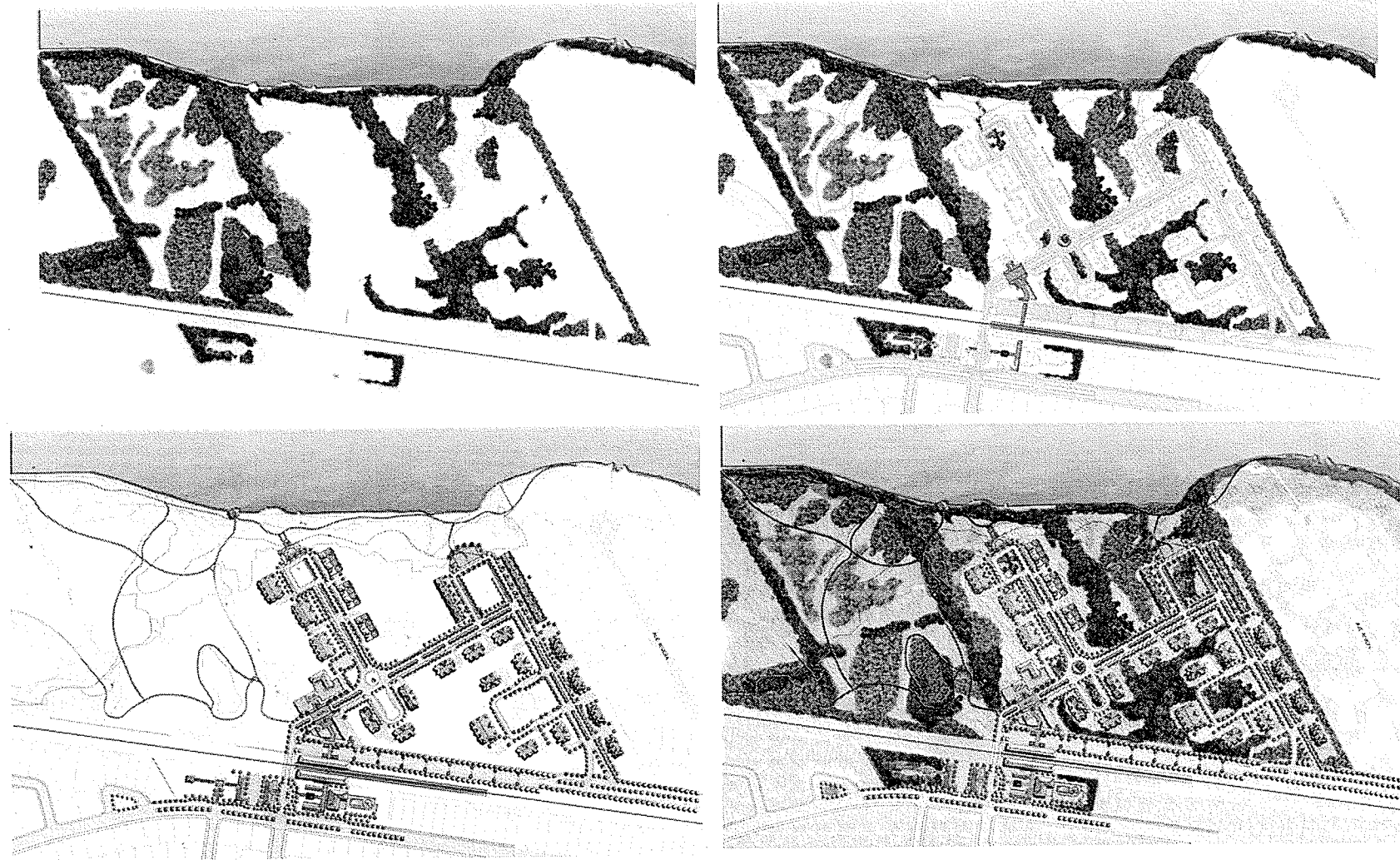
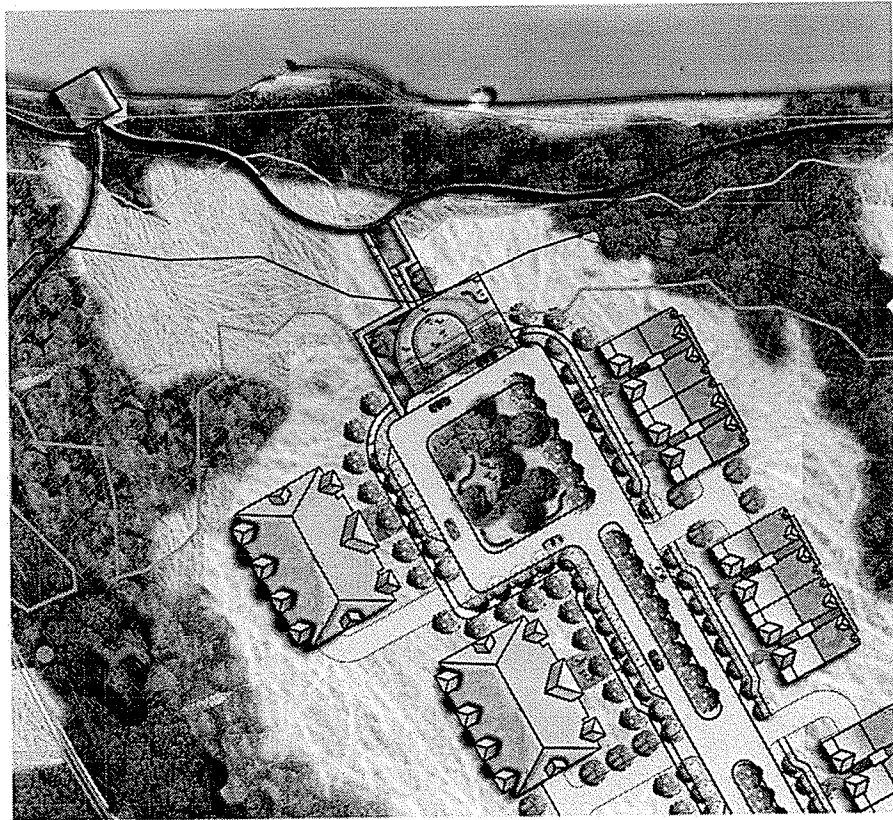


Fig. 123 Plan option 2 – cluster A



0 10 20 30 40 50M

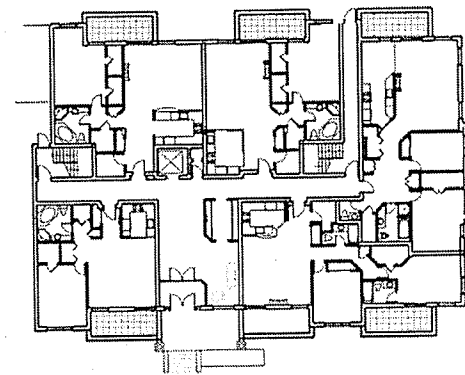
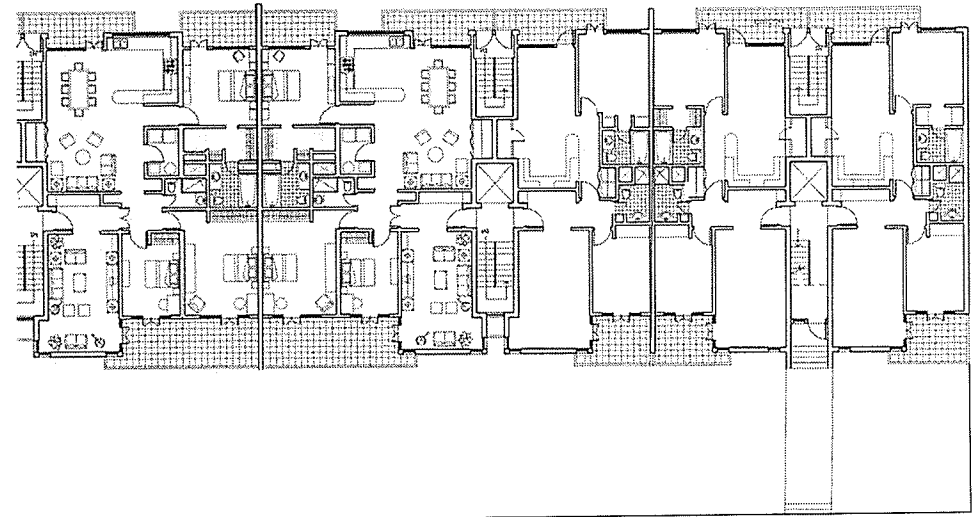
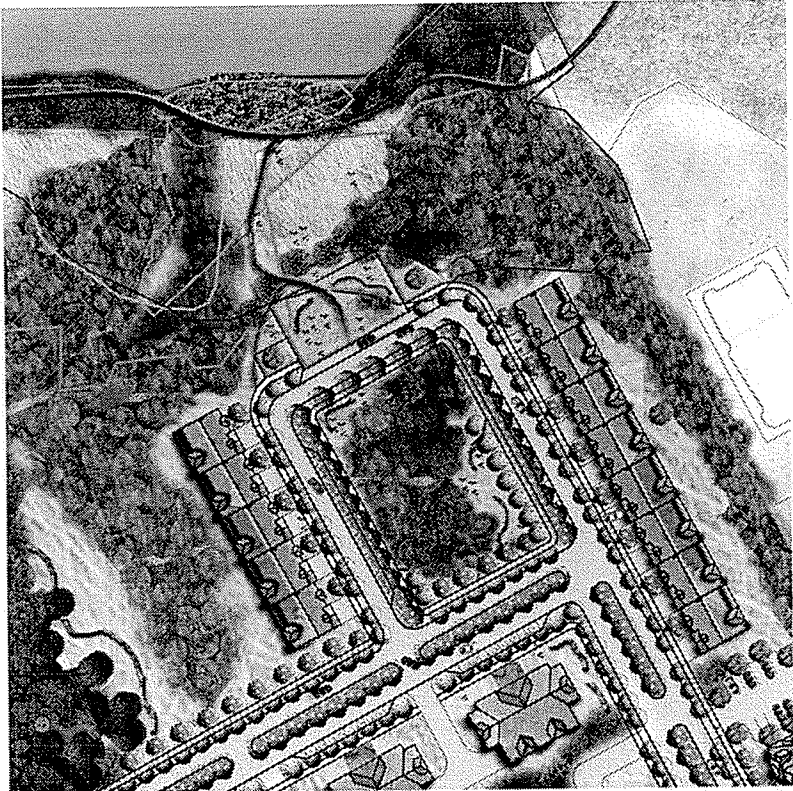


Fig. 124 Plan option 2 – cluster B



0 10 20 30 40 50M

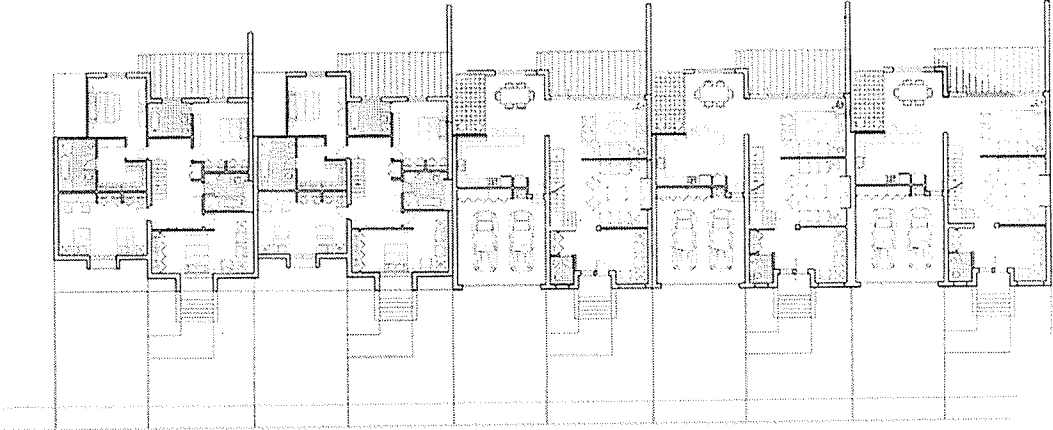
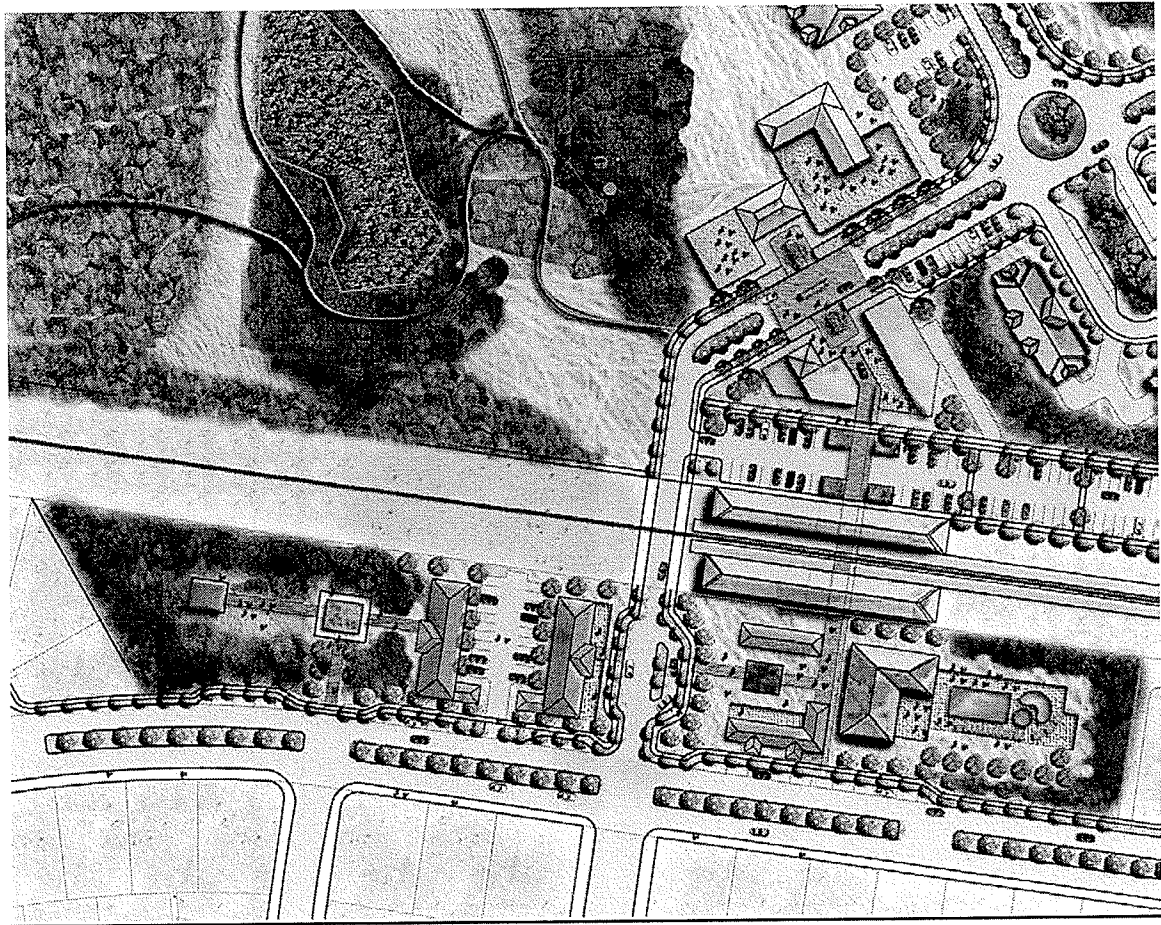
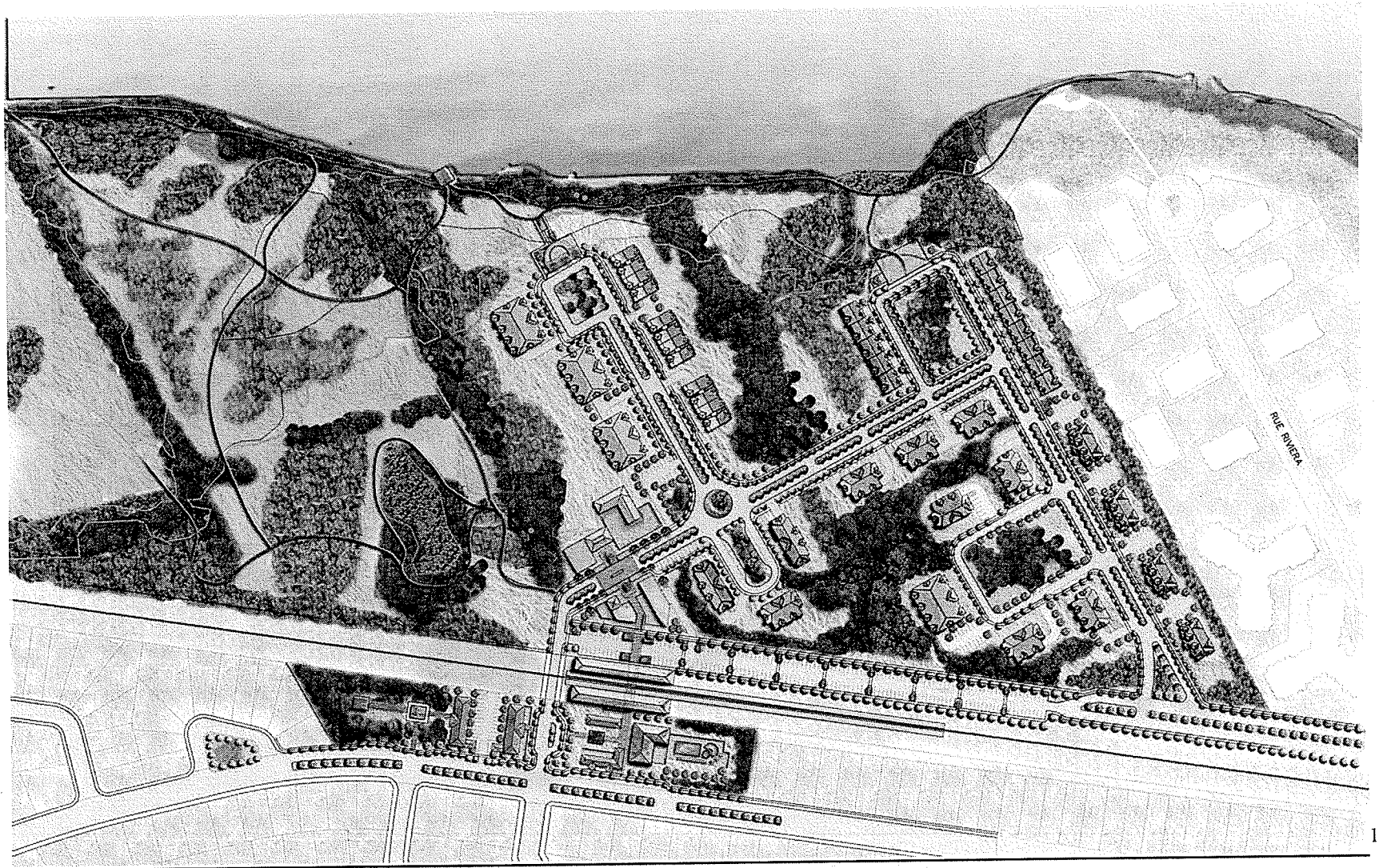
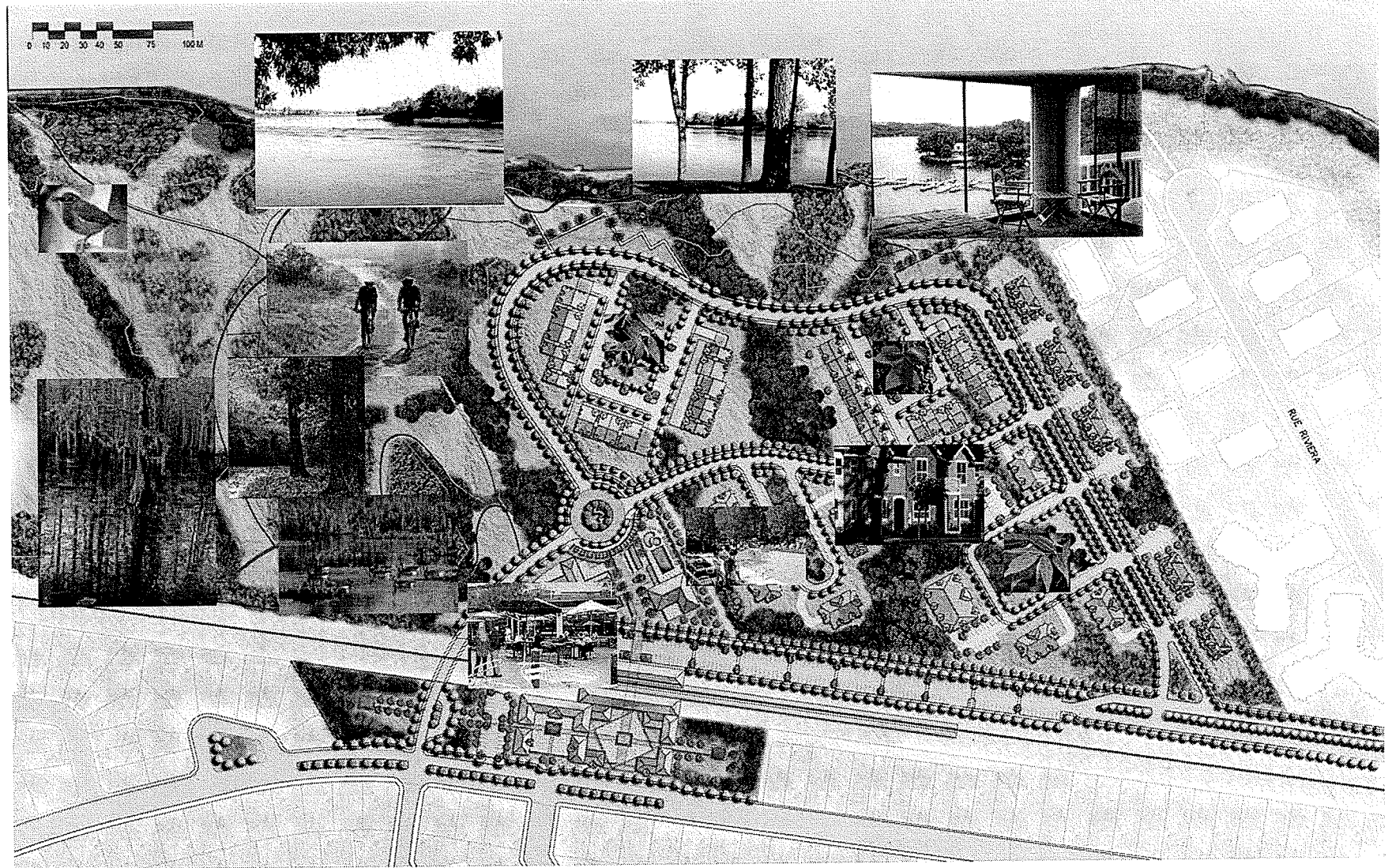


Fig. 125 Plan option 2 – core area





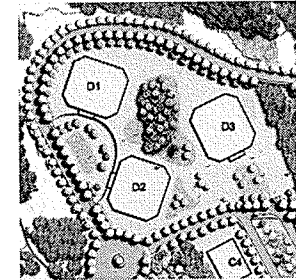
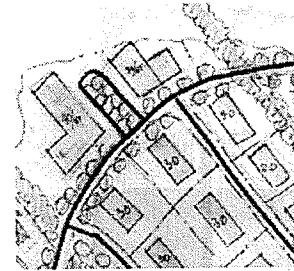
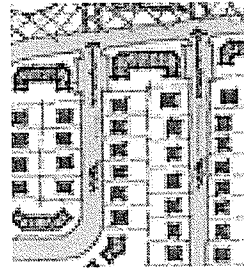
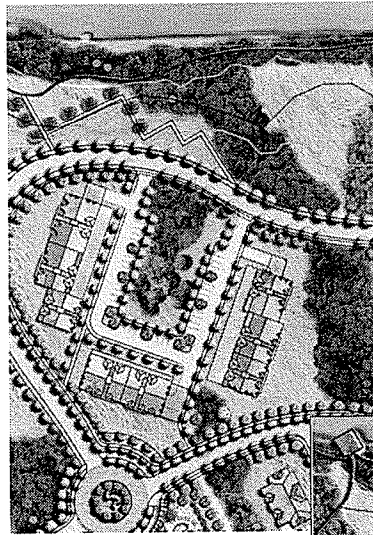




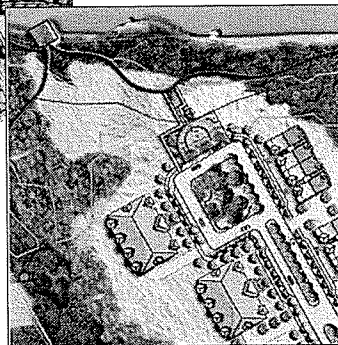
## Conclusions and Reflections

The conclusions, future directions and reflections on this entire theory-practice process seek to answer a threefold question related to community, ecology and multi-disciplinarity in the TOD concept. The first is that did the 'cluster' form and following design guidelines as outlined in chapter 4, Section A incorporating principles of the ecosystems approach, place-making and transit-neighbourhood lead to a 'better' design in comparison to the earlier options? Did it create a better 'sense of place' and 'community' and preserve ecological identity as opposed to the alternatives that were done without deeper research and overlaying of layers; without community participation and without making 'expert' opinion vulnerable to the specific constraints of place and place-making?

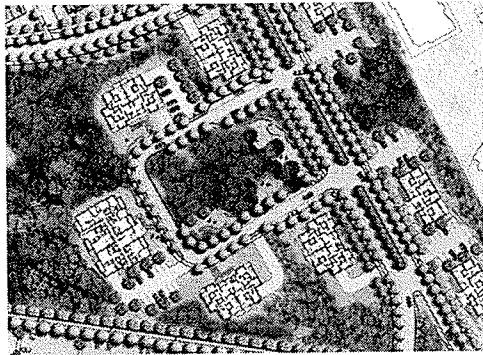
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*or this*

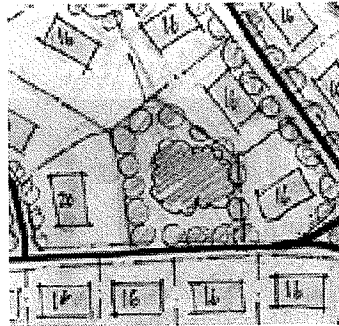


*Is this a better option*



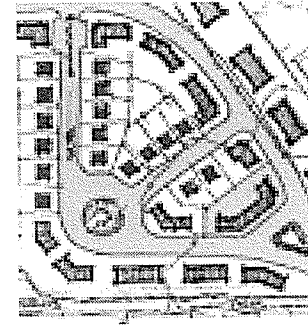
*than*

*this*

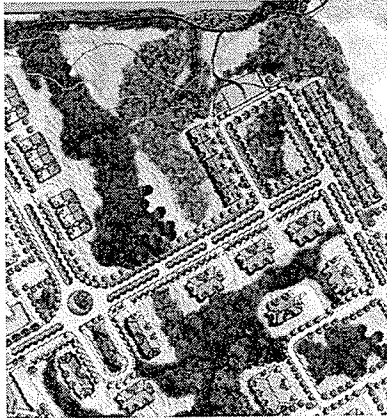


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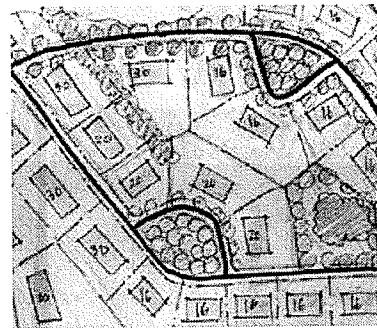
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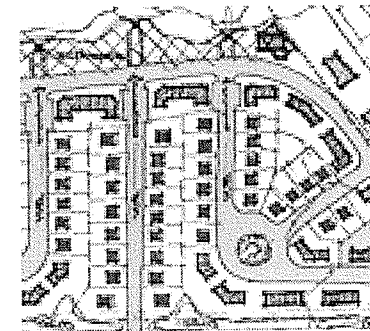
*Is network connectivity and corridor preservation better here,*



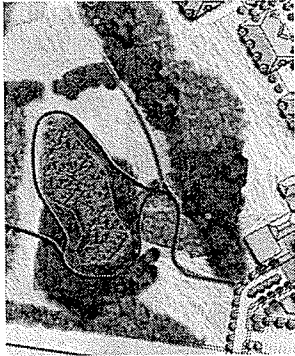
*or here*



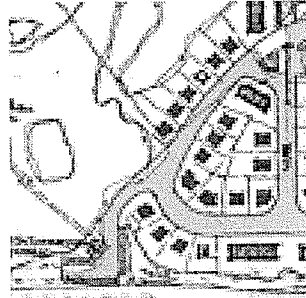
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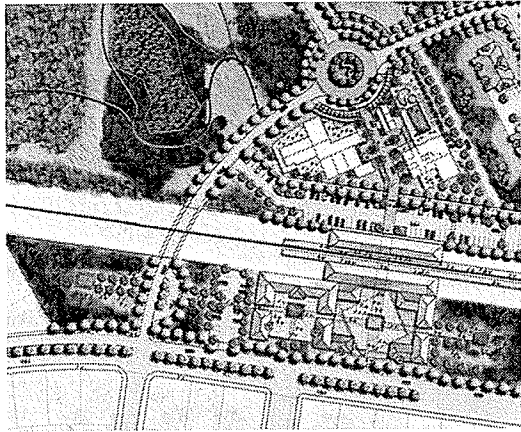
*Has the sensitive wetland been better preserved here*



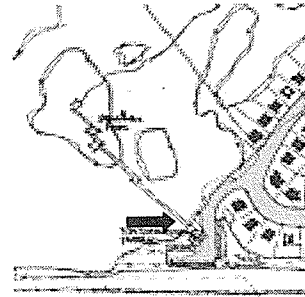
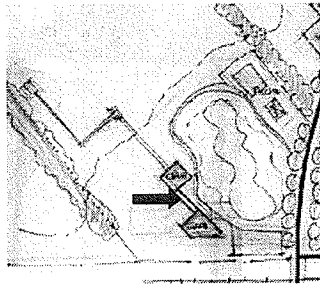
*or here?*



*Is the transit stop and core area represented better here*



*or here?*



These comparisons among many others which could be made regarding form, function, land use, ecological sensitivity and node-place relations are important parameters to see if the design resolution through this process was still a better if not the best of what could have been instead of what would have happened had the interventions not occurred. It goes back to the principles of basing planning on natural boundaries, considering multi-scale implications, creating people places and enriching the existing as well as mixing uses and forms while working with the landscape.

This practicum had started as a theoretical exploration of a practice-driven project. Reviewing and studying in depth the issues governing transit-oriented-neighbourhoods gave a clear perspective to the specific problems and solutions while planning complex projects where transit, land use patterns, market economics and community vitalization all played an equally important role. The detailed literature review of the meaning of 'ecological' indicated the different multiple contexts in which the term could be used when put as a prefix to this project. Ecological design did not simply become a question of ecological sustainability, preservation, conservation and patch and network connectivity but it also defined the inter-relationships and inter-connections between different principles and disciplines, the 'bonding' or 'scaffoldings' between different processes, and understanding multiplicity and plurality in terms of relationships. In the broader context of 'ecology' of the human habitat, diversity and interdependence between communities, transit, public spaces, road networks and regional design become a requisite not an afterthought. In fact accepting that all voices, disciplines and players are equally important and not hierarchical there developed a common sense of purpose – of working together – from the smallest module of the community to the larger volume of the region. In essence the approach to 'ecology' in this context becomes 'integral'<sup>155</sup> as a way of weaving all approaches instead of becoming fragmented.

The basic tenet of 'holarchy' (derived from holism)<sup>156</sup> in place of hierarchy becomes an essential factor to the 'multi-disciplinary' context of the work. While ideally, all the experts in the field should set aside egos and blur boundaries, in reality this was easier said than done. The design produced under the firm's guidance, though satisfying the majority of groups, bent to accommodate the financial profits. But interestingly, in my two individual alternatives which I have proposed here, the number of units still correspond to 360, crossing the 350 unit mark which the developer required for a \$ 60-80 million selling price. Also the units due to their elevator access still had room for vertical expansion (if it was required years later) without compromising their cluster forms and without annihilating the natural landscape. They also adhered to all the existing zoning by-laws. Also, the 'sense of place' and 'sense of community' as well as ecological identity brought about by continuing and emphasizing the existing site features and vegetation was a conscious attempt and would only help in increasing profit and increase long term value. Road lengths were shorter than the developer group's alternatives and the core area much more dynamic. It therefore seems just a matter of mind set in the construction community that tall bulky high rises or single family large lot units are the only way to go and clear cutting necessarily ensures more available space. The comparative design

alternatives clearly destroy this myth. At the end it all comes down to the designer's table and how well the substantive and procedural theories have been integrated. As landscape architects, architects and planners, our professions have to be in the vanguard of blurring the boundaries, integrating the disciplines and thinking in terms of hybrids and symbiosis and not as opposing dualities and linear reductionism. Going back to the very root of the very definition of the profession and realizing how multi-disciplinary it was meant to be in the first place, we can bring back its core values back into the context of designing viable communities. Listening to every voice in the design process, removing blinders and biases, we can truly work as inter-dependent teams. At the end of the day, every interest group and every future habitant has very simple needs – basically a good liveable *place*, mobility *choices*, and the splendour of *nature*. Therefore it makes sense to examine the very underlying principles which govern these notions – place-making, transit neighbourhoods and ecological design and use them as a framework to create sustainable communities. This work was an attempt to address all these issues. Though it seemed complex and humungous at first, it revealed at the end what Calthorpe had basically observed that combining problems often leads to simple solutions while segregating them typically leads to frustration. Understanding the intricacies and cyclical processes of ecology helps to relate this concept back to holistic solutions and not linear reductionist ones – as is usually the case in practice. In essence it helps to come back full circle- from theory to practice to practical theory.

My personal reflection through the process is that the in depth study of landscape architecture with all its intricacies, shifting scales and 'indeterminations' and its varied interpretations of 'ecology' only enriches the architect and the planner and softens the hard edged boundaries of the latter. It also without question makes us more sensitive designers who think deeper into issues of sustainability and whole systems instead of cosmetic appearances, in terms of 'places' and not just 'spaces.'. The inability to call myself a specialist is also a personal reflection in this work as I have shifted scales and boundaries as a planner, landscape architect, architect and interior design.

Coming back to the principles of designing transit-oriented-neighbourhoods in the Canadian regional context, as this country's healthier public transit usage shows (compared to America) there is much potential for creating lively and viable transit-oriented-neighbourhoods given its comparative denser growth patterns along the south. In fact not just Montreal but all other Canadian cities getting into the venture should search for their own regional identity instead of looking south of the border which has largely been the case. . It is not just important to remember who and what we design for but also where we design. The hitherto followed three Ds of TOD namely density, distance and design should be adjoined by identity, integration and interdependence.

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## SECTION B

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## Part II : PRACTICE

### SECTION A

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### **Conclusions, Future Research and Reflections**

<sup>155</sup> as in Sean Hargen's 'integral ecology.'

<sup>154</sup> term derived from Dr. Ian Wight, Head, Dept. of City Planning, University of Manitoba.

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- fig.3 Caltrain station. Official website of Calthorpe Associates
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- fig.16 TOD neighbourhoods. Cisco Systems campus. *Statewide transit Oriented development Studies. factors for Success in California.* California Department of Transportation (Sep. 2002)
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- fig. 18 Charlotte county, North Carolina. *Comprehensive Experience on Transit Projects Worldwide.* Report by Parsons Brinkerhoff(2001) 7
- fig.19 – 26. Building, Population and Transport patterns in Montreal. Statistics Canada (1996)
- fig.28 Streets of Montreal. photographs by Michel Degray *Reflets de Montréal.* Just pour Voir (2000), 29
- fig.29 New suburban residential development in Ste.Julie, south of Montreal and Commercial mall along freeway. Cox, Wendell. [www.demographia.com](http://www.demographia.com)
- fig.30 Artist unknown. proposed TOD, Mount St. Hilaire. <http://www.ville.mont-saint-hilaire.qc.ca/>
- fig.31 TOD Visualisation Tools. *Urban Advantage. Envisioning Smart Growth* [www.urban-advantage.com](http://www.urban-advantage.com)
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**APPENDIX**  
**Site Municipal By-laws**





Pierrefonds

Règlement numéro 1050

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sur la production des  
plans d'aménagement d'ensemble

---

By-law number 1050

---

on the production of  
comprehensive development programmes

---

PRODUCTION DES PLANS  
D'AMÉNAGEMENT D'ENSEMBLE

PRODUCTION OF COMPREHENSIVE  
DEVELOPMENT PROGRAMME

Texte du règlement numéro : 1050  
Text of by-law number : 1050

Entré en vigueur le : 31 décembre 1989  
In force since : December 31, 1989

tel qu'amendé par les  
as amended by

Règlements numéros  
By-laws numbers

Entré en vigueur  
In force since

1050-1

20 mai 1990  
May 20, 1990

1050-2

12 février 1993  
February 12, 1993

1050-3

23 septembre 1993  
September 23, 1993

1050-4

7 octobre 1994  
October 7, 1994

1050-5

14 juillet 1995  
July 14, 1995

1050-6

17 mai 1996  
May 17, 1996

1050-7

18 avril 1999  
April 18, 1999

1050-8

17 septembre 2000  
September 17, 2000

1050-9

17 septembre 2000  
September 17, 2000

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PROVINCE DE QUÉBEC  
VILLE DE PIERREFONDS

RÈGLEMENT 1050

RÈGLEMENT SUR LA PRODUCTION DES PLANS D'AMÉNAGEMENT D'ENSEMBLE

À une séance régulière du Conseil de la Ville de Pierrefonds, tenue en la Salle du Conseil sise au 13 665, boulevard Pierrefonds, dans ladite Ville de Pierrefonds, le 10 octobre 1989 à 20 heures, conformément à la Loi sur les Cités et Villes (Chapitre C-19, L.R.O. 1977), à laquelle sont présents:

Son Honneur le Maire

Cyril Wm McDonald

MM. les Conseillers

Louis Bellefeuille

Jacques Bibeau

George Boutilier

Eldor Daigneault

Brian Harris

Marcel Morin

Harold Worth

Tous membres du Conseil et formant quorum sous la présidence de Son Honneur le Maire Cyril Wm McDonald.

Monsieur le conseiller Ken Mann est absent.

Le directeur général et le greffier sont présents.

ATTENDU que la municipalité de la Ville de Pierrefonds peut adopter un règlement qui lui permet d'exiger dans une zone, lors d'une demande de modification des règlements d'urbanisme, la production d'un plan d'aménagement d'ensemble de cette zone;

ATTENDU que la municipalité de la Ville de Pierrefonds a tenu de la façon prescrite une assemblée publique au cours de laquelle les représentants des intéressés ont été entendus;

ATTENDU qu'un avis de motion de ce règlement a été préalablement donné à une session du conseil de la municipalité;

IL EST PROPOSÉ par M. le Conseiller Eldor Daigneault  
APPUYÉ par M. le Conseiller Louis Bellefeuille

QUE le présent règlement numéro 1050 soit et est adopté et qu'il soit statué et décrété et le conseil de la municipalité de la Ville de Pierrefonds ordonne et statue qu'à compter de l'entrée en vigueur dudit règlement numéro 1050 la totalité ou les parties du territoire de la municipalité de la Ville de Pierrefonds selon les cas prévus aux présentes soient soumises aux dispositions suivantes:



CHAPITRE I

Dispositions déclaratoires

1. Préambule

Le préambule du présent règlement fait partie intégrante de celui-ci.

2. Titre du règlement

Le présent règlement peut être cité sous le nom de "RÈGLEMENT SUR LA PRODUCTION DES PLANS D'AMÉNAGEMENT D'ENSEMBLE" de la municipalité.

3. Territoire touché par ce règlement

Le présent règlement s'applique à l'ensemble du territoire soumis à la juridiction de la municipalité.

4. Personnes touchées par ce règlement

Le présent règlement touche toute personne morale de droit public ou de droit privé et tout particulier.

5. Le règlement et les lois

Aucun article du présent règlement ne saurait avoir pour effet de soustraire toute personne à l'application d'une loi du Canada ou du Québec.

6. Validité

Le Conseil de la municipalité décrète le présent règlement dans son ensemble et également partie par partie, chapitre par chapitre, section par section, article par article, paragraphe par paragraphe, sous-paragraphe par sous-paragraphe et alinéa par alinéa, de manière à ce que si une partie, un chapitre, une section, un article, un paragraphe, un sous-paragraphe ou un alinéa de celui-ci était ou devait être un jour déclaré nul par la cour ou autres instances, les autres dispositions du présent règlement continueraient de s'appliquer.

CHAPITRE II

Dispositions interprétatives générales

7. Objet présumé

Toute disposition du présent règlement est réputée avoir pour objet de remédier à quelque abus ou de procurer quelque avantage.

8. Interprétation du texte

Les titres contenus dans ce règlement en font partie intégrante à toutes fins que de droit. En cas de contradiction entre les titres et le texte proprement dit, le texte prévaut.

Quel que soit le temps du verbe employé dans une disposition du présent règlement, cette disposition est tenue pour être en vigueur à toutes les époques et dans toutes les circonstances où elle peut s'appliquer.

Chaque fois qu'il est prescrit qu'une chose sera faite, doit être faite ou devra être faite, l'obligation de l'accomplir est absolue; mais s'il est dit qu'une chose "pourra", "peut" ou "devrait" être faite, il est facultatif de l'accomplir ou non.

Le genre masculin comprend les deux sexes, à moins que le contexte n'indique le contraire.

Le nombre singulier s'étend à plusieurs personnes ou à plusieurs choses de même espèce, chaque fois que le contexte se prête à cette extension.

9. Formes d'expression hors texte

Les tableaux, diagrammes, plans, croquis, grilles, graphiques, symboles ou autre formes d'expression hors texte contenus dans ce règlement en font partie intégrante à toutes fins que de droit. En cas de contradiction entre les tableaux, diagrammes, plans, croquis, grilles, graphiques, symboles ou autres formes d'expression hors texte et le texte proprement dit, le texte prévaut.

10. Unités de mesures

Toutes les dimensions, mesures et superficies mentionnées dans le présent règlement sont exprimées en unités de mesure du système international. Une correspondance en mesure anglaise approximative peut apparaître entre parenthèses. Cependant, les mesures en système international ont préséance sur les mesures anglaises.

11. Terminologie

Dans le présent règlement, à moins que le contexte n'indique un sens différent, les mots ou expressions se réfèrent à la terminologie utilisée dans le règlement de zonage de la municipalité.

CHAPITRE III

Dispositions communes à tous les territoires assujettis à la production d'un plan d'aménagement d'ensemble

SECTION I

Procédures

Proposition 3 copies	Vérification	Etude et recommandations	Décision
Promoteur	Responsable	C.C.U.	Conseil

12. Obligation de produire un plan d'aménagement d'ensemble

Pour les territoires visés au présent règlement, la production d'un plan d'aménagement d'ensemble est obligatoire dans le cas où le projet du requérant n'est pas conforme aux dispositions de l'article 24, paragraphe 1° du règlement des permis et des certificats.

13. Transmission d'une proposition d'un plan d'aménagement d'ensemble

Le plan d'aménagement d'ensemble et tous les documents pouvant s'y rattacher doivent être transmis en trois (3) exemplaires au responsable des services d'Urbanisme et de Construction de la municipalité.

14. Vérification de la proposition

Le responsable doit s'assurer que toutes les informations exigées par le présent règlement sont incluses dans la proposition du plan d'aménagement d'ensemble.

15. Transmission de la proposition

Si la proposition est jugée recevable, le responsable transmet une copie de la proposition au comité consultatif d'urbanisme ainsi qu'au conseil de la municipalité.

16. Etude de la proposition par le comité consultatif d'urbanisme

Le comité consultatif d'urbanisme étudie la proposition du plan d'aménagement d'ensemble et peut demander au requérant des informations additionnelles ainsi qu'à tout autre expert afin de compléter l'étude. Dans le cadre de son étude, le comité consultatif d'urbanisme soumet cette proposition à une assemblée publique de consultation.

17. Avis du comité consultatif d'urbanisme

Suite à la tenue de l'assemblée publique de consultation, le comité consultatif d'urbanisme prépare un avis écrit à l'intention du conseil municipal. L'avis doit tenir compte des résultats de la consultation, des critères d'évaluation prescrits au présent règlement et recommande l'acceptation, les modifications ou le rejet du plan d'aménagement d'ensemble.

Le comité peut également suggérer des conditions d'approbation du plan d'aménagement d'ensemble.

18. Décision du conseil

Le conseil, suite aux recommandations du comité consultatif d'urbanisme, doit prendre une décision par résolution à l'égard du plan d'aménagement d'ensemble qui lui est soumis.

Le conseil peut l'approuver, le refuser ou suggérer des modifications possibles en vue de la présentation d'un plan d'aménagement d'ensemble révisé.

19. Transmission de la décision au requérant

Une copie de cette résolution doit être transmise à la personne qui a présenté le plan.

20. Effet de l'approbation d'un plan d'aménagement d'ensemble

L'approbation d'un plan d'aménagement d'ensemble par le conseil ne peut constituer pour la corporation une obligation d'accepter une demande d'opération cadastrale, une demande de permis de construction, ni d'accepter la cession des rues proposées au plan, ni de décréter leur ouverture, ni de prendre à sa charge les frais d'entretien.

7° les niveaux du terrain aménagé par rapport au terrain adjacent et au chemin;

8° la localisation exacte des bâtiments;

9° la date, le nord et l'échelle utilisée;

10° la localisation des stationnements et des allées d'accès sur les terrains.

22. Plan de circulation

Le plan d'aménagement d'ensemble doit préciser et justifier:

1° les caractéristiques des réseaux de circulation sur l'emplacement: le réseau piétonnier, la circulation des véhicules, l'organisation et l'aménagement des aires de stationnement, l'éclairage, les directions et l'affichage;

2° les liens prévus avec le réseau de voirie municipale existant ou projeté;

3° le nombre prévisible de véhicules qui utiliseront les accès et sorties sur chaque voie publique adjacente à l'emplacement;

4° l'impact sur la voirie municipale en termes:

a) d'accroissement du volume de circulation;

b) d'accroissement de la congestion aux intersections les plus près de l'emplacement;



5° les aménagements prévus pour permettre l'accès aux véhicules de sécurité publique;

6° les aménagements prévus pour le chargement et le déchargement de matériaux et marchandises;

7° le nombre de véhicules lourds qui auront accès à l'emplacement;

8° la localisation des accès à privilégier pour la circulation de véhicules lourds;

9° l'accroissement prévu du nombre d'utilisateurs du transport en commun;

10° les modalités prévues pour faciliter l'accessibilité au transport en commun;

11° les caractéristiques du réseau de sentiers piétonniers prévus;

12° la hiérarchie des voies de circulation distinguant les rues collectrices des rues locales.

23. Plan de protection et de mise en valeur de l'environnement

M  
Le plan d'aménagement d'ensemble doit préciser et justifier:

1° les modalités prévues pour le remisage et l'enlèvement des ordures ménagères et des rebuts; pour les habitations de haute densité, dans le cas où une cloche de recyclage est requise, la localisation de cet équipement;

2° les caractéristiques des équipements prévus pour le remisage et l'enlèvement des ordures ménagères, notamment les matériaux de construction, la localisation sur l'emplacement et l'aménagement de l'enclos à déchets s'il y a lieu;

3° les moyens proposés pour éviter que le projet constitue une source de nuisance pour les zones résidentielles adjacentes, s'il en est, quant au bruit, à la lumière, à l'achalandage;

4° les modalités prévues pour le drainage de l'emplacement et l'impact sur les services publics existants ou projetés;

5° les modalités de raccordement des bâtiments aux réseaux publics d'aqueduc et d'égout et préciser l'impact sur lesdits réseaux publics;

6° les modalités de raccordement aux réseaux de distribution d'électricité, de téléphone et de câblo-distribution;

7° les modalités d'autonomie fonctionnelle par rapport aux contraintes physiques, telles que: autoroute, emprise de chemin de fer, caractéristiques physiques liées à la topographie, lignes de transmission électrique.

Le plan d'aménagement d'ensemble doit également comporter un plan d'aménagement paysager.

(1050-9 ; 00-09-17)

24. Plan d'implantation et d'intégration architecturale (P.I.I.A.)

Le plan d'implantation et d'intégration architecturale doit préciser et justifier:

1° les caractéristiques architecturales et les liens volumétriques entre les bâtiments projetés;

2° les caractéristiques architecturales et les liens volumétriques avec les bâtiments érigés dans les zones adjacentes;

3° les matériaux de parement extérieur, les agencements entre lesdits matériaux et leur identification;

4° l'orientation de chacun des bâtiments érigés sur l'emplacement;

5° l'orientation des bâtiments avec les bâtiments érigés sur les emplacements adjacents en précisant l'usage de ces bâtiments;

6° la relation des bâtiments entre eux;

7° la relation entre les niveaux projetés autour des bâtiments et les accès au(x) garage(s) et au rez-de-chaussée;

8° l'aménagement paysager par rapport aux niveaux géodésiques de l'emplacement;

9° comment l'aménagement paysager met le site en valeur, comment les aires de stationnement y sont intégrées;

10° comment les espaces récréatifs sur l'emplacement sont protégés des sources de nuisances et comment s'établit le lien avec les réseaux publics des parcs et des pistes cyclables;

11° le plan général d'affichage.

25. Plan d'opportunité

Le plan d'aménagement d'ensemble doit:

1° fournir le bordereau détaillé de l'utilisation du sol proposé indiquant en mètres carrés et en pourcentage:

- a) les aires affectées à chaque usage;
- b) les densités d'occupation du sol;
- c) le pourcentage des espaces verts;
- d) le ratio de stationnement pour chaque usage;
- e) tout autre élément quantitatif pertinent;

2° montrer comment les équipements particuliers ou les services connexes proposés sur l'emplacement présentent un intérêt par rapport aux équipements et services existants avoisinants;

3° préciser et justifier les différentes phases de réalisation du projet ainsi que le coût de réalisation lié à chaque phase;

4° préciser les modalités de participation du promoteur à la mise en place des infrastructures requises pour desservir le projet;

5° préciser les modalités de garantie d'exécution proposées par le promoteur;

6° étudier la rentabilité du projet par rapport à la fiscalité municipale.

26. Territoire couvert par le plan d'aménagement d'ensemble

A moins d'indication contraire, un plan d'aménagement d'ensemble doit couvrir l'ensemble du territoire pouvant comprendre une ou plusieurs zones ou parties de zones à l'intérieur duquel il est présenté.

SECTION III

Critères généraux d'évaluation

27. Territoires touchés par les critères généraux

La présente section s'applique à tous les territoires assujettis à la production d'un plan d'aménagement d'ensemble.

28. Localisation des usages

Les usages commerciaux doivent être localisés le long des voies principales et séparés des usages résidentiels par un écran visuel. Sauf lorsqu'elles sont séparées par une rue, une zone tampon doit être prévue entre toute zone commerciale et les zones résidentielles adjacentes; cette zone tampon d'une largeur minimale de 4,5 mètres doit comprendre un talus d'une hauteur de 0,5 mètre minimum et 1,0 mètre maximum recouvert d'arbres et d'arbustes; des aménagements paysagers doivent également être prévus le long de l'emprise des rues donnant sur les zones commerciales.

Les habitations à moyenne densité ainsi que l'école doivent être localisées à proximité des espaces verts.

Les espaces de stationnement pour les usages commercial et institutionnel doivent respecter les normes du règlement de zonage et doivent être séparés de la rue et des usages adjacents par un écran visuel.

Dans le cas d'habitation multifamiliale de 5 étages et plus, où un usage commercial est permis, les normes de stationnement à respecter pour les usages commerciaux sont de 1 case par 32 m<sup>2</sup> ou 100 % de la superficie brute de plancher.

29. Ensoleillement

L'orientation des bâtiments et des rues doit favoriser l'ensoleillement des espaces privés extérieurs et l'exploitation énergétique du rayonnement solaire.

30. Réseau routier

Outre le réseau des collectrices, le réseau routier ne peut occuper plus de 20 % de la superficie de la zone faisant l'objet du plan d'aménagement d'ensemble.

La hiérarchie des voies de circulation doit distinguer les rues collectrices des rues locales, et l'utilisation des boucles et des culs-de-sac devrait décourager la circulation de passage.

31. Réseaux d'électricité et de télécommunication

Tout circuit de distribution électrique primaire et secondaire, tout circuit de distribution téléphonique et tout circuit de câblo-distribution doivent être souterrains.

Les entrées électriques privées des bâtiments doivent être souterraines.

Les transformateurs et autres équipements similaires installés au niveau du sol doivent être incorporés dans des constructions dont les matériaux de revêtement sont similaires à ceux utilisés pour le bâtiment principal ou entouré d'un aménagement paysager dont les éléments naturels sont composés de conifères.

32. Aménagement paysager

Les critères suivants seront considérés en ce qui a trait à l'aménagement paysager:

- 1° conservation au maximum des boisés existants;
- 2° reboisement des zones déboisées;
- 3° couper la suite monotone des stationnements le long de la rue par les buttes garnies d'arbustes;
- 4° chacune des unités d'habitation doit avoir des arbres en façade;
- 5° le stationnement doit être caché de la rue par une bande d'arbres composée essentiellement de conifères;
- 6° le stationnement devra être paysagé afin d'atténuer l'effet de masse par des arbres résistants et dégagés à la base comme l'érable rouge, l'érable à sucre, le chêne rouge ou le tilleul à petite feuilles;

7° les espaces verts doivent être intégrés à un réseau de voies piétonnières;

8° un réseau de voies piétonnières et cyclables reliées aux parcs et terrains de jeux tant de la zone faisant l'objet du plan d'aménagement d'ensemble que des zones adjacentes doit être prévu;

9° pour les projets à haute densité, des espaces extérieurs paysagés privés doivent être aménagés.

33. Conformité au plan d'urbanisme

Tout plan d'aménagement d'ensemble doit être conforme aux orientations du plan d'urbanisme de la municipalité.

Le plan d'aménagement d'ensemble ne doit pas compromettre la mise en valeur de la partie résiduelle de la zone (lorsqu'une partie seulement de la zone fait l'objet du projet d'ensemble) quant au réseau de rues et aux réseaux d'infrastructure d'égout.

A 34. Superficie des habitations unifamiliales (abrogé)

(1050-7 ; 99-04-18)

A 34.1 Marges latérales pour unifamiliales isolées et jumelées (abrogé)

(1050-1 ; 90-05-20, 1050-7 ; 99-04-18)



Pour tout terrain d'une superficie minimale égale et supérieure à six cent trente mètres carrés (630 m<sup>2</sup>), les marges latérales minimales doivent être de 3 mètres d'un côté et de 3,5 mètres de l'autre côté. (1050-1; 90-05-20)

34.2 Profondeur et cour avant des  
habitations unifamiliales en rangée

Pour les habitations unifamiliales en rangée, la cour avant minimale est de 8 mètres et la profondeur minimale des terrains est de 30 mètres. (1050-1; 90-05-20)

35. Traitement architectural

L'alignement d'une façade doit viser à créer un gabarit de rue homogène. La monotonie doit être évitée par un traitement particulier d'une façade et par une variété dans son implantation.

Une interruption de façade pour un accès piétonnier ou véhiculaire doit donner lieu à un traitement particulier des coins d'un bâtiment ou à un traitement architectural de l'accès lui-même.

Une ouverture, un mur mitoyen, une corniche, une projection, un retrait et tout autre traitement architectural doit être souligné par un jeu particulier du matériau de revêtement.

36. Composition architecturale

La composition et le traitement d'une façade doivent contribuer à en assurer la verticalité.

La composition de la façade de plusieurs bâtiments contigus doit permettre la perception de chaque bâtiment dans la série et conférer un rythme à l'ensemble.

Les surfaces pleines doivent être supérieures aux surfaces des ouvertures.

L'ornementation doit mettre en valeur les composantes structurales; l'expression d'un linteau, d'une arche, d'un bandeau, à même le revêtement extérieur, doit être apparente et étroitement liée à la composition architecturale de la façade.

L'expression de la corniche doit prédominer sur la forme du toit dans la perception qu'on a du bâtiment, à partir de la rue. Elle doit être articulée et ornementée par rapport au mur de la façade mais ne doit pas être le résultat de l'avancée du toit.

La volumétrie doit être développée par l'avancée ou le recul d'une travée verticale et d'une fenêtre en baie qui se présente en façade du bâtiment; elle doit être complétée par le traitement en saillie d'un balcon et d'un encorbellement.

Le traitement de la façade latérale d'un bâtiment situé à l'intersection de rues ou des passages piétons doit être équivalent à celui de la façade principale.

37. Balcon

L'usage du balcon comme élément de composition de la façade principale est suggéré. Son utilisation pour un même ensemble est, le cas échéant, général et obligatoire pour tout bâtiment de cet ensemble. Le balcon et ses composantes doivent dans ce cas constituer une volumétrie légère, continue d'un étage à l'autre.

Chaque bâtiment doit, le cas échéant, être doté de balcons dans une proportion d'au moins cinquante pour cent (50 %) des logements, à l'exclusion des logements situés au rez-de-chaussée.

A 38. Fenestration (abrogé)

(1050-7 ; 99-04-18)

A 39. Forme du toit (abrogé)

1050-7 ; 99-04-18)

40. Accès au logement

L'accès à un logement doit, si possible, être individualisé et se faire sur la rue.

A 41. Matériau de revêtement extérieur (abrogé)

(1050-7 ; 99-04-18)

42. Couleur de la brique

La couleur de la brique doit être l'une de celles qui dominent dans l'architecture urbaine nord-américaine et s'inscrire dans les tons de brun-rouge, brun-orangé, rouge-orangé ou gris. Le beige, le blanc ou la brique à glaçure colorée sont interdits.

A 43. Localisation d'un accès (abrogé)

1050-7 ; 99-04-18)

44. Allée piétonne

Une allée piétonne doit avoir une largeur minimum d'un mètre cinquante (1,50 m). Une allée menant à l'entrée principale d'un immeuble doit être liée à la rue, au trottoir et à l'espace de stationnement. Elle doit être couverte d'un revêtement dur, régulier et antidérapant. Elle doit être plane et sa pente inférieure ou égale à 1:12.

45. Aménagement des espaces de stationnement

Les dispositions suivantes s'appliquent à l'aménagement d'un espace de stationnement extérieur:

1° un espace de stationnement extérieur doit être situé à une distance minimum de sept mètres (7 m) de toute fenêtre d'un logement, de trois mètres (3 m) de toute autre fenêtre ou vitrine et d'un mètre cinquante (1,50 m) de tout mur. Il doit être entouré d'une bande de terrain aménagée d'au moins un mètre cinquante (1,50 m) de largeur. Cette bande de terrain doit être plantée d'arbres, d'arbustes et de haies qui assurent un écran visuel suffisant en hauteur et en densité;

2° un maximum de dix (10) cases de stationnement peuvent être disposées en série. Chaque série doit être isolée de la suivante par un espace paysager (arbres, arbustes, haies ou bacs à fleurs) de la dimension d'une case de stationnement (au minimum);

3° deux (2) séries de cases qui se font face doivent être séparées par une bande gazonnée d'au moins trois mètres (3 m) de largeur et limitée par une bordure de béton ou de granite d'une hauteur minimale de cent cinquante millimètres (150 mm). Une ligne d'arbres doit être plantée au centre de la bande gazonnée. L'intervalle de plantation doit varier de cinq mètres (5 m) à dix mètres (10 m) c/c selon l'espace prévu;

4° un niveau d'éclairage de 20 à 55 lux doit être assuré dans un espace de stationnement extérieur;

5° une source lumineuse doit être disposée de façon à éviter l'éblouissement d'un logement environnant;

6° un trottoir doit être composé de pierre, de brique de béton, de dalle de béton ou de béton coulé;

7° seul un matériau naturel (à l'exception d'un lampadaire et du mobilier) doit être utilisé pour l'aménagement paysager.

Un espace immédiatement adjacent à un espace de stationnement commun doit être prévu pour l'entreposage de la neige. À cet endroit, l'aménagement paysager peut se limiter à un couvre-sol résistant au sel.

Dans toutes les zones, tout espace de stationnement de surface doit être en cour intérieure, non visible de la rue. Aucun espace de stationnement ne peut être aménagé à moins de deux mètres (2 m) de tout bâtiment résidentiel et d'un mètre (1 m) de tout bâtiment commercial ou bureau; cette bande de protection doit être gazonnée et plantée d'arbustes, dans le cas d'un bâtiment résidentiel.

CHAPITRE IV

Dispositions spécifiques à chaque territoire assujetti à la production d'un plan d'aménagement d'ensemble

SECTION I

Territoire 1

46. Limites du territoire 1

Les limites du territoire 1 apparaissent au plan 1 du présent règlement.

47. Usages et densités applicables

Conformément au plan d'urbanisme, la municipalité entrevoit un développement à caractère institutionnel avec un parc riverain urbain. En outre, la municipalité entrevoit également la possibilité de modifier son plan d'urbanisme afin d'autoriser un développement à caractère résidentiel conformément aux affectations du schéma d'aménagement.

Le coefficient d'occupation du sol est établi à 0,75 minimum et 2,0 maximum.

48. Critères spécifiques d'évaluation

Les critères spécifiques d'évaluation se présentent comme suit:

1° protection de la bande riveraine et maintien d'un recul moyen minimum de 50 mètres des constructions par rapport à la ligne naturelle des hautes eaux de la rivière;

2° aménagement d'accès publics à l'eau;

3° préservation du caractère architectural des bâtiments existants;

4° protection des arbres matures existants;

5° implantation à angle des bâtiments pour les terrains adjacents au boulevard Gouin;

6° mise en place d'une zone tampon de 4,5 mètres de largeur, composée de talus paysagers entre le parc régional et tout usage projeté;

7° pour des habitations unifamiliales en bordure du boulevard Gouin, des terrains d'une largeur minimale de 18 mètres et une cour avant de 10 mètres minimum;

8° en ce qui a trait à l'architecture des bâtiments:

a) toit mansard à deux côtés ou en pente (toits plats non recommandés);

b) lucarnes à capuchon ou à pignon;

c) style général mansard américain ou d'inspiration française;



- d) cheminées situées dans l'axe plaitier du toit;
- e) hauteur maximum de trois étages;
- g° dans le cas d'habitations multifamiliales, aucun stationnement n'est permis en front du bâtiment principal.

## SECTION II

### Territoire 2

#### 49. Limites du territoire 2

Les limites du territoire 2, 2A et 2B apparaissent au plan 1 du présent règlement.

#### 50 - Usages et densités applicables


Les coefficients d'occupation du sol sont établis comme suit :

- 1° habitation de faible et moyenne densité : 0,25 minimum, 0,90 maximum;
- 2° habitation de haute densité : 0,75 minimum, 2,0 maximum;
- 3° institutions : 0,75 minimum, 2,0 maximum.

51 - Critères spécifiques d'évaluation

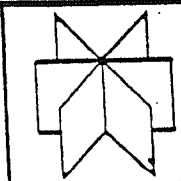
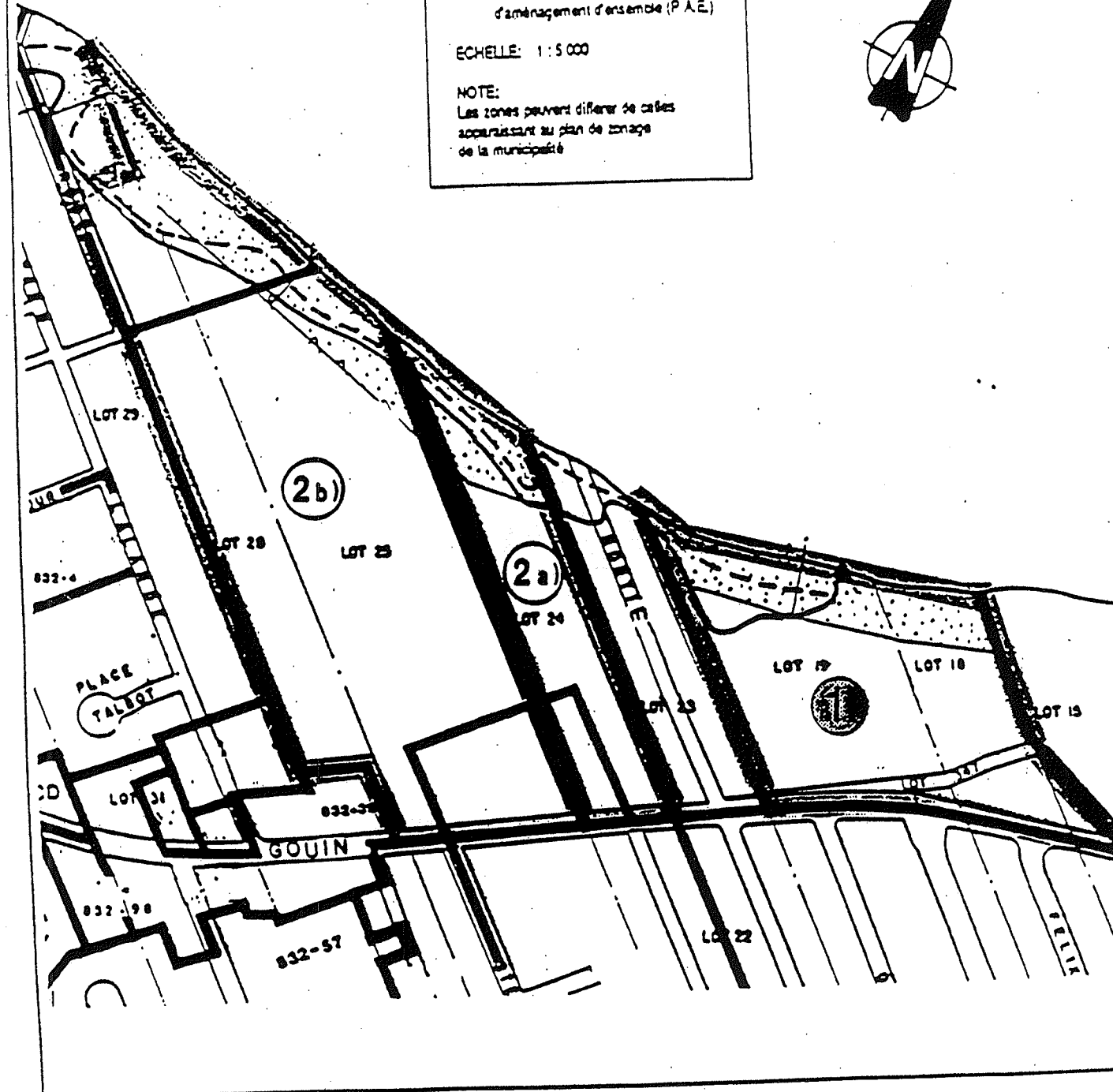
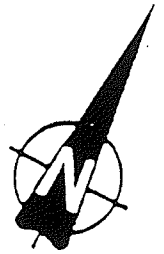
Les critères spécifiques d'évaluation se présentent comme suit :

- 1° protection de la bande riveraine et maintien d'un recul moyen minimum de 35 mètres de construction par rapport à la ligne naturelle des hautes eaux de la rivière;
  - 2° aménagement d'accès public à l'eau;
  - 3° préservation du caractère architectural des bâtiments existants;
  - 4° protection des arbres matures existants;
  - 5° les arbres coupés ou endommagés doivent être remplacés;
- (1050-3; 93-09-23)

**LEGENDE**  
 Limite d'un territoire faisant l'objet d'un plan d'aménagement d'ensemble (P.A.E.)

**ECHELLE:** 1 : 5 000

**NOTE:**  
 Les zones peuvent différer de celles apparaissant au plan de zonage de la municipalité



Territoire faisant l'objet d'un plan d'aménagement d'ensemble (P.A.E.)

SECTION III

Territoires 3 et 4

52. Limites des territoires 3 et 4

Les limites du territoire 3 apparaissent au plan 2 et celles du territoire 4 au plan 3 du présent règlement.

M 53. Usages et densités applicables

Conformément au plan d'urbanisme, la municipalité entrevoit les développements suivants:

1° territoire 3 : zone multifonctionnelle comprenant des habitations de haute, moyenne et basse densité, des commerces, des parcs urbains et des usages publics et institutionnels;

2° territoire 4: habitations de haute, moyenne et basse densité avec parc riverain urbain.

Les coefficients d'occupation du sol sont établis comme suit:

1° habitation de faible densité: 0,25 minimum et 0,45 maximum (unifamiliale isolée et jumelée);

2° habitation de moyenne densité: 0,35 minimum et 1,15 maximum (unifamiliale en rangée, duplex, triplex, multifamiliale de 2 et 3 étages);

3° habitation de haute densité: 0,50 minimum et 2,0 maximum (multifamiliale de 4 étages et plus);

4° commerces: 0,20 minimum et 2,0 maximum;

5° public et institutionnel : 0,20 minimum et 2,0 maximum.

(1050-4 ; 94-10-7, 1050-8 ; 00-09-17)

M 54. Critères spécifiques d'évaluation

Les critères spécifiques d'évaluation se présentent comme suit:

1° protection de la bande riveraine et maintien d'un recul de construction moyen minimum de 50 mètres par rapport à la ligne de propriété localisée le long de la berge;

2° protection des arbres matures existants situés à l'extérieur de l'aire d'implantation des bâtiments et du stationnement;

3° distance minimale de 15 mètres entre tout bâtiment d'habitation et l'emprise d'une voie ferrée; un talus ou muret avec aménagements paysagers doit être prévu dans cet espace; cette distance peut être réduite à 10 m dans le cas où une combinaison d'aménagements paysagers et de mesures de protection contre le bruit sont proposés par le promoteur; il appartiendra au promoteur de démontrer par une étude acoustique que diverses mesures peuvent être prises pour minimiser l'impact du bruit sur les bâtiments d'habitation;

4° présentation d'un scénario où il serait possible de localiser une gare ou une plate-forme permettant au train Montréal-Deux-Montagnes d'effectuer un arrêt pour les passagers futurs de ce secteur;

5° planification d'un grand parc et d'un parc linéaire situés le long de la berge;

6° en ce qui a trait à l'architecture des bâtiments:

- les constructions de haute densité seront regroupées de façon à créer un ensemble intégré;
- dépôt à la Ville d'un PIIA montrant les différences architecturales du projet et l'intégration des constructions entre elles;

- si les bâtiments ne sont pas séparés par une rue, mise en place de zones tampons de 5 mètres de largeur, paysagées à 50%, telles que les bandes de verdure requises sur rue par le règlement 1047, pour réduire les différences de hauteur entre la haute densité et la basse densité.

Entre les immeubles d'habitation actuels de la rue Riviera et les futurs aménagements à l'ouest, aucune tour d'habitation (5 étages et plus) ne doit être construite sur une distance de 100 mètres.

Le requérant devra fournir une étude permettant:

- 1° d'établir les mesures de protection des éléments écologiques de valeur;
- 2° d'identifier l'emplacement des arbres matures à conserver sur le site;
- 3° de définir sur un plan d'arpenteur les zones d'inondation vingtenaire et centenaire et de visualiser la topographie du secteur.
- 4° dans un concept général, de spécifier le phasage des constructions, qui devra se faire d'est en ouest en évitant d'enclaver certains sites.

# Règlement de zonage # 1047

Prenefonds,

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3° sont autorisés et maintenus conformément à toute disposition d'une loi ou d'un règlement provincial;

4° respectent le nombre de cases de stationnement requises qui s'établit selon le calcul suivant :

$$C = \frac{0,25 \times S}{26}$$

où C est défini comme étant le nombre de cases de stationnement requises et S, la superficie totale des planchers habitables exprimée en mètres carrés;

5° fournissent une aire d'agrément de 35 m<sup>2</sup> par logement ou chambre. Pour le calcul de cette aire, les terrasses extérieures et intérieures ainsi que les balcons peuvent être comptabilisés;

6° sont construits de manière à ce que les murs et les fenêtres de la façade nord soient isolés de façon à procurer un environnement intérieur acceptable en raison du bruit extérieur occasionné par la voie ferrée du C.N.;

7° sont pourvus d'extincteurs automatiques à eau dans tout le bâtiment.

## 173.1 Zone RG-1

Dans cette zone, sont autorisés les usages des groupes résidentiels H1, H2, H3, H4, H5, H8, des groupes publics et institutionnels, du groupe parc récréatif et des sous-groupes commerce C1-1, C1-2 et C2-1.

Aucune construction de tour d'habitation de 5 étages et plus ne sera autorisée à l'ouest de la rue Riviera sur une distance de 100 mètres.

Un minimum de 40% des logements doivent être des bâtiments de haute densité de 4 étages et plus. Les logements de moyenne densité (duplex, triplex, multifamiliaux de deux et trois étages) sont limités à un maximum de 20%.

Les coefficients d'occupation du sol sont établis comme suit :

- 1° habitation de faible densité : 0,25 minimum et 0,45 maximum  
(unifamiliale isolée et jumelée);
- 2° habitation de moyenne densité : 0,35 minimum et 1,15 maximum  
(unifamiliale en rangée, duplex, triplex, multifamiliale de 2 et 3 étages);
- 3° habitation de haute densité : 0,50 minimum et 2,0 maximum  
(multifamiliale de 4 étages et plus);
- 4° commerces : 0,20 minimum et 2,0 maximum;
- 5° public et institutionnel : 0,20 minimum et 2,0 maximum.

Les normes doivent respecter la grille de spécifications pour les groupes d'usages correspondants relatifs aux zones RB, RE, RH, CC, PA, PB, PC.

Nonobstant toute disposition contraire, les habitations unifamiliales peuvent avoir 3 étages en hauteur.

La délivrance d'un permis de construction, de lotissement ou de certificat d'autorisation ou d'occupation dans cette zone est assujettie à l'approbation de plans relatifs à l'implantation et à l'architecture des constructions ou à l'aménagement des terrains et aux travaux qui y sont reliés en vertu des dispositions du règlement de P.I.I.A.

(1047-150 ; 00-10-20)

174. Zone RH-2 - ABROGÉ

(1047-156 ; 01-10-14)



48. Implantation en bordure d'une voie ferrée

Dans une zone où un groupe ou un sous-groupe HABITATION est autorisé, sauf dans le cas de terrains déjà desservis, la distance minimale entre tout bâtiment principal et l'emprise d'une voie ferrée est de dix mètres (10 m);

Dans le cas de terrains desservis, le côté adjacent à la voie ferrée doit être aménagé par un talus, une dénivellation de terrain, un muret, des plantations d'alignement ou une clôture opaque de deux mètres (2 m) de hauteur.

Nonobstant les exigences mentionnées à la grille de spécifications, lorsqu'un terrain destiné à un usage commercial ou industriel ou occupé par un tel usage est adjacent par sa ligne arrière à une emprise de voie ferrée, la cour arrière peut être nulle. (1047-2 ; 90-06-29, 1047-164 ; 02-06-05)

49. Largeur minimale des cours latérales

Nonobstant toute autre disposition contraire, la largeur minimale des cours latérales varie selon les groupes d'usage de la façon suivante :

1° pour le groupe d'usage H1-1 sans garage, la largeur des cours latérales est de deux mètres (2 m) d'un côté et de trois mètres (3 m) de l'autre;

2° pour le groupe H1-2 et H1-3 sans garage, trois mètres (3 m) d'un côté;

3° pour les unifamiliales cours latérales zéro sans garage, la largeur est de 3,5 mètres; avec un garage contigu, la cour latérale est de 2,5 mètres; et avec un garage incorporé, la cour est de 3,5 mètres;

4° pour le groupe H4-3, les cours latérales des bâtiments en forme de pyramide, c'est-à-dire qui forment une pyramide régulière dont la base est un polygone et dont la hauteur passe par le centre de la base, se calculent comme suit : 30 % de la hauteur du bâtiment;

