

Standing Committee to Study "Grid-Lock" and Transit Issues in Toronto the
National Capital Region. Michael Kostiuk

**Submission to the Committee Study on “grid-lock” in the Greater
Toronto Area (GTA) and the National Capital Region (NCR).**

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Summary of the main conclusions and recommendations

1) Better use of the Bus-Based Transitway in Ottawa. Page 9.

If the City of Ottawa operated the bus Transitway as a true Bus-Based Metro system there would be seamless, and quick, rapid transit from Kanata, Barrhaven, Ottawa South and Orleans to the downtown core to Ottawa. The Bus-based Transitway, as well the exclusive dedicated bus lanes on the Queensway (Highway 417), and Woodroffe Avenue are already in place so it is just a matter of implementing the change from a “multiple route bus road” to a true “Bus-based Metro System” to create a vast improvement in

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transit service in Ottawa, while also lowering the operating cost of the system as a bonus outcome. Peak hour bus volume would drop from nearly 190 buses to approximately 100 buses per hour in the downtown core if the Ottawa Transitway were run as a true

Bus-Metro operation. Bus operating costs would also drop a corresponding amount since there would be 47% fewer buses running in the downtown core. Passenger waiting time and bus dwell time would drop considerably since passenger would board every bus that come by their stop.

2) Better use of the Greenbelt, and the Satellite Cities of Kanata, Barrhaven and Orleans. Page 15.

The city of Ottawa is not a concentric city, but rather it is more of a Multiple Nucleii city with multiple central business districts, and multiple zones of transition and light industrial zones. In fact, the National Capital Commission purposely set out to design Ottawa with “*dispersed employment zones*” away from the downtown core of the city.

As well, Ottawa is also a region that includes the three satellite cities of Kanata Barrhaven/Nepean South And Orleans. And what may be quite surprising to many people is that only 19% of the people in Ottawa currently work in the downtown core. If we follow the intent of the original design of the satellite cities for the Ottawa Region there will eventually be major employment centres located near the centre of the three satellite cities. Along with a mix of affordable low, and medium density housing, these satellite cities will be places where people can both live and work in. Therefore, the need to provide transportation to the core city of Ottawa will be greatly reduced since many people will be living NEAR where they work. i.e. there will be LESS people commuting

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across the greenbelt from Orleans, Barrhaven and Kanata to the downtown core of Ottawa since they will have the opportunity of living close to where they work in their satellite cities.. This is the main concept and goal of Satellite cities. People live near where they work. This is in contrast to suburban communities where people have to commute considerable distances to employment areas.

3) Moving more employment to the Satellite cities of Orleans, Barrhaven and Kanata. Page 31.

To create a more balanced employment rate throughout the region of Ottawa MORE employment needs to be directed to Orleans and South Nepean. Using new Urbanist techniques we can take small portions of the parking areas that are allocated to their suburban Shopping Centres and Big Box Malls (that are located along the main road ways), and use that space for the construction of office towers. At the base of these office towers, stores and services would be located. Wide sidewalks are then built in the front of these office towers, and the main streets upon which they are situated can either have on-street parking, and/or dedicated lanes for public transit. Greenery and street furniture are placed on the sidewalks to create a pleasant walking environment. The end result is a **main street** that has employment, shopping and services in a very condensed area.

Housing such as apartments can also be incorporated into the main street environments, and these can link to lower density houses further away from the main street. The Shopping Centres themselves will benefit from this development since there is a larger pool of potential shoppers in the area. Since employment is now located near where

people live, use of cars will drop, and people will more able to use public transit, or to
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even to walk, or bike to work. The result will be less travel time and more personal and family time. This creates a more sustainable community, and reduces the need to provide transit services across the Greenbelt. It is cheaper to do this than to build expensive Rapid Transit Systems since it can be done by the Private Sector instead of using Public Funds.

4) Hunt Club Road Congestion Solutions. Page 36.

In the south central section of the city of Ottawa one major issue is the problem with traffic congestion on the Hunt Club Road. The main sources of these problems are traffic going east and west on Hunt Club Road, as well as traffic turning to/from Bank Street, Riverside Drive and Prince of Wales Drive.

This absence of east-west public transit is another consequence of directing Ottawa's transit services THROUGH downtown Ottawa via the Transitway on the assumption that everyone works there. Of course, most of the work force is distributed throughout the Ottawa area. Ottawa's Transit system appears to be designed for a Concentric city, yet Ottawa is a Multiple Nucleii city. Using the Multiple Nucleii city design concept Ottawa should be using both the existing Road and Rail networks to supply much needed transit services for its east-west transit user.

These east-west rail lines also go very close to many of these industrial parks (coloured in Purple in the supplied map) where people work. And many of these employment centres are located on either side of these railway tracks. A quick solution would be to purchase

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commuter/light rail trains similar to the Award winning O-Train that operates so
successfully on the North-South O-Train Line

**5) Better use of the existing Road and Rail transit network to allow people to go
where the employment. Page 41.**

Using diesel Light Rail Technology is a low cost solution to the particular transportation
problem that occurs along Hunt Club Road and other parts of the City of Ottawa. This
can be done with limited funding, and be put into service in a relatively short period of
time. In time, the east-west lines could gradually be converted to electricity if it was
deemed necessary.

The O-Train also costs approximately 1/3 the fuel, and 1/3 the labour, to move the same
number of passengers as a bus. This statement is very important since there is a cost
efficiency difference of Rail versus Bus. Both engines (* combined) in an O-Train
consume about 650 litres of fuel per day. Ottawa's O-Train has two engines: one in the
front car and one in the rear car. The single engine in an articulated bus consumes about
650 litres per day, which is the same daily consumption as the O-Train. BUT, the O-Train
can carry 285 people: i.e. 135 seated and 150 standees. An articulated bus has 54 seats,
and room for 40 or so standees, so it has about a 95 persons capacity. And of course we
have one bus driver moving 95 people, versus one O-Train driver moving 285 people, or
three times as many passengers.

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The former Regional Municipality researched the use of existing railway lines for use in commuter rail for Ottawa. This study known was called ORTES (Ottawa Rapid Transit Expansion Study) and it was the basis for the ORTEP (Ottawa Rapid Transit Expansion Plan). This study was also based on earlier separate proposals by Canadian National Railways (Appendix 1), and Canadian Pacific Railways (Appendix 2).

6) Prince of Wales Drive Bus Way Proposal. Page 46.

The widening of Prince of Wales Drive from Woodroffe Avenue to Fisher Avenue has the potential of adding significant amounts of unwanted additional traffic to many areas in south-central section of the City Of Ottawa; namely the area of Carling and Holland Avenues. However, if the City of Ottawa were to use the new lanes as dedicated bus lanes in the morning and afternoon commuting periods, they could instead divert many people who are using, or are planning to use cars, to divert these people to bus transit instead.

Therefore, it is more cost effective and environmentally prudent to move people by articulated buses than by cars on roads in this part of the city. An articulated bus can carry to 100 people, so if we move people from cars to buses, then one fully loaded articulated bus could remove up to 100 cars (based on one person per car) from the roads in Ottawa. And just 50 fully loaded articulated buses could remove up to 5,000 cars each day (per direction) if we would use the Prince of Wales Drive expansion for bus-based transit instead of car-based transit.

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7) Use the Prince of Wales Railway Bridge for Commuter Rail Use. Page 48.

Since the City of Ottawa has three Talent Trains used for the O-Train operation, but only two are used on a daily basis, the third train could be used to shuttle transit users between the **Bayview Station** and **Terasses de la Chaudiere** during the morning and afternoon peak transit periods. This would be very easy to establish since it would only involve a simple platform and connected pathway to be built on the Ottawa side near the Bayview station, and a platform to be built at the siding that is just across the street from **Terasses de la Chaudiere**.

8) Benefits of a Downtown Streetcar Loop in Ottawa. Page 52.

If modern streetcars were used on a proposed inter-provincial streetcar loop across the Ottawa River this system would be able carry all inter-provincial transit riders that are currently being carried by the STO and OC Transpo systems. This would be a great revenue generator for the Ottawa Streetcar system, and it would eliminate the need for either STO or OC Transpo to be Federally regulated (since they would no longer have to cross Provincial Boundaries). This means that the Streetcar line would require 6 to 8 modern articulated streetcars, and two or 3 replica heritage streetcars. The replica streetcars can be used off peak during tourist season and on weekends. The Replica Heritage streetcars can also be used as “tractors” to haul broken down streetcars back to the car barn. Modern track laying procedures would also allow for relatively quick laying of tracks without disrupting the existing services that lay under the city streets. For more information about this please look at Appendix 3.

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Eight Modern streetcars (200 per capacity) running one way on a single track have the potential of carrying 6400 people per hour between Ottawa and Gatineau.

The General Benefits and lower carbon footprint from an Inter-Provincial Streetcar loop.

The operation of an inter-provincial streetcar loop using modern low floor streetcars would:

- Create and maintain Cleaner air in the downtown core of Ottawa;
- Less bus congestion in the core area;
- Quicker transportation in the Rideau-Wellington corridor;
- Less labour used on transit;
- Less wear and tear on the roads;
- Less energy consumption and cleaner energy used;
- OC Transpo and STO buses fleet would operate more efficiently since they would not have to go back empty to their starting locations across the Ottawa River.

Better use of the Bus-Based Transitway in Ottawa.

Use it as a True Bus Metro System; instead of using it is a dedicated multi-use bus road.

Two years ago I asked the City of Ottawa how many people are carried by the bus system through downtown Ottawa during the morning and afternoon peak travel periods (Rush Hour).

The answer was:

- 10,500 people per hour travel on both Albert and Slater Streets.
- 198 buses are used per hour to move commuters on Albert during the rush hour period.

I then asked how many people can an articulated bus carry, and the reply from the City was 100 passengers (combined sitting and standing). Note: There are even larger articulated buses that can carry more than 100 passengers (approximately 180 person, such as manufactured by the Solaris Company), and which have 4 doors for loading/unloading, but which are not used in Ottawa. Use of larger buses would increase the driver and passenger ratio thereby reducing operating costs.

For example, the following image shows a side view of a Solaris bus (in Poland) with 4 doors. 4 doors also allow for quicker loading and unloading of passengers.

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Therefore, if you divide 10,500 passengers per hour by 100 (capacity of an articulated bus) then we get a number of 105 buses that could be used the same number of people that are being transported by 198 buses during the same travel period. That is almost half the number of buses that are actually used to move the same amount of people/per hour in downtown Ottawa. i.e. 198 buses are used to move people on Albert Street during rush hour.

Even if we ran the articulated buses at a 90% load this number of people could then be carried by approximated 120 articulated buses.

What this means is that the City is "NOT" using its bus fleet effectively, nor is it using the Bus Transitway as it should be used.

i.e. The Bus Transitway should be operated in the same manner as a rail-based Metro style subway system with only or two different routes traveling on its system.

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In contrast to the Ottawa Transitway, a Rail-based subway, or a Metro System imposes a rigorous set of operating rules that simply cannot be changed without drastically reducing the effectiveness of that system. However, the Ottawa Bus-based Transitway lacks the operating discipline that is seen in rail-based Metro systems. In the present situation there are simply too many buses (based are multiple routes) carrying too few people on the dedicated bus lanes on downtown Ottawa streets. The core of this downtown transit problem of "too many buses" is the express bus system. In contrast to the Ottawa Transitway, the City of Gatineau is building a bus-based transitway that is based partly on the Ottawa Transitway, but with one major difference; The STO Bus way will operate as a dedicated Bus Metro system. Local transit users will have to transfer from the local bus to the STO Transit bus and then continue their journey on the STO Transitway, which is operating as a Bus Metro System.

The following image shows how the bus lanes in downtown Ottawa are over crowded with a variety of buses due to the multiple routes that operate in the same bus lane during morning and afternoon peak travel times.



IF THIS WERE A BUS METRO OPERATION, THERE WOULD ONLY BE ONE ROUTE RUNNING ON THE BUS LANES. Passengers would get on the next available bus instead of waiting at the bus platform for their specific route number to arrive.

For the present situation in Downtown Ottawa, instead of taking the next available bus, many transit users are waiting for their own express bus to take them back to their suburban destination. This causes delays at each downtown bus stop since all the buses must line up along either Albert or Slater and wait for the other buses to slowly move to each bus stop. This delay is called "dwell time" and the only way to solve this problem is to either remove the express buses from Albert and Slater Streets or to eliminate them

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from the inner urban area altogether. The express buses also only comprise 8% of the transit users, but they are the cause of the transit delays.

THAT is the problem!

To contrast the operation of the bus way through Downtown Ottawa imagine instead a subway system where there are 30 different subway routes operating on a single track. People would then jam up on the platform waiting for their Subway car to arrive. The Subway cars would also not be filled to capacity, but would run with many empty seats. That would of course, NOT happen, since you could NOT operate a subway system in such a chaotic manner. Yet that is how the bus-based transit system in Ottawa is operating.

If we ran the Bus System as a true Bus Rapid Transit System as it was designed, then we would have people getting off at Transitway stops to transfer to dedicated larger buses. Then, the dedicated Transitway buses would carry people on the Transitway east and west, and north and south and the system would operate in the same manner as a rail-based Metro system.

This is how Commuter Rail, Subway systems, Metro System, Light rail lines, and even Streetcar lines are designed to operate, and do operate all around the world.

Therefore, if the City of Ottawa operated the bus Transitway as a true Bus-Based Metro system there would be seamless, and rapid transit from Kanata, Barrhaven, Ottawa South

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and Orleans to the downtown core to Ottawa. More people would take the Bus and there would be less road congestion since there would be less people using their cars to get to work. The Bus-based Transitway, as well the exclusive dedicated bus lanes on the Queensway (Highway 417) and Woodroffe Avenue are already in place so it is just a matter of implementing the change from a "multiple route bus road" to a true "Bus-based Metro System" to create a vast improvement in transit service in Ottawa, while also lowering the operating cost of the system as a bonus outcome. Bus operating costs would also drop a corresponding amount since there would be 47% fewer buses running in the downtown core. Passenger waiting time and bus dwell time would drop considerably since passenger would board every bus that come by their stop.

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**Better use of the Greenbelt, and the Satellite Cities of Kanata,
Barrhaven and Orleans.**

Before I go into explaining the merits of the Greenbelts and Satellite cities I feel that it is important to outline the major difference between a concentric city and a multi-node city.

I am doing this because it is quite apparent that much of the planning that is being for Ottawa is based on a form of city that no longer exists. I.e. the Concentric City.

The following is taken from chapter four from the Introduction to Real Estate as a Professional Career manual:

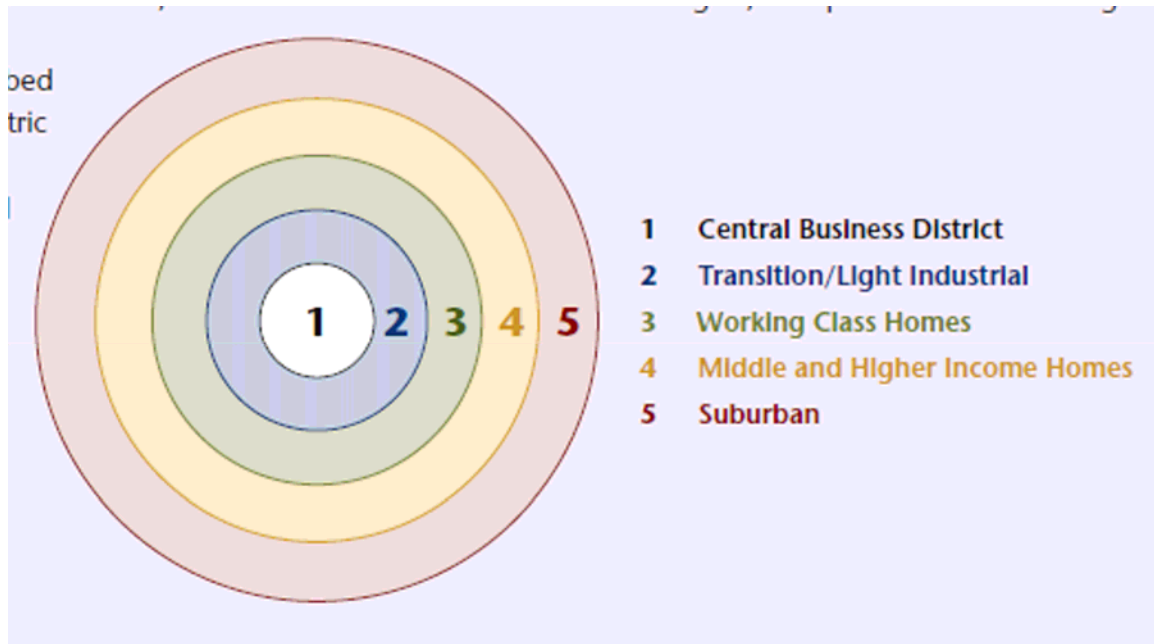
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Concentric Circle Theory

Urban economists have generally concentrated on what makes cities grow, what shape that growth takes and the consequent complex interactions that give rise to land use patterns, densities, location of residential versus commercial developments and transportation systems. Urban economics, as we know it today, began with theorists postulating on patterns of urban growth. The most notable, based on the 1920's work of Ernest Burgess, a respected urban sociologist from the University of Chicago (born in Tilbury, Ontario), described urban growth in terms of concentric circles emanating from a central business core. Burgess conceived of a model that contained five zones: the central

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business district (CBD), transition zone, working class homes, middle and higher income residential, and suburban.



Source: Real Estate as a Professional Career. Chapter 4, Page 124. 2011 Edition. Real Estate Council of Ontario. 3250 Bloor Street West. Suite 600, East Tower. Toronto,

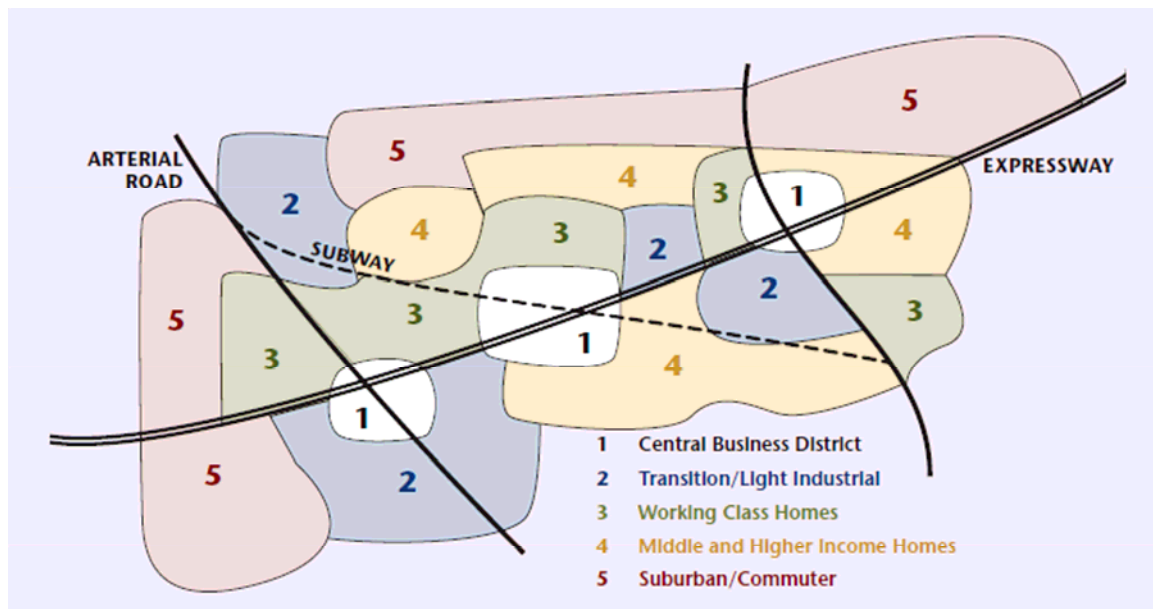
MultiPle Nucleii theory

Subsequent urban economists would further refine these models by moving away from the one CBD (the monocentric city) to address the growth of suburban core commercial areas and resulting realignment of traffic patterns, densities and land usage to accommodate these relatively independent suburban subpoints of economic activity. Each successive model seemed to be a refinement based on the era in which it was developed.

Certainly, Burgess' concept worked for city growth in the early 1900's but later models

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provided successively better 'fits' as cities became more complex and urban economists sought further theoretical refinements. Interestingly, most modern cities typically display components of all four models with multiple nuclei having the best fit for large centres; i.e., the Greater Toronto Area. Numerous models have been developed based on these four primary theories but such discussion goes beyond the scope of this text.



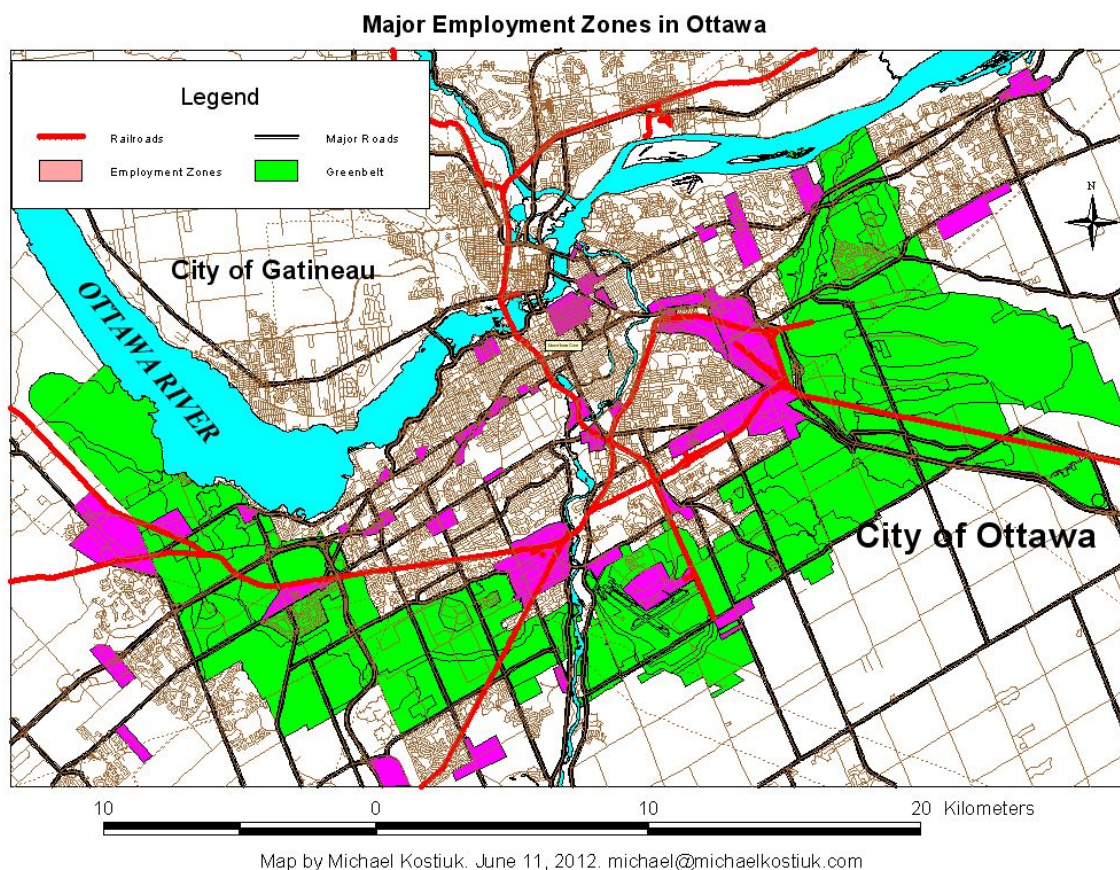
Source Real Estate as a Professional Career. Chapter 4, Page 125. 2011 Edition. Real Estate Council of Ontario. 3250 Bloor Street West. Suite 600, East Tower. Toronto,
[End Quote]

The city of Ottawa is not a *concentric* city, but rather it is more of a **Multiple Nucleii** city with multiple central business districts and multiple zones of transition and light industrial zones. As well, Ottawa is also a region that includes the three satellite cities of Kanata Barrhaven/Nepean South And Orleans. These **Multiple Nucleii** zones were

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further multiplied with the formation of the new City of Ottawa, which was created by the amalgamation of all of the cities, and townships that once comprised the area formerly known as the Regional Municipality of Ottawa-Carleton.

I made a map to show the layout of the City of Ottawa showing its Greenbelt as well as the location of the major employment zones. The employment zones are shown as pink tones. And it is shown below. I also send a pdf file of this map along with this submission so that you may enlarge it to view it in greater detail is you desire.



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It is obvious by viewing this map that the city of Ottawa is a **Multiple Nucleii city with multiple employment and commercial zones**. Please note that these employment zones are distributed all across the city of Ottawa, and they are located both inside and outside the Greenbelt. The downtown core of Ottawa is simply one zone of many employment zones located through out the city of Ottawa. Although the City of Ottawa once a Concentric city in the 19th and early 20th centuries, it gradually changed to a **Multiple Nucleii city after world war two. In fact many cities in North America also went through the same type of urban change as is seen in Ottawa.** The proliferation of the business parks that are located outside the Central Business District of most major sized cities is a significant part of this change in the form of modern North American cities from their original concentric design. **And what may be quite surprising to many people is that only 19% of the people in Ottawa currently work in the downtown core.** The Source of this information comes from the City of Ottawa's own Demographics Report. *"Employment in Ottawa. Results of the 2006 Employment Survey. Date. November 2007. Publication # 10-12".*

In fact, the NCC (National Capital Commission) purposely set out to design Ottawa with **"dispersed employment zones"** away from the downtown core of the city. The following information about the NCC's planning for dispersed employment zones in Ottawa comes from an article in the Ottawa Journal dated 1961. The complete article is in Appendix 1a.

"Speaking on "Railway Relocation Plans for Ottawa" before an Engineering Institute of Canada meeting Thursday night, Eric Thrift, NCC general manager, said the redevelopment of land vacated by the railways "opens up new possibilities and poses many problems."

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Towards the end of the article there is a quote about the NCC's vision and planning regarding the employment zones in the City of Ottawa:

"In answer to a question on the disappearance of downtown rail lines that the questioner thought could be used for commuter transportation in the future, **Mr. Thrift said Ottawa was being planned on a dispersed technique.**"

By this, he explained, he meant that there would not be the daily rush of commuters to the downtown areas now experienced by larger cities.

Source: Ottawa Journal, Friday 21 April 1961, Page 25.

As well as being a **Multiple Nucleii city**, Ottawa is a special and unique city in Canada since it has many unique attributes. It is the national capital of Canada; it is part of the National Capital Region that straddles the Ottawa River. While the City of Ottawa is solely in Ontario, the National Capital Region occupies portions of the Province of Ontario and the Province of Quebec. And as well as having its own municipal government the region is also partly managed by the province of Ontario and National Capital Commission. The city also cooperates with the City of Gatineau on the Quebec side of the Ottawa River on various planning, transportation and other issues.

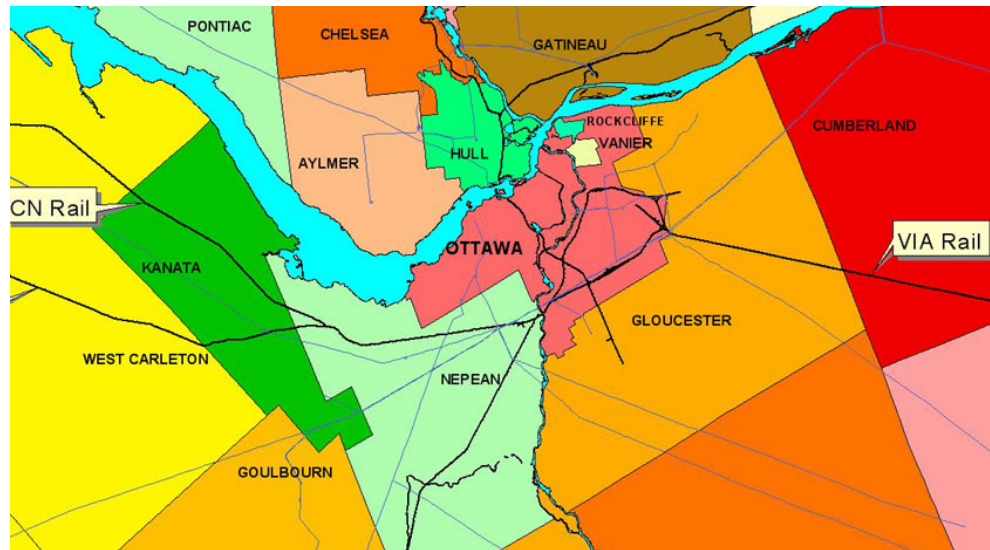
The Greenbelt.

Over the years the various local, provincial and federal governments have greatly changed and modified the design and complexity of this region. One of the earliest attempts at managing and controlling future growth was through the creation of the Greenbelt. This is a collection of lands that surrounds the central urban core The

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greenbelt extends from approximately Kanata in the west to Barrhaven and Riverside in the south and to Orleans in the east.

The map below shows the region before the introduction of the Greenbelt



The purpose of a Greenbelt in urban and regional planning is to contain urban growth from sprawling uncontrollably. The further a city grows away from its centre the more difficult and more expensive it is to provide services to provide transportation and public transit systems. Along with the greenbelt new growth is directed to new cities, which are often called "Satellite Cities". These cities are located on, or near existing and active rail lines, and they are designed to have: a mix of employment, a mix of housing styles as well as having a sufficient number of schools, playgrounds, parks and community facilities.

The main idea of this new style of urban growth was to design and build new cities without all of the problems that were inherit with the older, congested, and dirty cites.

This not a new concept since urban planners have been using these things since the middle of the 20th century. The modern geography of Ottawa with its greenbelt and it

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existing communities of Barrhaven, Kanata and Orleans is a legacy of this style of urban and regional planning.

Here is a link to a short animated movie on the Internet archives site: [New Town 1948.](http://archive.org/details/new_town_TNA)

http://archive.org/details/new_town_TNA

It is a British government information film that describes the concept of greenbelts and satellite cities. It does an excellent job of explaining why we have greenbelts and how they "should work", however, the film is definitely "anti-high rise" development. Please watch it and then come back to continue reading this page. It is a fun movie to watch.

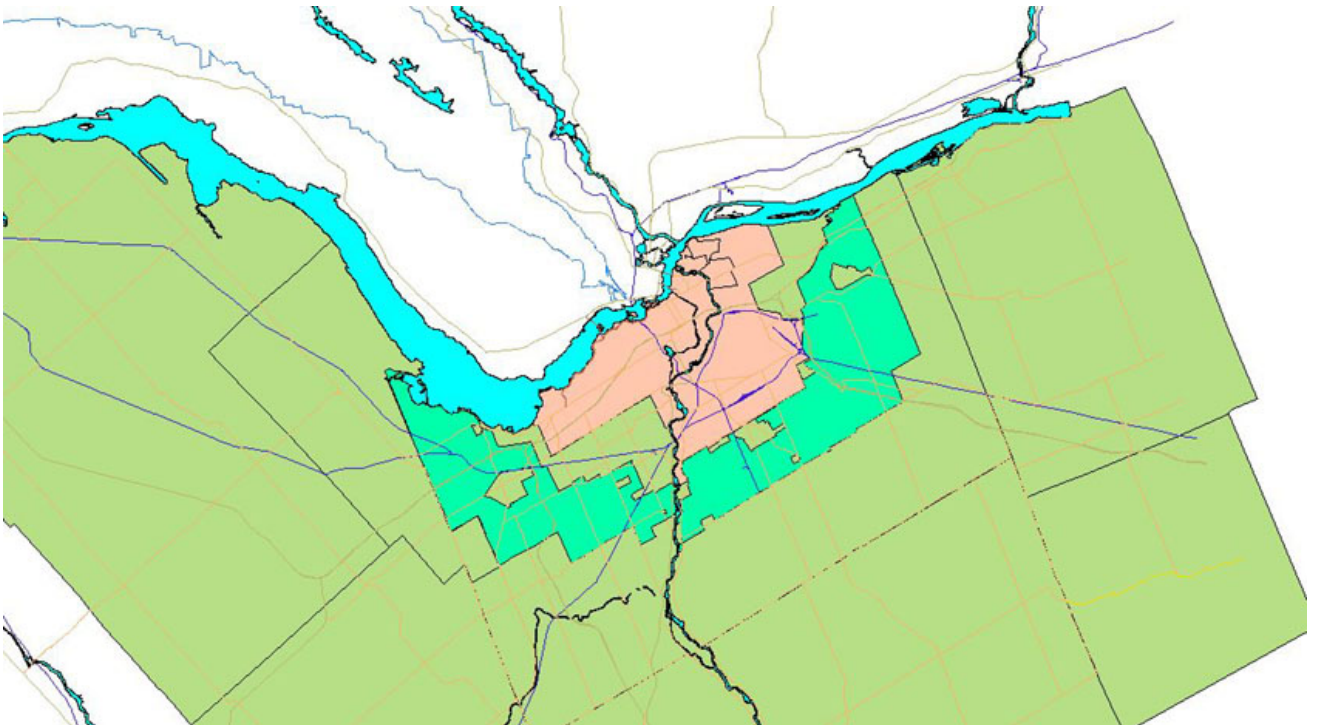
Note: According to Professor David L.A. Gordon (who teaches Urban Planning in the School of Urban and Regional Planning at Queen's University), he recently stated that the concept of a satellite city outside a Greenbelt is still useful, but to be effective in the 21st century the following modifications need to be made:

- Clustering of employment requires networks of high-speed transit to connect each cluster, and to places where people live.
- Satellite city employment with employment clusters works best with ONE Parent working (As in the British Satellite city model). The model is not as efficient if two spouses are working and one does not work in the satellite city. ***Therefore, there needs to be access to a network of high-speed transit that connects the various satellite cities with the MAIN URBAN CENTRE.***

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Professor Gordon said that when the satellite city design was being implemented in the Ottawa area, the urban growth occurred so quickly and beyond what was originally estimated (mostly due to post world war two baby boom and immigration) that the planners were not able to keep up with the demand for housing. So instead of designing proper satellite towns with higher density, and a sufficient employment base, most of the planning was done to simply allow the creation of quick and low density housing suburbs to be located just beyond the Greenbelt in places like Orleans. So with some exceptions like the north sector of Kanata (which was planned correctly according to 1950s methodology), we got bedroom communities instead of fully functional satellite cities.

The map shows the location of the greenbelt

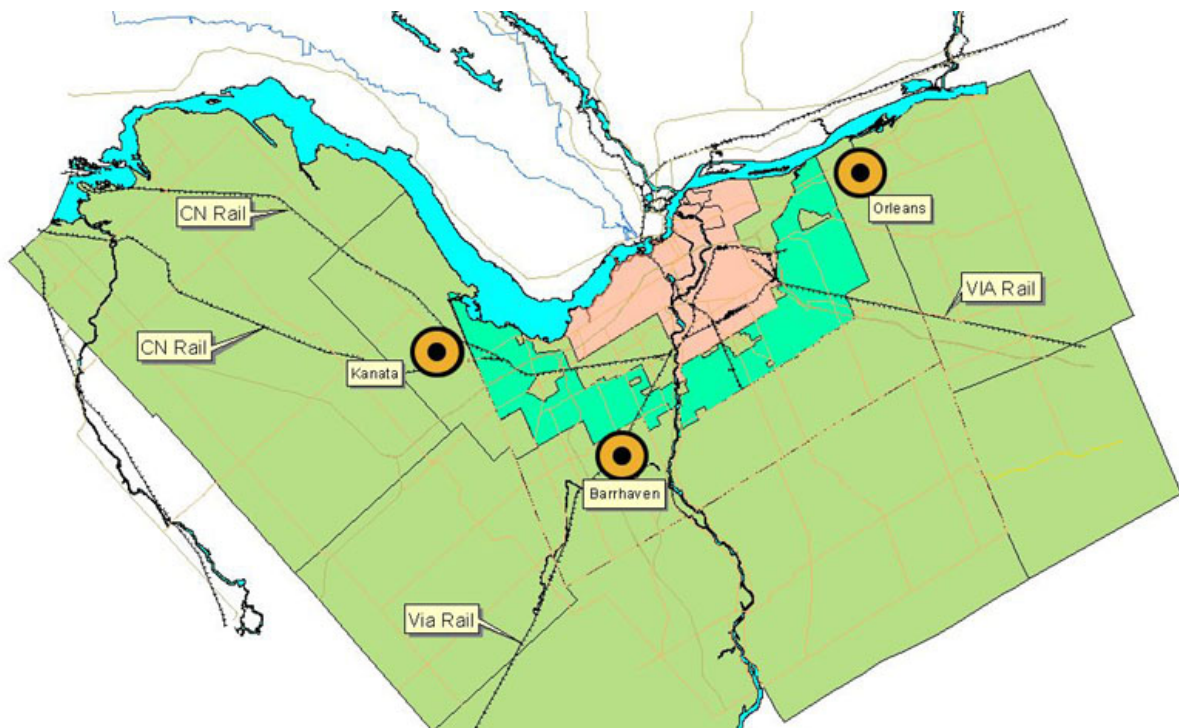


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To contain urban sprawl and to direct new growth, three major "Satellite Cities" were planned for Ottawa. These cities were to be built OUTSIDE the greenbelt, and ideally they should have their own employment centre's so that the majority of its residents would be able to both LIVE, AND WORK in those new communities. It was important that those new communities be placed near to existing and future rail lines and road systems.

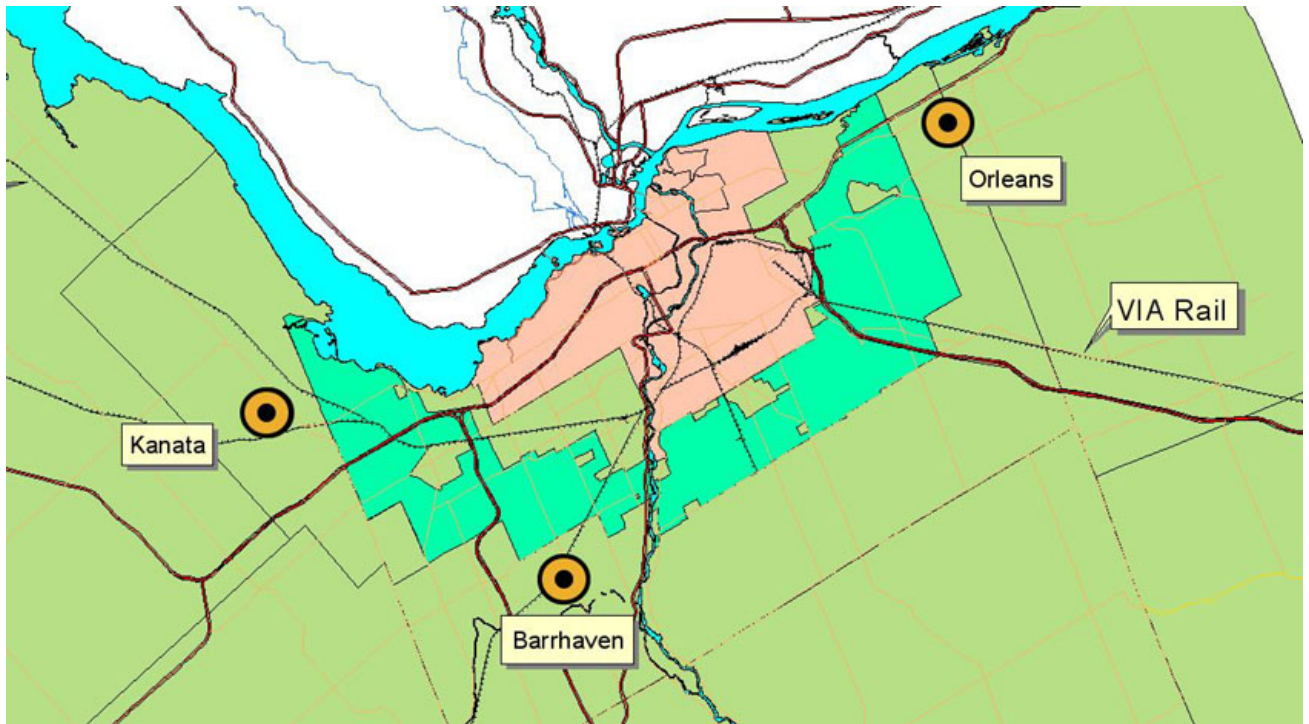
The following simplified map shows the location of Kanata in the West, Barrhaven in the south and Orleans in the east.

Note the location of rail lines near all three of the satellite cities.



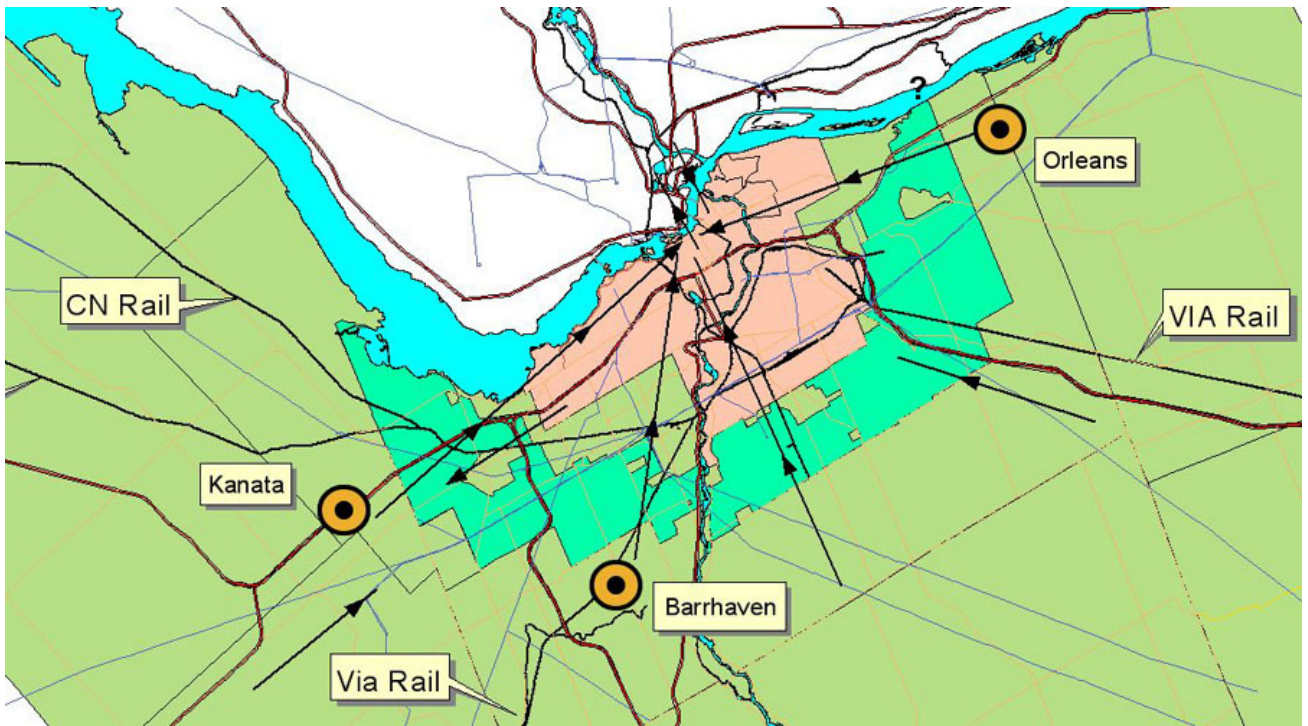
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This map shows the location of major roads in the Ottawa Region

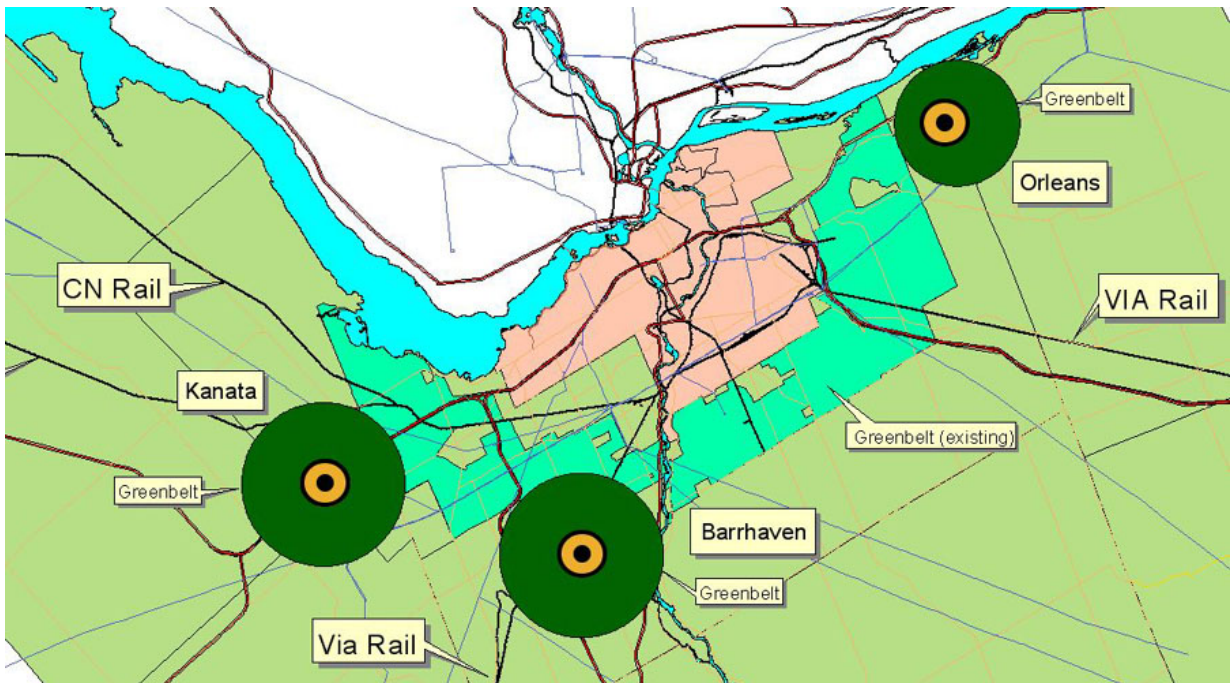


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This maps shows an approximation of current transit flows in the Ottawa Region.



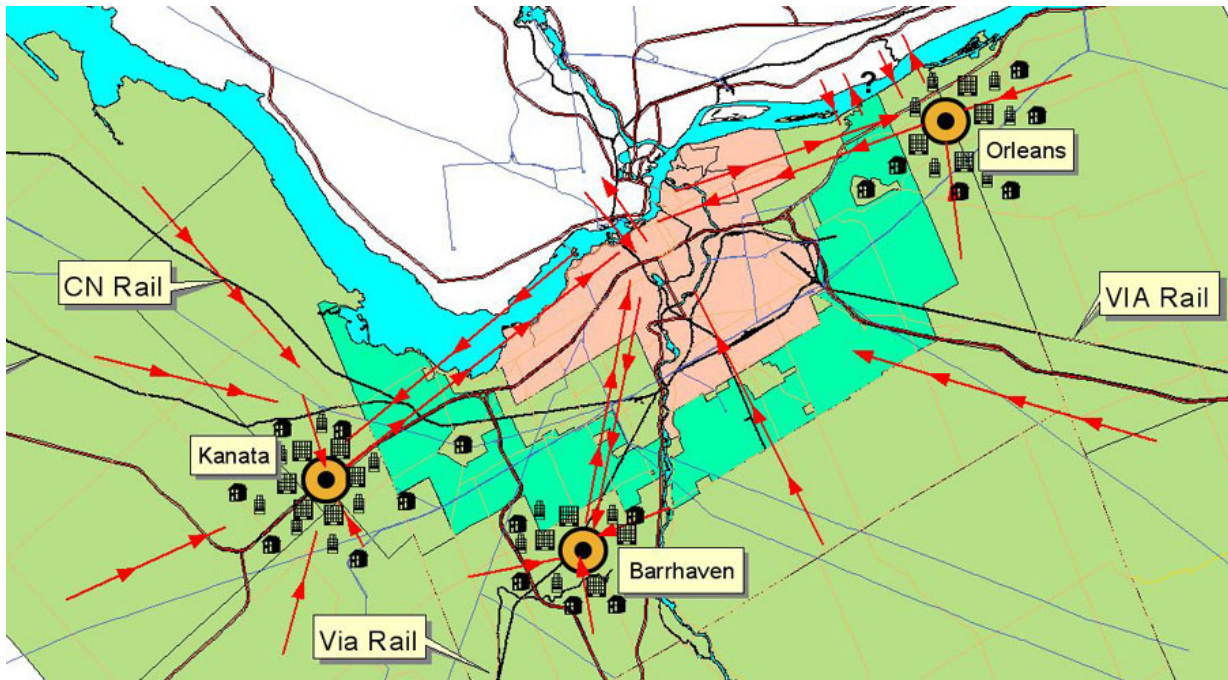
This map shows a simplified version of the three satellite cities with their own greenbelt systems



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If we follow the intent of the original design of the satellite cities for the Ottawa Region there will eventually be major employment centres located near the centre of the three satellite cities. Along with a mix of affordable low, and medium density housing, these satellite cities will be places where people can both live and work in. Therefore, the need to provide transportation to the core city of Ottawa will be greatly reduced since many people will be living NEAR where they work. i.e. there will be LESS people commuting across the greenbelt from Orleans, Barrhaven and Kanata to the downtown core of Ottawa since they will have the opportunity of living close to where they work. This is the main concept and goal of Satellite cities. People live near where they work. This is in contrast to suburban communities where people have to commute considerable distances to employment areas.

The following map shows a more balanced system of satellite cities outside of the greenbelt. Note that transit is going to the satellite cities as well as to the core of the city.



Transportation will also be dual or multi-directional since in reality not everyone will live where they work. Therefore, a gird system of Public Transit (bus and commuter rail) will be necessary since not everyone will want to go through the core of the city in order to get to his or her destinations. Use will be made of existing rail corridors to move people across the region. In some ways this is ideal since in the present situation transit buses carry people from the areas outside of the greenbelt to the core of the city and return mostly empty to the suburbs to restart their transit runs. In the future these buses or light rail trains (including commuter trains) will be carrying people in both directions, and this means that they will be generating transit revenue in both directions of their runs. i.e. No more dead heading routes! This will result in a more cost effective and energy efficient operations. In this scenario a transit tunnel under downtown Ottawa may not be necessary since transit flow to the core may actually remain stable or even decrease. Add the factor of an increased amount of people entering the retirement age, which will result in a

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smaller percentage of the population commuting to work each day. Since there will be more retired people using transit during the off-peak hours of the day, the transit systems will need to be designed to accommodate these off-peak users. ***This is where a grid system of transportation will be essential.*** Use of privately run rural-based transportation networks that link into the Ottawa transportation system will be required to make off-peak transit use efficient and cost effective.

The Transit system MUST be run as Single line Metro System.

No matter what type of vehicle is used for Public Transit, the backbone of the system needs to be run as a Metro system where Transit users can quickly move across the City and then take a local “feeder” bus to where they want to go. This Metro System can be bus-based or rail-based. It really does not matter which technology is being used. It is however, very important (In fact it is vital) to run it in the same manner as a large city subway or Metro system. Right now there are too many buses operating along the Transitway since there are too many destinations being served by too many different buses each operating on their own specific route. The result is a congested Transit System, which is slow and produces unsatisfied transit customers. The Transitway **MUST NOT** be clogged up with multiple routes operating on it! The Transitway needs to be run like a subway with one main line and one route number. Then every transit user can take every bus that comes along and the system will move **MORE** people with **LESS** buses and in **LESS** time.

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Rural Transit is needed as well as well as Urban Transit.

I then propose that city of Ottawa eliminate its transit monopoly outside of the greenbelt so that private operators can provide transit services that the City of Ottawa is unable to provide. Or at the very least to provide a mechanism where private transit operators can be contracted to provide such a service. I have seen these rural transit systems work in many European countries, and it provides a very useful link between the rural and urban areas. **Remember that the “City and Region of Ottawa” is 5/6 rural and 1/6 urban!**

Such a service will allow rural-based elderly people to remain in their homes if they lose the ability to drive their cars. For more information on the benefits of rural transit please read my report on rural transit on my home page titled: “Rural Transit Symposium, November 19, 2009” at [http://web.ncf.ca/fd978/transgeo/Rural Transit Symposium Nov 19 2009.pdf](http://web.ncf.ca/fd978/transgeo/Rural%20Transit%20Symposium%20Nov%2019%202009.pdf)

Moving more employment to the Satellite cities of Orleans, Barrhaven and Kanata.

The following table divides the population of Ottawa by employment to get a percentage of residents who are employed. If you then apply this percentage to populations in the Satellite Cities and Urban centres outside the Greenbelt this will determine how many people should be employed in those areas. The result of this estimate is as follows:

CITY	Ottawa		Greater Ottawa-Gatineau	
YEAR	2006	2031	2006	2031
Population	870,800	1,135,800	1,307,100	1,733,800
Jobs	529,800	703,100	742,700	1,008,300
Percent	60.84	61.9	56.82	58.16

If you divide Ottawa 2006 and Ottawa 2031 by 2 we get an average population percentage of 61.37%

Therefore, based on the average of 61% employment ate for Ottawa the following communities SHOULD have workforces of the following:

Note: Suburbs will have many younger people living there as opposed to the older neighbourhoods, so this will not be 100% accurate, but it will give a fairly good picture of the *POTENTIAL* local employment of the three Satellites cities outside the Greenbelt.

City/Population	Actual	Expected	Difference
------------------------	---------------	-----------------	-------------------

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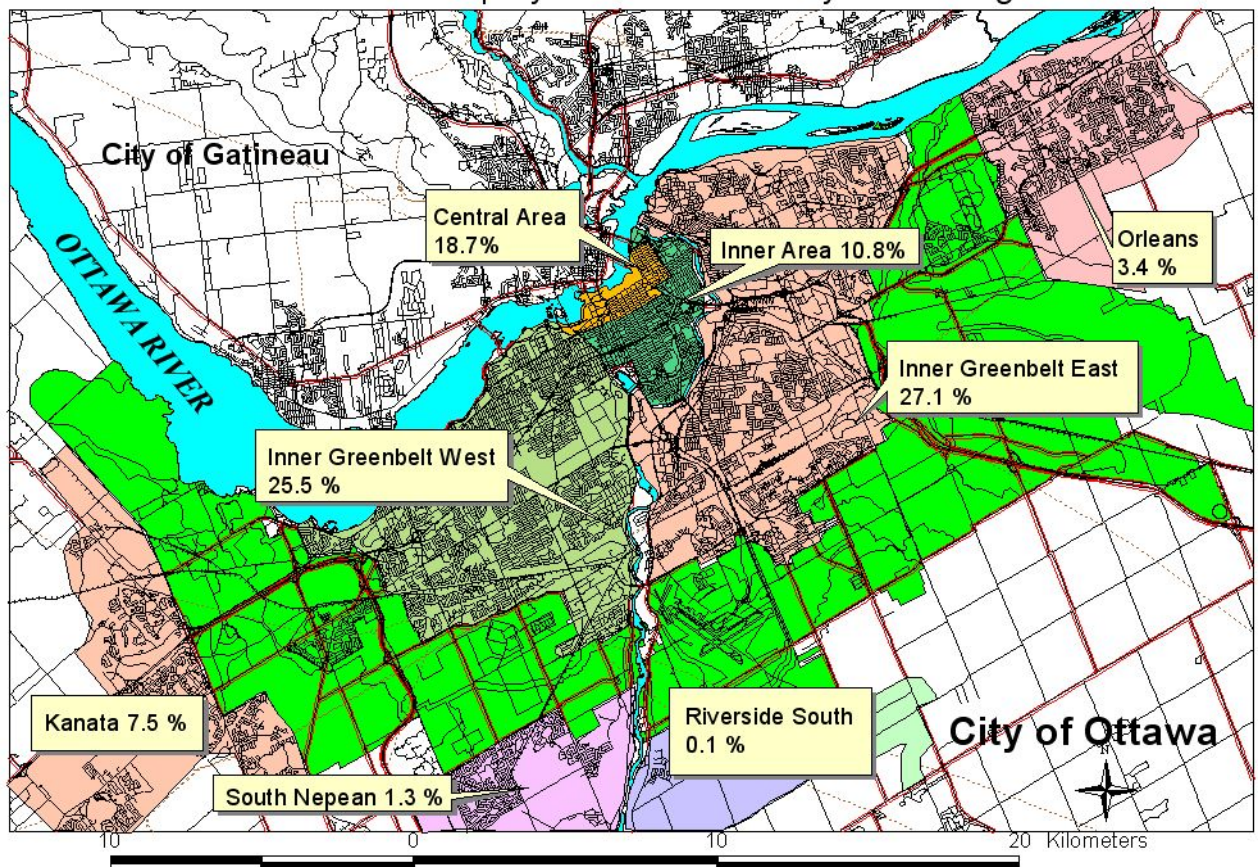
Employment	Employment		
Orléans /94,980	17898 or 18.84%	57937.8	- 40,039.8
Kanata /67,100	39002 or 58.13%	40931	- 1,929
South Nepean / 54,950	6982 or 12.7%	33519.5	- 26,537.5
Riverside South / 6,840	629 or 9.2%	4172.4	- 3,543.4
Stittsville /18,950	4638 or 24.48%	11559.5	- 6,921.5
Letrim / 1,235	2158 or 174.74%	753.35	+1404.65

If you refer to the above table you will see how the employment rate is much lower in Orleans and South Nepean than it is to the Ottawa average. I have highlighted this in red to make it more visible.

This map shows the employment distribution of the year 2006.

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Distribution of Employment in Ottawa by Percentage



Michael Kostiuk. michael@michaelkostiuk.com September 2010.

To create a more balanced employment rate throughout the region of Ottawa MORE employment needs to be directed to Orleans and South Nepean. Using new Urbanist techniques we can take small portions of the parking areas that are allocated to their suburban Shopping Centres and Big Box Malls (that are located along the main road ways), and use that space for the construction of office towers. At the base of these office towers, stores and services are then located. Wide sidewalks are then built in the front of these office towers, and the main streets upon which they are situated can either have on-street parking, and/or dedicated lanes for public transit. Greenery and street furniture are

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placed on the sidewalks to create a pleasant walking environment. The end result is a

main street that has employment, shopping and services in a very condensed area.

Housing such as apartments can also be incorporated into the main street environments,

and these can link to lower density houses further away from the main street. The

Shopping Centres themselves will benefit from this development since there is a larger

pool of potential shoppers in the area. Since employment is now located near where

people live, use of cars will drop, and people will more able to use public transit, or to

even to walk, or bike to work. The result will be less travel time and more personal and

family time. This creates a more sustainable community, and reduces the need to provide

transit services across the Greenbelt. It is cheaper to do this than to build expensive Rapid

Transit Systems since it can be done by the Private Sector instead of using Public Funds.

The following images are of Liberty Square at the corner of Town Centre Road and

Highway 7 in Markham Ontario. This is a cluster of office towers and

apartments/condominiums with stores and services on the ground level. The buildings are

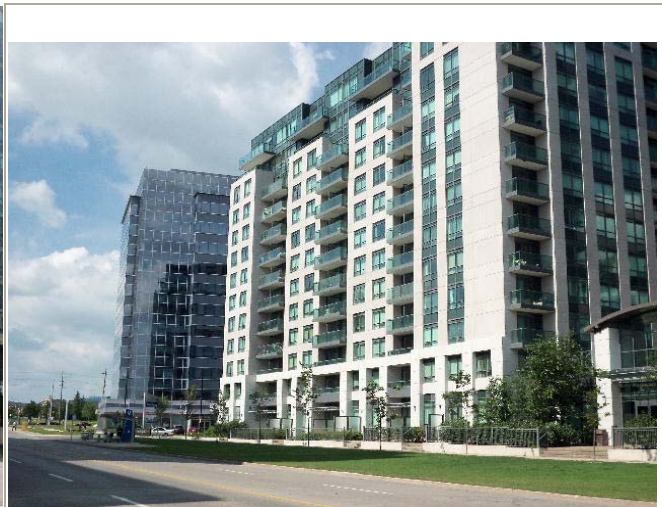
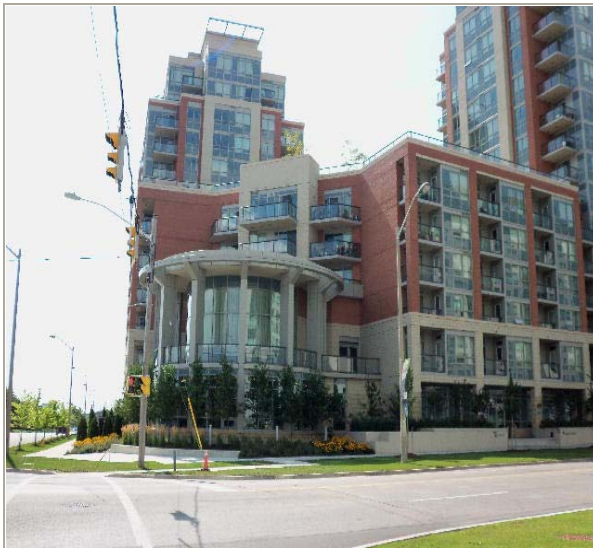
also offset from the roads, which give pedestrians a pleasant walking experience away

from the nearby traffic. It is not a perfect (or textbook) example of New Urbanism, but it

has many of the features that are described above.

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Hunt Club Road Congestion Solutions.

In the south central section of the city of Ottawa one major issue is the problem with traffic congestion on the Hunt Club Road. The main sources of these problems are traffic going east and west on Hunt Club Road, as well as traffic turning to/from Bank Street, Riverside Drive and Prince of Wales Drive.

If you look at an OC Transpo map you will also see that there are no buses that operate on a west-east-west direction on Hunt Club Road. This is quite amazing since with no cross-town public transit available for commuters in this part of the city, all of the commuters are literally forced to use the private automobile to travel in an east–west direction. This area also has many employment zones that people work in. For example, the South Merivale Road industrial area has more people working there than there work at Tunney's Pasture.

This absence of east-west public transit is another consequence of directing Ottawa's transit services THROUGH downtown Ottawa via the Transitway on the assumption that everyone works there. Of course, most of the work force is distributed throughout the Ottawa area. Ottawa's Transit system appears to be designed for a Concentric city, yet Ottawa is a **Multiple Nucleii city**. One has to wonder at the level of competence (or lack of basic geographic knowledge) that exists in the City of Ottawa where transit design seems to have no relation to city design.

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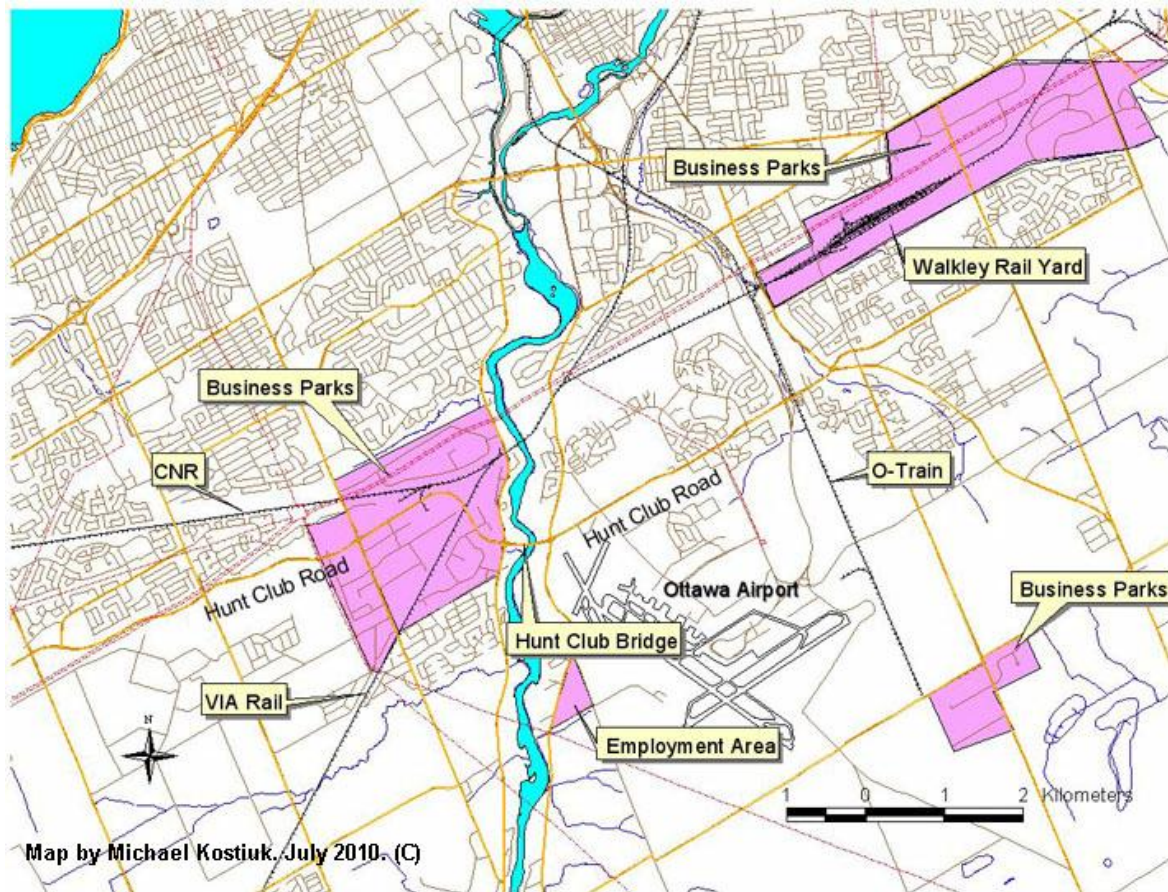
Using the **Multiple Nucleii city** design concept Ottawa should be using both the existing Road and Rail networks to supply much needed transit services for its east-west transit user.

In the short term, I would propose that the City implement a bus service that operates on the entire length of Hunt Club. These buses should also run in a dedicated lane so that it does not get slowed down in rush hour periods.

However, there is a problem with this bus solution. The road is already choked with cross-town traffic, so unless a new bus lane is implemented, the buses would also get stuck in traffic. If a bus lane is implemented then there is even less road capacity for an already crowded road.

However, if you look at the following map, one will see that to the north, there are east-west rail lines that are available for transit use. Local service OC Transpo buses could also feed into commuter/light rail trains along this corridor and this would give those workers an alternate to driving a car along Hunt Club Road.

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These east-west rail lines also go very close to many of these industrial parks (coloured in Purple) where people work. And many of these employment centres are located on either side of these railway tracks. A quick solution would be to purchase commuter/light rail trains similar to the Award winning O-Train that operates so successfully on the North-South O-Train Line. Remember that the O-Train has already run several demonstrations trips on the east-west rail lines for special occasions (see page 35). Take note that if the O-Train were extended a short distance south to at least Letrim Road it would be able to offer transit services to the Business Parks that are located in that area.

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R. Hoather of VIA Rail has already stated that they would be quite willing to share their tracks with Ottawa for Commuter rail purposes, so this is not an obstacle either.

Here are a few images of the O-Train during its special trip to Carp in September of 2004:



Along Carling Avenue Near Bayfield.



O-Train in Carp Village.

Here are two images of the O-Train in Barrhaven in 2004:



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And click on the following link to see a YouTube video about the O-Train parked on the
east-west Line at the VIA station in Barrhaven for the 2004 Light Rail Funding
Announcement..

[O Train in Barrhaven 2004. Funding Announcement.](http://www.youtube.com/watch?v=x9OcLgkxY6Q)

<http://www.youtube.com/watch?v=x9OcLgkxY6Q>

Take note in this video that they were talking about "extending" the O-Train system, not
replacing it with another type of system.

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**Better use of the existing Road and Rail transit network to allow people
to go where the employment is.**

Using diesel Light Rail Technology is a low cost solution to the particular transportation problem that occurs along Hunt Club Road and other parts of the City of Ottawa. This can be done with limited funding and be put into service in a relatively short period of time. In time, the line could gradually be converted to electricity if it was deemed necessary.

For example: On its trip to Carp in September of 2004, the current O-Train was observed doing 100 kph on the Beachburg Sub, which faster than it travels on its existing North-South route. In June of 2003 the cost to replace the O-Train's route's jointed rail with welded rail was only about \$250,000 per kilometre. It also only took three WEEKS to replace the entire 8 kilometres of rail. AND, the entire O-Train project only cost about \$4 million per km., INCLUDING the cost of the trains. Compared this cost to that of our Busways, which have cost an average of \$15 million per kilometre, NOT including the buses. AND, setting up the entire O-Train project, took less than a year: from October. 26, 2000 to October 15, 2001. New extensions of the O-Train, on existing track, would take far less time, due to the big learning curve The City of Ottawa has already gone through.

The O-Train also costs 1/3 the fuel, and 1/3 the labour, to move the same number of

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passengers as a bus. This statement is very important since there is a cost efficiency difference of Rail versus Bus Both engines (* combined) in an O-Train consume about 650 litres of fuel per day. Ottawa's O-Train has two engines: one in the front car and one in the rear car. The single engine in an articulated bus consumes about 650 litres per day, which is the same daily consumption as the O-Train. **BUT**, the O-Train can carry **285 people**: i.e. 135 seated and 150 standees. An articulated bus has 54 seats, and room for 40 or so standees, so it has about a 95 persons capacity. And of course we have one bus driver moving 95 people, versus one O-Train driver moving 285 people, or three times as many passengers.

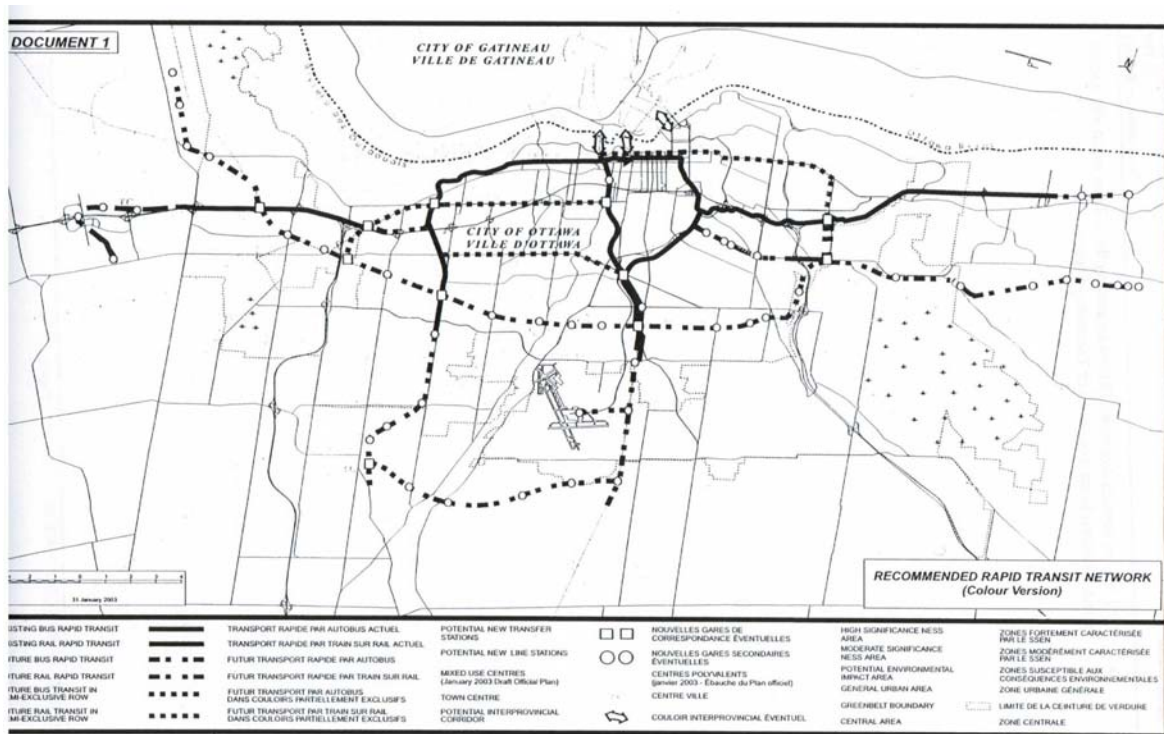
Therefore, a light rail vehicle that is a designed like our Current O-Train will consume one third the fuel and use one third the labour, to move people the same number of people that can be carried by a typical articulated bus as is currently in use by **OC Transpo.

I believe that using the O-Train or similar rail technologies on our existing east-west rail lines is a practical and cost effective solution to a Transportation and Transit problems on Hunt Club Road that is only going to get worse. ** There are larger capacity and longer articulated buses available, but they are not being used in Ottawa.

The former Regional Municipality researched the use of existing railway lines for use in commuter rail for Ottawa. This study known was called ORTES (Ottawa Rapid Transit Expansion Study) and it was the basis for the ORTEP (Ottawa Rapid Transit Expansion Plan). This study was also based on earlier separate proposals by Canadian National Railways (Appendix 2), and Canadian Pacific Railways (Appendix 3). I have placed
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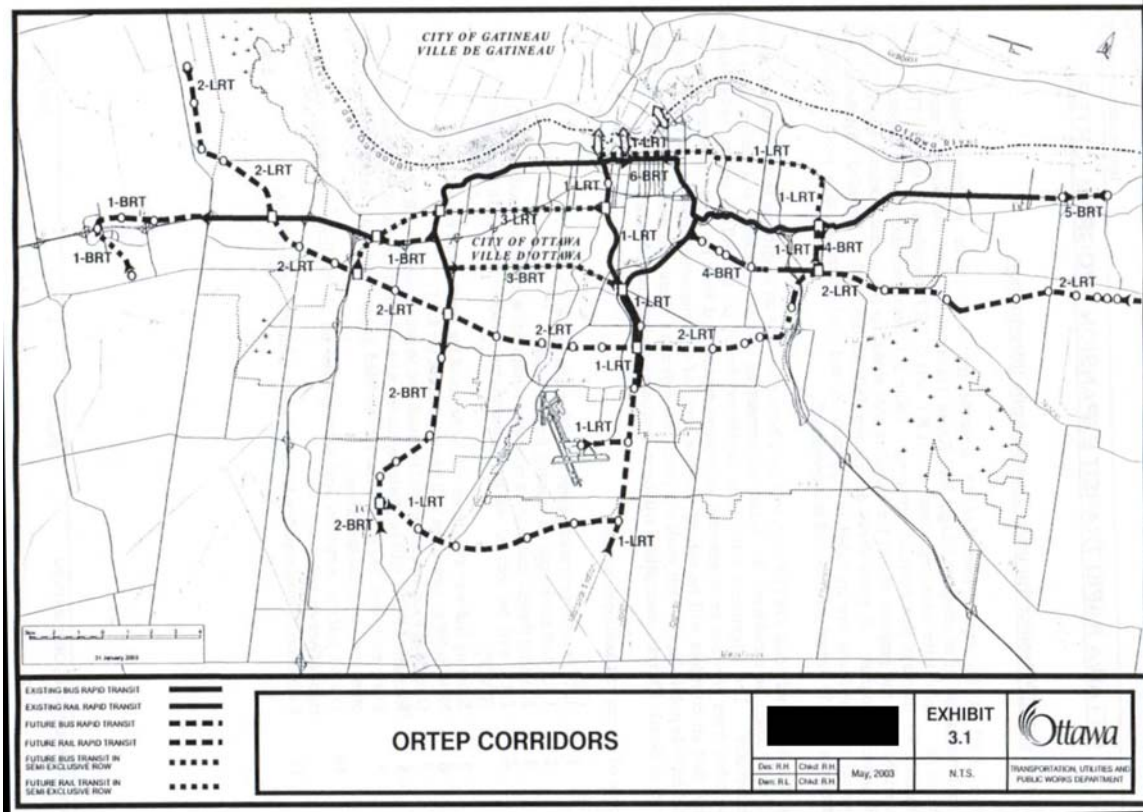
copies of the CN Rail Proposal, as well as two newspaper reports about these two proposals in appendix 2 and 3 of this submission. The following is a map from the ORTEP showing use of the existing rail lines and corridors for commuter and rapid transit services in the former Regional Municipality of Ottawa-Carleton.



The next image shows the Recommended Rapid Transit corridors from the ORTEP

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However, The current Plan for Public Transit in Ottawa has greatly reduced the effectiveness of the former ORTEP plan by removing the use of the East-West railways lines for Public Transit for the foreseeable future.

This is a big mistake and a waste of valuable transit infrastructure that is already in place.

The following is a copy of the map taken from the City of Ottawa “Ultimate Rapid Transit Network” at http://ottawa.ca/city_hall/master_plans/tmp/maps/index_en-04.html.

Note the absence of using the East-West railways lines in this map, dated June 11, 2012.

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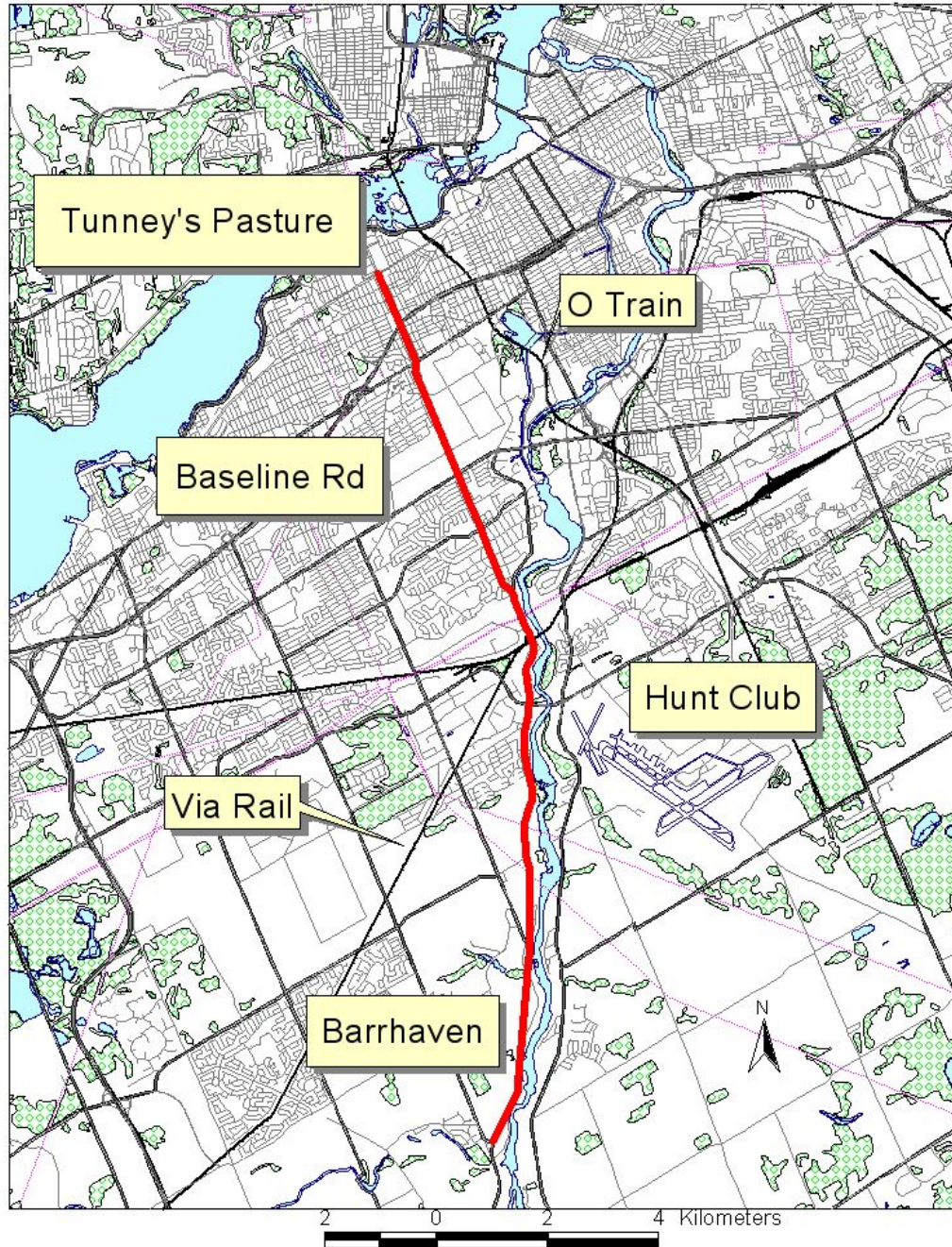
Prince of Wales Drive Bus Way Proposal.

The widening of Prince of Wales Drive from Woodroffe Avenue to Fisher Avenue has the potential of adding significant amounts of unwanted additional traffic to many areas in south-central section of the City Of Ottawa; namely the area of Carling and Holland Avenues.

However, if the City of Ottawa were to use the new lanes as dedicated bus lanes in the morning and afternoon commuting periods, they could instead divert many people who are using, or are planning to use cars, to divert these people to bus transit instead. If you look at the following map you will see that Fisher Avenue links up with Holland Avenue at Carling Avenue. Holland Avenue in turn leads directly to the Tunney's Pasture Transit station. Holland Avenue also contains "bus-only" dedicated lanes. Therefore, it is more cost effective and environmentally prudent to move people by articulated buses than by cars on roads in Ottawa. An articulated bus can carry to 100 people, so if we move people from cars to buses, then one fully loaded articulated bus could remove up to 100 cars from the roads in Ottawa. And just 50 fully loaded articulated buses could remove up to 5,000 cars each day (per direction) if we would use the Prince of Wales Drive expansion for bus-based transit instead of car-based transit. The following map shows the location of my proposed Prince of Wales Drive Busway:

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Prince of Wales Busway. Michael Kostiuk. 2010



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Use the Prince of Wales Railway Bridge for Commuter Rail Use.

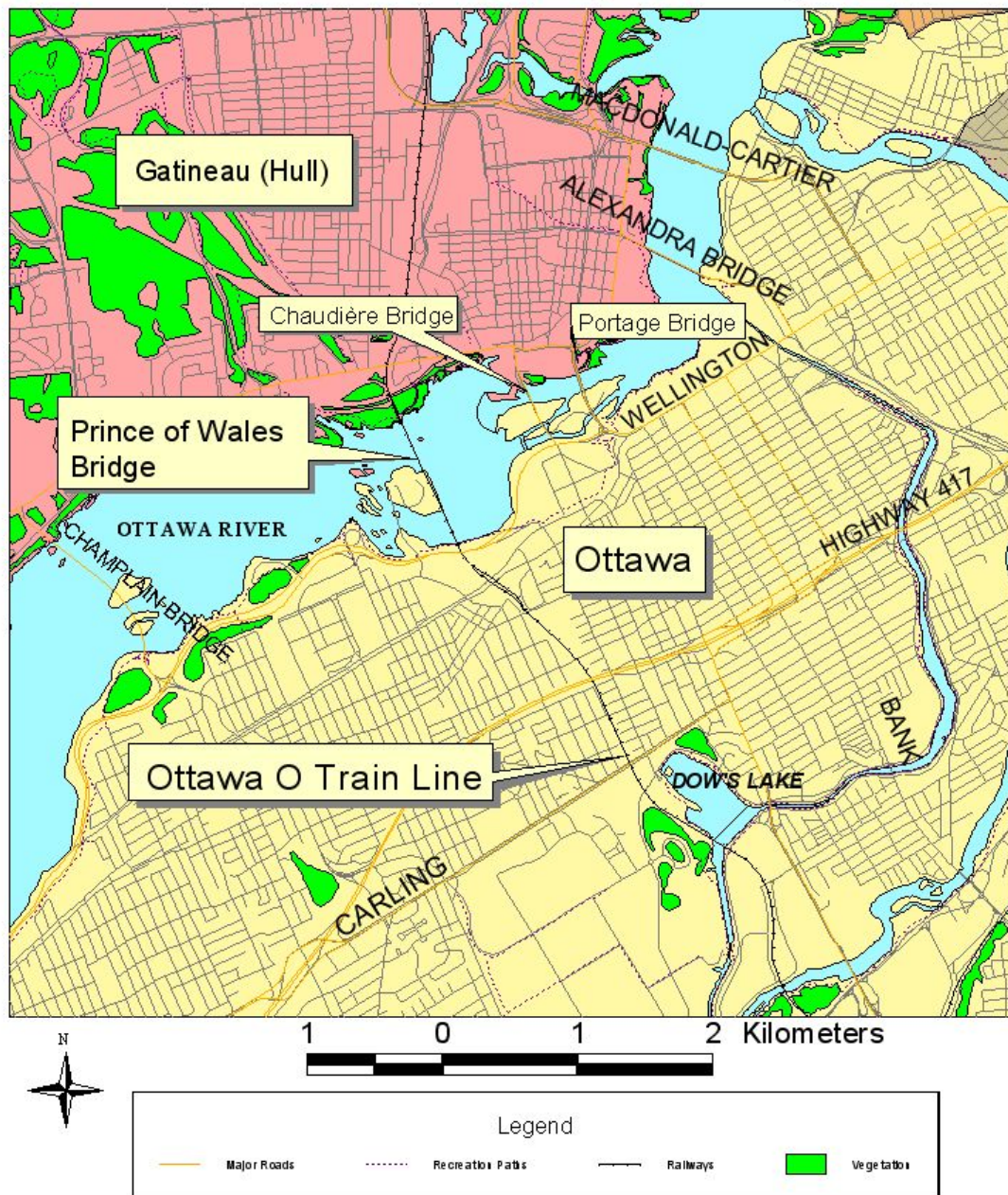
The City of Ottawa could easily run an O-Train shuttle across the Prince of Wales Railway Bridge between **Bayview Station** and **Terasses de la Chaudiere**. This would be MORE cost effective than moving people across the Ottawa River by buses. This would save **MILLIONS** of tax dollars each year. Currently, OC Transpo sends approximately 300 buses each day from Monday to Friday to bring Ottawa commuters to their employment destinations in Gatineau. Instead of using all those buses, the City of Ottawa could be using the Prince of Wales Railway Bridge, and its existing rail lines to bring transit users to the West end of Gatineau formerly known as downtown Hull.

Since the City of Ottawa has three Talent Trains used for the O-Train operation, but only two are used on a daily basis, the third train could be used to shuttle transit users between the Bayview Station and **Terasses de la Chaudiere** during the morning and afternoon peak transit periods. This would be very easy to establish since it would only involve a simple platform and connected pathway to be built on the Ottawa side near the Bayview station, and a platform to be built at the siding that is just across the street from **Terasses de la Chaudiere**.

This map shows the location of the Prince of Wales Bridge and its ideal location for cross-river, and Inter-Provincial transit use.

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Prince of Wales Bridge Area Map



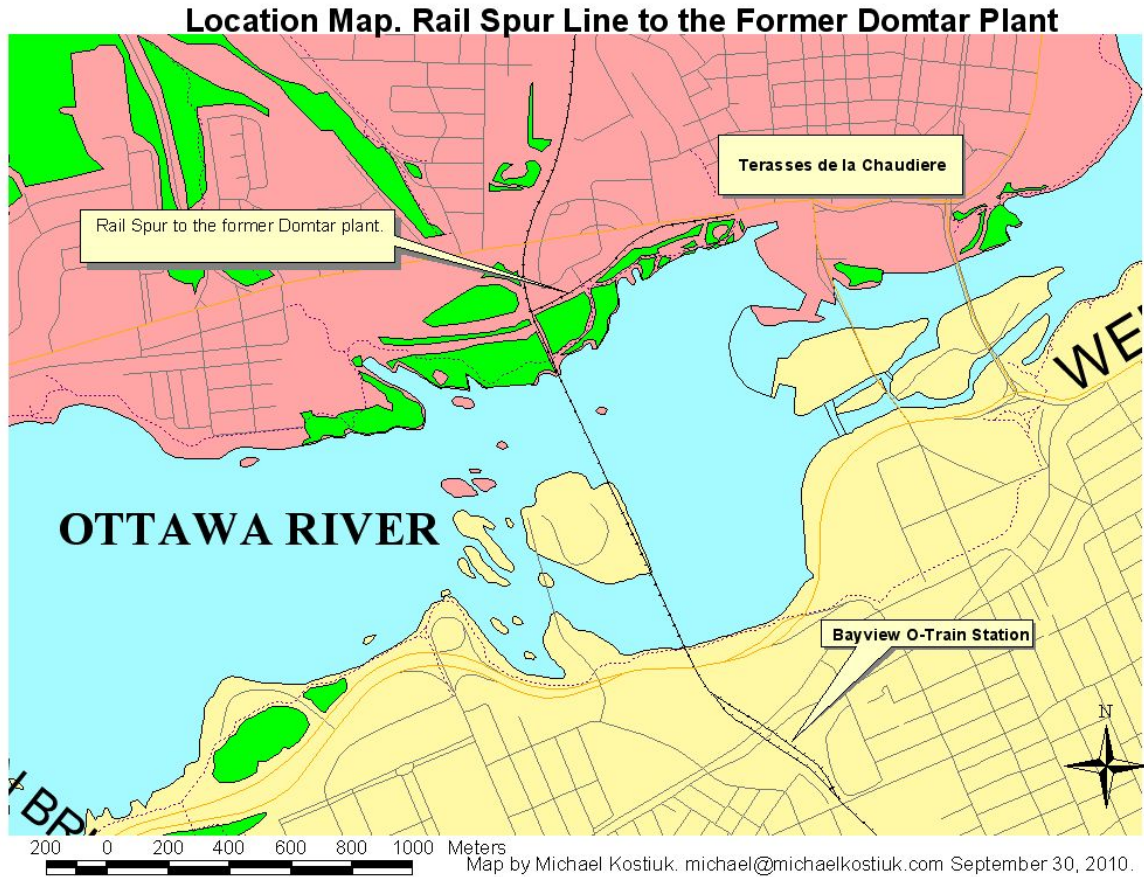
(C) By Michael Kostiuk. www.michaelkostiuk.com

August 19, 2009

michael@michaelkostiuk.com

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The map below shows the actual location of the unused rail spur. This rail spur once
served the former Domtar Plant.



The following image also shows how close the existing railway siding is to **Terasses de la Chaudiere** on the Quebec side of the Ottawa River..

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View of **Terasses de la Chaudiere** from the railway siding.

See how close it is to the end of the rail spur!

Based on this evidence there is NO reason why the City of Ottawa should NOT be using the Prince of Wales Railway Bridge for Rail-Based Peak Hour Transit across the Ottawa River Between Ottawa and Gatineau.

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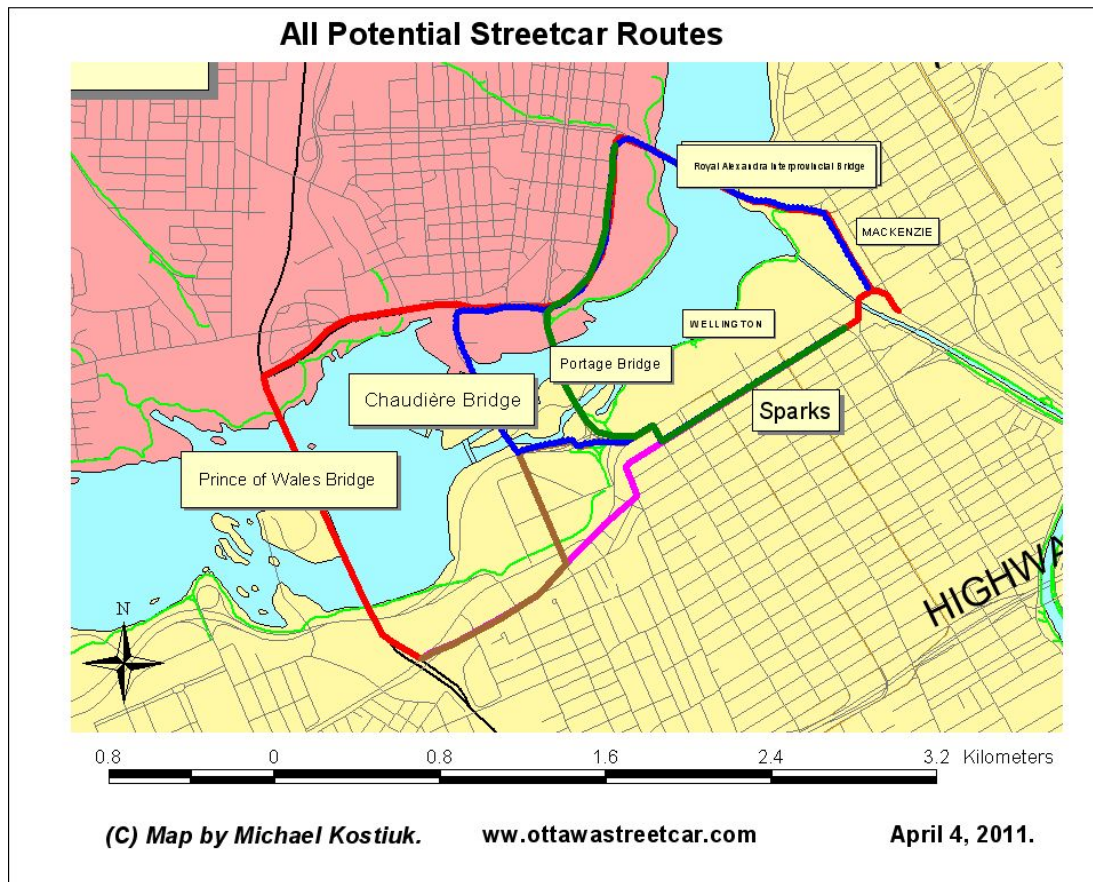
Benefits of a Downtown Streetcar Loop in Ottawa.

I am the current chair of the Sparks Street Heritage Streetcar Committee. The original purpose of this committee was to revitalize Sparks Street and other parts of the downtown section of Ottawa through the creation and operation of a heritage streetcar loop. The system would use two replica heritage style streetcars to operate on Sparks Street and then the track would go west and cross over one of the bridges (such as the unused Prince of Wales Railway Bridge) into Gatineau and then travel through Gatineau (Hull sector) to return to Ottawa by either the Alexandra or MacDonald-Cartier Bridges.

There is also the opportunity to interconnect with other forms of transit such as OC Transpo (Bus and O-Train), STO Transit, and the Wakefield Steam Train. The long-term goal is to create a smaller inner inter-provincial streetcar loop, and then later on, to create a large inter-provincial streetcar loop that would connect with each other. The rationale for a downtown-based streetcar loop in Ottawa and Gatineau is that it would connect most of the major tourism sites such as Sparks Street, The Congress Centre, Major event sites such as the War Museum grounds (Blues Fest), Museums, Parliament Hill and shopping areas with hotels and downtown housing.

The following map shows the various routes and bridge options that are currently being evaluated and researched.

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Use the Streetcar system for Morning and Afternoon Rush Hour Service.

The obvious question about creating a heritage streetcar loop is the possibility of using the same track and electrical infrastructure to run modern low floor streetcars (that look similar to Light rail, but a somewhat shorter and narrower) to move commuters across the Ottawa River during morning and afternoon peak travel times. The answer to this question is: “YES it can”!

In fact this would make sense from a financial point of view since the potential revenue that would be received from a tourist ONLY system would most likely not be sufficient

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to recover the capital and operating costs of the system. It would most likely require a form a subsidy (private or government) to be built and to operate. However, if modern streetcars were used on the inter-provincial streetcar loop to carry all inter-provincial transit riders between STO and OC Transpo systems, then this revenue from ridership would make the system more profitable. This would be a great revenue generator, and it would eliminate the need for either STO or OC Transpo to be Federally regulated (since they would no longer have to cross provincial Boundaries). This means that the Streetcar line would require 6 to 8 modern articulated streetcars (this amount needs to be calculated more precisely), and two or 3 replica heritage streetcars. The replica streetcars can be used off peak during tourist season and on weekends. The Replica Heritage streetcars can also be used as “tractors” to haul broken down streetcars back to the car barn. Modern track laying procedures also allow for relatively quick laying of tracks without disrupting the existing services that lay under the city streets. For more information about this please look at Appendix 4.

The General Benefits and lower carbon footprint from an Inter-Provincial Streetcar loop.

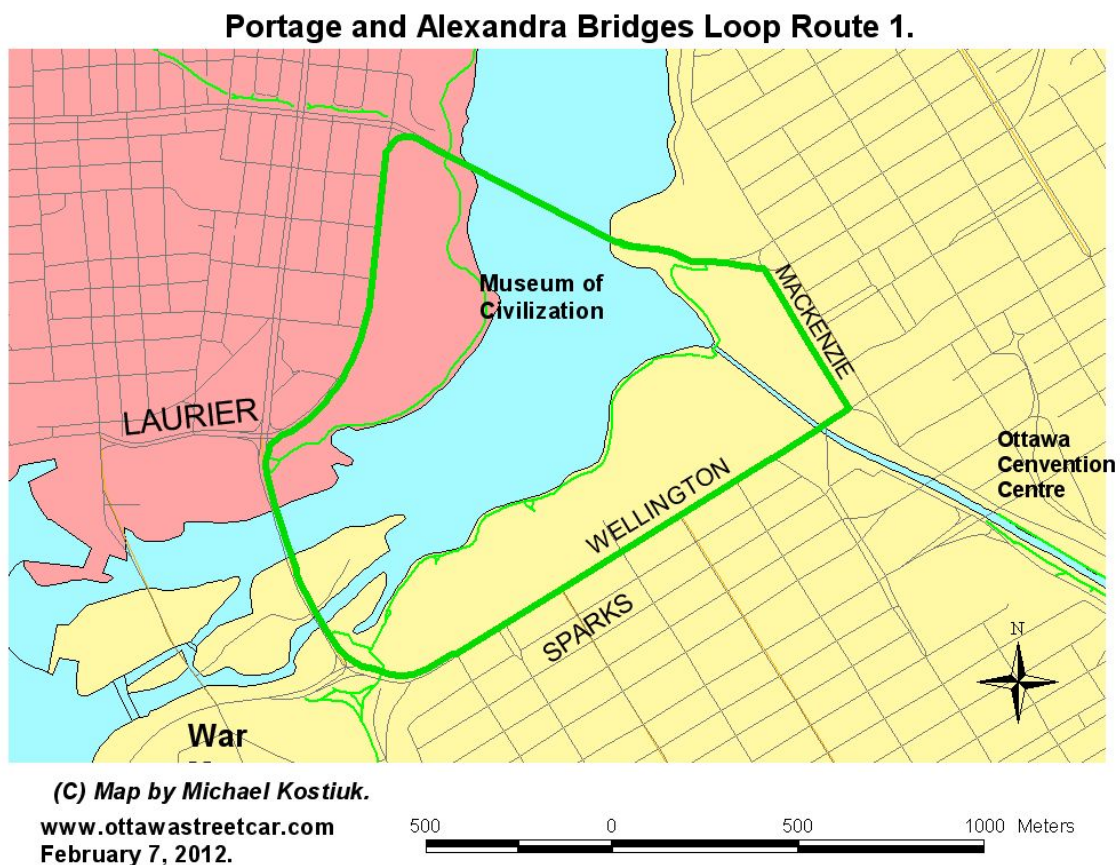
The operation of an inter-provincial streetcar loop using modern low floor streetcars would:

- Create and maintain Cleaner air in the downtown core of Ottawa;
- Less bus congestion in the core area;
- Quicker transportation in the Rideau-Wellington corridor;
- Less labour used on transit;

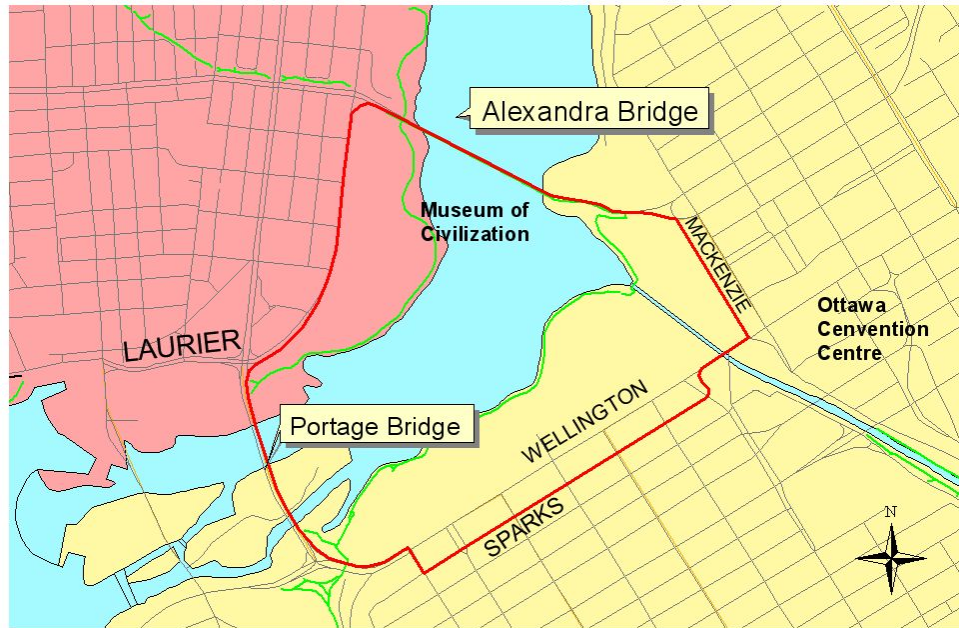
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- Less wear and tear on the roads;
- Less energy consumption and cleaner energy used;
- OC Transpo and STO buses fleet would operate more efficiently since they would not have to go back empty to their starting locations across the Ottawa River.

The following three maps show three possible routes for the “Inner Streetcar Loop”.



Portage and Alexandra Bridges Loop Route. 1A.



(C) Map by Michael Kostiuk.
www.ottawastreetcar.com
February 1, 2012.

Portage and Alexandra Bridges Loop Route. 1B.



(C) Map by Michael Kostiuk.
www.ottawastreetcar.com
February 1, 2012.

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Ottawa Light Rail Project Peer Review.

The international rail experts that did a peer review of the Ottawa Light Rail Plan also said that as well as a downtown tunnel; a surface streetcar/light rail system should still be built to supplement the cross-town system. Our Streetcar project is following up on the recommendation of this International Peer Review panel.

Cars required and passengers carried per hour.

Since this project is still in the research stage, not all of the analysis is complete; however the following are some ridership estimates based on using modern streetcars of various passenger capacities. **Note:** This is based on a single-track, one direction loop.

Therefore, if a double-track system is in place then these estimates can be doubled.

150 passengers Streetcar.

1 car – $150 \times 4 = 600$ pp/h. 15 minute headway.

2 cars – $300 \times 4 = 1200$ pp/h. 7.5 minute headway.

4 cars - $600 \times 4 = 2400$ pp/h. 3 minutes, 45 seconds headway.

6 cars - $900 \times 4 = 3600$ pp/h . 2 minutes, 30 seconds headway.

8 cars - $1200 \times 4 = 4800$ pp/h. 1 minute, 52 seconds headway.

200 passengers Streetcar.

1 cars – $200 \times 4 = 800$ pp/h. 15 minute headway.

2 cars – $400 \times 4 = 1600$ pp/h. 7.5 minute headway.

4 cars – $800 \times 4 = 3200$ pp/h. 3 minutes, 45 seconds headway.

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6 cars – $1200 \times 4 = 4800$ pp/h. 2 minutes, 30 seconds headway.

8 cars – $1600 \times 4 = 6400$ pp/h. 1 minute, 52 seconds headway.

300+ passenger streetcars are also available too.

Streetcar Train Option.

Instead of running separate streetcars, which could jam up due to unforeseen traffic delays, the streetcars could be couple together to form a streetcar train. This has two main advantages: Better spacing between streetcars means more flexibility in designing stop times and factoring in delays due to traffic delays. Labour saving of 50% is achieved. For example, 8 people (not including fair inspectors) are required to operate 8 separate streetcars, but only 4 people are required to operate 4 streetcar trains.

Costs of Replica Streetcars.

Since streetcars for Sparks Street will need to have wheelchair access the choice of a streetcar will most likely involve the purchase of a modern replica streetcar since the cost to retrofit a heritage streetcar for wheelchair access would not be cost effective. Since we want to operate in winter the streetcar needs to be built for winter operations. This is another reason why a modern replica is the best option. Any heritage streetcar that could be purchased would be limited to summer use and would not be wheelchair accessible. Since the system would be built in stages the streetcars chosen should be capable of operating in either direction in order to keep costs down. These streetcars are typically

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known as “double-enders”. They most often have doors on both sides of the side for a total of 4 doors.

According to LightRailNow.org “Costs for a replica trolley from Gomaco currently (2007) range around \$870,000 for an air-conditioned double-truck car (using rebuilt vintage running gear and modern control equipment). A typical diesel transit bus costs about half as much, but has a shorter service life (12-17 years vs. 25-30 for trolley/streetcar or larger light rail car).

There are also significant differences in vehicle cost and complexity, a modern replica vintage car selling from about \$870,000 and a modern articulated streetcar at around \$3 million (the vehicle is also larger – see photos below). The replica vintage cars are also readily available.



Gomaco replica vintage car Capacity: 88
passengers;
44 seated, 44 standing



inekon/Skoda modern articulated streetcar
Capacity: 157 passengers;
30 seated, 127 standing

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Appendix 1.

NCC Explains Rail Relocation

The Ottawa Journal of Friday 21 April 1961, Page 25, contained the following report. It suggests that the NCC did not intend to abandon its role in setting policy for the Ottawa terminal Railway to the two railways. It also has a curious explanation why Ottawa would not need to retain downtown rail lines for commuting. Neither statement appears to be valid, as indicated by my comments, which follow the report.

Thrift Explains Rail Relocation

Union Station Area A Unique Challenge

Ottawa may be unique among North American cities for its redevelopment of large downtown areas made possible by the relocation of railway facilities.

Speaking on "Railway Relocation Plans for Ottawa" before an Engineering Institute of Canada meeting Thursday night, Eric Thrift, NCC general manager, said the redevelopment of land vacated by the railways "opens up new possibilities and poses many problems."

He cited the construction of the western part of the Queensway along the old CNR Renfrew line as an example.

22 ACRES

He explained that plans to relocate Union Station and the CNR freight sheds near Hurdman Road East of Alta Vista Drive would leave 22 acres in the middle of the city for NCC use. (Union Station and the area South, now taken up by CNR yards.)

"If we capitalize on this opportunity to redevelop this area it will be unique in North American cities, and especially good for the capital if we can do it well - that's important - if we can do it well," he said.

"Possibly no other city has an opportunity like this to take over and redevelop such a large part of its area right down town," he added.

PARKWAY DEVELOPMENT

He also explained how removal of the CPR yards at Nepean Bay bounded by Wellington and Broad Streets plus the removal of the CPR Carleton Place line along the Ottawa River - and its many dangerous level crossings - would make way for further development of the Ottawa River Parkway and the Queensway.

"Although the Carleton line has many bad crossings and there are many complaints about it, the railway will still have to use it for some time," he said.

SIDE BY SIDE

CPR freight sheds will be located along side the CNR sheds.

Both CNR and CPR marshalling areas are to be built South of Walkley Road.

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The CPR line from Sussex Drive along the East side of the Rideau River to Alta Vista Drive will also be removed according to the NCC plans.

With the present Union Station removed the railway across Alexandra Bridge will be unnecessary and the problem of how best to utilize the bridge will be "on our hands," he said.

STILL UNDECIDED

It has not been decided, he said, whether to "depress or elevate the CPR Prescott line (running through Carleton University campus) but the NCC favours putting it down in the ground."

On a large map illustrating his talk, Mr. Thrift showed a line encompassing the city, inside of which he said would operate a CNR-CPR terminal company. Although wholly owned by the railways, the NCC would have a say in policy.

PROBLEMS

He also touched on the multiple and individual problems of industrial relocation to coincide with railway plans.

"The NCC has begun an industrial subdivision near the new Union Station site, but industries located along discontinued lines such as the CPR Carleton Place line are problems yet to be dealt with," he said.

"The target date for completion of the scheme is 1965. By then 35 miles of track would be removed, 70 level crossings eliminated and 450 acres would be made available for industrial development," he summed up.

In answer to a question on the disappearance of downtown rail lines that the questioner thought could be used for commuter transportation in the future, Mr. Thrift said Ottawa was being planned on a dispersed technique."

By this, he explained, he meant that there would not be the daily rush of commuters to the downtown areas now experienced by larger cities.

END

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Appendix 2

The ORTEP plan was not the first plan to use our existing railway lines for public transit in the Ottawa areas. During the time that the City of Nepean was in existence Canadian National proposed a plan that would use the railways lines in Nepean and Ottawa for Commuter rail. The following are some scans of a report that was made to the Nepean Chamber of Commerce about such a proposal.

CONCEPT FOR DISCUSSION OTTAWA - BARRHAVEN Commuter Shuttle



15/06/2012

PROPOSAL - CONTEXT

CN believes National Capital Region
conducive to Commuter Shuttle Service:

- Railway infrastructure in place
- Roadways approaching capacity/reduce congestion
- Limited government financial resources for
new highway infrastructure
- Rail capital cost lower compared to other options

PROPOSAL - CONTEXT

(Continued)

Population - (Projection to 2011)

- Barrhaven to grow from 27,000 to 65,000
- Barrhaven Employment to grow from 1,300 to 24,000
- Park and ride growth beyond Barrhaven (Kemptville, Manotick, Richmond)

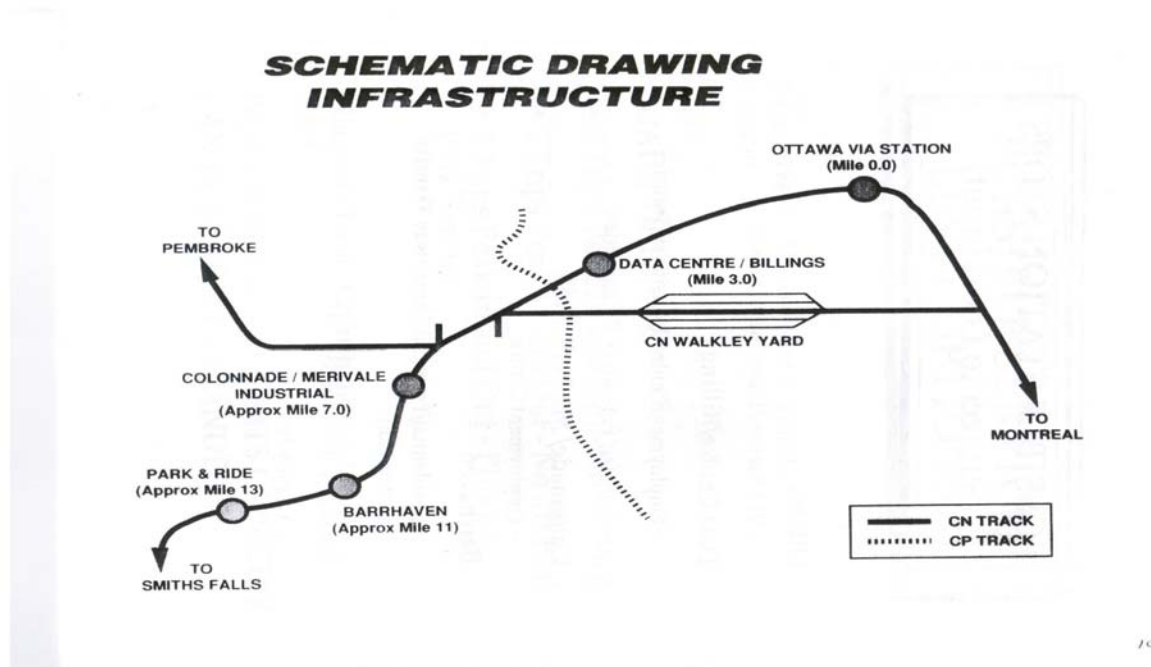
Employment Centres

- South Merivale, South Nepean, Colonnade
- Data Centre, Billings Bridge

And here is the map that shows the extent of this proposed rail-based transit network.

Take note of the railway station/stop at the Colonnade-Merivale

Industrial Parks



The following is a copy of a Newspaper article about this CN Proposal.

15/06/2012

CN tries to steer region down right track

Private group joins CN to push light rail proposal to Barrhaven

BY MOHAMMED ADAM

Close on the heels of rival CP Rail, a private consortium that includes CN Rail has unveiled another commuter rail proposal, this time for Ottawa-Carleton's burgeoning west end.

UniRail Canada Inc. yesterday took a bevy of area politicians on a 25-minute train ride from the Ottawa train station to Barrhaven to give them a taste of the new service and convince them to jump aboard now.

With bus ridership showing no signs of improvement, some public transit experts say light rail is the way to wean more riders from cars.

The region now appears ready to shift gears to trains. It will soon consider approval of a pilot rail service on an eight-kilometre, CP-owned track from Bayview, near LeBreton Flats, to the South Keys Shopping Centre in Ottawa's suburban south end at Hunt Club Road and Bank Street. That proposal involves a partnership between CP and the region. But CN doesn't want to be left behind and is pulling out all the stops to join the ride.

"The future is already here," said UniRail president Steve Gordon, shortly after the demonstration run ended. "We can be up and running within three months if the political will is there."

CN is hoping to be third time lucky. About two years ago, CN pitched the 18.5-kilometre track to the region for commuter rail, but the proposal died for lack of interest.

Earlier this summer, the newly-constituted consortium asked the region to include it in a study of light rail options. While regional consultants agreed the line had potential, they said (bus) ridership numbers were too low for the area to be considered for a light rail pilot.

But capitalizing on the new appetite for trains at the region, the consortium is pressing its case very hard. It's convinced the project could open up an untapped market in Nepean's expanding south end, and says it can be done at half the estimated \$10.5-million to \$23.5-million cost of the CP plan.

Project manager John Clark says Barrhaven, which is growing at a fast pace, is so poorly served by buses that commuter rail will have great appeal.

Beginning in Barrhaven at Jockvale Road, the proposed line would head northward through the Merivale Business Park, near Hunt Club Road to the

Merivale Acres Business Park on Colonnade Road. Crossing the Rideau River into Ottawa, the service would run through businesses around Confederation Heights and then to Billings Bridge, a major OC Transpo terminus.

From Billings Bridge, it would continue to Smyth Road, serving major employment areas such as the Riverside, General and Children's hospitals, ending at the inter-city train station near Alta Vista. Ramps would have to be constructed at various stations to link them with buses, to ensure smooth and timely transfers.

It would take about 25 minutes to get from Barrhaven to the inter-city train station on the proposed UniRail line.

No ridership or feasibility studies have been done but Mr. Clark says analysis shows the service would attract up to 3,700 riders a day. Regional consultants came up with similar numbers, but found them too low to justify public investment at this time.

But Mr. Clark says the consultants based their projections on a service that would run every 15 minutes. The UniRail service would run, ideally, every hour.

The single CN track is the same one used by VIA Rail trains to Toronto and, for that reason, the rush-hour commuter service would have to be scheduled around the inter-city service. Mr. Clark says it can be done.

But if the commuter service were to run every half-hour, for example, it would require more capital investment because a side track or passing track would have to be constructed to accommodate VIA.

Mr. Clark says the consortium, led by Regional Group, a major real estate firm in the region, will pay all capital costs for such things as stations and equipment, including rail cars. The company will manage the system for a fee from the region.

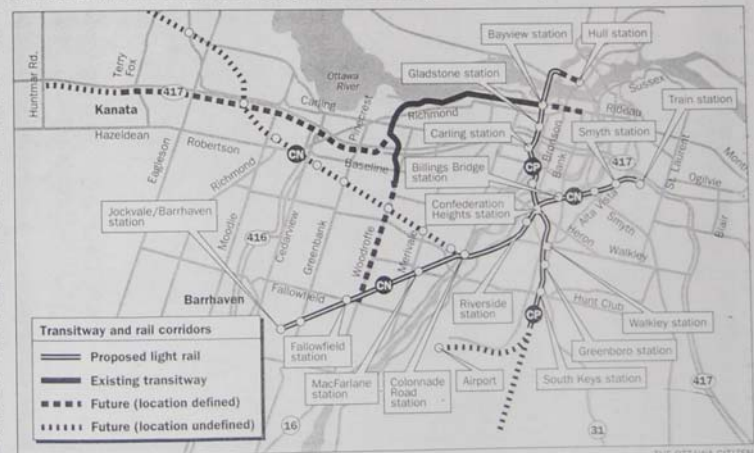
UniRail hopes to produce some firm numbers in about six weeks when it makes an official offer to the region to make Barrhaven another pilot project. Mr. Clark made it clear the UniRail is in it to earn a profit, but the region would get a first class service that would boost public transit ridership as well.

Some regional councillors oppose light rail because they say it will cost too much money at a time when the region has very little to spare. But BellSouth Nottan, Cane, Malla M...



YVONNE BERG, THE OTTAWA CITIZEN

Steven Gordon, of UniRail Canada, in aisle, explains rail proposal to Regional Chair Bob Chiarelli, second row by the window seated next to Len Potechin of the Regional Group, which is leading the consortium of businesses behind the plan. Seated in front row are regional Coun. Al Loney and former Congress Centre boss Jean Pigott.



THE OTTAWA CITIZEN

Goldrick-Larsen says the Barrhaven proposal could work.

Regional Chair Bob Chiarelli, the major booster of light rail in the region, is pleased the two main rail companies agree to be in the region for attention with

rival plans. He says this shows light rail has a future, and he will ask regional council to give serious consideration to the UniRail proposal.

He still backs the CP plan for a pilot

proven feasible and cost-effective, he will back it as a second pilot project.

"If we can be satisfied that it is cost-effective, and will increase ridership, not steal them from buses, we will support it," he says.

Appendix 3.

The following is a copy of a newspaper article about a proposal from Canadian Pacific to create a commuter rail network for the Ottawa Region.

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A10

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THE OTTAWA CITIZEN

Friday, December 31, 1993

Commuter rail

Using old railways for mass transit rather than building new busways is worth study. Make sure the public is involved.

Sometimes a solution seems so obvious that it's difficult to fathom how it could have been overlooked for so long. One such example is commuter rail, a safe, inexpensive and reasonably convenient answer to traffic congestion and smog.

Since 1976, the Ottawa-Carleton regional government has been doggedly expanding its popular bus transit system, as the population billows outward, so do the busways. But every new kilometre means fresh battles with community groups and homeowners who, as a rule, want the transitways close by, just not through their backyards. Another headache is the interprovincial bridges issue, temporarily flattened into a non-issue by community pressure in Ottawa.

Enter the idea-peddlers. CP Rail System, which runs the occasional freight train from Gatineau across the Ottawa River on the Prince of Wales bridge and southward through Ottawa, proposes taking commuters out of cars and putting them into nifty little short-haul trains, then linking the rail system to the municipal bus network on both sides of the river.

True, this does sound like another little business opportunity for the railway arm of the \$20-billion CP empire. Why not squeeze a few more bucks out of an underused track, three bridges

and a tunnel beneath Dow's Lake?

And why not indeed? It sounds like a light bulb has gone on over somebody's head. The idea of commuter rail, once ignored, then ridiculed or dismissed, has finally earned serious study by a task force comprising CP and regional governments here and across the river. A — dare we say it? — collaboration between the private and public sectors.

The study will gauge how much demand there would be for commuter rail, and would compare its cost to other proposals to build new busways, including one roughly parallel to the rail corridor.

Preliminary estimates suggest capital costs of roughly \$20 million for 35 kilometres of commuter rail between the Gatineau airport and the Ottawa airport — for the cars, to upgrade the tracks and build station platforms. It would take less than two years to get the system rolling. By contrast, the infrastructure costs of a busway between Gatineau and the federal public service complex at Confederation Heights could reach \$520 million. That includes four bridges, one of which has been effectively nixed, and would take 10 years.

There is some concern that this area doesn't have the population to warrant a commuter rail system. In

fact, some rail shuttles in the United States serve populations less than one-tenth ours. The concern does raise some important points that the rail study must take into account.

- The service must be fully integrated with the OC Transpo and Outaouais Transit buses. Since it's been shown that commuters don't like to transfer, changeovers must be made as convenient and pleasant as possible.
- The single, north-south line must

be viewed as a pilot which, if it succeeds, would expand through new rail connections to Aylmer, Kanata, Nepean and southeast Gloucester.

There are already tracks (or, in Aylmer's case, a rail right-of-way) between those municipalities and the Gatineau-to-south Ottawa line. Expansion of the railway net would bring more passengers, with nowhere near the disruptions of new bus corridors.

- The public must be involved in all stages of planning and developing the

commuter rail concept. Whether it is the type of rolling stock to be bought or leased, the location of stations or the frequency and speed of the service, the people who will ride the rails must have a say.

For many urban Canadians, there's something quaint about trains. But at a time when we want to save money, build bridges of civility between Ontario and Quebec, and clean up the environment, we should be prepared to dust off an old idea, when it is manifestly a good one.

Proposed commuter rail system

Legend:

- Proposed Ottawa-Gatineau line
- Existing lines for possible future expansion
- Existing right of way
- Existing transitway

Appendix 4.

Portland Oregon Innovations for Modern Streetcar Design.

Compiled by Michael Kostiuk.

michael@michaelkostiuk.com

<http://www.heritagetrolley.org/existPortlandOverview.htm>

http://www.gomaco.com/Resources/worldstories/world28_3/stacy_witbeck.html

Groundbreaking. It's the only way to describe a streetcar project the city of Portland, Oregon, is undertaking, with the help of Stacy & Witbeck Inc. as prime contractor. The project has used innovative approaches and techniques from the very beginning to create painless reconstruction in a downtown environment.

"The whole concept behind the project is a minimalist approach to rail construction," Bill Bruce, project manager for Stacy & Witbeck, said. "Rail construction has historically been extremely involved, full roadway right-of-way reconstruction where you go from building face to building face. The concept behind this project was to go in and make this as small as possible."

"Slipforming was an idea that was developed in the fledgling stage of the project. This project is a Construction Manager/General Contractor (CMGC) project, so it's a little different than low bid," Bruce said. "In this type of contracting format, you work with the client during the tail end of the design phase and you provide the client with estimating services and value engineering ideas. It was during this phase that we developed slipforming."

"In most cases, the existing road substrate was significant enough that we simply reprocessed the top six inches (152 mm) and started building our track on top of it," Bruce said. "Where we didn't have suitable grade, we over-excavated the ground six or 12 inches (152 or 305 mm), depending on the conditions, and replaced it with aggregate base." A complicated steel reinforcing base mat was laid on the subgrade. The mat is a combination of #6 and #7 bars tied together in a 12 inch (305 mm) pattern.

"We panelize the base mat into 30 foot (9.14 m) panels in our yard and then move them out to the site," Bruce said. "It shortens the duration of stringing out the base mat on site. We cut what normally took two to three days down to half a day because it was already put together. It just needed to be distributed."

This is the first project in the United States to use RI-52 rail. It's being used because of its short height. It's only five inches (127 mm) from top to bottom," Bruce said. "Most rail construction uses a rail about seven inches (178 mm). The concept of a low-profile rail creates a low-profile slab, which creates a low-profile excavation which enabled us to

15/06/2012

eliminate the need for relocating every single utility we crossed. It had a huge impact on the scope of the project as far as time and cost."

The track is raised to elevation and line and supported by Iron Horse steel ties while it's being built and during the slipforming. Another layer of rebar mat is placed on top of the track.

"Once the base mat is in, we build the track on top of it and then the rebar guys come back in and they tie an outside set of stirrups that connect into the base mat and tie another set of stirrups that also connect into the base mat so it's the same," Bruce said. "Essentially, we have two layers of rebar mat."

The process of excavating the nine foot (2.74 m) lane and setting both layers of matting and track takes approximately two and one half weeks for each three block section. The Commander III is then brought in to slipform the rail bed.



The slab is slipformed eight feet (2.44 m) wide with a depth of 12 inches (305 mm). The tolerances for the rail are tight.

"Typical railroad tolerance for rail is .125 inch (3 mm) in 60 feet (18.29 m), so we're dealing with some pretty fine-tuned tolerances," Bruce said. "There's .125 inch (3 mm) for cross-level, .125 inch (3 mm) tolerance for gauge on the rail plus several other different tolerance criteria."

Standing Committee to Study "Grid-Lock" and Transit Issues in Toronto the
National Capital Region. Michael Kostiuk



An innovative feature is use of 5 inch (127 mm) high Austrian rail, enabling a trench of only 12 inches (300 mm).

15/06/2012



Good cross-section of the shallow-slab track construction



The rails, without traditional ties, were then enclosed in a slab of concrete to ensure stability.

15/06/2012



The finished concrete gives a pleasing appearance. Slightly raised platforms extend from the curb to the rails.



Newly completed residential buildings on either side of the streetcar line in a former rail yard in Portland.

15/06/2012



A heritage streetcar in Portland provides scheduled weekend service, demonstrating here how the line effectively shares a narrow, bidirectional street with autos.



Economic development inspired by the streetcar: A Skoda car passes an industrial building under conversion to loft apartments in Portland.

15/06/2012



Light Rail, Bus and Streetcar all share a short section of the new Portland transit mall. January 2010. Note how much smaller a modern streetcar is (on the right) compared to a Light Rail train (at the left).

End of Report.

15/06/2012