Residential Land Strategy for Ottawa 2006-2031

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Executive summary

Setting Ottawa's urban boundary to 2031 is a complex process that involves a balance between policy direction and market forces. Policy direction flows from a variety of sources, including provincial policy, the cost of providing and maintaining new infrastructure and community services, and the type of city we want. Market forces carry a powerful momentum of long-established industry practices, business plans and consumer demand patterns that have evolved over time. While not immune to change, market forces tend to evolve slowly unless unexpected shocks or stimuli cause people to shift preferences more quickly.

The Residential Land Strategy's primary goals are to be consistent with the Provincial Policy Statement and City Council's direction. As such, it rests on the following key principles:

- "Grow in, not out"
- Set intensification targets that guide new residential construction toward more urban forms of development, while remaining reasonable from a market perspective.
- Set density targets at key stations and locations along the rapid transit network to support the City's transit investment and modal split objectives;
- Set intensification targets for Traditional and Arterial Mainstreets, to support, strengthen or set the stage for vibrant mainstreets in the older areas of the city;
- Set density targets for greenfields, and put in place the support mechanisms that will lead to the housing industry choosing pedestrian- and transit-supportive development patterns over the car-oriented patterns of the last six decades;
- Set density targets for suburban Town Centres to support future upgrades of the rapid transit service from Bus Rapid Transit to Light Rail Transit;
- If urban expansion is required, keep it to a minimum.

The elements and proposals of the Residential Land Strategy are summarized as follows:

- Projected TOTAL of 147,532 new dwellings in Ottawa between 2006 and 2031.
- Projected new construction dwelling type split of 40% single detached, 5% semi-detached, 27% townhouses and 28% apartments.
- Projected rural share of 9% (13,278 units) of all new dwellings to be built in Ottawa, with the balance of 91% (134,254) to be built in the urban area.
- Projected new rural dwellings at 94% single detached, 1% semi-detached, 4% townhouses and 1% apartments.
- Projected new urban dwellings at 35% single detached, 5% semi-detached, 29% townhouses and 31% apartments.
- Establish a city-wide minimum intensification target of 40% of new urban dwellings to 2031, a TOTAL of 53,700 dwellings.
- Provide for the intensification target to be phased-in as follows:
  - 2006-2011: 36%
  - 2012-2021: 40%
  - 2022-2031: 44%
- Establish as target areas for intensification:
  - The Central Area
  - Major Mixed-Use Centres
  - Mixed-Use Centres at Transfer Stations
  - Emerging Mixed-Use Centres
  - Traditional Mainstreets
  - Arterial Mainstreets
  - Town Centres
- Establish minimum intensification targets for the target areas, to reside outside the Official Plan, but to guide Community Design Plans (CDPs), zoning and infrastructure planning.
- Establish the following density targets, expressed in people and jobs per gross hectare:

    - The Central Area 500
    - Major Mixed-Use Centres 250
    - Target Arterial Mainstreets 120 to 200
    - Mixed-Use Centres at Transfer Stations 200
    - Emerging Mixed-Use Centres 120
    - Town Centres 120
- Ensure that all future CDPs or amendments to existing CDPs, and new zoning flowing therefrom, provide for no less than the minimum intensification targets set out in this document for Traditional and Arterial Mainstreets, Mixed-Use Centres and Town Centres.
- Permit high-rise buildings in the Central Area, Mixed-Use Centres and Town Centres.
- Acknowledge intensification potential outside the target areas and accommodate it subject to urban design and building height requirements that preserve neighbourhood character and do not detract from the target areas' ability to be the focus of intensification and growth within the built-up area.
- On greenfields outside the Greenbelt, establish a minimum net density of 26 units per hectare for all new single detached dwellings, and a minimum overall residential net density of 32 units per hectare.
- Create an Intensification Implementation Group led by the Planning Branch that will be tasked with coordinating all City departments and services' practices, by-laws and administration to support intensification and compact, mixed-use development, and lead discussions with all external stakeholders (including School Boards and utilities) with a view to addressing technical, regulatory and design matters in a way that will allow the City's Residential Land Strategy to be successful.

Foreword

Setting Ottawa's urban boundary to 2031 is a complex process that involves a balance between policy direction and market forces. Policy direction flows from a variety of sources, including provincial policy, the cost of providing and maintaining new infrastructure and community services, and the type of city we want. Market forces carry a powerful momentum of long-established industry practices, business plans and consumer demand patterns that have evolved over time. While not immune to change, market forces tend to evolve slowly unless unexpected shocks or stimuli cause people to shift preferences more quickly.

This report is the result of extensive technical analysis and consultation with stakeholders in the homebuilding industry and the city's community associations. It builds on the work contained in the document titled Growth Projections for Ottawa: Prospects for Population, Housing and Jobs 2006-2031 (November 2007) and incorporates the results of consultations that flowed from the White Papers (winter 2007-2008), and the Intensification Forum (May 2008). Representatives of the homebuilding industry have participated in technical discussions with staff on a monthly basis since January 2007 and have provided information and opinion on the topic.

This report contains five sections. The first section deals with policy requirements and direction. It discusses the application of the Provincial Policy Statement (PPS) to Ottawa's housing forecast. It also relates Council's intent, as expressed in the 2003 Official Plan (OP) and its Growth Management section, to the current projection of population and housing and to PPS requirements.

The second section addresses housing requirements and presents the recommended projection of dwellings by type. It is based on detailed analysis of statistics and building trends and represents, in the opinion of staff, the most methodologically defensible and appropriate forecast of housing needs for Ottawa based on available information and policy direction.

The third section deals with intensification targets. This is a new feature in the Official Plan. The calculation of the targets and their application to the forecast is addressed in this section. The discussion addresses target locations for intensification, minimum densities to sustain rapid transit, intensification outside target areas, and strategies to support intensification.

The fourth section addresses greenfield suburban development. It discusses residential densities and subdivision layout, the relationship of residential uses to overall suburban land, contributors to suburban densities and strategies to support higher suburban densities.

Section five concludes with the recommendations of the Residential Land Strategy.

1. Policy Requirements

1.1 Summary

The policy framework for the review of Ottawa's urban land requirements requires the City to accomplish the following things:

- The City must include the existing built-up area and the redevelopment potential it provides in its calculation of residential supply [PPS, policy 1.1.2].
- The City must establish minimum intensification targets and a monitoring system that will allow it to verify whether the targets are being achieved at the same time as, or before, greenfield development within the urban boundary [PPS policies 1.1.3.5 and 1.1.3.6].
- The City must develop intensification targets. It will develop an overall city-wide target for the OP, and targets for the Central Area, Mainstreets, Mixed-Use Centres and Town Centres that will reside outside the OP [OP and OP Review Preliminary Proposals, received by Planning and Environment Committee April 22, 2008].
- The City must adopt development standards and density targets that facilitate compact urban form along transit corridors and on greenfields [PPS policies 1.1.3.4, 1.1.3.7 and 1.2.2(d); Council Direction of May 28, 2008].
- The City's intensification targets must be met before approving any further expansion of the urban boundary [PPS policies 1.1.3.9 and 1.2.2 (c)].
- The City must provide for an appropriate range of housing types and densities to meet projected requirements of the entire regional market area [PPS policy 1.4.3; City Housing Strategy 2007-2012].

Overall, in its assessment of how to accommodate residential growth, the City must begin with an intensification target and then develop greenfield development density targets that are higher than the suburban densities observed in the past. Once it has done this, and if the projected housing requirement still exceeds the amount of designated urban land, it may expand the urban boundary.

1.2 Provincial Policy

The Provincial Policy Statement (2005) contains policies under the heading "Managing and Directing Land Use to Achieve Efficient Development and Land Use Patterns" that provide direction to municipalities on managing urban growth.

For ease of reference, they are transcribed below:

"1.1.2 Sufficient land shall be made available through intensification and redevelopment and, if necessary, designated growth areas, to accommodate an appropriate range and mix of employment opportunities, housing and other land uses to meet projected needs for a time horizon of up to 20 years. […]

1.1.3.3 Planning authorities shall identify and promote opportunities for intensification and redevelop-ment where this can be accommodated taking into account existing building stock or areas, including brownfield sites, and the availability of suitable existing or planned infrastructure and public service facilities required to accommodate projected needs.

1.1.3.4 Appropriate development standards should be promoted which facilitate intensification, redevelopment and compact form, while maintaining appropriate levels of public health and safety.

1.1.3.5 Planning authorities shall establish and implement minimum targets for intensification and redevelopment within built-up areas.

1.1.3.6 Planning authorities shall establish and implement phasing policies to ensure that specified targets for intensification and redeve-lopment are achieved prior to, or concurrent with, new development within designated growth areas.

1.1.3.7 New development taking place in designated growth areas should occur adjacent to the existing built-up area and shall have a compact form, mix of uses and densities that allow for the efficient use of land, infrastructure and public service facilities.

1.1.3.8 Planning authorities shall establish and implement phasing policies to ensure the orderly progression of development within designated growth areas and the timely provision of the infrastructure and public service facilities required to meet current and projected needs.
1.1.3.9 A planning authority may identify a settlement area or allow the expansion of a settlement area boundary only at the time of a comprehensive review and only where it has been demonstrated that:

a. sufficient opportunities for growth are not available through intensification, redeve-lopment and designated growth areas to accommodate the projected needs over the identified planning horizon;
b. the infrastructure and public service facilities which are planned or available are suitable for the development over the long term and protect public health and safety;
c. in prime agricultural areas:

1. the lands do not comprise specialty crop areas;
2. there are no reasonable alternatives which avoid prime agricultural areas; and
3. there are no reasonable alternatives on lower priority agricultural lands in prime agricultural areas; and

d. impacts from new or expanding settlement areas on agricultural operations which are adjacent or close to the settlement area are mitigated to the extent feasible.

1.2.2 Where planning is conducted by an upper-tier municipality, the upper-tier municipality in consultation with lower-tier municipalities shall:
[…]

e. identify targets for intensification and redevelopment within all or any of the lower-tier municipalities, including minimum targets that should be met before expansion of the boundaries of settlement areas is permitted in accordance with policy 1.1.3.9;
f. where transit corridors exist or are to be developed, identify density targets for areas adjacent or in proximity to these corridors, including minimum targets that should be met before expansion of the boundaries of settlement areas is permitted in accordance with policy 1.1.3.9.

1.2.3 Where there is no upper-tier municipality, planning authorities shall ensure that policy 1.2.2 is addressed as part of the planning process, and should coordinate these matters with adjacent planning authorities.
[…]
1.4.3 Planning authorities shall provide for an appropriate range of housing types and densities to meet projected requirements of current and future residents of the regional market area by:

a. establishing and implementing minimum targets for the provision of housing which is affordable to low and moderate income households.
b. permitting and facilitating:

1. all forms of housing required to meet the social, health and well-being requirements of current and future residents, including special needs requirements; and
2. all forms of residential intensification and redevelopment in accordance with policy 1.1.3.3;

c. directing the development of new housing towards locations where appropriate levels of infrastructure and public service facilities are or will be available to support current and projected needs;
d. promoting densities for new housing which efficiently use land, resources, infrastructure and public service facilities, and support the use of alternative transportation modes and public transit in areas where it exists or is to be developed; and
e. establishing development standards for residential intensification and new residential development which minimize the cost of housing and facilitate compact form, while maintaining appropriate levels of health and safety."

1.3 City of Ottawa Council Direction

Official Plan

The Official Plan contains strategic directions with respect to the direction of growth in Ottawa. These policies will not change during the course of the current OP review.
Section 2 (Strategic Directions) sets out the City's growth pattern:

- "The City will manage growth by directing it to the urban area where services already exist or where they can be provided efficiently.

- Growth in the urban area will be directed to areas where it can be accommodated in compact and mixed-use development, and served with quality transit, walking and cycling facilities.
- Downtown Ottawa will be a vibrant mix of thriving economic and cultural activities within a setting that celebrates the unique qualities of both the city and the National Capital.
- A transportation system that emphasizes transit, walking and cycling will be built.
- Public water and sanitary wastewater facilities will be provided to reinforce the City's commitments to a compact urban area and safe and healthy communities."

Section 2.2 (Managing Growth) states that "about 90% of the projected growth in population, jobs and housing is to be accommodated within the urban boundary (or designated settlement area under the PPS). The urban boundary defines the area that is already, or is approved to be, serviced with major roads, transit and piped sewer and water services."
Section 2.2.3 (Managing Growth Within the Urban Area) states that "within the designated urban area, growth will be directed to locations with significant development potential, specifically those designated as Central Area, Mixed-Use Centres, Employment Areas, Enterprise Areas, Developing Communities and Mainstreets." (Growth, in this context, includes both housing and jobs.) It further states: "Within the General Urban Area, opportunities for intensification exist and will be supported, although such opportunities are generally at a much smaller scale than in the land use designations described above."
Section 2.2.3 states that the areas targeted for intensification include the Central Area, Mainstreets, Mixed-Use Centres and Town Centres. Policies in S. 2.2.3 also identify additional areas where opportunities for intensification are promoted, including:

- "Lands within 600 m of existing or future rapid transit stations with potential to develop as compact, mixed-use and pedestrian-friendly cores;
- Lands that are no longer viable for the purposes for which they were intended, such as older industrial areas, exhausted quarries, or abandoned transportation corridors […];
- Lands where the present use is maintained but the addition of residential uses or other uses can be accomplished in a complementary manner, such as on under-utilized shopping centre sites;
- Lands currently or formerly used as parking lots or other extensive storage purposes;
- Lands where records indicate existing contamination due to previous commercial or industrial use, but which can be made suitable for development if cleaned up."

The PPS and OP policy frameworks require a new way of calculating land requirements for residential purposes. In fact, the notion of "land requirements" becomes somewhat inaccurate under this new system because redevelopment opportunities cannot, by definition, be quantified in the same way as vacant greenfield land.

Proposed Transportation Master Plan
The first phase of the proposed Transportation Master Plan was the approval by Council, on May 28, 2008, of a Primary Rapid Transit Network which is centered on the construction of a Light Rail Transit (LRT) tunnel through downtown, the conversion of the existing Transitway to LRT between Blair and Baseline stations, and the conversion of the existing O-Train to twin-track electric LRT along with its extension to the airport and into Riverside South.

City Council provided additional direction with respect to suburban densities in their decision to adopt the Primary Rapid Transit Network, as follows:
"2. That staff recommended Option 4 be amended to extend Light Rail Transit (LRT) in the east to Trim Road (along Cumberland Transitway) and in the west to Scotiabank Place subject to the following:

- Development of transit corridors inside Greenbelt first
- Business case supports return on rail investment (ridership, capital and operating costs)
- Achieving a minimum density target (to be determined in the updated Official Plan)
- Availability of funding.

9. That the recommended Transit Network be approved on the following basis:
    a. A city-wide network that ultimately extends LRT to Kanata, Orléans and Barrhaven/Riverside South;
    b. A priority network within the planning horizon based on Option 4, as amended."

Based on this direction by Council, minimum density targets for suburban development will be included in the Official Plan.

City Housing Strategy
The City Housing Strategy, 2007-2012 (CHS), adopted by Council in 2007, contains specific directions with respect to residential development. Direction 1, "Building Healthy, Sustainable, Inclusive Communities", informs the City's residential land strategy. It directs the City to "promote compact, sustainable housing development and redevelopment" and to "encourage and enable diverse, flexible housing solutions across the city". The promotion of a diversity of housing throughout Ottawa increases housing options in each neighbourhood and reduces the use of cars by enabling residents to live closer to workplaces. It promotes pedestrian-oriented and transit supportive neighbourhoods. Diversity and flexibility is defined as a mix of types and tenures and housing affordable to all community members.

The CHS requires a more integrated approach to land use planning and the achievement of affordable housing targets as set out in the 2003 Official Plan. It establishes clear linkages between the inclusion of affordable housing in residential development and growth management strategies. The achievement of affordable housing targets is a key part of successful growth management.

The City's most recent Annual Development Report (2007) indicates the need to ensure the inclusion of affordable housing as part of the City's residential land strategy. Migration data from Statistics Canada shows that our most significant population deficit in the 2001-2006 period has been to Gatineau and Ontario Municipalities Adjacent to Ottawa (OMATO), likely due to the mounting cost of housing in Ottawa as well as improved road access into Ottawa.

2. Housing Requirements

2.1 Projections Recap

The population projection adopted by City Council in November 2007 is Scenario 2 as presented in the document Growth Projections for Ottawa: Prospects for Population, Housing and Jobs 2006-2031 (November 2007). That projection is summarized as follows:

Figure 1
Projected population, households and jobs to 2031

	2006	2011	2021	2031
Population	871,000	923,000	1,031,000	1,136,000
Households	351,000	382,000	444,000	497,000
Jobs	530,000	580,000	648,000	703,000

From the above projection, the City needs to provide opportunities for 146,000 additional households and 173,000 more jobs by 2031.

2.2 Methodology and Scenarios

In Growth Projections for Ottawa, two methodologies were presented for projecting housing requirements. Because of the size and complexity of a city like Ottawa, the Detailed Methodology was selected.

The Detailed Methodology involves a projection of dwelling type propensities by age groups: that is to say, a forecast of the types of homes the population is likely to inhabit based on their age, and a forecast of how these preferences may evolve over the projection period both from a demographic and market standpoint and from the perspective of what the City would like to encourage.

The TOTAL number of required dwellings is obtained by adding to the TOTAL projected household demand a vacancy factor and accounting for demolition replacements. The population that resides in institutions (e.g. nursing homes, group homes or prisons) is factored out of the "market" housing demand; however, provision must be made to accommodate a growing institutionalized population (see Appendix 1 for a discussion on the institutionalized population).

A projection of propensities was presented in Growth Projections for Ottawa, but after consultations, two more scenarios were added to reflect a variety of hypotheses about evolving dwelling choices.

The resulting three scenarios are presented below. All technical data and calculations appear as appendices at the end of this report. The assumptions behind the four scenarios take into account the following factors, which are discussed in Growth Projections for Ottawa (s. 2.4):

- Housing choices of an aging population
- Housing choices of an older population with increasing disabilities
- Housing choices of households of decreasing size
- Housing choices of immigrants
- The appeal of the urban lifestyle
- Increasing cost of, and challenges to finance municipal infrastructure construction and maintenance
- Increasing cost of energy

Scenario 1
This is the dwelling propensity scenario, using the "detailed methodology", that appeared in the Growth Projections for Ottawa report. Under this scenario, new housing units required to 2031 would be distributed as follows:

Figure 2
New dwelling units by type, 2006-2031, Scenario 1

	Single	Semi	Row	Apt.	TOTAL
Units	44,979	7,465	44,737	50,587	147,767
%	30%	5%	30%	34%	100%

This scenario entails no expansion to the current urban boundary and the achievement of a higher intensification target than in the two next scenarios. It anticipates the most significant shift in people's housing preferences toward apartments and away from single detached homes.

Scenario 2
The second scenario anticipates a shift in people's housing preferences, but accounts for a more gradual transition toward multi-family dwellings. The share of single detached homes and townhouses remains at levels close to those seen in recent market history. Apartments increase their share at the lowest rate in this scenario. New housing units required to 2031 would be distributed as follows:

Figure 3
New dwelling units by type, 2006-2031, Scenario 2

	Single	Semi	Row	Apt.	TOTAL
Units	63,632	7,841	44,418	32,264	148,155
%	43%	5%	30%	22%	100%

This scenario entails an expansion of the urban boundary and the achievement of a 40% intensification target.

Scenario 3
The third scenario also anticipates a shift in people's housing preferences based on the reasons noted above, and accounts for a quicker transition than in Scenario 2 toward apartments, which would take share away from townhouses and single detached dwellings. The share of single detached homes remains at levels close to those seen in recent market history.

Under this scenario, new housing units required to 2031 would be distributed as follows:

Figure 4
New dwelling units by type, 2006-2031, Scenario 3

	Single	Semi	Row	Apt.	TOTAL
Units	59,101	7,257	39,447	41,728	147,532
%	40%	5%	27%	28%	100%

This scenario also entails an expansion of the urban boundary and the achievement of a 40% intensification target.

Recent housing construction trends
To compare these three scenarios with recent trends in homebuilding, the following figure summarizes housing starts by share of dwelling type for the last three five-year periods.

Figure 5
Share of housing starts by type, 1993-2007

	Single	Semi	Row	Apt.
1993-1997	45%	3%	42%	10%
1998-2002	56%	5%	27%	12%
2003-2007	44%	6%	34%	17%

On an annualized basis, housing starts for the last fifteen years have produced the following number of units by type:

Figure 6
Housing starts by type (annualized), 1993-2007

	Single	Semi	Row	Apt.	TOTAL
1993-1997	1,578	111	1,380	350	**3,418**
1998-2002	3,178	284	1,470	647	**5,579**
2003-2007	2,821	338	2,003	1,036	**6,197**

Figures 5 and 6 show cyclical variations in the shares of each dwelling type that correspond with prevailing economic conditions. For example, during the 1993-1997 period (a time of economic recession in Ottawa), townhouses accounted for 42% of new housing construction because they were more affordable types of homes. In the following period (1998-2002), which corresponds to the high-tech boom, the proportion of single detached homes surged to 56%, an all-time record, on the strength of higher incomes and buoyant economic conditions, in combination with relatively low house prices following the mid-1990s economic slowdown.

One trend clearly appears in the data, and that is the rising share of apartments regardless of the ups and downs of the wider economy. Another salient feature of Ottawa's housing market is the prominence of townhouses. Their share has increased in the most recent period, which nevertheless coincides with relative economic prosperity and stability.

2.3 Preferred scenario

Scenario 1 would allow the City to stay within its current urban boundary, but supposes a greater shift in housing preferences than recent market history suggests might be reasonable to anticipate.

Scenarios 2 and 3 represent both an incremental market shift and support for a policy direction that fulfills the City's planning objectives. The question is which of these scenarios best captures the likely demographic evolution of the city's population. The difference between the two is in the proportion of townhouses and apartments. In Scenario 2, the proportion of townhouses is closer to what recent market history has produced. In Scenario 3, the proportion of apartments is slightly higher than the proportion of townhouses and is about double the share achieved over the last 15 years.

Scenario 3 will be carried forward as the preferred scenario. It maintains ground-oriented dwellings (notably townhouses and single detached homes) as the largest component of Ottawa's new housing construction over the next 25 years, but anticipates a shift toward apartments.

An important assumption of this Residential Land Strategy is that the next 25 years will be different than the past 25 years in terms of people's choice of where to live. A shift toward apartments and away from single detached dwellings is the most salient change anticipated.

Much of this shift will be due to demographic-based market demand stemming from smaller households, an ageing population, the emergence of a viable market for urban lifestyles along with rising energy prices, and the desirability of the types of locations where new apartments are projected to be constructed (the Central Area, the Mainstreets, and near hubs of transit and employment activity). The City's investment in rail rapid transit over the projection period will solidify the desirability of many of these areas, which are also the focus of the intensification targets discussed in Section 3.

The argument has been made that people generally wish to "age in place" and this means that seniors are expected (and often encouraged) to stay in their homes (typically single detached dwellings) until they need institutional care. Looking at today's senior-age cohort, this appears to be the case. However, these homes were built between the mid-1940s and the late 1960s, which means that they would typically be of significantly smaller sizes, and in locations that are more central, than the much larger single detached dwellings built over the last 30 years at more peripheral locations.

Can seniors reasonably be expected to age in place in the future in 2,500 square-foot homes at similar rates to which they do today in 1,200 square-foot homes? Staff believe they will not, especially if there are homeownership options available to seniors in the form of condominium apartments at locations that are close to services and amenities.

Scenario 3 anticipates a gradual shift in the share of each dwelling type over the projection period, as detailed in Figure 7:

Figure 7
Share of new dwelling units by type, 2006-2031, Scenario 3

	Single	**Semi**	**Row**	**Apt.**	**TOTAL**
2006-2011	43%	5%	29%	23%	100%
2011-2016	41%	5%	27%	27%	100%
2016-2021	40%	5%	27%	27%	100%
2021-2026	39%	5%	25%	31%	100%
2026-2031	37%	5%	25%	32%	100%
2006-2031	**40%**	**5%**	**27%**	**28%**	**100%**

The forecast number of new dwellings for the projection period, on an annualized basis, is presented in

Figure 8
Forecast number of new dwelling units by type, 2006-2031, Scenario 3 (annualized)

	Single	**Semi**	**Row**	**Apt.**	**TOTAL**
2006-2011	2,751	322	1,889	1,496	**6,457**
2011-2016	2,561	307	1,651	1,681	**6,199**
2016-2021	2,434	292	1,635	1,778	**6,140**
2021-2026	2,189	275	1,428	1,743	**5,634**
2026-2031	1,886	256	1,287	1,647	**5,075**

This scenario will be carried forward as the basis for the City's Residential Land Strategy.

2.4 Distribution between urban and rural areas

A further defining element of the housing projection is the distribution of dwelling units between the urban and rural parts of the city. Since amalgamation, the rural area has averaged about 9% of all residential building permits issued by the City. This share is consistent with a longer series of historical data prior to amalgamation, gathered from Census data, which reveals that since 1971 the rural area has accounted for an average of 9.1% of Ottawa's household growth (Figure 10).

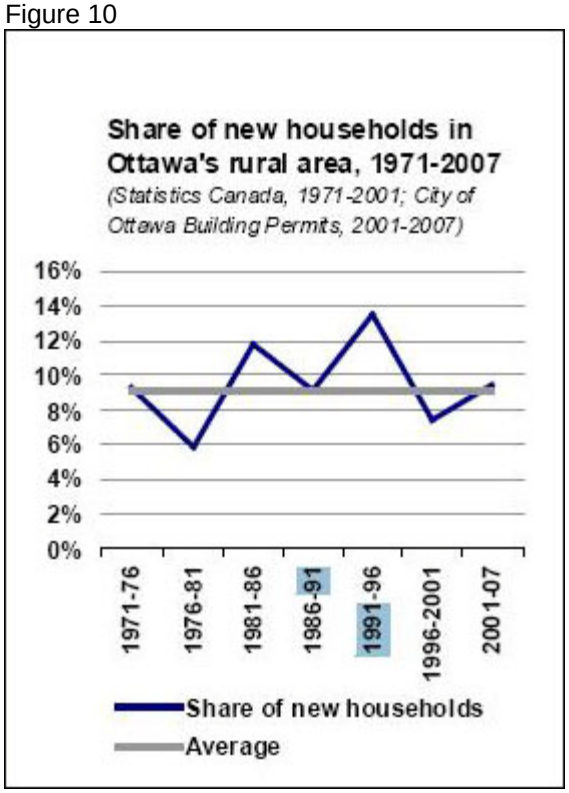
The Residential Land Strategy proposes to use a 9% share of new dwellings to the rural area. The distribution of dwellings would therefore be as follows:

Figure 9
Projected distribution of new dwellings between urban and rural areas to 2031

Period	TOTAL units	Urban	Rural
2006-2011	**32,287**	29,381	2,906
2011-2016	**30,997**	28,207	2,790
2016-2021	**30,700**	27,937	2,763
2021-2026	**28,172**	25,636	2,535
2026-2031	**25,377**	23,093	2,284
TOTAL	**147,532**	**134,254**	**13,278**

Within the rural area, dwellings are predominantly single detached. In some of the larger villages there are limited opportunities for denser forms of housing including townhouses and apartments; however the composition of rural housing is not projected to change significantly.

Figure 10



The following assumption is applied to the assumption of rural dwellings to 2031:

Figure 11

Rural dwelling types, 2006 to 2031

Dwelling type	Share	Units
Single detached	94%	12,481
Semi-detached	1%	133
Townhouse	4%	531
Apartment	1%	133
TOTAL	**100%**	**13,278**

The balance of the city's housing requirements will be accommodated in the urban area (Figure 12).

Figure 12
Urban dwelling type projection, 2006 to 2031

Dwelling type	Share	Units
Single detached	35%	46,619
Semi-detached	5%	7,124
Townhouse	29%	38,915
Apartment	31%	41,595
TOTAL	**100%**	**134,254**

These projections are carried forward into Sections 3 and 4, which discuss intensification targets and greenfield development.

2.5 The Regional Market Area

Ottawa's Regional Market Area includes the City of Gatineau, Ontario Municipalities Adjacent to Ottawa (OMATO) and Québec Municipalities Adjacent to Gatineau (QMAG). In Growth Projections for Ottawa, a projection of population, jobs and dwellings was prepared for the entire metropolitan area, summarized in Figure 13 below:

Figure 13
Projection of population, jobs and households for the Regional Market Area

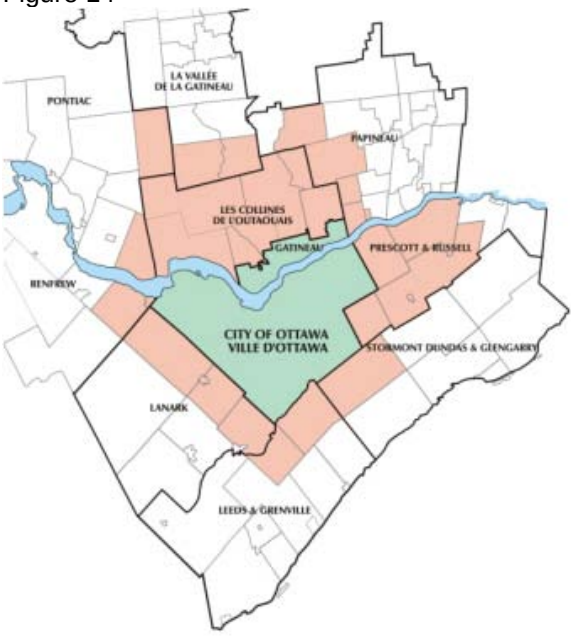
	Ottawa	Gatineau	OMATO	QMAG	TOTAL
2006					
Population	870,800	249,400	139,800	47,200	**1,307,100**
Households	345,600	102,000	52,100	18,200	**517,900**
Jobs	529,800	114,500	73,700	24,700	**742,700**
2011					
Population	923,000	262,400	149,700	49,900	**1,385,000**
Households	376,600	108,200	54,700	18,900	**558,400**
Jobs	580,200	122,800	78,700	26,000	**807,600**
2021					
Population	1,031,300	288,000	183,300	59,000	**1,561,600**
Households	437,000	120,800	66,000	22,700	**646,500**
Jobs	648,400	139,900	95,300	31,200	**914,800**
2031					
Population	1,135,800	309,700	219,600	68,600	**1,733,800**
Households	489,000	132,200	77,200	27,200	**725,600**
Jobs	703,100	156,300	111,800	37,200	**1,008,300**

OMATO = Ontario Municipalities Adjacent to Ottawa
QMAG = Québec Municipalities Adjacent to Gatineau
* Removes institutionalized population

In the absence of formal planning mechanisms to prepare a Residential Land Strategy for the Regional Market Area, which encompasses two provinces and two sets of planning legislation, the City has established dialogues with Regional Market Area municipalities. Detailed projections were prepared in partnership with the Ville de Gatineau and comments were received from many of the other adjacent municipalities in Ontario and Québec. The City's projections for the Regional Market Area incorporate all input from other municipalities.

The household projections presented in Figure 13 above were obtained by aggregating the dwelling occupancy rates for Ottawa, Gatineau, OMATO and QMAG municipalities, then projecting how these might evolve taking into account the role fulfilled by each of these four components within the Regional Market Area.

Figure 14



Ottawa's Regional Market Area comprises 32 municipalities in Ontario and Québec with a combined population of over 1.3 million in 2008.

Ottawa and Gatineau, as the mature central cities, are in a more advanced state of urbanization, have the most diverse housing stock (with differences between them), and have smaller households. The average household size is projected to continue getting smaller as a result of a higher concentration of single-person, senior, and non-family households in these two urban centres.

OMATO has 14 municipalities, many of which are closely tied to the Ottawa-Gatineau labour market. Over 40% of the employed labour force in half the OMATO municipalities, and between 20% and 40% in the other half, works in Ottawa-Gatineau. This integration is confirmed by the existence of eight regional transit systems that operate lines into Ottawa. Several Ottawa-based homebuilders are active in OMATO municipalities. As a result, several OMATO municipalities exhibit dwelling occupancy rates that reflect a more suburban role for these communities, in addition to their traditional rural profile. It is projected that this role will continue to grow and as a result, average household sizes are projected to increase in OMATO to 2031.

QMAG has 16 municipalities. The seven largest ones are immediately adjacent to Gatineau (forming the MRC Les-Collines-de-l'Outaouais) and have a very high degree of integration with the Ottawa-Gatineau labour market: 67% of the employed labour force residing in the municipalities of Les-Collines work in one of the two central cities. The nine other QMAG municipalities are much smaller in population and still

exhibit rural demographic characteristics, including average household sizes higher than Gatineau's but falling, reflecting youth migration to the cities. However, because of their adjacency and position on the highway network, residential development aimed at commuters is beginning to take place in all of them. As a result, the percentage of employed labour force working in Ottawa or Gatineau and residing in those outer municipalities ranges from 30% to 70%. It is projected that the suburban role of QMAG municipalities will continue to grow, but at a slower pace than OMATO's since this evolution is at an earlier stage than OMATO's. As a result, it is projected that the average household size in QMAG will continue to be significantly higher than Gatineau's, but will gradually become smaller to reflect a continuing net out-migration from the more rural areas.

The projection of dwellings by type, given the demographic composition and metropolitan role of each of the four large components of the Regional Market Area (Ottawa, Gatineau, OMATO and QMAG), anticipates that the overall share of single detached dwellings will decrease to varying degrees. For Ottawa the assumptions are discussed in Section 2.3 above.

For Gatineau, as a mature urban centre, a projection similar to Ottawa's is proposed but with the share of single detached homes starting at a higher point, reflecting that city's housing stock and current housing market. Townhouses are not as present in Gatineau's housing market as they are in Ottawa's; it is anticipated that their share will rise. Apartments already make up a significant share of the housing market in Gatineau, and this is projected to accelerate.

In OMATO the majority of the housing stock and current market is comprised of single detached homes. This is not projected to change significantly, but a slightly higher share of townhouses is anticipated in response to a diversifying housing market in those municipalities. The share of apartments will remain low throughout the projection period. In QMAG, no significant changes are projected in the housing market. Single detached homes will continue to predominate.

The projected share of new dwellings by type appears in Figure 15 below:

Figure 15
Projected share of new dwellings by type, 2006-2031

		Single	Semi	Town	Apt.	TOTAL
Ottawa	2006-2011	43%	5%	29%	23%	100%
	2011-2016	41%	5%	27%	27%	100%
	2016-2021	40%	5%	27%	29%	100%
	2021-2026	39%	5%	25%	31%	100%
	2026-2031	37%	5%	25%	32%	100%
Gatineau	2006-2011	56%	13%	3%	28%	100%
	2011-2016	54%	12%	5%	29%	100%
	2016-2021	52%	11%	7%	30%	100%
	2021-2026	50%	10%	8%	32%	100%
	2026-2031	46%	10%	10%	34%	100%
OMATO	2006-2011	88%	4%	6%	2%	100%
	2011-2016	87%	4%	7%	2%	100%
	2016-2021	86%	4%	8%	2%	100%
	2021-2026	85%	3%	9%	3%	100%
	2026-2031	84%	3%	9%	4%	100%
QMAG	2006-2011	99%	1%	0%	0%	100%
	2011-2016	99%	1%	0%	0%	100%
	2016-2021	97%	1%	1%	1%	100%
	2021-2026	95%	1%	2%	2%	100%
	2026-2031	94%	1%	3%	2%	100%

On an annualized basis, the projected number of housing starts by dwelling type would be as follows:

Figure 16
Projected housing starts by dwelling type, Regional Market Area (annualized)

		Single	Semi	Town	Apt.	TOTAL
Ottawa	2006-2011	2,751	322	1,889	1,496	**6,457**
	2011-2016	2,561	307	1,651	1,681	**6,199**
	2016-2021	2,434	292	1,635	1,778	**6,140**
	2021-2026	2,189	275	1,428	1,743	**5,634**
	2026-2031	1,886	256	1,287	1,647	**5,075**
Gatineau	2006-2011	711	170	38	360	**1,279**
	2011-2016	702	156	65	377	**1,300**
	2016-2021	674	143	91	389	**1,296**
	2021-2026	621	124	99	397	**1,241**
	2026-2031	503	109	109	372	**1,094**
OMATO	2006-2011	618	28	42	14	**702**
	2011-2016	976	45	79	22	**1,122**
	2016-2021	1,039	48	97	24	**1,208**
	2021-2026	1,011	36	107	36	**1,190**
	2026-2031	934	33	100	44	**1,112**
QMAG	2006-2011	195	2	0	0	**197**
	2011-2016	377	4	0	0	**380**
	2016-2021	392	4	4	4	**404**
	2021-2026	420	4	9	9	**442**
	2026-2031	444	5	14	9	**473**
TOTAL	2006-2011	4,275	522	1,969	1,870	**8,635**
Regional	2011-2016	4,616	512	1,795	2,080	**9,001**
Market	2016-2021	4,539	487	1,827	2,195	**9,048**
Area	2021-2026	4,241	439	1,643	2,185	**8,507**
	2026-2031	3,767	403	1,510	2,072	**7,754**

NOTE: The institutionalized population has not been factored out of the projections for Gatineau, OMATO and QMAG.

Under this projection, Ottawa's share of total housing will increase slightly, from 66.7% in 2006 to 67.4% in 2031, because of smaller average household sizes. Gatineau's share will decrease from 19.7% to 18.2%. OMATO's and QMAG's shares will rise, from 10.1% to 10.6% and from 3.5% to 3.7% respectively. Figure 17 summarizes the share of Regional Market Area total dwellings projected for each of the four major components:

Figure 17
Projected share of total dwellings, Regional Market Area

	2006	2011	2016	2021	2026	2031
Ottawa	66.7%	67.4%	67.5%	67.6%	67.5%	67.4%
Gatineau	19.7%	19.4%	19.0%	18.7%	18.5%	18.2%
OMATO	10.1%	9.8%	10.0%	10.2%	10.4%	10.6%
QMAG	3.5%	3.4%	3.4%	3.5%	3.6%	3.7%
TOTAL	100%	100%	100%	100%	100%	100%

OMATO and QMAG will have an increasing share of the new single detached dwellings built in the Regional Market Area to 2031. Ottawa and Gatineau, while retaining a range of dwelling type choices, will have a greater focus of higher density forms of housing.

The share of new dwellings by type across the Regional Market Area will be as outlined in the following figure:

Figure 18
Projected share of new dwellings by type, Regional Market Area

	Single	Semi	Town	Apt.
2006-2011	50%	6%	23%	22%
2011-2016	51%	6%	20%	23%
2016-2021	50%	5%	20%	24%
2021-2026	50%	5%	19%	26%
2026-2031	49%	5%	19%	27%

The projection shows that there will remain sufficient choice across the Regional Market Area for all types of dwellings including single detached homes throughout the projection period. Overall, only a very slight downward shift in the share of single detached is anticipated across the Regional Market Area, and an increase in the share of apartments primarily focused on Ottawa and Gatineau.

The assumptions behind this projection comply with PPS policies 1.4.3(c) and (d). Planning for denser forms of housing in the two central cities of Ottawa and Gatineau establishes the correct match between the amount and density of new housing and appropriate levels of infrastructure and public service facilities, promotes densities for new housing that efficiently use land, resources, infrastructure and public service facilities, and supports the use of alternative transportation modes and public transit in areas where it exists or is to be developed.

3. Intensification and density targets

3.1 Background

3.1.1 Why set a target for intensification

As outlined in Section 1 of this report, the Official Plan, and predecessor Regional and Local Official Plans, have for some years encouraged intensification at specific locations including the Central Area, Mainstreets and Mixed-Use Centres, and generally inside the Greenbelt. Under the Provincial Policy Statement, municipalities in Ontario are required to establish and implement minimum targets for intensification and redevelopment.

3.1.2 Policy and monitoring requirements

The PPS requires targets for intensification and redevelopment for the built-up area in general, and density targets for transit corridors [PPS policies 1.1.3.5, 1.2.2 and 1.2.3]. These targets should be met before any expansion of the boundaries of settlement areas is permitted.

Since settlement area boundaries are subject to comprehensive reviews, which are carried out every five years, the intensification and density targets will be monitored for performance over five-year periods, and annually as documentation and trend analysis.

The city-wide intensification target will be monitored through the annual analysis of residential building permits that meet the definition of Residential Intensification in the PPS. Location-specific targets that will not form part of the OP (Central Area, Vicinity of Rapid Transit Stations, Mixed-Use Centres, Mainstreets and Town Centres) will also be monitored annually.

The density targets for transit corridors, which will be analyzed in terms of people and jobs per gross hectare, will be monitored every five years (at each Census year), concurrently with the City's Employment Survey.

3.1.3 Recent Intensification Trends

A minimum target for intensification should be based on an understanding of how much intensification has been taking place in recent years and express the City's objectives for the future.

In the report Residential Intensification in Ottawa, 2001-2006, the City analysed all residential building permits and calculated the number of those that conformed to the Provincial definition of intensification. The period covered is mid-2001 to mid-2006, to correspond with the national Census.

The report found that intensification accounted for 36% of all dwellings built in the urban area of Ottawa during the study period. Comparable records for the period 1998 to mid-2001 show that intensification then had a share of about 25% of urban dwellings. Intensification has therefore gathered momentum.

Figure 18 summarizes the amount and share of new dwellings built through intensification during the study period.

Figure 19
New residential dwelling units, mid-2001 to mid-2006

	2001 Jul-Dec	**2002**	**2003**	**2004**	**2005**	**2006 Jan-Jun**	**TOTAL**
Urban, intensification	782	2,599	2,237	2,323	1,545	1,070	**10,556**
Urban, non-intensification	1,688	4,492	3,716	4,417	3,006	1,647	**18,966**
Urban, TOTAL	2,470	7,091	5,953	6,740	4,551	2,717	**29,522**
Rural dwellings	285	744	758	648	541	221	**3,197**
TOTAL Units, City of Ottawa	**2,755**	**7,835**	**6,711**	**7,388**	**5,092**	**2,938**	**32,719**
Intensification as % of urban units	**32%**	**37%**	**38%**	**34%**	**34%**	**39%**	**36%**

Source: Residential Intensification in Ottawa, 2001-2006 – Publication # 13-27

The report also detailed the types of dwelling built each year through intensification. Between mid-2001 and mid-2006, intensification accounted for 10% of all single detached homes built in Ottawa, 25% of all townhouses, 31% of all semi-detached homes and 87% of all apartments.

Figure 20
Average annual number and share of intensification units by type, 2001-2006

	Single	**Semi**	**Row**	**Apt**	**TOTAL**
Intensification	219	91	501	1,300	**2,111**
Non-intensification	1,874	202	1,524	194	**3,793**
TOTAL, Urban Area	2,093	292	2,025	1,494	**5,904**
% intensification	10%	31%	25%	87%	**36%**

Of the dwellings built through intensification, the majority were apartments (including condominium, rental, additions, new construction, etc.). Figure 21 details the types of dwellings built through intensification between mid-2001 and mid-2006:

Figure 21
Residential intensification by dwelling type, mid-2001 to mid-2006

Dwelling type	Units	Share (%)
Single detached	1,097	10.4%
Semi-detached	453	4.3%
Townhouses	2,506	23.7%
Apartments	6,500	61.6%
Condominium apartments	3,842	36.4%
Condominium stacked townhouses	81	0.8%
Retirement residences	660	6.3%
Student residences	706	6.7%
Other types of apartments	1,211	11.5%
TOTAL	**10,556**	**100%**

3.2 City-wide intensification target

3.2.1 Discussion

In Section 1, the recommended scenario for the projection of housing requirements calls for 147,507 new dwellings in Ottawa by 2031. As detailed in Figure 10, 13,276 of those dwellings are intended to be built in the rural area. The balance, 134,231 dwellings, will be built in the urban area.

Figure 22 below summarizes the breakdown of urban and rural dwellings by type projected to 2031.

Figure 22
Projected dwellings by type, urban and rural areas, 2006-2031

Dwelling type	Urban		Rural		TOTAL	
	Units	%	Units	%	**Units**	**%**
Single detached	46,619	35%	12,481	94%	**59,101**	**40%**
Semi-detached	7,124	5%	133	1%	**7,257**	**5%**
Townhouse	38,915	29%	531	4%	**39,447**	**27%**
Apartment	41,595	31%	133	1%	**41,728**	**28%**
TOTAL	**134,254**	**100%**	**13,278**	**100%**	**147,532**	**100%**

In setting a target, the City wishes to increase the share of intensification from recent levels. The reasons for this are as follows:

- The City has a multi-billion dollar rapid transit plan that involves the construction of a downtown Light Rail Transit (LRT) tunnel; the conversion of the east-west Bus Rapid Transit (BRT) Transitway to LRT between Blair and Baseline stations; the twin-tracking of the existing O-Train line, its extension to the airport and to Riverside South, and its conversion to LRT to provide high-order rapid transit along that corridor; and new BRT lines. For the City's transit investment to have a measurable impact on congestion and transportation efficiency, the City will require a much more urban form of development that will bring people and buildings, dwellings and jobs closer together, especially along the new rail rapid transit lines.
- The City also requires a more urban form of development to improve cost efficiency in terms of infrastructure construction and maintenance and service delivery.
- The City wishes to leverage the market's interest in urban living to rejuvenate, revitalize and repopulate certain older areas of the city that would provide opportunities for more people to live in environments where walking, cycling and transit are viable alternatives to the car.
- At all public consultations led by the City for its 2003 Official Plan, and during the current Official Plan review, it has emerged from the public that there is a strong wish for a city that is compact, human-scaled, urban (in the sense of a city that is dense enough to be walkable, with basic services and

conveniences a walk away). Sensitive residential intensification increases the number of people living in a given neighbourhood, and therefore increases the local market that needs services, retail, schools and other amenities that can therefore be viably provided, thus reducing the need to drive.
- A compact and walkable city is also necessary to accommodate the future needs of an aging population that may less be able to drive.
- The City is mindful of its responsibility as Canada's capital and wishes to continue the repopulation of its downtown core and its surrounding neighbourhoods to improve Ottawa's image as a world city that is animated, vibrant, and a suitable reflection of Canada as an urban country.
- At the same time, the City is mindful of its responsibility toward the almost 90% of its territory that is not urbanized and wishes to be a good steward of its rural area by containing urban sprawl that consumes agricultural and other rural land.

In summary, residential intensification is a key component of the City's residential land strategy because:
- It is required by Provincial policy;
- It is needed to support the rapid transit plan;
- It is the kind of city we want;
- It repopulates and rejuvenates older, walkable areas of the city;
- It is supportive of an aging population;
- It contributes to the symbolism that the capital city conveys to the world about Canada;
- It lessens the impact on rural resource areas.

It is proposed that an overall minimum intensification target of 40% of new urban dwellings be set for the projection period to 2031. This translates to 53,700 dwelling units over the projection period.

3.2.2 Phasing-in the target

To successfully implement an intensification target, the City will need to examine its various frameworks and by-laws to ensure that the intensification it seeks is or will be permitted and encouraged by the Corporation's various branches and approvals processes. To account for this examination and the time it will take to make appropriate adjustments, the intensification target is proposed to be phased in gradually as follows:
- 2006-2011: 36%
- 2012-2021: 40%
- 2022-2031: 44%

It is anticipated that the majority of intensification will be in the form of apartments, as evidenced by the activity monitored between mid-2001 and mid-2006. However, there will remain opportunities for intensification with ground-oriented dwellings including single detached and semi-detached homes.

In the forecast, however, a diminishing number of opportunities for lower-density housing is anticipated as the amount of vacant land within the built-up area available for intensification decreases, and more of the potential for intensification is found through redevelopment.

Overall, the intensification target of 53,690 dwelling units is broken down as follows:

Figure 23
Projected residential intensification by dwelling type, 2006-2031

Dwelling type	Units	Share
Single detached	3,225	6%
Semi-detached	2,150	4%
Row	10,200	19%
Apartment	38,125	71%
TOTAL	**53,700**	**100%**

To provide for a smoother phasing of the intensification target and to account for the gradually diminishing opportunities for ground-oriented intensification, it is expected that the dwelling mix within the intensification target will evolve, as outlined in Figure 24:

Figure 24
Projected evolution of residential intensification, 2006-2031

	Single	Semi	Row	Apt
2006-2011	10%	8%	26%	56%
2011-2016	7%	3%	20%	70%
2016-2021	5%	3%	17%	75%
2021-2026	5%	3%	17%	75%
2026-2031	4%	3%	16%	78%

(TOTALs may not add due to rounding)

3.2.3 Intensification Potential

In the 2004 report Where Will We Live? Housing Potential in Ottawa, the City calculated total residential potential for the OP's intensification target areas based on a series of assumptions that were meant to be illustrative of a possible urban form, subject to neighbourhood-specific refinements. In that report, no time lines or phasing were provided. The homebuilding industry criticized the study for its lack of phasing considerations, market acceptability of some of the identified areas, and questionable qualification of certain parcels of land.

Building on the work of that study and on the industry's input, the City considers the methodology used to identify locations and development potential to remain essentially sound. The necessary next step to be applied to such an exercise is to differentiate the areas targeted for intensification by time of likely development (phasing) and to apply an extra level of scrutiny to the selection of candidate lands. The City carried out this work as part of the preparation of intensification targets.

Accounting for new projects developed since the Where Will We Live report and some of the more detailed work undertaken for certain recent Community Design Plans, the total residential potential for the intensification target designations as of mid-2008 is estimated as follows:

Figure 25
Estimated TOTAL residential potential, Target areas, mid-2008

OP Designation	Units
Central Area	7,000
Traditional Mainstreets	20,425
Arterial Mainstreets	72,725
Mixed-Use Centres	22,050
TOTAL	**122,200**

The entire potential will not be realized within the projection period, as it is more than double the intensification target of 40% of urban dwellings by 2031.
The questions then become:

- Which of these target areas ought to be priorities for the OP targets?,
- How can the overall target number of units be distributed among the designations?, and
- What phasing can be applied to the projected targets based on market considerations and the timing of municipal services and infrastructure upgrades, if relevant?

3.2.4 Target locations for intensification

The Official Plan directs residential intensification to the following designations: Central Area; Mainstreets; Mixed-Use Centres; Town Centres; Enterprise Areas. It also directs intensification to within 600 metres of rapid transit stations.

During the period mid-2001 to mid-2006 those target areas accounted for 20% of the new dwellings in the urban area of Ottawa, or 56% of the total intensification activity.

Figure 26 lists the number of dwelling units built in each of the target areas, and each target area's share.

Figure 26
Intensification dwellings and share by OP target areas, mid-2001 to mid-2006

OP Target Area	Units	Share
Vicinity of rapid transit stations (600 m)	2,091	35%
Central Area	2,077	35%
Mainstreets	1,393	23%
Town Centres	760	13%
Mixed-Use Centres	663	11%
Enterprise Areas	103	2%
TOTAL, target areas	**5,943***	*
TOTAL Intensification	10,556	
TOTAL Urban dwellings	29,522	
Target areas as % of intensification		**56.3%**
Target areas as % of urban dwellings		**20.1%**

* TOTAL removes double counting of units that fall within more than one of the target areas. Therefore, the summed share of all target areas adds to more than 100%.

From these data it appears that the rapid transit network, the Central Area and the Mainstreets are the focus of most of the intensification activity within the OP's target areas. It also appears that there are significant intensification opportunities beyond these target areas, since 44% of the city's intensification during the 5-year monitoring period took place outside of the target areas.

The proposed Transportation Master Plan (TMP), which includes the 2031 Primary Rapid Transit Network (Appendix 4), provides a reconfirmed focus for intensification and becomes a greater determinant in the setting of intensification targets. The Central Area, where the LRT will be underground, as well as the Mainstreets and Mixed-Use Centres that are on or close to the new rail transit lines, will have priority in the setting of targets.

Town Centres will be addressed in this section because Council has instructed staff to prepare a strategy that involves suburban density targets that will one day justify LRT extensions beyond the Greenbelt. The three suburban Town Centres will form a key part of such a strategy.

Enterprise Areas will be removed from the list of target areas for intensification. The original intent of this designation was to achieve a more efficient use of land in business parks by permitting medium- and high-density residential uses integrated with employment uses. Following Official Plan Amendment 28, the number of Enterprise Areas has been significantly reduced and the remaining ones will now be subject to minimum density targets if they comprise greenfield lands.

3.3 The Rapid Transit Network

3.3.1 Description of target locations

The Rapid Transit Network forms the first basis for the intensification targets. LRT, as a higher order form of transit than BRT, will incite more people to use the transit system for work and other trips. The underground LRT in the downtown core will allow commuters to wait for their train in a weather-protected station. The underground LRT downtown will also lessen the need for commuter automobile parking, and the City will encourage the disappearance of downtown surface parking lots to entice more people into using the LRT network.

In every major city that has rail-based rapid transit, residential locations close to stations are highly sought after and desirable. From the prestige of residing close to the more central stations, to the

convenience and comparable affordability of living close to the more distant stations, the mobility that is offered by a rail-based transit system attracts a substantive interest that is visible in the housing market. A map of the Primary Rapid Transit Network to 2031 adopted by Council appears at Appendix 4.

The Central Area, as well as the Mixed-Use Centres and Traditional Mainstreets that are on or near the rail rapid transit network, are therefore in the first order of priority for intensification. This includes:

- The Central Area (downtown)
- Designated Key Transfer Stations at Blair, Hurdman, Baseline (Lincoln Fields is a special case, discussed separately)
- Tunney's Pasture and Carling-Bayview Mixed-Use Centres
- Lees, Industrial, and Cyrville Mixed-Use Centres
- Blair-174 Mixed-Use Centre
- Confederation Heights Mixed-Use Centre
- Carling Avenue Arterial Mainstreet

These correspond to the following rapid transit stations (OP designations in brackets):

LRT network:

- Future LRT underground stations, to be determined but possibly at: Rideau Centre, Metcalfe/O'Connor, Kent/Lyon (Central Area)
- Future LRT-BRT Key Transfer Stations within major mixed-use nodes: Baseline, Blair (Mixed-Use Centre)
- Future LRT-BRT Key Transfer Station in an under-developed area: Hurdman (Mixed-Use Centre)
- Future LRT-BRT Key Transfer Station along an Arterial Mainstreet: Lincoln Fields (Arterial Mainstreet; Major Open Space)
- Future LRT stations within major mixed-use nodes: Tunney's Pasture, Cyrville, Carling, Confederation (Mixed-Use Centre)
- Future LRT stations within other types of major destinations: Train (Mixed-Use Centre), St. Laurent, Carleton, Greenboro, South Keys (General Urban), Airport
- Future LRT stations in urban neighbourhoods within Mixed-Use Centre or Central Area designations: Bayview, Campus, Gladstone (future), Somerset (future), Lebreton, Lees
- Future LRT stations in urban neighbourhoods on or near a Traditional Mainstreet: Westboro, Dominion (General Urban)
- Future LRT station in suburban neighbourhoods: Iris (General Urban)

BRT network:

- BRT stations within employment nodes: Billings Bridge, Heron (Mixed-Use Centre)
- BRT stations at suburban Town Centres: Place d'Orléans, Shenkman Centre (future), Barrhaven Centre, Terry Fox (Town Centre)
- BRT stations near employment nodes: Moodie, Eagleson, Kanata North, Montreal-Canotek, Trim (General Urban)
- BRT stations in suburban neighbourhoods: Hazeldean, Bayshore, Fallowfield, Strandherd, Jeanne-d'Arc, Lycée Claudel, Smyth, Riverside, Pleasant Park (General Urban)
- BRT stations within other types of destinations: Walkley, Millennium (General Urban)

Of these locations, some are readier to be immediately embraced by the housing market as desirable places to live: the Central Area, and the West Wellington, Richmond, and Preston Traditional Mainstreets which are within or near Mixed-Use Centres served by the proposed LRT network.

At those locations it is reasonable to expect that a short-term target can be realized. In the case of the broader Carling-Bayview Mixed-Use Centre, its more peripheral parts (including the vicinity of Bayview Station) will require public realm improvements before the housing market moves toward it.

Other areas require new anchor developments and/or public realm enhancements to reach a similar degree of market readiness: Baseline-Woodroffe and Tunney's Pasture Mixed-Use Centres.

In the case of Baseline-Woodroffe, the upcoming new buildings by Algonquin College, the new City Archives project, the infrastructure investment in road work as well as the new transfer station between LRT and the BRT line to Barrhaven, make this a suitable location to expect the attainment of short- and medium-term targets. Already there is residential development activity along Centrepointe Drive, and Algonquin College is a major source of demand for housing. However, the very large size of this Mixed-Use Centre will mean it will take more time to reach a target of 200. It is therefore listed as a beyond-2031 target.

Tunney's Pasture Mixed-Use Centre encompasses more than the federally owned office campus of that name. It takes in the "Quad" area bounded by Scott Street, Holland Avenue, West Wellington Street and Parkdale Avenue. The City sees a long-term potential for intensification on the federal lands at Tunney's Pasture and above the current Transitway's right-of-way through air-rights development. In the more immediate future, the Quad area is located within one of Ottawa's currently most sought-after urban neighbourhoods and represents a viable short-term location for intensification targets. Holland Avenue in particular, and Parkdale Avenue to a lesser extent, are natural pedestrian links between the West Wellington Mainstreet and Tunney's Pasture station, which is slated to be part of the LRT network.

The Lees, Hurdman and Industrial Mixed-Use Centres present environmental and public realm challenges that make them longer-term propositions. Still, the Lees Mixed-Use Centre (Ottawa's smallest) already has a significant number of dwellings, and the University of Ottawa has expanded its campus into the area between Lees Station and the Rideau River. Subject to any environmental constraints that may exist at this Mixed-Use Centre, it can be considered a possible short- to mid-term target.

Hurdman station will become a Key Transfer Station between the north-south BRT and the east-west LRT. At present, there is peripheral residential development clustered to the southeast of the intersection between these two transit lines, and along Riverside Drive. The lands that immediately surround the station are vacant. Given the conversion of the east-west BRT to LRT and the proximity of this station to downtown, it is possible that some development may occur here through market forces alone during the projection period. The City must act as a proponent of development, and coordinate stakeholders, around the station lands to kick-start the process. However, land ownership and environmental challenges make this station a longer-term target.

The Blair-174 Mixed-Use Centre is essentially suburban in form. It is primarily comprised of office and retail uses. It is, however, designated as a Key Transfer Station (it will receive the eastern transfer station between the east-west LRT line and the BRT line to Orléans). Residential opportunities could therefore become feasible in the mid-term, once the rail transit system is in place. The development of a condominium community at the nearby Cyrville Station, which will also be part of the LRT network, is presently underway, at a location with comparable suburban attributes. For Blair-174, however, to achieve the proposed density target to sustain rail rapid transit (see next section), the City will have to act as a proponent of development, and coordinate stakeholders, around the station lands to kick-start the process.

Confederation Heights will be another Key Transfer Station between north-south LRT and BRT lines and is already a significant employment hub. Under current projections, its density will approach but not reach the target 200 by 2031. Federal land ownership also introduces extra uncertainty about the timing of possible reurbanization efforts here. It will be listed as a post-2031 target.

As for Lincoln Fields, the current Transitway station is within a Major Open Space designation that corresponds to the Ottawa River Parkway corridor, owned by the National Capital Commission. Carling Avenue, which intersects this corridor at Lincoln Fields station, is designated an Arterial Mainstreet and is itself a Supplementary Transit Corridor in the proposed Transportation Master Plan. Intensification at this station will be challenged by the fact that the Ottawa River Parkway corridor is 400 metres wide along the northern frontage of Carling Avenue and 200 metres wide along the southern frontage. Unless the station lands along Carling Avenue are made available for development, adjacency to the station will not be achievable. The potential for intensification within 600 metres will be accordingly reduced.

3.3.2 Minimum densities to sustain transit

In addition to intensification targets, the PPS also requires minimum density targets along transit corridors. Density targets are proposed for the vicinity of rapid transit stations that correspond to Mixed-Use Centres and suburban Town Centres. However, Provincial Policy also states that minimum density targets must be established for "transit corridors" in general, which may include all Transit Priority Corridors as designated in the proposed TMP.

Of primary concern to the City is to achieve higher employment and residential densities at and around the rapid transit stations that serve Mixed-Use Centres along the planned LRT lines, and suburban town centres at existing and planned BRT lines.

The Provincial Government, in its 2006 Growth Plan for the Greater Golden Horseshoe (Growth Plan), established a benchmark for density targets at "Urban Growth Centres", and set out a hierarchy of Growth Centres to which a different density target applies. The density targets are expressed in people and jobs per net hectare. Although the Growth Plan does not apply to the Greater Ottawa Area, the density targets and hierarchy of growth centres approach can be applied to Mixed-Use Centres.

The Ministry of Municipal Affairs and Housing (MMAH) referred the City of Ottawa to a recent study by IBI Group that deals with transit in the Greater Toronto Area and Hamilton (GTAH). That report suggests that urban densities listed in Figure 27 are considered minimums for various levels of transit service. The report also establishes the importance of the link between transit and land use: "A key principle is that compact, mixed-use urban development supports good transit service, which, in turn, serves and makes possible the compact urban form in a true symbiotic relationship."

Figure 27
Transit service potential based on urban density

Density range*	Transit potential	Type of service
Under 20	Low	No public transit. Requires dial-up cabs, jitneys, etc.
20 – 40	Modest	Marginal public transit. Buses every half-hour. Rush hour express buses.
40 – 80	Good	Good bus service.
80 – 120	Very good	Excellent bus service. Possible BRT/LRT
120 – 200	BRT/LRT	Higher order transit
Over 200	Subway	Higher order transit

* Density is expressed as People and Jobs per Gross Hectare.

Source: IBI Group: "Transportation Trends and Outlooks for the Greater Toronto Area and Hamilton – Needs and Opportunities", January 29, 2007

Using data from the 2006 Employment Survey and the 2006 Census, current densities in the Central Area and at Mixed-Use Centres are as follows:

Figure 28
Employment and dwelling densities at Mixed-Use Centres, 2006

	Area (ha)	Jobs (2006)	Pop. (2006)	DENSITY*
Central Area	268.0	97,710	8,147	**395**
Tunney's-Quad	86.6	15,873	2,057	**207**
Lees	15.6	54	2,545	**167**
Bayview-Preston	82.0	8,916	2,738	**142**
Billings Bridge	42.6	5,519	0	**130**
Blair-Hwy. 174	60.5	6,411	0	**106**
Baseline-Woodroffe	140.6	7,897	5,599	**96**
Confederation Heights	50.4	3,682	0	**73**
Hurdman	44.7	142	2,272	**54**
Cyrville	54.6	2,162	300	**45**
Industrial	139.0	4,120	1,692	**42**
Kanata West	254.2	2,346	10	**9**
Mer Bleue	142.1	(Undeveloped)	(Undeveloped)	**0**

* Density is expressed as People and Jobs per Gross Hectare.

Density targets are applied to the Central Area and Mixed-Use Centres according to a hierarchy. The highest density target is assigned to the Central Area, which is the metropolitan employment hub and its symbolic heart. It is also the hub of the rapid transit system and will have underground LRT stations. The target for the Central Area is set at 500 people and jobs per gross hectare.

Major Mixed-Use Centres are those that already have high employment and residential densities, are in mature urban areas close to downtown and are served by planned LRT stations. They receive the second highest density targets, 250 people and jobs per gross hectare. It is the City's objective to focus a significant amount of employment and residential growth at and around these stations. Their location and maturity justifies that they be treated immediately as fully urban nodes that function first and foremost as transit-based pedestrian areas.

Mixed-Use Centres at Key Transfer Stations between LRT and BRT receive the third tier of density targets, 200 people and jobs per gross hectare. The target is set high despite existing densities that, in some cases, are well below. The intent of this target is to focus the City's effort on the scale of redevelopment that must take place at these locations to reach densities that will sustain higher order transit.

Emerging Mixed-Use Centres receive the fourth tier of density targets, 120 people and jobs per gross hectare. The City's objective, for these low-density Mixed-Use Centres, is to direct future development to achieve densities that will be consistent with rail rapid transit service. In Mixed-Use Centres where there are no dwellings or very few, the target should be read as encouraging more residential development. In cases where there are few jobs, the target should be read as encouraging more employment.

The following are the density targets proposed for the Central Area and Mixed-Use Centres. These targets are at or above the benchmarks required to sustain higher-order transit, and recognize that target densities will be reached post-2031 in some cases.

Figure 29
2031 Density targets for the Central Area and Mixed-Use Centres

Area	**Target Density***	
	At 2031	Post-2031
Central Area	**500**	
Major Mixed-Use Centres (MUC)	**250**	
Tunney's - Quad	250	
Lees	250	
MUC at Key Transfer Stations	**200**	
Bayview-Preston	200	
Blair-174	200	
Confederation Heights		200
Baseline-Woodroffe		200
Hurdman		200
Emerging MUC	**120**	
Billings Bridge	120	
Cyrville	120	
Industrial		120
Kanata West		120
Mer Bleue		120

* Density is expressed as People and Jobs per Gross Hectare.

It is proposed that all future Community Design Plans provide for these densities as a minimum. Zoning by-laws should be examined and amended if required to permit these densities as of right.

In order to achieve these densities, Figure 30 sets out projections of jobs and population to 2031. It is to be noted that in some cases, these projections do not achieve the target densities by 2031 and intensification at those locations will be an ongoing long-term planning goal post-2031. In all cases, however, the projections yield densities that correspond to the "Very Good" benchmark of transit support.

Figure 30
Projected population and employment for the Central Area and Mixed-Use Centres, 2031

Area	New dwellings	New jobs	TOTAL Jobs	TOTAL Population	2031 Density*	TARGET*
Central Area	7,850	22,540	120,250	19,844	**523**	**500**
Lees	750	946	1,000	3,760	**305**	**250**
Tunney's-Quad	1,325	2,042	17,915	4,204	**255**	**250**
Bayview-Preston	2,500	2,036	10,952	6,788	**216**	**200**
Blair-174	1,250	3,650	10,061	2,025	**200**	**200**
Confederation Heights	950	3,589	7,271	1,758	**179**	**200**
Baseline-Woodroffe	1,000	1,333	9,230	7,219	**117**	**200**
Hurdman	1,000	500	642	2,414	**101**	**200**
Billings Bridge	700	81	5,600	1,295	**162**	**120**
Cyrville	1,800	750	2,912	3,630	**120**	**120**
Kanata West	2,424	12,774	15,120	6,070	**83**	**120**
Mer Bleue	800	8,000	8,000	1,528	**67**	**120**
Industrial	500	1,067	5,187	2,617	**56**	**120**

* Density is expressed as People and Jobs per Gross Hectare.

In Confederation Heights, Blair-174, Hurdman and some parts of Tunney's-Quad, given land ownership, the amount of development in the above Figure is unlikely to occur unless the City takes the lead in acting as a catalyst for development and in coordinating stakeholders to initiate the process.

3.3.3 Intensification targets

The potential and the targets for Mixed-Use Centres and the vicinity of rapid transit stations is drawn from the Where Will We Live report, and further detailed by input from the homebuilding industry and by site-specific planning exercises undertaken by the City. These targets will reside outside the Official Plan but will be part of technical documentation for infrastructure planning and the preparation of Community Design Plans.

Figure 31
Targets for the Central Area (dwelling units)

	Short-term (2006-2021)	Mid-term (2021-2031)	Target Projection period	Long term (post-2031)	TOTAL
Central Area	3,000	2,350	**5,350**	1,650	7,000
Lebreton	1,500	1,000	**2,500**	1,500	4,000
TOTAL	**4,500**	**3,350**	**7,850**	**3,150**	**11,000**

Figure 32
Targets for Mixed-Use Centres (dwelling units)

Mixed-Use Centre	Short-term (2006-2021)	Mid-term (2021-2031)	Target Projection period	Long term (post-2031)	TOTAL
Bayview-Preston	1,000	1,500	**2,500**	2,275	4,775
Blair-174	500	750	**1,250**	1,350	2,600
Cyrville	900	900	**1,800**	825	2,625
Tunney's-Quad	325	1,000	**1,325**	975	2,300
Hurdman	200	800	**1,000**	1,625	2,625
Industrial	250	250	**500**	1,000	1,500
Baseline-Woodroffe	500	500	**1,000**	1,300	2,300
Confed. Heights	250	700	**950**	1,000	1,950
Lees	250	500	**750**	500	1,250
Billings Bridge	300	400	**700**	1,000	1,700
TOTAL	**4,475**	**7,300**	**11,775**	**11,225**	**23,000**
Kanata West*	1,400	1,024	**2,424**		
Mer Bleue*	200	600	**800**		

* Kanata West and Mer Bleue Mixed-Use Centres are not considered Intensification, but have dwelling unit and density targets.

It is proposed that the Official Plan permit high-rise buildings in the Central Area and Mixed-Use Centres to help achieve the targets. Community Design Plans will continue to be the basis for planning at a more detailed level for growth at specific locations, and an opportunity to assess community facility shortfalls and infrastructure capacity requirements.

It is proposed that existing and future Community Design Plans and Zoning By-laws that apply to the Central Area and Mixed-Use Centres ensure that the minimum targets set out above can be accommodated as-of-right.

There is intensification potential at other transit stations that are not within the Central Area or Mixed-Use Centres, but they will not receive a target because the City will focus its priority on the locations listed in the previous two Figures. Since the total intensification potential exceeds the 40% city-wide target (see Summary, Section 3.9), the City will focus its efforts on the most important locations along the rapid transit network. In subsequent phases (post-2031), intensification potential at other stations can be evaluated and targeted.

3.4 Mainstreets

In the Official Plan, Mainstreets are identified in Section 3.6.3 as offering "some of the most significant opportunities in the city for intensification through more compact forms of development, a lively mix of uses and a pedestrian-friendly environment." The Plan also states "The common feature of all Mainstreets is their function as a mixed-use corridor with the ability to provide a wide range of goods and services for neighbouring communities and beyond. It is the intent of this Plan to continue to focus on nodes and corridors (Mixed-Use Centres and Mainstreets) to support the public transit system, to create an essential community focus, to allow for minimum travel and to minimize disruption in existing stable neighbourhoods."

The Official Plan designates two types of Mainstreets: Traditional Mainstreets, and Arterial Mainstreets.

3.4.1 Description of Traditional Mainstreets

Traditional Mainstreets are the functional backbone of Ottawa's older areas. The transit system operates on each of them and, with the upcoming conversion of the majority of the Transitway to LRT, feeder bus lines linking Mainstreets with stations will take on a new importance.

As is the case with Mixed-Use Centres, not all Traditional Mainstreets are at the same point of market readiness and acceptability. Traditional Mainstreets will all receive a target, but a differentiation must be made between short-, mid- and long-term targets.

Recent trends in the housing market indicate the popularity and desirability of certain Traditional Mainstreets. Figure 33 lists the number of residential projects and dwelling units on or within one block of Traditional Mainstreets and in the Central Area since 2001. As the figure illustrates, Rideau and Bank Streets and both the east and west parts of the Central Area have been the focus of most of the projects, followed by the Richmond and West Wellington Mainstreets. In total, in the Central Area and on Traditional Mainstreets, 69 projects with 4,752 dwelling units were built or under construction, 12 projects with 984 units were approved, and a further 24 projects with 2,658 units were in the approvals pipeline. This adds to 105 projects and 8,394 units.

Figure 33
Projects and dwelling units in the Central Area and on Traditional Mainstreets, 2001-2008

OP Designation	Built or u/c*		Approved		Planned		TOTAL	
	Projects	Units	Projects	Units	Projects	Units	Projects	Units
Central Area East (1)	16	1,674	0	0	1	103	17	1,777
Bank TM	11	618	1	50	3	471	15	1,139
Central Area West (2)	8	694	0	0	2	350	10	1,044
Rideau TM	4	306	3	149	2	344	9	799
Elgin TM	1	118	1	160	2	520	4	798
Richmond TM	3	199	1	93	5	352	9	644
West Wellington TM	7	206	1	46	2	130	10	382
Somerset TM	4	294	0	0	1	59	5	353
Scott TM	2	193	2	156	0	0	4	349
Preston TM	2	188	1	44	1	28	4	260
Main TM	0	0	0	0	3	199	3	199
Dalhousie TM	7	193	0	0	0	0	7	193
McArthur TM	2	152	1	37	0	0	3	189
Bronson TM	2	98	0	0	1	65	3	163
Montreal TM	1	68	0	0	0	0	1	68
Gladstone TM	0	0	0	0	1	27	1	27
TOTAL	**69**	**4,752**	**12**	**984**	**24**	**2,658**	**105**	**8,394**

* u/c = Under Construction; TM = Traditional Mainstreet
(1) Central Area East: As designated in Schedule B of the Official Plan, east of the Rideau Canal (mostly the ByWard Market area)
(2) Central Area West: As designated in Schedule B of the Official Plan, west of the Rideau Canal (the financial and office district).

The Traditional Mainstreets designation will have an overall target and phases. The technical analysis presented here outlines the potential number of units on each of the streets and a forecast phasing based on the convergence of municipal priorities (sustaining transit, improving the pedestrian environment, etc.), and market readiness, which affects the likelihood of attaining the target.

The potential for each Traditional Mainstreet is drawn from the Where Will We Live report with changes based on input from the homebuilding industry and to account for projects built since the report was published. Figure 25 summarized the total potential of Traditional Mainstreets at 20,425 dwelling units. This total includes longer-term potential, which is defined as beyond the projection period to 2031. For the purposes of this analysis (Figure 35), the short term is defined as the period to 2021 and the mid-term as the period 2021-2031.

3.4.2 Intensification targets for Traditional Mainstreets

The targets for Traditional Mainstreets were developed on the basis of the potential calculated by the WWWL methodology, which assumes five-storey buildings with four residential storeys as the norm for Traditional Mainstreets. However, the potential may be higher because taller buildings are appropriate on some Traditional Mainstreets.

As is the case for transit system targets, the Traditional Mainstreet targets will reside outside the Official Plan but will be part of technical documentation for infrastructure planning and the preparation of Community Design Plans.

It is proposed that all future CDP's, or amendments to existing CDP's, and new zoning flowing from them, provide for no less than the minimum targets specified in Figure 34 below.

Figure 34
Targets for Traditional Mainstreets (dwelling units)

Traditional Mainstreet	Short-term (to 2021)	Mid-term (2021-2031)	2031 TARGET	Long term (post-2031)	TOTAL
Richmond	800	1,000	**1,800**	2,350	4,150
Bank	1,000	625	**1,625**	100	1,725
West Wellington	675	550	**1,225**	775	2,000
Rideau	800	300	**1,100**	500	1,600
Beechwood	375	500	**875**	325	1,200
Montreal	250	500	**750**	1,000	1,750
Preston	300	400	**700**	800	1,500
Bronson	175	500	**675**	250	925
Main	525	100	**625**	175	800
Somerset	225	350	**575**	150	725
Gladstone	200	350	**550**	225	775
Stittsville Main	225	275	**500**	1,225	1,725
Scott	125	275	**400**	1,400	1,800
Elgin	125	275	**400**	150	550
McArthur	100	300	**400**	1,400	1,800
Merivale	0	150	**150**	950	1,100
Dalhousie	100	0	**100**	250	350
King Edward	0	0	**0**		
TOTAL	**6,000**	**6,450**	**12,450**	**10,975**	**23,425**

It is proposed to update policies pertaining to Traditional Mainstreets by assigning a range of building storeys to each. This would fulfill a number of planning goals:

- It would provide a strong urban design framework within which to insert new buildings, with the aim to create a cohesive urban fabric that is suitable to each street.
- It would provide greater certainty about future urban form on each street for both the neighbourhood and the homebuilding industry.
- It would set the stage for a zoning regime that is more focused on urban form, and less on land use and performance standards. Specifically, Floor Space Index (FSI) requirements would be removed altogether from all Traditional Mainstreet zoning, and buildings would have to conform to a prescribed height, without exceeding or under-building.

Hence, the total potential for Traditional Mainstreets may change pending a more street-specific set of assumptions based on building height. Consequently, the targets may also change. As they stand calculated, however, Traditional Mainstreets can realistically be expected to fulfill approximately 23% of the total intensification target, about 12,500 units to 2031.

3.4.3 Description of Arterial Mainstreets

Surrounding the older, more walkable areas of Ottawa is a vast inner belt of post-World War II neighbourhoods. Their location (now close to the city centre) and positioning on the rapid transit system mean that they will, or are starting to, experience a surge in value, and this in turn calls for a strategic approach to direct orderly intensification at the right locations in those areas, and gradually integrate them into the walkable sections of the city primarily through transit corridors, most of which are Arterial Mainstreets.

Arterial Mainstreets present the first order of potential to achieve a balance between intensifying the inner suburban areas outside the core while ensuring that the residential sections that abut them remain stable. Schedule D of the Official Plan illustrates the City's Rapid Transit Network. Many Arterial Mainstreets inside the Greenbelt, along with several other major arterials inside and outside the Greenbelt, are designated Supplementary Transit Corridors in the City's Transit Plan. Carling Avenue is proposed to receive rail-based transit.

In general, Arterial Mainstreets as they are today are not ready to absorb large amounts of intensification. They are still too car-oriented, too suburban in form, too deficient in their public realm and therefore too far from market maturity to expect them to fulfill any significant short-term intensification target.

However, there are sections of some Arterial Mainstreets that are suitable for residential intensification projects for site-specific reasons: they may be located adjacent to established and vibrant Traditional Mainstreets (e.g.: Carling Avenue near Preston Street and Bronson Avenue), they may be located near major places of employment (e.g. Montreal Road East); they may present a lot fabric that bring one or both of their frontages close to established residential areas (e.g. the west side of Merivale Road, the north side of Richmond Road west of the Ottawa River Parkway); or they may have site-specific redevelopment opportunities at locations where a residential component will be viable (e.g. Laurentian High School site at Baseline and Merivale Roads).

In all cases, residential intensification along Arterial Mainstreets must take on the role of generator of a future urban fabric that is pedestrian-oriented and transit supportive. The City, in its planning for Arterial Mainstreets, should consider improvements to the public realm (wider sidewalks, shade trees, permitting on-street parking, road design options like slip roads for parking and local access to lessen the functional width of arterials for pedestrians, and converting bus lines to streetcars) before most of these streets can become urban avenues in their own right, and suitable residential locations for their entire length.

Nevertheless, there is some intensification potential that may be reasonably anticipated in the short- and medium-term on Arterial Mainstreets.

3.4.4 Intensification targets for Arterial Mainstreets

The targets for Arterial Mainstreets are drawn from the Where Will We Live report with changes based on input from the homebuilding industry and to account for projects built since the report was published. As is the case for the other targets, the Arterial Mainstreet targets will reside outside the Official Plan, but will be part of technical documentation for infrastructure planning and the preparation of Community Design Plans.

It is proposed that all future CDP's, or amendments to existing CDP's, and new zoning flowing from them, provide for no less than the minimum targets specified in the Figure below.

Figure 35
Targets for Arterial Mainstreets (dwelling units)

Arterial Mainstreet	Short-term (to 2021)	Mid-term (2021-2031)	TARGET for 2031	Long term (post-2031)	TOTAL
Montreal	750	1,500	**2,250**	5,375	7,625
St. Joseph	400	1,600	**2,000**	8,700	10,700
Carling	500	1,000	**1,500**	8,600	10,100
Merivale	250	750	**1,000**	9,500	10,500
Bank	250	500	**750**	10,825	11,575
St. Laurent	0	500	**500**	8,400	8,900
Robertson	0	0	**0**	8,475	8,475
Hazeldean	0	0	**0**	3,175	3,175
Richmond	0	0	**0**	1,675	1,675
TOTAL	**2,150**	**5,850**	**8,000**	**64,725**	**72,725**

These targets were developed on the basis of the potential calculated by the WWWL methodology, which assumes eight-storey buildings with seven residential storeys as the norm for Arterial Mainstreets. However, the potential may be higher because taller buildings are appropriate on some Arterial Mainstreets.

The greatest challenge for new development along Arterial Mainstreets is to initiate a more urban fabric at locations where the established context is largely suburban and car-oriented. Because new development will help set the stage for the evolution of Arterial Mainstreets as more genuinely urban avenues, particular attention should be placed on their relationship to the street, the location of parking and minimizing gaps between buildings along the sidewalk.

3.4.5 Density targets for Arterial Mainstreets

The PPS states that municipalities should establish density targets along designated transit corridors, and this applies to Arterial Mainstreets. Figure 36 shows the existing density on Arterial Mainstreets. Richmond Road and Carling Avenue stand out as the Arterial mainstreets with the highest densities. In the Transportation Master Plan, Richmond Road will be near the east-west LRT line while Carling Avenue is designated a Supplementary Transit Corridor and is slated for a streetcar line in later phases of implementation of the city's rapid transit plan.

Figure 36
Densities on Arterial Mainstreets, 2006 (people and jobs per gross hectare)

Arterial Mainstreet	Jobs	Population	Density
Richmond	653	1,980	**217**
Carling	21,215	4,705	**183**
St. Laurent	8,927	2,950	**92**
Bank	9,692	1,752	**79**
Hazeldean	3,047	900	**64**
Robertson-Richmond	3,578	55	**62**
St. Joseph	3,982	575	**61**
Merivale-Clyde-Baseline	7,357	1,370	**50**
Montreal East	11,508	4,760	**41**
Innes	1,535	42	**7**
Eagleson	662	0	**7**

Source: 2006 Census custom tabulation, Statistics Canada (population); City of Ottawa 2006 Employment Survey (jobs)

A target density of 200 dwellings and jobs per hectare is proposed for Richmond and Carling Arterial Mainstreets. This target is based on an analysis of current densities and a level of density that supports higher order transit.

In a more distant future (post-2031) it is possible that other Arterial Mainstreets inside the Greenbelt may receive light rail service in the form of streetcars on dedicated rights-of-way. To prepare those streets for eventual upgrades in transit service, a target density of 120 dwellings and jobs per hectare is proposed for St. Laurent, Bank, Montreal East and Merivale-Clyde Arterial Mainstreets.

Combining the residential intensification targets for Arterial Mainstreets set out in Figure 35 and a projection of new jobs on those streets to 2031, resulting densities are shown in Figure 37.

Figure 37
Projected densities on Target Arterial Mainstreets, 2031 (people and jobs per gross hectare)

Arterial Mainstreet	New jobs	New population	Density
Richmond (n. of Carling)	66	0	**209**
Carling	1,655	2,235	**208**
St. Laurent	2,446	745	**115**
Bank	1,134	1,118	**94**
Merivale-Clyde	4,348	1,490	**83**
Montreal East	2,601	3,353	**54**

(The average number of persons per dwelling that produces the projected population for each Mainstreet, and the employment growth projection, are detailed in Appendix 8.)

The decrease in density on Richmond Road is due to declining household size combined with few new jobs and no new dwellings projected by 2031 on this short stretch of the street. Carling Avenue will surpass the target density of 200 people and jobs per hectare, St. Laurent will get close, and the three other Arterial Mainstreets will remain a work in progress.

It is proposed that each new development on the target Arterial Mainstreets be required to meet the target density, implemented in terms of dwellings and jobs per net hectare, to ensure that development takes the proper urban form and that progress is made with each new project toward the attainment of the target densities. (The conversion of density measures is outlined in Appendix 5).

The achievement of target densities will be incremental and depends on individual development projects meeting or exceeding the targets. The City will require individual development applications, from site plans to rezonings and Official Plan Amendments, to comply with the minimum density target. However, the achievement of the ultimate density targets will not be tied to urban land reviews.

It is not proposed to establish density targets for the other Arterial Mainstreets in order to focus on the ones that have the greatest possibility of achieving densities that will support higher order transit.

3.5 Town Centres

3.5.1 Existing Densities

The three suburban Town Centres (Orléans, Kanata, Barrhaven) are at different stages of their development. Orléans' is the most mature. Recent investments by the City and private sector in cultural facilities, combined with residential infill and a new hotel, continue to consolidate the urban fabric of Orléans Town Centre. In Kanata, high-rise apartment buildings appeared at the turn of the 21st century and more are planned; there is a significant residential component made up of ground-oriented housing. The core of the Town Centre in Barrhaven is not yet constructed. The employment recorded at that location is in retail outlets at the northern fringe of the area designated Town Centre.

Using data from the 2006 Employment Survey and the 2006 Census, current densities in Town Centres are shown in Figure 38.

Figure 38
Employment and population densities at Town Centres, 2006

	Area (ha)	Jobs (2006)	Pop. (2006)	Density*
Orléans TC	83.2	3,163	834	**48**
Kanata TC	229.4	3,818	3,771	**33**
Barrhaven TC	217.1	2,176	127	**11**

* Density is expressed as People and Jobs per Gross Hectare.

3.5.2 Density Targets for Town Centres

Development in Town Centres will be considered intensification under the PPS definition for the purposes of this Residential Land Strategy. It will count toward the City's 40% intensification target.

In the Orléans and the Kanata Town Centres, certain land parcels that have remained undeveloped are now surrounded by development, which makes those lands fall under the PPS definition of "vacant or underutilized lands within previously developed areas". The Barrhaven Town Centre is rapidly becoming surrounded by developed areas, even though the core of the Town Centre itself is yet to be developed. When residential development starts, this Town Centre will therefore also qualify under the same PPS definition.

Because of their position on the rapid transit network, the Town Centres are part of the City's strategy to bring about compact mixed-use development at higher densities. The primary goal of this Residential Land Strategy is to increase population and employment density with targets in mind, so as to generate additional ridership for rapid transit. The density targets proposed for the suburban Town Centres are consistent with those of Emerging Mixed-Use Centres inside the Greenbelt.

In all cases, it is anticipated that the amount of development during the projection period will not allow the three Town Centres to reach their target densities. Intensification will remain an ongoing planning goal post-2031 at these locations.

Figure 39
2031 Projections for Town Centres

Town Centre	Area (ha)	2031 Jobs	New dwellings	2031 Pop.	Density*
Orléans TC	83.2	6,150	550	1,884	**97**
Kanata TC	229.4	9,280	1,072	5,818	**66**
Barrhaven TC	217.1	10,143	2,875	5,618	**73**

* Density is expressed as People and Jobs per Gross Hectare.

The target density proposed for Town Centres is 120 people and jobs per gross hectare, the minimum threshold required to support higher-order transit including LRT.

It is proposed that the Official Plan permit high-rise buildings in the Town Centres to help achieve the density targets.

3.6 Intensification outside the target areas

One of the findings of the Residential Intensification report was that 44% of the residential intensification that occurred between mid-2001 and mid-2006 was not in the OP target areas. The report also highlighted the prominent role of lands sold by the Federal government and made available for development during that period.

The supply of federal lands suitable for redevelopment, although still quite large, is subject to a number of political and other considerations that make their availability unpredictable. For example, the former CFB Rockcliffe has been slated for reurbanization since the mid-1990s but First Nations land claims have delayed the project.

Other than potential Federal lands, the opportunities for intensification outside the target areas would fall in one of the following categories:

- Additions of dwellings to existing buildings
- Conversions of non-residential buildings to residential uses
- Infill by lot severance
- Infill on vacant lots
- Infill on vacant school sites
- Redevelopment

Data from the Residential Intensification report for the period of mid-2001 to mid-2006 tracked intensification under those categories.

Figure 40
Residential intensification by category, mid-2001 to mid-2006 (dwelling units)

Category	Single	Semi	Row	Apt.	TOTAL
Redevelopment					
Federal lands	473	112	823	453	**1,861**
Commercial and office sites	45	16	249	1,234	**1,544**
Residential replacements	4	24	131	391	**550**
Closed schools	50	22	182	240	**494**
Former industrial sites	2	54	227	188	**471**
Former gas stations	0	0	16	341	**357**
Sub-TOTAL	574	228	1,628	2,847	**5,277**
Development on vacant or underutilized lots within previously developed areas					
Vacant lots	183	52	546	2,092	**2,873**
Former parking & used car lots	0	14	62	1,064	**1,140**
Enterprise Area	0	16	87	0	**103**
Former Hydro right-of-way	0	0	58	0	**58**
Sub-TOTAL	183	82	753	3,156	**4,174**
Infill					
Infill by severance	199	114	60	9	**382**
Infill on vacant school sites	138	0	53	10	**201**
Sub-TOTAL	337	114	113	19	**583**
Expansion or conversion of existing buildings					
Conversion*	3	28	12	415	**458**
Addition	0	1	0	63	**64**
Sub-TOTAL	3	29	12	478	**522**
TOTAL	**1,097**	**453**	**2,506**	**6,500**	**10,556**

* Including new secondary dwelling units

It is generally accepted that the opportunities on vacant lots may gradually diminish in the built-up area. It is also generally accepted that from time to time, unforeseen opportunities come up for which no forecast can be made. Examples include religious or school properties, utility sites, parcels created through right-of-way reconfigurations, unforeseen redevelopment sites, and other circumstances.

The OP's intent with respect to established residential neighbourhoods outside the target areas is that they will remain stable without necessarily remaining static. This means that intensification will be supported where it is in scale and character with the surroundings, but the General Urban Area is not considered to be the main focus of intensification and is not a target area. The intent is not to transform established neighbourhoods, but to accommodate occasional opportunities that meet OP policies and are contextually integrated with their surroundings.

Scale and character refer to the height and positioning of buildings, and to urban design and architecture, but do not relate to types of dwellings or density measures. Greater varieties of dwelling types and increases in residential densities are not, by themselves, reasons to disqualify what can otherwise be good small-scale intensification.

3.6.1 Infill

Infill by severance (382 units), on vacant lots (2,873 units) or on unused school sites (201 units) added 3,456 units between mid-2001 and mid-2006 (Figure 40), an average of 691 units per year. The number of vacant lot opportunities may gradually diminish, but the number of severance opportunities remains significant, given the amount of wide-lot development carried out in Ottawa especially in the decades after the Second World War.

In the period to 2031, it is anticipated that infill activity will produce 3,225 single detached dwellings (an average of 129 per year), 1,850 semi-detached dwellings (74 per year) and 6,000 townhouses (240 per year). These averages will vary as the projection period advances to account for diminishing opportunities over time. Appendix 3 details the projection on an annual basis.

3.6.2 Secondary dwelling units

Additions of secondary dwelling units to existing residences are difficult to count from building permits because many are done without one, leaving the City with no official record of the actual number of units created yearly. From building permit information, there were 231 apartments created legally in single detached homes or apartment buildings in the five years between mid-2001 and mid-2006.

In 2004 the City legalized the creation of secondary apartments in all single- and semi-detached homes in all residential zones. It is therefore a reasonable expectation that there will be a sustained number of such types of units created throughout the projection period. It is anticipated that an average of 100 secondary apartments per year, to 2031, will be created.

3.6.3 Planned intensification outside the target areas

There is an officially stated intent by Canada Lands Company (CLC) to redevelop CFB Rockcliffe for residential and employment uses. Preliminary concepts prepared prior to the latest interruption in this process called for approximately 6,000 housing units.

3.6.4 Unforeseen intensification

This category is the most unpredictable and includes religious or school properties, utility sites, parcels created through right-of-way reconfigurations, which become available for residential development over time on a regular basis. Under this category it is assumed that there will be a total of approximately 6,000 units during the projection period to 2031, comprised of 300 single detached homes, 200 semi-detached homes, 4,000 townhouses and 1,500 apartments. The total number of intensification units anticipated outside the target areas is summarized in the following Figure:

Figure 41
Intensification potential outside the target areas, 2006-2031 (dwelling units)

Non-target area	Short-term (to 2021)	Mid-term (2021-2031)	TOTAL Projection period
CFB Rockcliffe	0	6,000	**6,000**
Apts in houses	1,300	1,000	**2,300**
Infill singles	2,350	875	**3,225**
Infill semis	1,500	650	**2,150**
Infill towns	3,600	2,400	**6,000**
Unforeseen	3,600	2,400	**6,000**
TOTAL	**12,350**	**13,325**	**25,675**

The potential in Figure 41 is not a target. Some of it, however, is assumed to occur and is therefore included in this Residential Land Strategy as contributing to achieve the City's overall intensification target.

The potential for CFB Rockcliffe constitutes a minimum target, but due to the ownership and legal status of the property, it is unknown at this time whether its redevelopment will proceed in the short- or mid-term. For the purpose of erring on the side of caution, the potential has been assigned to the later stages of the projection period.

Intensification outside the target areas should be accommodated under urban design and building height requirements that protect and preserve neighbourhood character. Specifically, intensification outside the target areas should not detract from the target areas' ability to be the focus of growth and intensification within the built-up area inside the Greenbelt.

3.7 Intensification and Affordable Housing

Intensification targets can support the provision of affordable housing, which in turn meets the needs of the diversity of workers required across Ottawa, particularly in the designations targeted for residential intensification, the Central Area, Mainstreets, Mixed-Use Centres and Town Centres. Affordable housing supports growth management by promoting more pedestrian-oriented neighbourhoods and increased demand for good transit services.

Intensification in the form of smaller units and/or apartments can lead to an increase in the affordability of housing. For example, increases in density can result in a lower land cost per unit. However, market demand can increase the cost of housing in areas undergoing intensification, particularly in desirable locations such as those close to transit stations.

In addition to minimum intensification targets, it is proposed that all future Community Design Plans or amendments to CDP's provide targets that implement the Official Plan's affordable housing policy, including housing for lower income households.

3.8 Strategies to support intensification

To successfully implement the City's intensification target, a series of strategies must be put in place to deal with administrative practices and a regulatory framework that may not have anticipated this type of direction for development. Through consultations with community groups and homebuilding industry representatives, the following matters have been identified as salient:

- Building height: Some communities are concerned about the impact of tall buildings that might not be properly integrated into their context. Industry representatives are concerned that height and density restrictions are too strict in favoured locations and thus reduce the viability of intensification projects. A clearer direction on the height profile of permitted buildings will be provided in the OP. In some cases this may mean taller buildings than are currently permitted; in other cases it may mean shorter ones. The fundamental principle is that the areas targeted for intensification by the OP are to be

considered appropriate for denser development and taller buildings in general, while the residential areas outside the targets are not to be considered appropriate for taller buildings, but rather, for small-scale intensification.

- Urban design: There is concern about the look of new buildings in established neighbourhoods. A sharper direction on urban design is therefore an important condition of success for intensification. The areas targeted for intensification should be made Design Priority Areas.
- Zoning: Aside from the issue of building height, it should be remembered that zoning was introduced to Ottawa in 1964 at a time when the goal of urban planning was to reduce urban densities and reinforce land use separation. Today the City's planning goals have changed, yet we retain a number of performance standards in our Zoning By-law that impede the achievement of intensification targets and transportation objectives. These must be investigated and amended as required.
- Zoning should immediately implement OP direction. The City should lead in rezoning target areas.
- Certainty: A common grievance by community groups is the lack of certainty as to whether the zoning in place "accommodates" the targeted amount of intensification, or whether rezonings should continue to be approved on the argument of accommodating intensification. While it is impossible for the City to provide absolute and permanent certainty, since cities are organic and evolve with time, it certainly should ensure the Zoning By-law accommodates the intensification targets (this could include upzoning as may be necessary). Once the City is satisfied that the zoning reflects its targets, arguments that rezoning is necessary to achieve those targets should no longer be accepted.
- Public education and quality communications are key conditions of success. Seminars, videos, and publications that explain intensification as part of a bigger picture, and that illustrate and celebrate successes, should be produced on an ongoing basis.
- The Committee of Adjustment should be given clearer direction on Council's policies about intensification and community compatibility.
- Servicing capacities: The City has to gain full knowledge of its piped infrastructure capacity limitations and prioritize upgrades based on this Residential Land Strategy and other criteria.
- Parking requirements: For new mixed-use buildings these requirements introduce an extra level of design complexity that demands separate entrances for residential and retail parking. To facilitate development forms that contribute to a walkable urban fabric, the City may wish to abandon parking "requirements" at certain locations and instead simply "permit" off-street parking, and let the market decide. This is especially relevant for new mixed-use buildings on Mainstreets that feature small retail spaces.
- Road widening requirements: Annex 1 Table 1 of the Official Plan contains minimum right-of-way width protections for streets that include many Traditional Mainstreets. There are provisions to grant exceptions for new development to proceed based on reduced or waived road protection setbacks, but these introduce a further level of process and uncertainty that could be eliminated if the City were to take a firmer position on whether such setbacks are truly expected to be fully realized.
- Hydro line setbacks: Recent increases to 5.m in the required setback of a building from a hydro line have a major impact on a building's volume. There remains a cost barrier and institutional unwillingness to bury hydro wires. However, if this new setback has the effect of sterilizing a significant amount of intensification potential, it must be addressed with the utilities.
- A long-term utilities strategy is needed to ensure that quality urban design, public realm and architecture, and density and intensification, are the overriding priorities.
- Seismic code requirements have significantly increased the cost of construction of multi-unit residential buildings.
- Other factors, including snow operations, waste removal requirements, encroachment fees, sign by-laws, visitor parking requirements, private approach by-laws and Canada Post requirements have been raised as not being fully prepared for urban-type development.

This Residential Land Strategy proposes the creation of an Intensification Implementation Group led by the Planning Branch that will be tasked with coordinating all City departments and services' practices, by-laws and administration to support intensification and compact, mixed-use development. The Group will also lead discussions with external stakeholders (including school boards and utilities) with a view to addressing technical, regulatory and design matters in a way that will allow the City's land strategy to be successful.

The Intensification Implementation Group should include senior representatives from the following branches in both the Infrastructure Services and Community Sustainability Department and the City Operations Department:

- Planning Branch (lead)
- Infrastructure Services Branch
- Water and Wastewater Services Branch
- Transit Services Branch
- OC Transpo
- Solid Waste Services Branch
- Housing Branch
- Parks and Recreation Branch
- Surface Operations Branch
- Traffic and Parking Operations Branch
- Real Property Assets Management Branch
- Fire Services Branch
- Fleet Services Branch

3.9 Intensification and Density Targets – Summary

Based on the analysis of potential and the City's priorities in directing its intensification targets, the 40% intensification target to 2031 is distributed as follows:

Figure 42
Summary of Intensification and Density Targets

Area	Target
Intensification	
City-wide target (40% of new urban dwellings)	**53,700**
Central Area (including LeBreton)	7,850
Mixed-Use Centres	11,775
Traditional Mainstreets	12,450
Arterial Mainstreets	8,000
Suburban Town Centres	4,500
Intensification outside target areas	25,675
Potential:	71,250
Density (People and Jobs per Gross Hectare)	
Central Area	500
Major Mixed-Use Centres	250
Target Arterial Mainstreets:	
Carling, Richmond	200
St. Laurent, Bank, Merivale, Montreal East	120
Mixed-Use Centres at Key Transfer Stations	200
Emerging Mixed-Use Centres	120
Town Centres	120

The sum of target numbers of dwelling units for the six intensification areas exceeds the 40% target of 53,690 by 17,560 dwellings. This allows for a great degree of flexibility, including ebbs and flows in the housing market, to reach the City's minimum target through development in several different areas and of different types.

4. Suburban and Greenfield Strategies

4.1 Housing requirements

Following the projections set out in Figure 12, Ottawa needs the following number of greenfield dwellings:

Figure 43
Greenfield dwelling type projection to 2031

Dwelling type	Projected Urban Dwellings		
	Intensification	Greenfield	**TOTAL**
Single detached	3,222	43,397	**46,619**
Semi-detached	2,148	4,976	**7,124**
Townhouse	10,203	28,712	**38,915**
Apartment	38,128	3,467	**41,595**
TOTAL	**53,702**	**80,552**	**134,254**

Ottawa's best chance to contain urban sprawl and change the way it grows lies in its ability to urbanize greenfields differently. Intensification is an essential step in setting a course for the city's future, but over the projection period, reaching the 40% intensification target still means that 60% of new urban dwellings will be on greenfields.

Provincial policy says that municipalities should adopt density targets and development standards that facilitate compact urban form on greenfields.

The greatest challenges facing Ottawa's suburbs are that they are separated by the Greenbelt from the core of the urban area. Even if the outer greenfields are developed at higher densities and in compact, mixed-use forms, there will remain a large suburban fabric both outside and inside the Greenbelt separating any new neighbourhoods from the more walkable areas of the city. Therefore, it is not realistic to hope to achieve a completely walkable urban fabric across Ottawa's entire urban area.

The area inside the Greenbelt can eventually be consolidated as such, but the suburban communities outside the Greenbelt will remain satellite communities for as long as there is a Greenbelt. In other words, there will remain for the foreseeable future large sections of the city that are car-dependent. Serving those areas with rail rapid transit will be a challenge. An intensification strategy that targets stations and corridors will be the logical place for those targets to generate high ridership. A longer-term challenge will be to densify the areas beyond rapid transit stations and to regenerate an urban fabric that will lend itself to support rail rapid transit.

Taking a long-term view also means planning greenfields at densities that will allow them to sustain higher-order transit (including BRT) right away, so that over time, intensification at targeted locations in established areas outside the Greenbelt will yield sufficient densities and ridership to warrant rail rapid transit. In other words, by planning new suburban communities at transit-supportive densities, at build-out they will be at an appropriate level of density for rail rapid transit and will therefore not require extra intensification efforts to achieve those densities.

4.2 Description of suburban densities

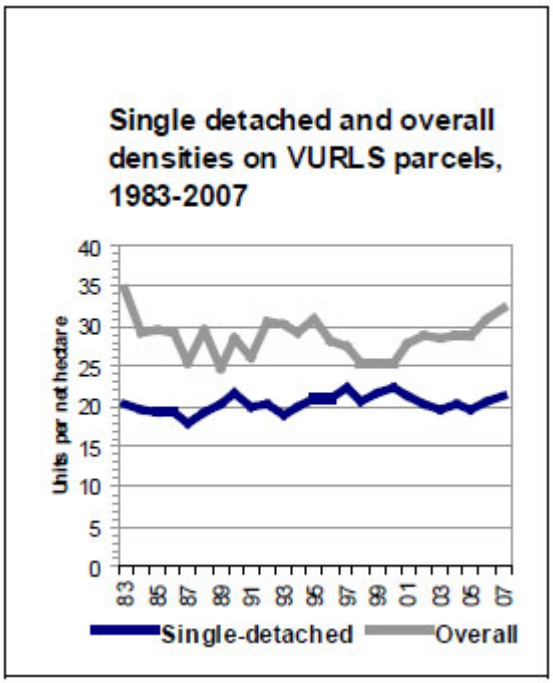
According to the 2007 Vacant Urban Residential Land Survey (VURLS), the average density of residential development has increased since 2001 (indicating a trend in today's market toward a greater acceptance of density), but in the specific case of single detached homes, average densities remain within a relatively invariable range. Figures 44 and 45 illustrate these findings.

Figure 44
Density of development on VURLS parcels, 2001-2007 (units/net ha)

	2001	2002	2003	2004	2005	2006	2007	Avg.*
Single	21.2	20.4	19.7	20.4	19.8	20.5	21.3	**20.4**
Semi	28.4	30.3	30.7	29.9	33.4	33.6	32.1	**31.8**
Row	38.9	42.0	44.8	42.6	40.5	41.9	45.8	**43.3**
Stacked	n.a.	n.a.	n.a.	93.4	157	110	131	**118**
Apt.	80.8	144	129	209	220	98.3	198	**164**
TOTAL	**27.7**	**28.9**	**28.4**	**29.0**	**28.9**	**30.9**	**32.3**	**29.9**

* Weighted 5-year average, 2003-2007, obtained by dividing the sum of units built by the sum of hectares developed.
n.a. = not available.

Figure 45



As Figure 45 shows, for the 25 years between 1983 and 2007 the density of single detached dwellings has largely remained between 19 and 21 units per net hectare. The overall density of VURLS residential development has mostly been in the range of 25 to 30 units per net hectare, only recently returning to levels above 30 as was observed in the early 1980s.

4.3 Minimum densities for greenfields

The biggest consumer of suburban residential land is the single detached house, but that consumption could be lower. Ottawa's older neighbourhoods illustrate that detached homes can be built at higher densities and designed in such a way as to create a pedestrian-friendly environment. That means a different layout of streets, a different location for car parking, and a different location for private green space. Other municipalities in Ontario like Toronto and Markham have successfully implemented New Urbanism development standards to large new suburban subdivisions, showing that there are other viable and market-appropriate ways to develop suburbs.

The Residential Land Strategy rests on an increase of suburban densities. In the Official Plan, residential development on lands designated "Developing Communities" were required to reach an overall minimum

net density of 29 units per net hectare. In the years that followed, several greenfield Community Design Plans were prepared for lands with this designation. In those plans, the most common approach in obtaining the target density has been to increase the number of townhouses, and add stacked townhouses, in the overall housing mix, but single detached homes continued to be planned at the densities observed for the past 25 years. Examples of such CDPs include Riverside South and Mer Bleue.

As a result, without changing those CDPs to achieve higher densities for single detached dwellings, very large amounts of greenfield suburban land are now "committed" to low-density residential development that will not be sufficiently transit supportive to justify rail rapid transit, and will result in continued pressures to widen roads. It will likely also result in the need to add more lands to the urban boundary.

Going forward, it is proposed that any future greenfield development, amendments to existing CDPs, and future CDPs, be required to comply with residential density targets that include a minimum net density of 26 units per hectare for single detached dwellings and an overall net density of 32 units per hectare (which implies densities of 34 units per hectare for semi-detached dwellings, 45 units per hectare for townhouses and 150 units per hectare for apartments, although these will not be specified as targets in the OP).

These target densities are all higher than what has been observed in recent history, significantly so in the case of single detached homes. This is intentional. In setting these targets, the City seeks to accomplish a variety of objectives:

- Recognize that single detached homes remain the choice of a significant proportion of the population;
- Accommodate the market's wish for single detached homes in denser formats that make servicing them more cost-effective;
- Encourage New Urbanist subdivisions, to make new neighbourhoods more walkable and transit-supportive;
- Accommodate homes on less land, including single detached homes, to contribute to their affordability.

Net residential densities of 26 units per hectare for single detached homes can be achieved in a variety of ways that will not unduly restrict choice in the market.

Typical lot sizes of 15.2 x 30.5 m (50 x 100 feet) produce net residential densities of 21.5 units per hectare. Reducing the lot size to 12.6 x 30.5 m (41 x 100 ft), would produce a density of 26 units per net hectare. To obtain a variety of lot sizes, the following frontage and depth combinations also yield a net density of 26 units per hectare:

Figure 46
Examples of lot sizes at 26 u/net ha for single detached dwellings

Frontage		**Depth**		**Lot Area**		
m	**ft**	**m**	**ft**	**m2**	**ha**	**sq.ft.**
11.0	36	**35.1**	115	**374**	0.0385	4,140
12.2	40	**31.4**	103	**383**	0.0383	4,120
12.6	41.4	**30.5**	100	**385**	0.0385	4,140
13.1	43	**29.3**	96	**384**	0.0384	4,128
13.7	45	**28.0**	92	**385**	0.0385	4,140
14.5	47.5	**26.5**	87	**384**	0.0384	4,133
15.2	50	**25**	82	**381**	0.0381	4,100
16.8	55	**22.9**	75	**383**	0.0383	4,125

Net residential densities on greenfields will be measured on a subdivision-by-subdivision basis. While minimum densities and New Urbanism development standards can increase the affordability of housing, this is not automatic but rather determined by market demand. It is proposed that all future

CDPs or amendments to CDPs for Developing Communities incorporate Official Plan affordable housing targets, including housing for lower income households.

4.4 Other contributors to suburban density

4.4.1 School sites

It has been an ongoing concern for both the City and the homebuilding industry that School Boards are asking for increasingly large parcels of land for school sites. The City has also started requiring off-street loading areas for cars and buses in addition to off-street parking, and no longer entertains the combination of schoolyards with city parkland.

All this is making schools significant consumers of land. School sites now introduce very significant discontinuities in the urban fabric of new communities, making their environment less hospitable to pedestrians, their buildings more disconnected and therefore requiring more driving, and pulling down the overall density of their neighbourhoods. This should change.

School Boards should be asked to consider multi-storey buildings set closer to the street. They should be required to locate staff parking away from any street frontage. School bus drop-offs should be on the street. There should be wider sidewalks in front of school buildings. Requirements for sports fields and open space should be reviewed to reduce them and, where the opportunity exists, combining them with City park space should be required.

The ultimate goals in pursuing these changes in school sites are:

- To integrate new school buildings into denser communities, making them viable walking destinations for the children they serve.
- To slow down traffic in front of them by moving school bus loading back to the street.
- To reduce the amount of land consumed by school sites in order to reach the density targets the City seeks to achieve in the suburbs.

4.4.2 Parks and Open Space

The City's requirements for parks and open space may have to be revisited to ensure that the types of spaces required of developers at the plan of subdivision stage reflect the need for quality spaces of all sorts (active, passive, programmed, soft-surface and hard-surface) at the right locations, and of the right sizes.

As much as possible, it is important to take on a greater number of smaller spaces for active parks at the right locations, than large residual spaces with no development potential whose fringe location and larger size will limit the space's use to passive, un-maintained and marginal green area.

As much as possible, new directives should be implemented to combine large passive spaces with schoolyards, sports fields, or other land-extensive active and recreational uses, to minimize land consumption.

The goals of a review of park and recreational land requirements should be:

- Quality over quantity of space should be the guiding principle.
- To adjust the amount of land taken on as parks and green space to thresholds that guarantee acceptable access to and amounts of green space without introducing excessive distances along streets, which become barriers to walkability and reinforce the need to drive within and between neighbourhoods;
- To combine passive uses with environmental conservation functions and/or school properties as much as possible;
- To provide active open green and hard-surface spaces that are at the appropriate locations and of the right sizes to be animated and become focal points for neighbourhoods;
- To achieve higher overall residential densities in new communities than in the suburban developments of the last sixty years.

4.5 Greenfield supply

The City monitors its supply of greenfield residential land in an annual report titled Vacant Urban Residential Land Survey (VURLS), which has been in continuous publication since 1983.

Based on VURLS data for the end of 2006, and including unit estimates for the Fernbank CDP, Ottawa's greenfields outside the Greenbelt had capacity for 97,195 dwelling units, summarized in Figure 47.

Figure 47
Urban residential land supply outside the Greenbelt, December 2006

	Single	Semi	Town	STH*	Apt.	MX**	TOTAL
Kanata-Stittsville	10,117	607	9,167	96	3,391	6,954	30,332
South Nepean	4,516	140	5,881	890	10,320	5,817	27,564
Riverside South	7,484	30	7,022	1,409	1,685	317	17,947
Leitrim	2,319	1,001	1,202	0	629	0	5,151
Orléans	5,244	576	4,831	984	2,339	2,226	16,200
Sub-total	**29,680**	**2,354**	**28,103**	**3,379**	**18,364**	**15,314**	**97,195**
TOTAL with MX**	**35,806**	**3,120**	**35,760**	**4,145**	**18,364**	**0**	**97,195**

* STH = Stacked Townhouses (classified as Apartments when not separated)
** MX = Mixed unit types, where there is no development application and no Community Design Plan. In the last line, the assumed split of MX units is 40% single detached, 5% semi-detached, 50% townhouses and 5% apartments.

To bring the supply to the same starting point in time as the projection (mid-2006), the units built between July and December 2006 are subtracted from the 2006-2031 demand:

Figure 48
Adjusted residential demand, adjusting mid-2006 to end of 2006

Period	Single	Semi	Row	Apt	TOTAL
Demand	59,101	7,257	39,447	41,728	147,532
Built Jul-Dec '06	1,210	197	1,102	812	3,321
Adj. demand	**57,891**	**7,060**	**38,345**	**40,916**	**144,211**

From this adjusted demand, projected dwellings are apportioned as per Sections 2, 3 and 4 of this report, as shown in Figure 49.

Figure 49
Distribution of adjusted residential demand, end of 2006 to 2031

TOTAL new units					**144,211**
Rural Units (9%)					12,979
Urban Units (91%)					**131,232**
				Intensification (40% of urban units)	52,493
				Greenfield (60% of urban units)	78,739
	Single	**Semi**	**Row**	**Apt**	**TOTAL**
Intensification	3,150	2,100	9,974	37,270	**52,493**
Greenfield	42,541	4,830	27,852	3,516	**78,739**
Rural	12,200	130	519	130	**12,979**
TOTAL	**57,891**	**7,060**	**38,345**	**40,916**	**144,211**

From Figures 47 and 49, the required supply of greenfield residential land, and the difference between the projected requirement and the inventoried supply, is as follows:

Figure 50
Difference between greenfield land requirement and supply, December 2006

Dwelling type	Projected Greenfield Dwellings		
	Requirement	Supply	Difference
Single detached	42,541	35,806	**- 6,735**
Semi-detached	4,830	3,120	**- 1,710**
Townhouse	27,852	35,760	**7,908**
Apartment	3,516	22,509	**18,993**
TOTAL	**78,739**	**97,195**	**18,456**

Apartments are not included in the calculation of greenfield land requirements because they account for the least amount of the demand for land, due to the relatively small number of projected units and their higher density. The main driver of suburban land demand is the single detached house.

Applying the suburban density target of 26 units per net hectare for single detached dwellings and 34 units per net hectare for semi-detached, as set out in Section 4.3, the net land requirement for these unit types is approximately 310 net ha (Figure 51). There is a significant over-supply of land for townhouses and apartments, but most of the supply of townhouses is already committed in approved Community Design Plans and in plans of subdivision. Therefore in order to avoid creating areas comprised solely of single and semi-detached houses, provision is made in the land requirement for 40% of units to be townhouses and apartments. total net land requirements are shown in Figure 51.

Figure 51
Net land requirement (ha)

Dwelling type	Units required	Density (units/net ha)	Net land requirement (ha)
Single detached	6,735	26	259.0
Semi-detached	1,710	34	50.3
Townhouses	5,067	45	112.6
Apartments	563	150	3.8
TOTAL	**14,075**		**425.7**

Assuming a net-to-gross ratio of 50%, the requirement for additional residential land adds to 851.4 gross ha.

4.6 Strategies to support higher suburban densities

By definition, many people perceive suburbs as places to escape from urban density. The most significant challenge in creating a denser form of suburban development is to capture the features that people value in suburban communities (privacy, peace and quiet, low-rise buildings, green space) and incorporate them within subdivision designs that will allow residents of the new communities to also function on foot and in a more urban manner, and the City to achieve higher efficiency in infrastructure and servicing.

Internally, the City and its various departments must tackle a number of matters if this Residential Land Strategy is to succeed. The most important suggestions so far are listed below, and more may come up during the course of the work to be undertaken by the Intensification Implementation Group:

- A “land efficiency-first” mentality should guide the City’s actions in all infrastructure and service delivery planning.
- It should generally be accepted that in the big picture, the most effective way to protect the environment is to not urbanize it. Therefore, land that is designated as urban should not be expected to act as an environmental preserve, it should be expected to act as urban and to have urban density, to allow a greater amount of land to be left unurbanized at the edge of the city.

- Zoning should immediately implement OP direction. The City should lead in rezoning target areas.
- Financial incentives, including the Development Charges By-law, should be set up to reward density while recovering the appropriate amount of growth-related costs to support development.
- New retail development in the suburbs must adopt a more urban form. Pedestrian-friendly shopping areas will contribute to suburban densities, improve the look of new communities, and reduce car dependency.
- Specifically, all City departments should embrace the notion of compact development, narrower streets and roads, and rear lanes.
- Easements should be combined and piped infrastructure should be deployed so as to avoid "easement creep" that consumes more land and affects urban form and design. Cable, gas, hydro, telephone and other types of easements should be combined to reduce their land consumption through "easement creep". Locating easements along rear lanes or under sidewalks should be considered.
- Snow operations should adapt to denser and more compact urban forms, and not the other way around. Whatever extra work and cost is required to plow and clear snow from better-looking streets should be invested for the greater good of the city.
- The Ottawa Fire Services should consider the acquisition of smaller vehicles that will allow them to operate efficiently on narrower streets.
- The City should anticipate that new streets will feature on-street parking. The unfettered flow and speed of traffic should no longer be the prime consideration for roadway planning; rather, streets and roads as public spaces that function for pedestrians first should be the new guiding principle.
- Setback requirements from creeks should be harmonized with Ministry of Natural Resources guidelines and reduced if warranted. The City should consider allowing residential lots to incorporate setbacks from creeks.
- The City should accept parkettes as part of the 5% parkland dedication. Parkland dedication should generally proceed on the basis of quality over quantity of space.
- The City should consider dual-zoning commercial and retail sites to allow a transition to urban forms of development without the need for a rezoning.

It is proposed that the coordination of these strategies to support higher suburban densities be placed under the responsibility of the Intensification Implementation Group, the creation of which was proposed in Section 3.8.

5. Summary

The Residential Land Strategy's primary goals are to be consistent with the Provincial Policy Statement and City Council's direction as outlined in Section 1 of this report. As such, it rests on the following key principles:

- "Grow in, not out"
- Set intensification targets that guide new residential construction toward more urban forms of development, while remaining reasonable from a market perspective.
- Set density and intensification targets at key stations and locations along the rapid transit network to support the City's transit investment and modal split objectives;
- Set intensification targets for Traditional and Arterial Mainstreets, to support, strengthen or set the stage for vibrant mainstreets through the older areas of the city;
- Set density targets for greenfields, and put in place the support mechanisms that will lead to the housing industry to choose pedestrian- and transit-supportive development patterns over the car-oriented patterns of the last six decades;
- Set density and intensification targets for suburban Town Centres to support future upgrades of the rapid transit service from BRT to LRT;
- If urban expansion is still required, keep it to a minimum.

The Residential Land Strategy, in terms of dwelling unit demand and supply by area and additional urban land requirements, is summarized in Figure 52.

Figure 52
Residential Land Strategy: demand and supply summary

	Single	Semi	Row	Apt	TOTAL
New dwellings, 2006-2031	**57,891 40%**	**7,060 5%**	**38,345 27%**	**40,916 28%**	**144,211 100%**
Urban dwellings	45,690	6,930	37,825	40,786	131,232
Rural dwellings	12,200	130	519	130	12,979
Intensification	3,150	2,100	9,974	37,270	52,493
Greenfield	42,541	4,830	27,852	3,516	78,739
Supply on greenfield land, end-2006	35,806	3,120	35,760	22,509	97,195
Greenfield demand vs. supply	-6,735	-1,710	7,908	18,993	18,456
Density requirements (units/net ha)	26	34	45	150	
Net land requirement (ha)	259.0	50.3	112.6	3.8	425.7
Net-to-gross ratio					50%
Gross residential land requirement					**851.4**

* for the period from the end of 2006 to mid-2031

The elements and recommendations of this Residential Land Strategy are summarized as follows:

- Project a TOTAL of 144,186 new dwellings in Ottawa between 2006 and 2031.
- Project an overall dwelling type split of 40% single detached, 5% semi-detached, 27% townhouses and 28% apartments.
- Project that 91% of all new dwellings (131,209) will be built in the urban area and 9% (12,977) in the rural area.
- Project new rural dwellings at 94% single detached, 1% semi-detached, 4% townhouses and 1% apartments.
- Project new urban dwellings at 35% single detached, 5% semi-detached, 29% townhouses and 31% apartments.
- Establish a city-wide minimum intensification target of 40% of new urban dwellings to 2031, a TOTAL of 52,484 dwellings.
- Provide for the intensification target to be phased-in as follows:
  - 2006-2011: 36%
  - 2012-2021: 40%
  - 2022-2031: 44%
- Establish the following as target areas for intensification:
  - The Central Area
  - Major Mixed-Use Centres
  - Mixed-Use Centres at Transfer Stations
  - Emerging Mixed-Use Centres
  - Traditional Mainstreets
  - Arterial Mainstreets
  - Suburban Town Centres
- Establish minimum intensification targets for the target areas, to reside outside the Official Plan but to guide CDP's, zoning and infrastructure planning.
- Establish the following density targets, expressed in people and jobs per gross hectare:
  - Central Are: 500
  - Major Mixed-Use Centres: 250

    - Target Arterial Mainstreets: 120 to 200
    - Mixed-Use Centres at Transfer Stations: 200
    - Emerging Mixed-Use Centres: 120
    - Suburban Town Centres: 120
- Ensure that all future Community Design Plans or amendments to existing CDPs, and new zoning flowing therefrom, provide for no less than the minimum intensification and density targets set out in this document for Traditional and Arterial Mainstreets, Mixed-Use Centres and Town Centres.
- Permit high-rise buildings in the Central Area, Mixed-Use Centres and Town Centres.
- Acknowledge intensification potential outside the target areas and accommodate it subject to urban design and building height requirements that preserve neighbourhood character and do not detract from the target areas' ability to be the focus of intensification and growth within the built-up area inside the Greenbelt.
- On greenfields outside the Greenbelt, establish a minimum net density of 26 units per hectare for all new single detached dwellings, and an overall residential net density minimum of 32 units per hectare.
- Create an Intensification Implementation Group led by the Planning Branch that will be tasked with coordinating all City departments and services' practices, by-laws and administration to support intensification and compact, mixed-use development, and lead discussions with all external stakeholders (including school boards and utilities) with a view to addressing technical, regulatory and design matters in a way that will allow the City's Residential Land Strategy to be successful.

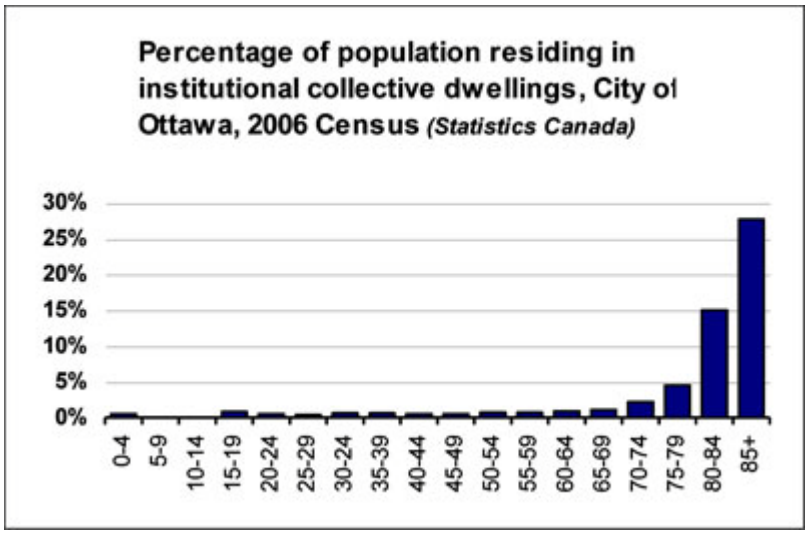
Appendix 1 - The Institutionalized Population

In each Census, Statistics Canada distinguishes persons who live in "Institutional Collective Dwellings" from the rest of the population. The Census definition of an "Institutional Collective Dwelling" is:

"General hospitals and hospitals with emergency, other hospitals and related institutions, nursing homes, facilities for persons with a disability, establishments for delinquents and young offenders, establishments for children and minors, penal and correctional institutions, jails, shelters for persons lacking a fixed address, other shelters and lodging and rooming with assistance services."
Source: http://www12.statcan.ca/english/census06/reference/dictionary/pop053a.cfm

The percentage of the population that is institutionalized (residing in institutional collective dwellings) is small, but in a city the size of Ottawa and given that the population of seniors is projected to increase significantly (almost half the city's population growth to 2031 will be among people aged 65 and older), a more detailed examination of institutionalized persons is warranted.

From the 2006 Census, Statistics Canada provides the following rate of institutionalization by age group:



As the chart shows, the fraction of the population residing in institutions is minute in the younger age groups but rises steadily after age 65. In the 85+ age group, fully 27.7% of the population resided in institutional collective dwellings.

Given that the population residing in institutional collective dwellings does not form part of the “private dwellings” housing market, then that population has to be factored out of the calculations of housing requirements and accounted for separately, under demand for institutional accommodation.

Applying the rates of institutionalization by age group to the estimated 2006 population for the cohorts over the age of 15 (those associated with housing demand), we obtain the institutionalized and non-institutionalized population numbers shown in Table A1-1.

Table A1-1 Total and Non-Institutionalized population, 2006 estimate and projection to 2031

Age group	Non-instit. rate	Pop. Est. 2006		Projected Pop. 2011		Projected pop. 2021		Projected pop. 2031	
		Total	Non-Inst	Total	Non-Inst.	Total	Non-Inst.	Total	Non-Inst.
15-19	99.2%	55,776	55,355	58,649	58,206	53,897	53,490	57,374	56,941
20-24	99.5%	59,952	59,657	62,333	62,027	61,900	61,596	61,269	60,968
25-29	99.6%	65,486	65,256	68,664	68,423	74,636	74,374	70,842	70,593
30-34	99.4%	64,067	63,704	71,957	71,549	78,306	77,862	79,048	78,600
35-39	99.4%	66,767	66,379	68,173	67,777	79,842	79,378	86,738	86,234
40-44	99.5%	75,684	75,280	69,180	68,811	78,869	78,448	85,846	85,388
45-49	99.5%	71,717	71,385	76,103	75,751	71,422	71,092	83,473	83,087
50-54	99.3%	61,830	61,397	70,552	70,058	68,886	68,404	78,884	78,332
55-59	99.3%	54,470	54,102	60,297	59,890	73,487	72,991	69,443	68,974
60-64	99.1%	38,944	38,586	52,334	51,853	66,690	66,077	65,656	65,052
65-69	98.9%	29,313	28,984	36,854	36,441	55,337	54,717	68,063	67,300
70-74	97.8%	24,627	24,080	27,025	26,424	45,871	44,852	59,157	57,842
75-79	95.5%	21,097	20,139	21,160	20,199	29,652	28,305	45,079	43,032
80-84	85.0%	15,901	13,511	16,383	13,920	18,574	15,782	32,107	27,280
85+	72.3%	13,044	9,435	16,478	11,919	19,555	14,145	26,516	19,180
Total		718,675	707,250	776,142	763,247	876,924	861,510	969,495	948,802
Total pop.		870,757		923,041		1,031,305		1,135,840	

As the table shows, the institutionalized population (the difference between the “Total” and “Non-Inst.” columns in the table) grows from 11,425 persons in 2006 to 20,693 persons in 2031. Since most of this institutionalized population is comprised of seniors who might otherwise be part of the private household housing market, having separate projections for the non-institutionalized population helps prepare a more accurate projection of housing need by dwelling type.

Private retirement homes are not considered “Institutions”, unless they are nursing homes or long-term care, and are therefore treated as apartments in the calculation of housing requirements.

Accommodation of the institutionalized population will continue to be in nursing homes and long-term care facilities, which are high-density building forms. As such, they can easily be accommodated within the urban boundary including on sites located within intensification target locations and through expansions of existing facilities.

Appendix 2 - Projection of Dwelling Type Propensities

Section 2 of the report Growth Projections for Ottawa discusses the two main methodologies used to project housing demand by dwelling type. It also discusses the various assumptions behind the projections of how housing choice (propensities) might evolve over the projection period.

Dwelling type propensities will change over the projection period due to factors like evolving housing choices of an aging population, evolving housing choices of an older population with an increasing share of people with disabilities, evolving housing choices of increasingly smaller households, housing choices of immigrants, the appeal of the urban lifestyle, the increasing cost of, and challenges to finance, municipal infrastructure construction and maintenance, and increasing energy costs.

In Section 1 of this report, three housing requirement scenarios are presented. Each represents a different projection of dwelling type propensities and therefore, each arrives at a different housing mix even though the total number of required dwellings is approximately the same across the scenarios.

This Appendix details the calculations for each of the three scenarios.

Common calculations

The three scenarios share the same population and household projections, including the distinction between the total population and the non-institutionalized population (see Appendix 1), which forms the basis of the projection of total housing demand.

The three scenarios share the same methodology to translate total household demand to total housing demand by adding demolition replacements and accounting for vacancies in the housing stock.

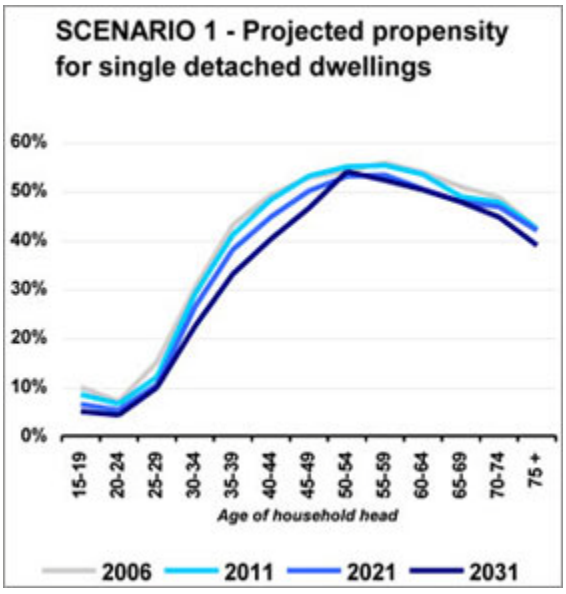
Demolition replacements are calculated at 100 dwellings per year (approximated based on the average of the last ten years), broken down as follows: 74 single detached, 4 semi-detached, 5 row houses and 17 apartments.

Vacancies in the housing stock are calculated as follows: rented dwellings are assumed to have a 3% vacancy rate (considered to represent a “balanced” rental market), and owned dwellings are assumed to have a 0.5% vacancy rate (to account for units that are vacant waiting for occupancy, including the small number of single detached and semi-detached dwellings that are rented). The owned and rented housing stocks are calculated as follows: from Census data, 30% of row houses and 75% of apartments in Ottawa are rented. The projection assumes that 15% of new row houses built to 2031 will be rental and 85% owned. For apartments, until 2021 the projection assumes that 25% of new units will be rental and 75% will be condominiums (owner-occupied). For the period 2021-2031 the projection assumes 40% of new apartments will be rental (to account for a rising number of private retirement homes) and 60% condominiums.

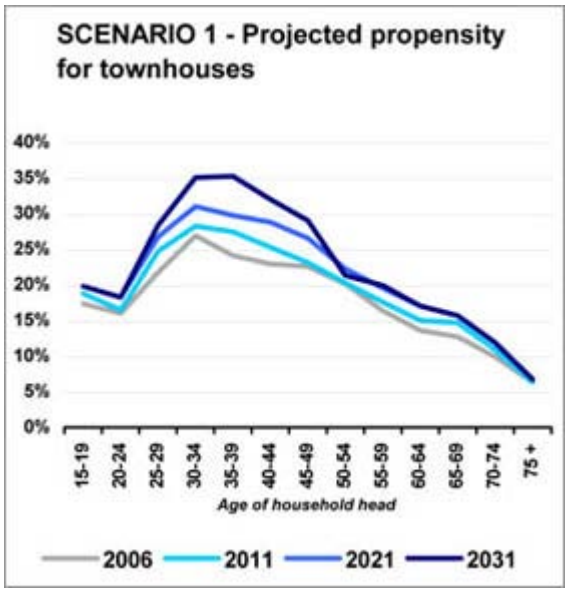
SCENARIO 1

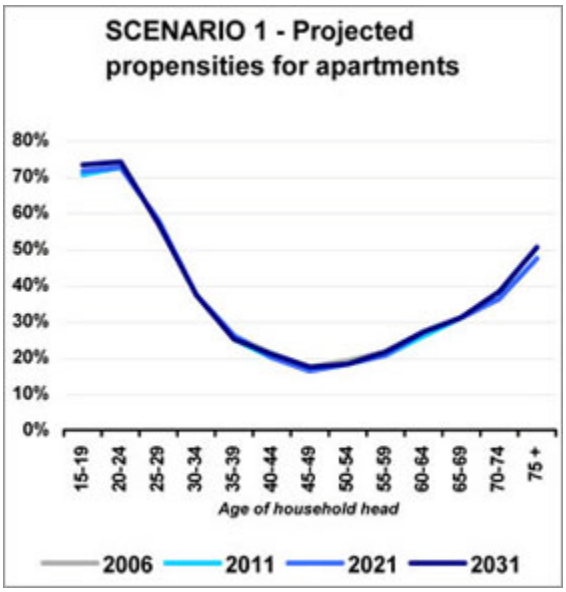
In Scenario 1, between 2006 and 2031 the propensity for single detached dwellings is projected to decrease for households in all age groups, most notably households headed by persons aged between 30 and 49. Propensities for semi-detached dwellings decrease slightly in all age groups up to age 49, then either remain the same as or increase very slightly from the propensities for semis observed in 2006. Propensities for row houses increase in all age groups, most significantly in households headed by persons aged between 25 and 49.

Lastly, the propensity for apartments remains unchanged, or experiences slight decreases, by 2031 in age groups 25-59, and experiences small increases in age groups over 70.



As the charts show, townhouses in this scenario experience the biggest shift in propensities: more households between the ages of 25 and 49 are forecast to choose them over the projection period. The propensity for single detached houses shows slighter changes across all age groups. The propensity for apartments shows very small changes, noticeable only in the youngest and oldest age groups. However, due to the proportional increase of the seniors population, this scenario translates into a requirement for an increasing number of apartments and a decreasing number of townhouses and single detached homes.





Dwelling type propensities by age group and dwellings by type in this scenario are as follows:

Age	Propensity by Dwelling Type				2006				
Group	Single	Semi	Row	Apt	Single	Semi	Row	Apt	Total
15-19	0.0993	0.0221	0.1734	0.7052	118	26	206	836	1,185
20-24	0.0700	0.0450	0.1599	0.7251	869	559	1,986	9,004	12,418
25-29	0.1501	0.0534	0.2174	0.5791	4,083	1,451	5,912	15,747	27,193
30-34	0.3030	0.0547	0.2691	0.3732	9,769	1,765	8,676	12,032	32,242
35-39	0.4304	0.0676	0.2412	0.2608	15,588	2,449	8,735	9,445	36,218
40-44	0.4921	0.0686	0.2295	0.2098	20,673	2,881	9,641	8,813	42,007
45-49	0.5273	0.0733	0.2259	0.1735	21,827	3,034	9,351	7,182	41,394
50-54	0.5407	0.0656	0.2015	0.1922	19,509	2,368	7,270	6,935	36,083
55-59	0.5573	0.0630	0.1637	0.2160	17,941	2,028	5,270	6,954	32,193
60-64	0.5378	0.0562	0.1361	0.2699	12,415	1,298	3,142	6,231	23,085
65-69	0.5083	0.0553	0.1269	0.3095	8,775	955	2,191	5,343	17,265
70-74	0.4869	0.0521	0.0991	0.3619	7,322	784	1,490	5,443	15,040
75 +	0.4237	0.0391	0.0630	0.4742	12,400	1,145	1,845	13,878	29,268
					151,288	20,746	65,714	107,843	345,591

Age	Propensity by Dwelling Type				2011				
Group	Single	Semi	Row	Apt	Single	Semi	Row	Apt	Total
15-19	0.0840	0.0231	0.1877	0.7052	105	29	234	879	1,246
20-24	0.0655	0.0450	0.1644	0.7251	846	582	2,123	9,362	12,912
25-29	0.1201	0.0534	0.2474	0.5791	3,424	1,522	7,054	16,512	28,512
30-34	0.2897	0.0547	0.2824	0.3732	10,490	1,982	10,226	13,514	36,213
35-39	0.4104	0.0646	0.2742	0.2508	15,176	2,389	10,140	9,274	36,979
40-44	0.4821	0.0656	0.2525	0.1998	18,511	2,519	9,695	7,672	38,397
45-49	0.5303	0.0749	0.2313	0.1635	23,294	3,290	10,160	7,182	43,926
50-54	0.5497	0.0656	0.2025	0.1822	22,632	2,703	8,337	7,501	41,172
55-59	0.5524	0.0661	0.1755	0.2060	19,686	2,357	6,254	7,341	35,638
60-64	0.5338	0.0562	0.1501	0.2599	16,560	1,744	4,656	8,063	31,023
65-69	0.4883	0.0553	0.1469	0.3095	10,599	1,201	3,189	6,718	21,707
70-74	0.4769	0.0521	0.1091	0.3619	7,871	861	1,801	5,973	16,505
75 +	0.4227	0.0391	0.0640	0.4742	13,250	1,227	2,006	14,864	31,347
					162,443	22,405	75,874	114,854	375,576

Age	Propensity by Dwelling Type				2021				
Group	Single	Semi	Row	Apt	Single	Semi	Row	Apt	Total
15-19	0.0640	0.0231	0.1977	0.7152	73	26	226	819	1,145
20-24	0.0525	0.0400	0.1824	0.7251	673	513	2,339	9,297	12,821
25-29	0.1035	0.0500	0.2674	0.5791	3,208	1,550	8,287	17,948	30,992
30-34	0.2637	0.0530	0.3101	0.3732	10,392	2,089	12,220	14,707	39,407
35-39	0.3804	0.0616	0.2972	0.2608	16,475	2,668	12,871	11,295	43,308
40-44	0.4471	0.0652	0.2879	0.1998	19,572	2,854	12,603	8,746	43,775
45-49	0.5003	0.0709	0.2653	0.1635	20,624	2,923	10,937	6,740	41,224
50-54	0.5297	0.0656	0.2225	0.1822	21,293	2,639	8,944	7,324	40,200
55-59	0.5324	0.0661	0.1955	0.2060	23,123	2,872	8,491	8,947	43,434
60-64	0.5038	0.0562	0.1701	0.2699	19,916	2,223	6,724	10,670	39,533
65-69	0.4783	0.0553	0.1569	0.3095	15,589	1,803	5,114	10,087	32,593
70-74	0.4669	0.0521	0.1191	0.3619	13,079	1,461	3,336	10,138	28,014
75 +	0.4193	0.0391	0.0674	0.4742	16,603	1,550	2,669	18,777	39,599
					180,620	25,170	94,761	135,494	436,045

Age	Propensity by Dwelling Type				2031				
Group	Single	Semi	Row	Apt	Single	Semi	Row	Apt	Total
15-19	0.0500	0.0200	0.1977	0.7323	61	24	241	893	1,219
20-24	0.0425	0.0350	0.1824	0.7401	539	444	2,315	9,392	12,691
25-29	0.0985	0.0485	0.2839	0.5691	2,898	1,427	8,351	16,741	29,417
30-34	0.2237	0.0527	0.3504	0.3732	8,899	2,096	13,939	14,846	39,780
35-39	0.3304	0.0666	0.3522	0.2508	15,545	3,133	16,571	11,800	47,049
40-44	0.4020	0.0682	0.3200	0.2098	19,154	3,250	15,247	9,996	47,647
45-49	0.4653	0.0709	0.2903	0.1735	22,418	3,416	13,986	8,359	48,179
50-54	0.5390	0.0656	0.2132	0.1822	24,812	3,022	9,814	8,387	46,035
55-59	0.5220	0.0631	0.1989	0.2160	21,424	2,590	8,163	8,865	41,042
60-64	0.5025	0.0562	0.1704	0.2709	19,557	2,188	6,632	10,543	38,920
65-69	0.4770	0.0553	0.1569	0.3108	19,121	2,218	6,290	12,459	40,088
70-74	0.4465	0.0521	0.1191	0.3823	16,131	1,884	4,303	13,811	36,128
75 +	0.3890	0.0391	0.0674	0.5045	23,639	2,378	4,096	30,657	60,770
					194,197	28,070	109,948	156,750	488,965

Using these propensities, household demand to 2031 would be as follows:

Year	Single	Semi	Row	Apt	Total
2006	151,288	20,746	65,714	107,843	345,591
2011	162,443	22,405	75,874	114,854	375,576
2016	171,531	23,787	85,318	125,174	405,810
2021	180,620	25,170	94,761	135,494	436,045
2026	187,408	26,620	102,354	146,122	462,505
2031	194,197	28,070	109,948	156,750	488,965

Adding demolition replacements and accounting for vacancies, the total number of dwellings required to 2031 would be as follows:

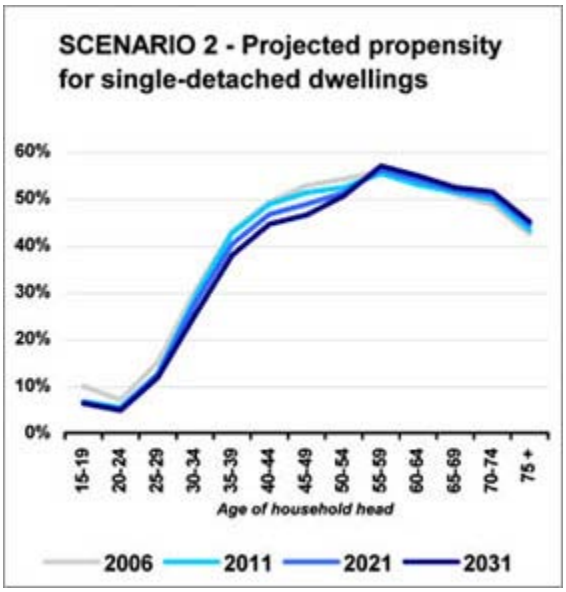
Year	Single	Semi	Row	Apt	Total
2006	152.044	20.849	66.703	109.930	349.527
2011	163.626	22.537	76.976	117.706	380.844
2016	173.131	23.947	86.525	128.235	411.838
2021	182.636	25.358	96.074	138.764	442.832
2026	189.830	26.836	103.757	149.640	470.063
2031	197.023	28.314	111.440	160.516	497.294

Total new dwellings					
Year	Single	Semi	Row	Apt	Total
2006-11	11,582	1,688	10,273	7,776	31,318
2011-16	9,505	1,410	9,549	10,529	30,994
2016-21	9,505	1,410	9,549	10,529	30,994
2021-26	7,194	1,478	7,683	10,876	27,231
2026-31	7,194	1,478	7,683	10,876	27,231
Total new dwellings, annualized					
2006-11	2,316	338	2,055	1,555	6,264
2011-16	1,901	282	1,910	2,106	6,199
2016-21	1,901	282	1,910	2,106	6,199
2021-26	1,439	296	1,537	2,175	5,446
2026-31	1,439	296	1,537	2,175	5,446
Share of new dwellings, annualized					
2006-11	37.0%	5.4%	32.8%	24.8%	100.0%
2011-16	30.7%	4.5%	30.8%	34.0%	100.0%
2016-21	30.7%	4.5%	30.8%	34.0%	100.0%
2021-26	26.4%	5.4%	28.2%	39.9%	100.0%
2026-31	26.4%	5.4%	28.2%	39.9%	100.0%
Total new dwellings, 2006-2031					
2006-31	44,979	7,465	44,737	50,587	147,767
	30.4%	5.1%	30.3%	34.2%	100%

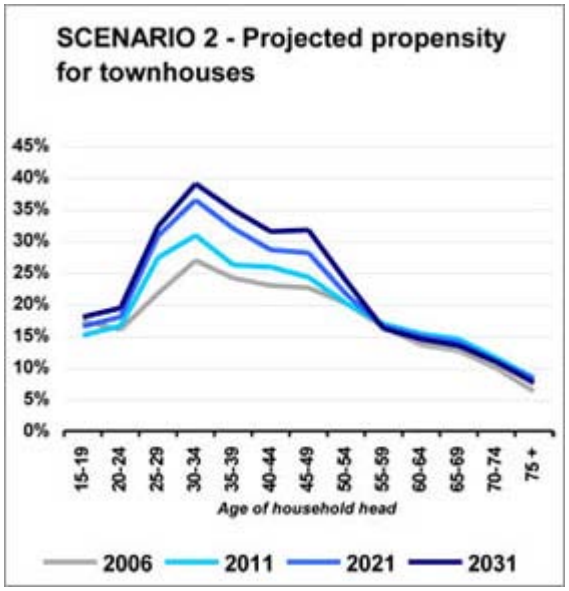
SCENARIO 2

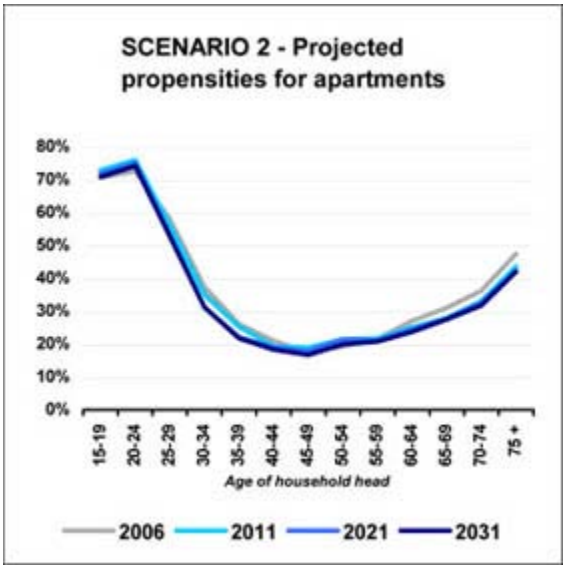
In Scenario 2, the propensity for single detached dwellings decreases for all age groups up to age 54, but increases in all older age groups. This projection assumes that older baby-boomers will want as much as possible to age in place and for about half of the people of that generation, the place in question is their single detached home.

However, for a variety reasons from lifestyle choice to cost, younger age groups would see their propensity for single homes decrease over time, and families with children would opt for townhouses in a much greater proportion. The propensity for townhouses would start decreasing in age groups 55 and older, for which it is assumed that the primary wish will be for living accommodations on a single level.



In this projection, the propensity for apartments goes down for all age groups based on the supposition that younger households will prefer ground-oriented housing in greater proportions, and that among older age groups there will be a greater number of households opting to age in place in single detached houses.





Dwelling type propensities by age group and dwellings by type in this scenario are as follows:

Age	Propensity by Dwelling Type				2006				
Group	Single	Semi	Row	Apt	Single	Semi	Row	Apt	Total
15-19	0.0687	0.0558	0.1416	0.7339	81	66	168	870	1,185
20-24	0.0553	0.0215	0.1539	0.7694	686	266	1,911	9,554	12,418
25-29	0.1282	0.0411	0.2516	0.5792	3,485	1,117	6,841	15,750	27,193
30-34	0.2912	0.0540	0.2857	0.3691	9,389	1,741	9,210	11,902	32,241
35-39	0.4281	0.0602	0.2505	0.2612	15,504	2,179	9,074	9,459	36,216
40-44	0.5084	0.0612	0.2177	0.2128	21,356	2,569	9,144	8,938	42,007
45-49	0.5314	0.0571	0.2021	0.2094	21,996	2,364	8,366	8,669	41,394
50-54	0.5338	0.0606	0.1870	0.2186	19,261	2,185	6,749	7,886	36,081
55-59	0.5337	0.0620	0.1752	0.2291	17,182	1,996	5,639	7,376	32,193
60-64	0.5189	0.0656	0.1558	0.2597	11,978	1,515	3,597	5,994	23,085
65-69	0.5005	0.0617	0.1523	0.2856	8,640	1,064	2,630	4,930	17,264
70-74	0.4839	0.0546	0.1185	0.3431	7,277	821	1,782	5,160	15,040
75 +	0.4135	0.0475	0.0868	0.4521	12,103	1,391	2,541	13,232	29,267
					148,939	19,274	67,650	109,719	345,583

Age	Propensity by Dwelling Type				2011				
Group	Single	Semi	Row	Apt	Single	Semi	Row	Apt	Total
15-19	0.0667	0.0538	0.1508	0.7287	83	67	188	908	1,246
20-24	0.0538	0.0205	0.1659	0.7598	694	265	2,142	9,810	12,911
25-29	0.1262	0.0393	0.2738	0.5607	3,598	1,122	7,807	15,987	28,514
30-34	0.2891	0.0525	0.3087	0.3497	10,469	1,900	11,178	12,663	36,211
35-39	0.4263	0.0590	0.2622	0.2525	15,764	2,182	9,696	9,337	36,979
40-44	0.4876	0.0605	0.2591	0.1928	18,722	2,322	9,949	7,403	38,396
45-49	0.5125	0.0560	0.2427	0.1888	22,512	2,461	10,661	8,293	43,926
50-54	0.5230	0.0601	0.2022	0.2147	21,532	2,474	8,325	8,841	41,171
55-59	0.5528	0.0620	0.1685	0.2167	19,700	2,209	6,005	7,722	35,636
60-64	0.5287	0.0666	0.1537	0.2510	16,401	2,065	4,768	7,787	31,021
65-69	0.5130	0.0628	0.1448	0.2794	11,135	1,363	3,143	6,065	21,706
70-74	0.4978	0.0558	0.1155	0.3309	8,216	921	1,906	5,461	16,504
75 +	0.4320	0.0487	0.0836	0.4357	13,542	1,527	2,621	13,658	31,347
					162,369	20,878	78,388	113,934	375,569

Age	Propensity by Dwelling Type				2021				
Group	Single	Semi	Row	Apt	Single	Semi	Row	Apt	Total
15-19	0.0647	0.0518	0.1653	0.7182	74	59	189	822	1,145
20-24	0.0508	0.0187	0.1799	0.7506	651	240	2,307	9,624	12,821
25-29	0.1242	0.0359	0.3082	0.5317	3,849	1,113	9,552	16,479	30,993
30-34	0.2754	0.0495	0.3643	0.3108	10,853	1,949	14,356	12,248	39,405
35-39	0.4027	0.0567	0.3196	0.2210	17,440	2,456	13,841	9,571	43,309
40-44	0.4661	0.0591	0.2859	0.1889	20,403	2,587	12,515	8,269	43,774
45-49	0.4873	0.0539	0.2812	0.1776	20,088	2,221	11,592	7,321	41,222
50-54	0.5114	0.0591	0.2164	0.2131	20,558	2,376	8,699	8,565	40,197
55-59	0.5611	0.0620	0.1651	0.2118	24,370	2,693	7,171	9,199	43,432
60-64	0.5385	0.0684	0.1493	0.2438	21,288	2,703	5,902	9,638	39,531
65-69	0.5180	0.0651	0.1399	0.2770	16,883	2,122	4,560	9,028	32,592
70-74	0.5056	0.0582	0.1107	0.3255	14,163	1,631	3,101	9,118	28,014
75 +	0.4438	0.0511	0.0822	0.4229	17,573	2,023	3,255	16,746	39,597
					188,193	24,172	97,039	126,627	436,032

Age	Propensity by Dwelling Type				2031				
Group	Single	Semi	Row	Apt	Single	Semi	Row	Apt	Total
15-19	0.0627	0.0498	0.1798	0.7077	76	61	219	863	1,219
20-24	0.0478	0.0169	0.1939	0.7414	607	214	2,461	9,409	12,690
25-29	0.1182	0.0325	0.3227	0.5267	3,476	955	9,493	15,494	29,418
30-34	0.2515	0.0464	0.3901	0.3120	10,005	1,847	15,518	12,411	39,782
35-39	0.3790	0.0544	0.3491	0.2175	17,832	2,559	16,425	10,233	47,049
40-44	0.4447	0.0577	0.3146	0.1830	21,189	2,750	14,990	8,719	47,647
45-49	0.4646	0.0517	0.3174	0.1663	22,384	2,492	15,292	8,012	48,180
50-54	0.5048	0.0581	0.2377	0.1994	23,237	2,677	10,942	9,179	46,035
55-59	0.5693	0.0620	0.1617	0.2070	23,365	2,546	6,636	8,496	41,043
60-64	0.5482	0.0702	0.1451	0.2365	21,336	2,731	5,647	9,204	38,918
65-69	0.5231	0.0674	0.1349	0.2746	20,969	2,703	5,408	11,008	40,088
70-74	0.5135	0.0606	0.1088	0.3171	18,551	2,190	3,931	11,456	36,128
75 +	0.4506	0.0535	0.0758	0.4201	27,382	3,249	4,606	25,529	60,766
					210,408	26,973	111,568	140,013	488,962

Using these propensities, household demand to 2031 would be as follows:

Year	Single	Semi	Row	Apt	Total
2006	148,939	19,274	67,650	109,719	345,583
2011	162,369	20,878	78,388	113,934	375,569
2016	175,281	22,525	87,713	120,281	405,800
2021	188,193	24,172	97,039	126,627	436,032
2026	199,301	25,573	104,304	133,320	462,497
2031	210,408	26,973	111,568	140,013	488,962

Adding demolition replacements and accounting for vacancies, the total number of dwellings required to 2031 would be as follows:

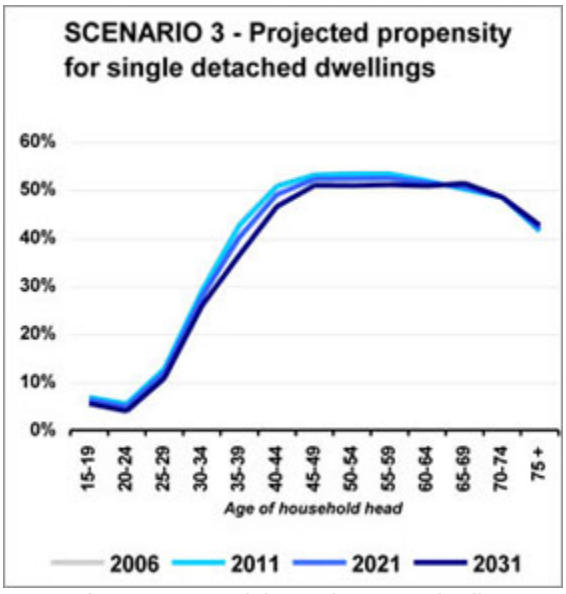
Year	Single	Semi	Row	Apt	Total
2006	149,684	19,371	68,646	111,808	349,509
2011	163,552	21,003	79,501	116,814	380,869
2016	176,900	22,679	88,931	123,460	411,970
2021	190,248	24,355	98,362	130,106	443,071
2026	201,782	25,783	105,713	137,089	470,367
2031	213,316	27,212	113,064	144,073	497,664

Total new dwellings					
Year	Single	Semi	Row	Apt	Total
2006-11	13,868	1,632	10,855	5,006	31,361
2011-16	13,348	1,676	9,431	6,646	31,101
2016-21	13,348	1,676	9,431	6,646	31,101
2021-26	11,534	1,428	7,351	6,983	27,297
2026-31	11,534	1,428	7,351	6,983	27,297
Total new dwellings, annualized					
2006-11	2,774	326	2,171	1,001	6,272
2011-16	2,670	335	1,886	1,329	6,220
2016-21	2,670	335	1,886	1,329	6,220
2021-26	2,307	286	1,470	1,397	5,459
2026-31	2,307	286	1,470	1,397	5,459
Share of new dwellings, annualized					
2006-11	44.2%	5.2%	34.6%	16.0%	100%
2011-16	42.9%	5.4%	30.3%	21.4%	100%
2016-21	42.9%	5.4%	30.3%	21.4%	100%
2021-26	42.3%	5.2%	26.9%	25.6%	100%
2026-31	42.3%	5.2%	26.9%	25.6%	100%
Total new dwellings, 2006-2031					
2006-2031	63,632	7,841	44,418	32,264	148,155
	42.9%	5.3%	30.0%	21.8%	100%

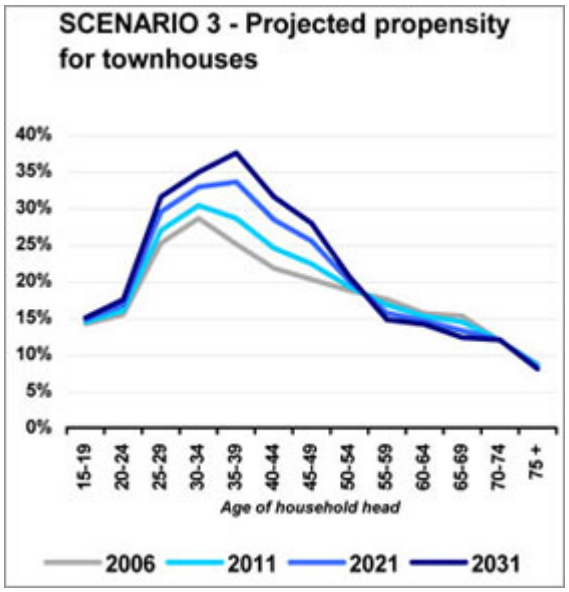
SCENARIO 3

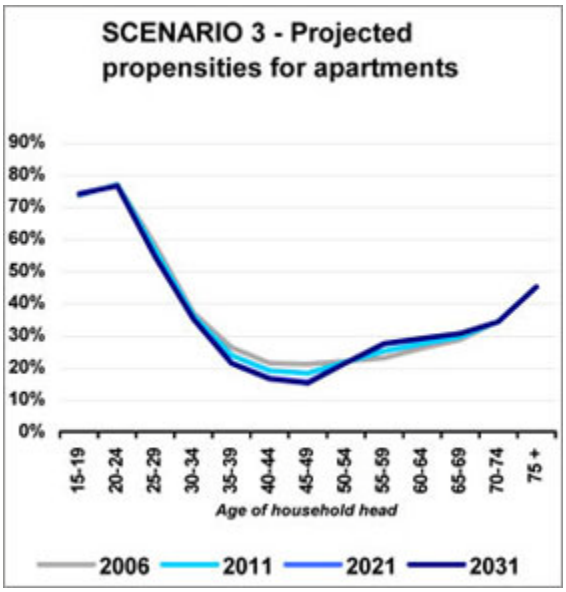
In Scenario 3, the propensity for townhouses is the only one to rise significantly between 2006 and 2031, at the expense of all other housing types. As a result of to the shift to townhouses, propensities for singles decline among younger age group. Rates for singles increase slightly among those over 65.

Townhouse propensities rise in younger groups and decline to 2001 levels among the 55 to 69 group. For ages over 70 rates are held close to 2006 levels, reflecting the popularity of single-level (bungalow) townhouses for older households seeking non-apartment accommodation without stairs.



For apartments, only slight increases in rates for age groups under 24 are anticipated. Rates decline among the 35 to 49 cohort due to a shift to townhouses, and increase moderately for ages 55 to 69, reflecting moves to condo apartments. Above 70, 2006 rates are held constant. Because of the demographic weight of the 60+ age cohorts, the resulting number of apartments required under this projection (as for the others) would see their share increase over time.





Dwelling type propensities by age group and occupied dwellings by type in this scenario are as follows:

Age	Propensity by Dwelling Type 2006				2006 Occupied Dwelling Units				
Group	Single	Semi	Row	Apt	Single	Semi	Row	Apt	Total
15-19	0.0687	0.0558	0.1416	0.7339	81	66	168	870	1,185
20-24	0.0553	0.0215	0.1539	0.7694	686	266	1,911	9,554	12,418
25-29	0.1282	0.0411	0.2516	0.5792	3,485	1,117	6,841	15,750	27,193
30-34	0.2912	0.0540	0.2857	0.3691	9,389	1,741	9,210	11,902	32,241
35-39	0.4281	0.0602	0.2505	0.2612	15,504	2,179	9,074	9,459	36,216
40-44	0.5084	0.0612	0.2177	0.2128	21,356	2,569	9,144	8,938	42,007
45-49	0.5314	0.0571	0.2021	0.2094	21,996	2,364	8,366	8,669	41,394
50-54	0.5338	0.0606	0.1870	0.2186	19,261	2,185	6,749	7,886	36,081
55-59	0.5337	0.0620	0.1752	0.2291	17,182	1,996	5,639	7,376	32,193
60-64	0.5189	0.0656	0.1558	0.2597	11,978	1,515	3,597	5,994	23,085
65-69	0.5005	0.0617	0.1523	0.2856	8,640	1,064	2,630	4,930	17,264
70-74	0.4839	0.0546	0.1185	0.3431	7,277	821	1,782	5,160	15,040
75 +	0.4135	0.0475	0.0868	0.4521	12,103	1,391	2,541	13,232	29,267
					148,939	19,274	67,650	109,719	345,583

Age	Propensity by Dwelling Type 2011				2011 Occupied Dwelling Units				
Group	Single	Semi	Row	Apt	Single	Semi	Row	Apt	Total
15-19	0.0681	0.0557	0.1440	0.7366	85	69	179	918	1,252
20-24	0.0547	0.0213	0.1598	0.7668	706	276	2,063	9,900	12,945
25-29	0.1274	0.0396	0.2693	0.5613	3,631	1,129	7,679	16,005	28,445
30-34	0.2899	0.0512	0.3033	0.3600	10,498	1,855	10,981	13,035	36,369
35-39	0.4255	0.0576	0.2854	0.2373	15,736	2,130	10,553	8,776	37,196
40-44	0.5067	0.0598	0.2449	0.1896	19,454	2,296	9,404	7,280	38,435
45-49	0.5305	0.0579	0.2236	0.1816	23,301	2,544	9,823	7,978	43,646
50-54	0.5328	0.0632	0.1925	0.2164	21,935	2,602	7,925	8,908	41,370
55-59	0.5328	0.0635	0.1674	0.2506	18,987	2,265	5,966	8,929	36,147
60-64	0.5184	0.0647	0.1517	0.2741	16,083	2,006	4,705	8,504	31,298
65-69	0.5010	0.0609	0.1441	0.2951	10,874	1,322	3,127	6,406	21,729
70-74	0.4839	0.0545	0.1189	0.3424	7,986	900	1,962	5,651	16,499
75 +	0.4140	0.0466	0.0849	0.4513	12,979	1,460	2,661	14,148	31,247
					162,255	20,854	77,032	116,439	376,579

Age	Propensity by Dwelling Type 2021				2021 Occupied Dwelling Units				
Group	Single	Semi	Row	Apt	Single	Semi	Row	Apt	Total
15-19	0.0628	0.0556	0.1473	0.7393	72	64	169	847	1,151
20-24	0.0488	0.0211	0.1682	0.7642	625	270	2,157	9,798	12,851
25-29	0.1196	0.0363	0.2947	0.5435	3,706	1,125	9,134	16,844	30,809
30-34	0.2775	0.0450	0.3284	0.3508	10,935	1,773	12,941	13,822	39,471
35-39	0.4008	0.0518	0.3352	0.2135	17,358	2,244	14,516	9,246	43,363
40-44	0.4899	0.0567	0.2839	0.1664	21,445	2,483	12,426	7,285	43,640
45-49	0.5218	0.0598	0.2544	0.1538	21,512	2,464	10,487	6,341	40,804
50-54	0.5228	0.0691	0.2003	0.2142	21,017	2,779	8,051	8,610	40,457
55-59	0.5237	0.0671	0.1564	0.2720	22,746	2,914	6,791	11,814	44,265
60-64	0.5141	0.0624	0.1457	0.2886	20,324	2,467	5,761	11,409	39,961
65-69	0.5058	0.0592	0.1323	0.3047	16,485	1,931	4,312	9,931	32,659
70-74	0.4839	0.0544	0.1195	0.3418	13,556	1,523	3,348	9,574	28,000
75 +	0.4188	0.0444	0.0822	0.4506	16,585	1,757	3,254	17,841	39,437
					186,366	23,793	93,346	133,362	436,866

Age	Propensity by Dwelling Type 2031				2031 Occupied Dwelling Units				
Group	Single	Semi	Row	Apt	Single	Semi	Row	Apt	Total
15-19	0.0550	0.0555	0.1500	0.7395	67	68	183	901	1,219
20-24	0.0400	0.0210	0.1750	0.7640	508	267	2,221	9,696	12,691
25-29	0.1080	0.0350	0.3150	0.5420	3,178	1,030	9,266	15,944	29,418
30-34	0.2591	0.0425	0.3485	0.3500	10,306	1,691	13,863	13,923	39,783
35-39	0.3641	0.0495	0.3750	0.2115	17,132	2,329	17,643	9,951	47,055
40-44	0.4651	0.0555	0.3150	0.1645	22,160	2,644	15,009	7,838	47,651
45-49	0.5090	0.0605	0.2790	0.1515	24,525	2,915	13,442	7,299	48,181
50-54	0.5081	0.0715	0.2065	0.2140	23,387	3,291	9,506	9,851	46,035
55-59	0.5102	0.0685	0.1475	0.2738	20,942	2,811	6,054	11,237	41,044
60-64	0.5077	0.0615	0.1410	0.2898	19,760	2,394	5,488	11,279	38,920
65-69	0.5130	0.0586	0.1229	0.3055	20,564	2,348	4,927	12,247	40,085
70-74	0.4840	0.0543	0.1200	0.3417	17,485	1,962	4,335	12,344	36,127
75 +	0.4260	0.0435	0.0800	0.4505	25,886	2,643	4,861	27,376	60,766
					205,899	26,392	106,798	149,886	488,976

Using these propensities, household demand to 2031 would be as follows:

Year	Single	Semi	Row	Apt	Total
2006	148,939	19,274	67,650	109,719	345,583
2011	162,255	20,854	77,032	116,439	376,579
2016	174,625	22,360	85,226	124,661	406,872
2021	186,366	23,793	93,346	133,362	436,866
2026	196,885	25,141	100,431	141,861	464,318
2031	205,899	26,392	106,798	149,886	488,976

Adding demolition replacements and accounting for vacancies, the total number of dwellings required to 2031 would be as follows:

Year	Single	Semi	Row	Apt	Total
2006	149,684	19,371	68,646	111,808	349,509
2011	163,437	20,979	78,091	119,289	381,796
2016	176,240	22,513	86,343	127,696	412,792
2021	188,411	23,974	94,520	136,587	443,492
2026	199,354	25,349	101,659	145,302	471,664
2031	208,784	26,628	108,093	153,536	497,041

Total new dwellings					
Year	Single	Semi	Row	Apt	Total
2006-11	13,754	1,608	9,445	7,481	32,287
2011-16	12,803	1,535	8,253	8,407	30,997
2016-21	12,171	1,461	8,177	8,891	30,700
2021-26	10,943	1,375	7,138	8,715	28,172
2026-31	9,430	1,278	6,434	8,234	25,377
Total new dwellings, annualized					
2006-11	2,751	322	1,889	1,496	6,457
2011-16	2,561	307	1,651	1,681	6,199
2016-21	2,434	292	1,635	1,778	6,140
2021-26	2,189	275	1,428	1,743	5,634
2026-31	1,886	256	1,287	1,647	5,075
Share of new dwellings, annualized					
2006-11	42.6%	5.0%	29.3%	23.2%	100.0%
2011-16	41.3%	5.0%	26.6%	27.1%	100.0%
2016-21	39.6%	4.8%	26.6%	29.0%	100.0%
2021-26	38.8%	4.9%	25.3%	30.9%	100.0%
2026-31	37.2%	5.0%	25.4%	32.4%	100.0%
Total new dwellings, 2006-2031					
2006-31	59,101	7,257	39,447	41,728	147,532
	40.1%	4.9%	26.7%	28.3%	100.0%

Appendix 3 - Annual Projections of Dwelling Units By Type and Location

Note: Year refers to the 12-month period ending June 30

Year	TOTAL UNITS					RURAL UNITS				
	Single	Semi	Row	Apt	Total	Single	Semi	Row	Apt	TOTAL
2007	2,751	322	1,889	1,496	6,457	546	6	23	6	581
2008	2,751	322	1,889	1,496	6,457	546	6	23	6	581
2009	2,751	322	1,889	1,496	6,457	546	6	23	6	581
2010	2,751	322	1,889	1,496	6,457	546	6	23	6	581
2011	2,751	322	1,889	1,496	6,457	546	6	23	6	581
2012	2,561	307	1,651	1,681	6,199	524	6	22	6	558
2013	2,561	307	1,651	1,681	6,199	524	6	22	6	558
2014	2,561	307	1,651	1,681	6,199	524	6	22	6	558
2015	2,561	307	1,651	1,681	6,199	524	6	22	6	558
2016	2,561	307	1,651	1,681	6,199	524	6	22	6	558
2017	2,434	292	1,635	1,778	6,140	519	6	22	6	553
2018	2,434	292	1,635	1,778	6,140	519	6	22	6	553
2019	2,434	292	1,635	1,778	6,140	519	6	22	6	553
2020	2,434	292	1,635	1,778	6,140	519	6	22	6	553
2021	2,434	292	1,635	1,778	6,140	519	6	22	6	553
2022	2,189	275	1,428	1,743	5,634	477	5	20	5	507
2023	2,189	275	1,428	1,743	5,634	477	5	20	5	507
2024	2,189	275	1,428	1,743	5,634	477	5	20	5	507
2025	2,189	275	1,428	1,743	5,634	477	5	20	5	507
2026	2,189	275	1,428	1,743	5,634	477	5	20	5	507
2027	1,886	256	1,287	1,647	5,075	429	5	18	5	457
2028	1,886	256	1,287	1,647	5,075	429	5	18	5	457
2029	1,886	256	1,287	1,647	5,075	429	5	18	5	457
2030	1,886	256	1,287	1,647	5,075	429	5	18	5	457
2031	1,886	256	1,287	1,647	5,075	429	5	18	5	457
TOTAL	59,101	7,257	39,447	41,728	147,532	**12,481**	**133**	**531**	**133**	**13,278**
				Rural Dwellings:		**9% of total**				
				Single 94%		Semi 1%		Row 4%		Apartment 1%

Year	URBAN UNITS								
	Single	Semi	Row	Apt	TOTAL	Single	Semi	Row	Apt
2007	2,204	316	1,866	1,490	5,876	37.5%	5.4%	31.7%	25.4%
2008	2,204	316	1,866	1,490	5,876	37.5%	5.4%	31.7%	25.4%
2009	2,204	316	1,866	1,490	5,876	37.5%	5.4%	31.7%	25.4%
2010	2,204	316	1,866	1,490	5,876	37.5%	5.4%	31.7%	25.4%
2011	2,204	316	1,866	1,490	5,876	37.5%	5.4%	31.7%	25.4%
2012	2,036	301	1,628	1,676	5,641	36.1%	5.3%	28.9%	29.7%
2013	2,036	301	1,628	1,676	5,641	36.1%	5.3%	28.9%	29.7%
2014	2,036	301	1,628	1,676	5,641	36.1%	5.3%	28.9%	29.7%
2015	2,036	301	1,628	1,676	5,641	36.1%	5.3%	28.9%	29.7%
2016	2,036	301	1,628	1,676	5,641	36.1%	5.3%	28.9%	29.7%
2017	1,915	287	1,613	1,773	5,587	34.3%	5.1%	28.9%	31.7%
2018	1,915	287	1,613	1,773	5,587	34.3%	5.1%	28.9%	31.7%
2019	1,915	287	1,613	1,773	5,587	34.3%	5.1%	28.9%	31.7%
2020	1,915	287	1,613	1,773	5,587	34.3%	5.1%	28.9%	31.7%
2021	1,915	287	1,613	1,773	5,587	34.3%	5.1%	28.9%	31.7%
2022	1,712	270	1,407	1,738	5,127	33.4%	5.3%	27.4%	33.9%
2023	1,712	270	1,407	1,738	5,127	33.4%	5.3%	27.4%	33.9%
2024	1,712	270	1,407	1,738	5,127	33.4%	5.3%	27.4%	33.9%
2025	1,712	270	1,407	1,738	5,127	33.4%	5.3%	27.4%	33.9%
2026	1,712	270	1,407	1,738	5,127	33.4%	5.3%	27.4%	33.9%
2027	1,457	251	1,269	1,642	4,619	31.5%	5.4%	27.5%	35.6%
2028	1,457	251	1,269	1,642	4,619	31.5%	5.4%	27.5%	35.6%
2029	1,457	251	1,269	1,642	4,619	31.5%	5.4%	27.5%	35.6%
2030	1,457	251	1,269	1,642	4,619	31.5%	5.4%	27.5%	35.6%
2031	1,457	251	1,269	1,642	4,619	31.5%	5.4%	27.5%	35.6%
TOTAL	**46,619**	**7,124**	**38,915**	**41,595**	**134,254**	**34.7%**	**5.3%**	**29.0%**	**31.0%**

Year	INTENSIFICATION UNITS						GREENFIELD UNITS				
	Single	Semi	Row	Apt	Total	inten.%	Single	Semi	Row	Apt	Total
2007	200	150	525	1,240	2,115	36.0%	2,004	166	1,341	250	3,761
2008	200	150	525	1,240	2,115	36.0%	2,004	166	1,341	250	3,761
2009	200	150	525	1,240	2,115	36.0%	2,004	166	1,341	250	3,761
2010	200	150	525	1,240	2,115	36.0%	2,004	166	1,341	250	3,761
2011	200	150	525	1,240	2,115	36.0%	2,004	166	1,341	250	3,761
2012	150	75	450	1,582	2,257	40.0%	1,886	226	1,178	94	3,385
2013	150	75	450	1,582	2,257	40.0%	1,886	226	1,178	94	3,385
2014	150	75	450	1,582	2,257	40.0%	1,886	226	1,178	94	3,385
2015	150	75	450	1,582	2,257	40.0%	1,886	226	1,178	94	3,385
2016	150	75	450	1,582	2,257	40.0%	1,886	226	1,178	94	3,385
2017	120	75	375	1,665	2,235	40.0%	1,795	212	1,238	108	3,352
2018	120	75	375	1,665	2,235	40.0%	1,795	212	1,238	108	3,352
2019	120	75	375	1,665	2,235	40.0%	1,795	212	1,238	108	3,352
2020	120	75	375	1,665	2,235	40.0%	1,795	212	1,238	108	3,352
2021	120	75	375	1,665	2,235	40.0%	1,795	212	1,238	108	3,352
2022	100	75	350	1,577	2,102	41.0%	1,612	195	1,057	161	3,025
2023	100	75	350	1,577	2,102	41.0%	1,612	195	1,057	161	3,025
2024	100	75	350	1,603	2,128	41.5%	1,612	195	1,057	135	2,999
2025	100	75	350	1,603	2,128	41.5%	1,612	195	1,057	135	2,999
2026	100	75	350	1,628	2,153	42.0%	1,612	195	1,057	109	2,974
2027	75	75	340	1,473	1,963	42.5%	1,382	176	929	169	2,656
2028	75	50	340	1,521	1,986	43.0%	1,382	201	929	121	2,633
2029	75	50	340	1,544	2,009	43.5%	1,382	201	929	98	2,609
2030	75	50	340	1,567	2,032	44.0%	1,382	201	929	75	2,586
2031	75	50	340	1,600	2,065	44.7%	1,382	201	929	43	2,554
TOTAL	**3,225**	**2,150**	**10,200**	**38,128**	**53,703**	**40.0%**	**43,394**	**4,974**	**28,715**	**3,467**	**80,551**
Must	**3,222**	**2,148**	**10,203**	**38,128**	**53,701**		**43,397**	**4,976**	**28,712**	**3,467**	**80,553**
	6%	**4%**	**19%**	**71%**	**100%**						

Year	INTENSIFICATION UNITS					GREENFIELD UNITS				
	Single	Semi	Row	Apt	Total	Single	Semi	Row	Apt	Total
2007	9.5%	7.1%	24.8%	58.6%	100%	53.3%	4.4%	35.6%	6.6%	100%
2008	9.5%	7.1%	24.8%	58.6%	100%	53.3%	4.4%	35.6%	6.6%	100%
2009	9.5%	7.1%	24.8%	58.6%	100%	53.3%	4.4%	35.6%	6.6%	100%
2010	9.5%	7.1%	24.8%	58.6%	100%	53.3%	4.4%	35.6%	6.6%	100%
2011	9.5%	7.1%	24.8%	58.6%	100%	53.3%	4.4%	35.6%	6.6%	100%
2012	6.6%	3.3%	19.9%	70.1%	100%	55.7%	6.7%	34.8%	2.8%	100%
2013	6.6%	3.3%	19.9%	70.1%	100%	55.7%	6.7%	34.8%	2.8%	100%
2014	6.6%	3.3%	19.9%	70.1%	100%	55.7%	6.7%	34.8%	2.8%	100%
2015	6.6%	3.3%	19.9%	70.1%	100%	55.7%	6.7%	34.8%	2.8%	100%
2016	6.6%	3.3%	19.9%	70.1%	100%	55.7%	6.7%	34.8%	2.8%	100%
2017	5.4%	3.4%	16.8%	74.5%	100%	53.5%	6.3%	36.9%	3.2%	100%
2018	5.4%	3.4%	16.8%	74.5%	100%	53.5%	6.3%	36.9%	3.2%	100%
2019	5.4%	3.4%	16.8%	74.5%	100%	53.5%	6.3%	36.9%	3.2%	100%
2020	5.4%	3.4%	16.8%	74.5%	100%	53.5%	6.3%	36.9%	3.2%	100%
2021	5.4%	3.4%	16.8%	74.5%	100%	53.5%	6.3%	36.9%	3.2%	100%
2022	4.8%	3.6%	16.6%	75.0%	100%	53.3%	6.4%	35.0%	5.3%	100%
2023	4.8%	3.6%	16.6%	75.0%	100%	53.3%	6.4%	35.0%	5.3%	100%
2024	4.7%	3.5%	16.4%	75.3%	100%	53.7%	6.5%	35.3%	4.5%	100%
2025	4.7%	3.5%	16.4%	75.3%	100%	53.7%	6.5%	35.3%	4.5%	100%
2026	4.6%	3.5%	16.3%	75.6%	100%	54.2%	6.6%	35.6%	3.7%	100%
2027	3.8%	3.8%	17.3%	75.0%	100%	52.0%	6.6%	35.0%	6.4%	100%
2028	3.8%	2.5%	17.1%	76.6%	100%	52.5%	7.6%	35.3%	4.6%	100%
2029	3.7%	2.5%	16.9%	76.9%	100%	52.9%	7.7%	35.6%	3.8%	100%
2030	3.7%	2.5%	16.7%	77.1%	100%	53.4%	7.8%	35.9%	2.9%	100%
2031	3.6%	2.4%	16.5%	77.5%	100%	54.1%	7.9%	36.4%	1.7%	100%

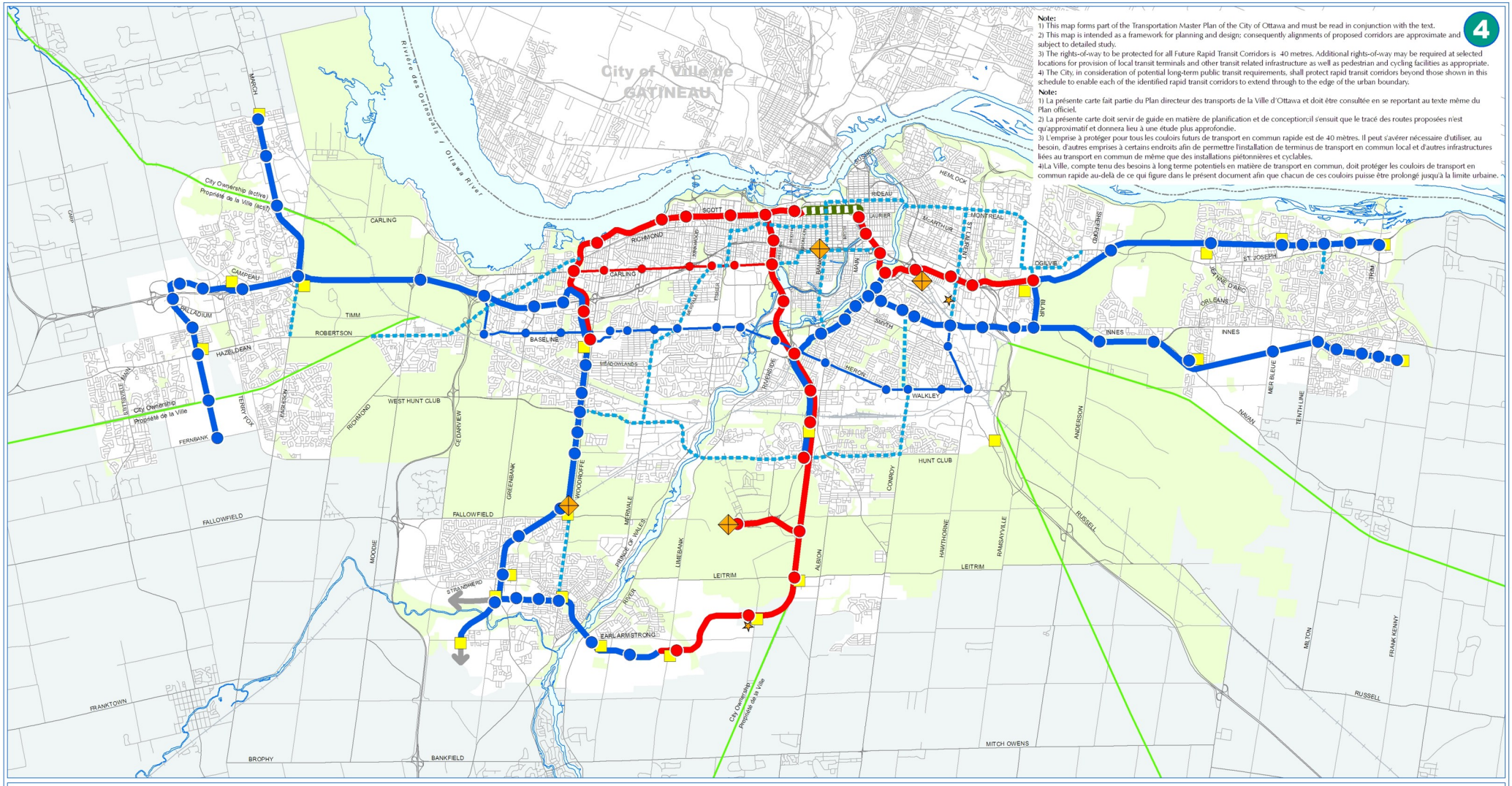
BY PERIOD:

	TOTAL UNITS				
	Single	**Semi**	**Row**	**Apt**	**Total**
2006-11	13,754	1,608	9,445	7,481	**32,287**
2011-16	12,803	1,535	8,253	8,407	**30,997**
2016-21	12,171	1,461	8,177	8,891	**30,700**
2021-26	10,943	1,375	7,138	8,715	**28,172**
2026-31	9,430	1,278	6,434	8,234	**25,377**
TOTAL	**59,101**	**7,257**	**39,447**	**41,728**	**147,532**

	RURAL UNITS					URBAN UNITS				
	Single	**Semi**	**Row**	**Apt**	**Total**	**Single**	**Semi**	**Row**	**Apt**	**Total**
2006-11	2,731	29	116	29	**2,906**	11,022	1,579	9,328	7,452	**29,381**
2011-16	2,622	28	112	28	**2,790**	10,180	1,507	8,141	8,379	**28,207**
2016-21	2,597	28	111	28	**2,763**	9,574	1,433	8,066	8,863	**27,937**
2021-26	2,383	25	101	25	**2,535**	8,560	1,350	7,037	8,690	**25,636**
2026-31	2,147	23	91	23	**2,284**	7,283	1,255	6,343	8,211	**23,093**
TOTAL	**12,481**	**133**	**531**	**133**	**13,278**	**46,619**	**7,124**	**38,915**	**41,595**	**134,254**

Appendix 4 - Primary Rapid Transit Network to 2031- Map 4

See figure on following page.



Note:
1) This map forms part of the Transportation Master Plan of the City of Ottawa and must be read in conjunction with the text.
2) This map is intended as a framework for planning and design; consequently alignments of proposed corridors are approximate and subject to detailed study.
3) The rights-of-way to be protected for all Future Rapid Transit Corridors is 40 metres. Additional rights-of-way may be required at selected locations for provision of local transit terminals and other transit related infrastructure as well as pedestrian and cycling facilities as appropriate.
4) The City, in consideration of potential long-term public transit requirements, shall protect rapid transit corridors beyond those shown in this schedule to enable each of the identified rapid transit corridors to extend through to the edge of the urban boundary.

Note:
1) La présente carte fait partie du Plan directeur des transports de la Ville d'Ottawa et doit être consultée en se reportant au texte même du Plan officiel.
2) La présente carte doit servir de guide en matière de planification et de conception;il s'ensuit que le tracé des routes proposées n'est qu'approximatif et donnera lieu à une étude plus approfondie.
3) L'emprise à protéger pour tous les couloirs futurs de transport en commun rapide est de 40 mètres. Il peut s'avérer nécessaire d'utiliser, au besoin, d'autres emprises à certains endroits afin de permettre l'installation de terminus de transport en commun local et d'autres infrastructures liées au transport en commun de même que des installations piétonnières et cyclables.
4)La Ville, compte tenu des besoins à long terme potentiels en matière de transport en commun, doit protéger les couloirs de transport en commun rapide au-delà de ce qui figure dans le présent document afin que chacun de ces couloirs puisse être prolongé jusqu'à la limite urbaine.

4

TRANSPORTATION MASTER PLAN - Map 4

RAPID TRANSIT NETWORK

****DRAFT / ÉBAUCHE****

PLAN DIRECTEUR DES TRANSPORTS - Carte 4

RÉSEAU DE TRANSPORT EN COMMUN RAPIDE

PRIMARY	PRINCIPAL
Light Rail Transit (LRT)	Train léger sur rail (TLR)
Bus Rapid Transit (BRT)	Transport en commun rapide par autobus (TCRA)
LRT Downtown Tunnel	TLR Tunnel au centre-ville
SUPPLEMENTARY	**SUPPLÉMENTAIRE**
Intensive Transit - Bus	Transport en commun intensif - autobus
Intensive Transit - Rail	Transport en commun intensif - train
Transit Priority	Transport prioritaire

Park and Ride	Parc-O-Bus
Transit Station - rail	Station du transport - train
Transit Station - bus	Station du transport - autobus
Conceptual Future Transit Corridor	Avenir conceptuel - Couloir de transport en commun
Abandoned Railway Corridor	Emprises ferrouiaires abandonnées
Inter-regional Stations	Stations interrégionales
Potential Rail Yard	Cour de tirage possible pour trains

Ottawa

1 0.5 0 1 2 3 Kilometers

Prepared by: City of Ottawa, Department of Infrastructure Services and Community Sustainability, November 2008
Preparé par: Ville d'Ottawa, Les Services d'infrastructure et Viabilité des collectivités, novembre 2008

Appendix 5 - Conversion of Density Benchmarks For Transit

In the IBI Group's report, Transportation Trends and Outlooks for the Greater Toronto Area and Hamilton – Needs and Opportunities, benchmarks are provided as indicative of densities required to support various levels of transit service. These benchmarks are as follows:

Table A5-1 – Transit Service Potential Based on Urban Density

Density range*	Transit potential	Type of service
Under 20	Low	No public transit. Requires dial-up cabs, jitneys, etc.
20 – 40	Modest	Marginal public transit. Buses every half-hour. Rush hour express buses.
40 – 80	Good	Good bus service.
80 – 120	Very good	Excellent bus service. Possible BRT/LRT
120 – 200	BRT/LRT	Higher order transit
Over 200	Subway	Higher order transit

* Density is expressed as People and Jobs per Gross Hectare.
BRT = Bus Rapid Transit
LRT = Light Rail Transit

Because the Greater Golden Horseshoe has several upper-, lower- and single-tier municipalities each with a different dwelling occupancy rate, density targets there are expressed as "people and jobs per gross hectare". Ottawa, being a single-tier municipality, has one Census occupancy rate for dwellings. Generally, planning documents in Ottawa measure density in terms of dwelling units or jobs per net hectare.

Therefore, the above benchmarks require conversion so that they may be understood in terms of Ottawa's density measurement approach. Two elements require conversion: people to dwellings and gross to net hectares. There also needs to be an understanding of the proportion of people and jobs entailed by the benchmarks.

For planning purposes, the benchmarks will apply to the Central Area, Mixed-Use Centres, Arterial Mainstreets, suburban Town Centres and the Riverside South Community Core, which are designations that call for a mix of uses. At present, some of the locations with these designations contain more jobs than residents; in other cases the opposite is true. An optimal mixed-use environment would have a roughly half-and-half balance between jobs and residents (with the understanding that some locations, such as the Central Area, will remain more heavily tilted toward employment). The target is to be interpreted as a blended sum of jobs and people.

First, a net-to-gross ratio has to be determined. To do this, an average was taken of the gross and net land areas in Ottawa's Central Area, Mixed-Use Centres, Arterial Mainstreets and suburban Town Centres. Even with the presence of several suburban and largely undeveloped Mixed-Use Centres and Town Centres, the average works out to 70%. Therefore, this 70% ratio is applied to gross density measurements to obtain a comparable net density expression. Given the more urban and denser nature (or planned future) of these areas, such a ratio is reasonable as it implies higher land coverage than typical suburban or general urban contexts.

Second, the proper dwelling occupancy rate has to be applied to each development application that is subject to the targets to translate dwellings into population. The dwelling occupancy rates are updated after every national Census. The current occupancy rates from the 2006 Census are as follows:

Dwelling Type	Persons per household
Single detached	3.35
Semi-detached	2.53
Townhouse	2.50
Stacked Townhouse	2.06
Apartment	1.62

NOTE: No new single detached dwellings are expected in Target Areas. The data is provided for information and to reflect the fact that there are existing single detached dwellings in some areas which may be part of future development applications

The full calculation appears in the table below:

Table A5-3 – Conversion of Transit Service Potential Based on Urban Density

Transit potential	People and Jobs per Hectare					People and Jobs per hectare	
	Gross		Net:Gross	Net		Net	
	Min	Max	Ratio	Min	Max	Min	Max
Low	0	20	70%	0	29	0	29
Modest	20	40	70%	29	57	28	57
Good	40	80	70%	57	114	57	114
Very Good	80	120	70%	114	171	113	171
BRT-LRT	120	200	70%	171	286	170	286
Subway	200		70%	286	0	286	

Rounding off the benchmarks would produce the following table expressing density in terms of Dwellings and Jobs per Net Hectare:

Table A5-4 - Transit Service Potential Based on Urban Density expressed in Dwellings and Jobs per Net Hectare

Density range*	Transit potential	Type of service
Under 30	Low	No public transit. Requires dial-up cabs, jitneys, etc.
30 – 60	Modest	Marginal public transit. Buses every half-hour. Rush hour express buses.
60 – 115	Good	Good bus service.
115 – 170	Very good	Excellent bus service. Possible BRT/LRT
170 – 285	BRT/LRT	Higher order transit
Over 285	Subway	Higher order transit

* Density is expressed here in terms of Dwellings and Jobs per Net Hectare.

Therefore, the Density Targets summarized in Section 3.9 as People and Jobs per Gross Hectare are translated into Dwellings and Jobs per Net Hectare as follows:

Area	Target	
	(people and jobs per gross ha)	(people and jobs per net ha)
Central Area	500	700
Major Mixed-Use Centres	250	350
Target Arterial Mainstreets: Carling, Richmond (north of Carling) St. Laurent, Bank, Merivale, Montreal East	200 120	 285 170
Mixed-Use Centres at Key Transfer Stations	200	285
Emerging Mixed-Use Centres	120	170
Town Centres	120	170
Riverside South Community Core	80	115

IMPLEMENTATION FOR ZONING AND SITE PLAN APPLICATIONS

The minimum densities assigned to each of the target areas must be complied with by all Official Plan Amendment, Zoning Amendment, Site Plan, Plan of Condominium and Minor Variance applications, subject to the relevant policies of the Official Plan.

Interpretation of the Density Targets

The density target expressed in "People and Jobs per Hectare" means that the target (e.g. 200) represents the combined minimum number of residents or employees that must be accommodated by any development subject to the target.

The target can be met through a development that provides only jobs, or only residents, or a combination of jobs and residents on a site or in a building.

Measuring the Density of an Proposed Development

Table A5-5 above expresses the minimum densities for target areas in Dwellings and Jobs per Net Hectare. This provides Approvals staff with a better measure with which to evaluate an application that would contain residential units against the minimum density requirements.

For employment, the following benchmarks are applied:

- For development applications with office-type employment:
  20 m^2 (215 sq.ft.) of gross floor space per employee
- For development applications with retail-type employment:
  35 m^2 (376 sq.ft.) of gross leasable area (GLA) per employee (outlets under 9,000 m^2)
  45 m^2 (484 sq.ft.) of GLA per employee (outlets 9,000 m^2 and greater)

Example 1: New downtown office building

A new office building in the Central Area is proposed on a site that measures 4,500 m^2 (0.45 net hectare). The total amount of floor space will be 34,000 m^2, of which there will be 30,600.m^2 of gross floor space for office employees and 2,500 m^2 of gross leasable retail space on the ground floor. The density calculation for this project will thus be as follows:

Site Area: 0.45 ha (net)
Total floor space: 34,000 m^2
Gross office space: 30,600 m^2
Retail GLA: 2,500 m^2

Employment density: Office space: 30,600 / 20 = 1,530 jobs
Retail space: 2,500 / 35 = 71 jobs
Total: 1,601 jobs

Jobs per net hectare: 1,601 / 0.45 ha = 3,558

This project exceeds the minimum density target of 700 people and jobs per net hectare for the Central Area, and meets the target through the provision of office and retail employment.

Example 2: New mixed retail-condo building
A new mixed-use development is proposed on Preston Street, within the Bayview-Preston Mixed-Use Centre. It is a 5-storey building with a retail ground floor and 4 residential storeys with 25 condo apartments on a small urban lot fronting on the Mainstreet. The lot measures 993 m^2 (0.0993 ha net). Because of rear yard setback requirements, the building occupies only 70% of the lot. The density calculation would be as follows:

Site Area: 0.0993 ha (net)
Building floorplate: 690 m^2
Number of dwelling units: 25
Retail GLA: 450 m^2
Retail jobs: 450 / 35 = 13
Building population: 25 units * 1.62 persons per household (apt. occupancy rate)
= 40 people

Combined jobs and people: 43
People and jobs per net hectare:
43 / 0.0993 ha = 433

This project exceeds the minimum density requirement of 285 people and jobs per net hectare.

Example 3: Retail development in a Town Centre
A proposal comes in for a 7,500-m^2 single-storey retail development on a 27,500-m^2 site in the Kanata Town Centre. The retail strip will feature a large pharmacy outlet and twelve other outlets including an end-cap coffee shop without a drive-through. There will be two hectares of landscaped surface parking. The density calculation for this project would be as follows:

Site area: 2.75 ha (net)
Retail building floorplate: 7,500 m^2
Retail GLA: 7,125 m^2
Retail jobs: 7,125 / 35 = 204
Jobs per net hectare:
204 /2.75 = 74

This proposal does not meet the minimum density requirement for Town Centres, which is 170 people and jobs per hectare. It cannot be approved.

Appendix 6 - Best Practice Examples of New Suburban Development

Increasing suburban densities means revisiting the way suburbs are developed. It is important that future suburban neighbourhoods retain the vital residential features of privacy, quiet and safety. Across Canada and North America, new approaches to suburban development have been tested over the last fifteen years and some hold considerable potential. One such approach is New Urbanism.

With increased densities, new opportunities arise for quality urban design. In New Urbanism subdivisions, garages are behind the houses, serviced by rear lanes. Rear lanes also serve as utility corridors, thus removing overhead wires and utility boxes from the street frontage. Rear lanes function as public places that provide play space away from the street. They allow for continuous curb frontage at the front of the houses to accommodate on-street parking for visitors. Cars parked on the street in turn introduce a buffer between the sidewalk and moving traffic, making sidewalks safer for children. Sidewalks are also safer for children when they are not crossed by driveways. The grid layout makes wayfinding easier and supports walkability and transit much more than curving street layouts. To prevent cut-through traffic, offset grids replace the regular grids found in older urban areas. Finally, houses that are built closer to the sidewalk give the street better enclosure and remove the possibility of front yard parking, which blights many neighbourhoods with large front yards.

New Urbanism communities are difficult to build in Ottawa in great part because the City's various standards and regulatory frameworks have not anticipated this type of development. For the past sixty years' worth of suburban development, the principles of subdivision design have been driver safety and ease of movement, the elimination of cut-through traffic with street layouts in crescents and cul-de-sacs, the separation of land uses and buildings, the buffering of "incompatible" uses with greenery, and the channelling of traffic from local streets to collector roads to arterials and highways. Throughout all these design principles, space has been generously apportioned to things like setbacks, road width, intersection radii, cul-de-sac turning loops and similar elements. In a design environment in which the use of a private vehicle is assumed to be the norm, space is an easy design solution by which to reduce costs and maximize convenience. Over time, utilities like Hydro and natural gas have introduced their own wishes for further space in the form of easements, corridors and utility box locations.

The challenge we face today is to reintroduce to suburban planning the notion that urban space is important. Suburban land is not free. It is a scarce resource that must be well planned and well used. This does not mean that suburbs should lose what makes them attractive for people who choose them: privacy, safety and quiet. It means that those attributes have to be produced in differently designed environments, so that the land base will last longer and the need to extend the urban boundary reduced.

Although the City of Ottawa may not immediately require new greenfield communities to follow the principles of New Urbanism, it may consider adapting some of its internal regulatory and service delivery frameworks to make such communities feasible and attractive to the development community.

There are a few built-out examples of New Urbanism neighbourhoods in Canada. In Ontario, they are mostly located within the Greater Toronto Area: the communities of Cornell (Markham), Oak Park (Oakville), and The Village at York University in the City of Toronto, among others. In Alberta, Calgary has two built-out New Urbanism communities: Garrison Woods and Mackenzie Town. In British Columbia, the community of East Clayton in the City of Surrey is a planned New Urbanism community.

Cornell (Markham)

Cornell is a 973-hectare greenfield site planned for 28,000 people. As of the 2006 Census it was home to about 12,000 and is still under active development.

Cornell is laid out in an offset grid pattern (see site plan, right) in which there are still curving streets but they intersect at right angles. There are no crescents or cul-de-sacs. There is a complete network of rear lanes for all residential and non-residential areas. This means that homes can be closer to the street and

closer together, but streetscapes are not dominated by garages and driveways, so the visual effect is more neighbourly and the perception of density is thereby attenuated.

There are mainstreet areas with retail storefronts along the sidewalk, and offices or condo apartments in the upper storeys. Those mainstreets are near city parks and around the corner from residential streets. They are part of people's journey in and out of their neighbourhood.

Cornell has a large central park and a number of smaller local parks that take up a small city block, which is surrounded by residential city blocks. Local parks are therefore typically surrounded by houses on all four sides. This allows better informal surveillance of these public spaces. According to the Town of Markham, the overall net residential density in the first phase of Cornell is 39 units per hectare. For each type of dwelling, net densities are as follows:

Single detached	**30**
Semi-detached	40
Townhouses	47
Apartments	75

Photos of Cornell:

Local park with houses fronting on it
Courtesy: Mattamy Homes

Live-work townhouses have their ground floor designed to be either a store or professional office, or part of a home. Their location right on the sidewalk creates the possibility for these buildings to evolve over time as either people's homes or part of a mixed-use street.
Courtesy: Mattamy Homes

Local residential streets: quiet, private, lined with front porches, devoid of driveways and garage doors. Sidewalks on both sides of the street.
Courtesy: Mattamy Homes

Mixed-use building at the edge of a public park. On the street side, the building has stores along the sidewalk and condo apartments on the upper floors.
Courtesy: Mattamy Homes

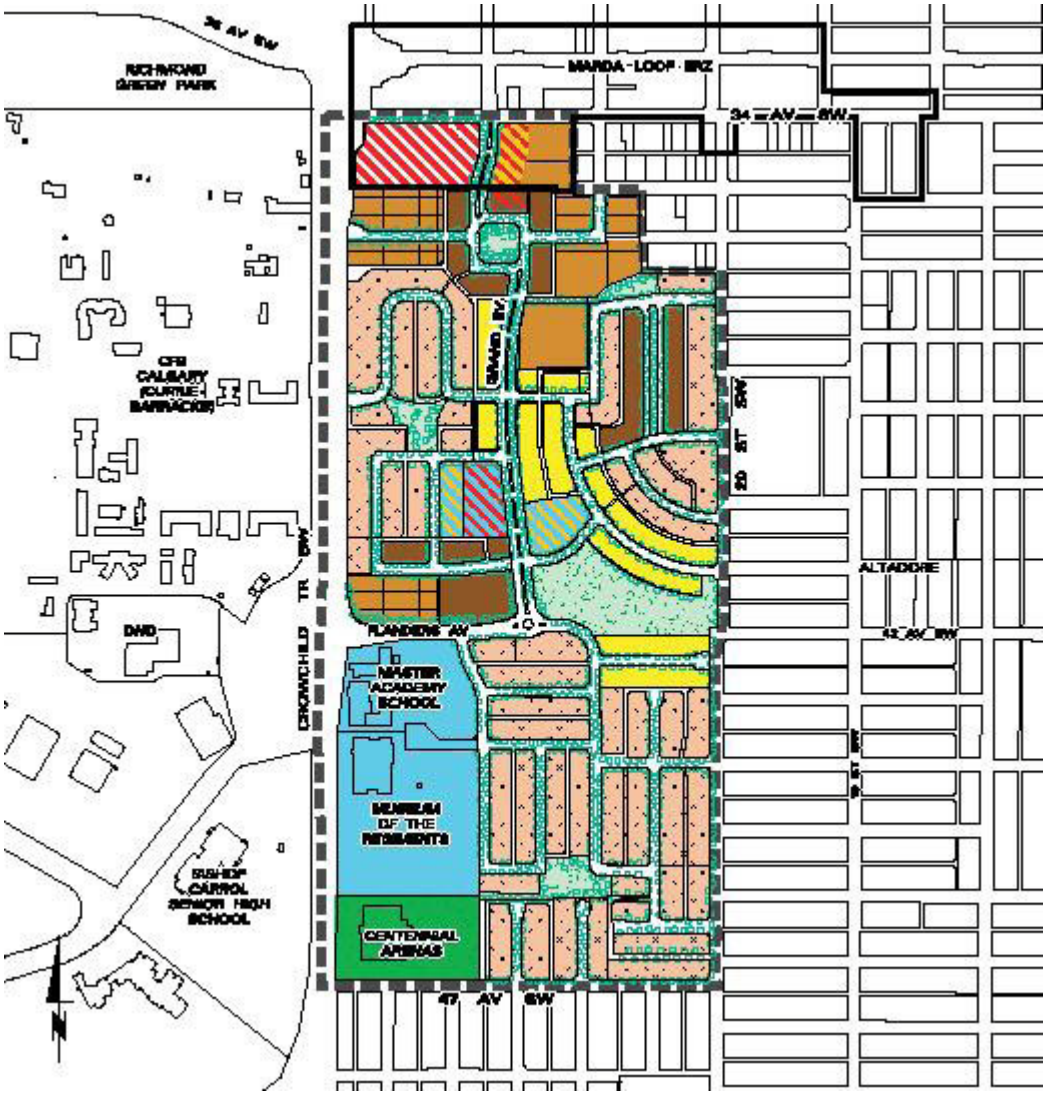
Cornell streetscapes. New Urbanism is wrongly and derogatorily associated with copycat historical architecture. While it is fact that many New Urbanist communities offer homebuyers architectural styles that are reminiscent of older neighbourhoods, the principles of New Urbanism do not by themselves demand specific styles of architecture.

(Left)
Housing mix and net residential density in the first phase of Cornell. Coach houses are secondary dwellings above the rear-lane garage.
Courtesy: Town of Markham

Garrison Woods (Calgary)

Garrison Woods is a new neighbourhood about 2 km southwest of downtown Calgary. It is located on the site of a decommissioned Canadian Forces Base, which closed in 1996. The eastern portion of the base, a 71-hectare site, was immediately redeveloped as a New Urbanist neighbourhood. Development is now completed. There are 1,600 dwelling units, some of which include former military homes that were moved to new locations along the new street grid. There are also 6,500 m2 of retail space including a major grocery store.

The site has a gross density of 26 dwelling units per hectare. There are a significant number of non-residential uses in Garrison Woods, including the Museum of the Regiments, an arena, a private school and a major park. Estimating a net-to-gross ratio of 40%, the net residential density is closer to 47 units per hectare.



Calgary planning staff report that one of their greatest challenges was convincing other city departments to accept different development standards. For example, the Fire department at first was reluctant to accept narrower streets and tighter street corners, which are important elements of a pedestrian-friendly neighbourhood. Planners organized field trials on comparably narrow streets to determine whether response times were adversely affected by the street layout. Firefighters' driving skills showed that the concern was exaggerated. The narrow streets and tighter corners proceeded.

Garrison Woods is on an urban site and as such, it is not a suburban development. It remains a model for Ottawa to consider because of its strict adherence to New Urbanist principles including roads and engineering standards, and because it may also serve as a model for comparable situations in Ottawa (notably CFB Rockcliffe).

The community has a retail main street that connects with an existing retail area (the Marda Loop). It has a central green surrounded by residences on all four sides. Most residential areas have rear lanes and, where they do not, the garages are at the rear of the house, accessed by shared driveways. Garage doors are therefore not at all present on the street front. Some homeowners have had accessory dwellings built above their rear-lane garages.

Photos of Garrison Woods:

Main street in Garrison Woods: buildings that front the sidewalk, with storefronts directly accessible and condo apartments on the upper floors.

Typical residential street in Garrison Woods. The homes are close to the sidewalk, creating an intimate streetscape, and there are no driveways in the front, increasing the green cover.

Historical architectural styles were chosen for Garrison Woods. These are not a requirement of New Urbanism, but in this case, traditional styles were used as an extra method by which to differentiate this subdivision.

Another example of some of the historical styles offered by the developers of Garrison Woods. The mixing of styles not only adds variety to the streetscape, it also better integrates various dwelling types along a street.

Rear lanes conceal garages and utility boxes. Some homeowners have purchased secondary dwellings above the garage as in-law suites. These were offered as upgrades by Garrison Woods developers.

Some streets have a central green with a pedestrian pathway, in addition to sidewalks on both sides. These greens become focal points for the neighbourhood, used for events like kids' birthday parties, barbecues, or yard sales.

Appendix 7 - Summary of Residential Land Strategy

Projected Households by Type, City-wide, 2006-2031 ***(excluding institutionalized population)***		
Singles	59,101	40%
Semis	7,257	5%
Rows	39,447	27%
Apartments	41,728	28%
Total	**147,533**	100%

Distribution	**Urban**		**Rural**		**Control**
Singles	46,619	35%	12,481	94%	59,100
Semis	7,124	5%	133	1%	7,257
Rows	38,915	29%	531	4%	39,446
Apartments	41,595	31%	133	1%	41,728
Total	**134,253**	**91%**	**13,278**	**9%**	**147,531**

Intensification Potential		**Infill**	**Additions**	**CLC (1)**	**Unfors'n**	**LeBreton**	**Central**	**TM (2)**	**AM (3)**	**MUC (4)**	**Transit**
Singles	4,022	3,222	0	500	300	0	0	0	0	0	0
Semis	2,350	1,850	0	300	200	0	0	0	0	0	0
Rows	14,500	6,000	0	4,200	4,000	300	0	0	0	0	0
Apartments	45,825	0	2,300	1,000	1,500	2,200	7,850	12,450	8,000	8,925	1,600
Total	**66,697**	**11,072**	**2,300**	**6,000**	**6,000**	**2,500**	**7,850**	**12,450**	**8,000**	**8,925**	**1,600**

Abbreviations:
(1) CLC: Canada Lands Company (CFB Rockcliffe)
(2) TM: Traditional Mainstreet
(3) AM: Arterial Mainstreet
(4) MUC: Mixed-Use Centre

Intensification Assumed to Occur to 2031		
Singles	3,222	6%
Semis	2,148	4%
Rows	10,203	19%
Apartments	38,128	71%
Total	**53,701**	**40% of urban dwellings**

Projected Greenfield Households by type		
The balance of urban dwellings projected to 2031 when intensification dwellings are removed		
Singles	43,397	54%
Semis	4,976	6%
Rows	28,712	36%
Apartments	3,467	4%
Total	**80,552**	

Greenfield Supply at year-end 2006		
Calculated through VURLS 2006 report, including CDP lands' unit breakdowns		
Singles	35,806	37%
Semis	3,120	3%
Rows	35,760	37%
Apartments	22,509	23%
Total	**97,195**	

Units built Jul.-Dec. 2006	
To adjust demand from mid-2006 to the end of 2006, which is the date of the supply data	
Singles	1,210
Semis	197
Rows	1,102
Apartments	812
Total	**3,321**

Adjusted total demand at end-year 2006			Urban		Intensification		Greenfield		Rural	
Singles	57,891	57,891	45,691	35%	3,150	6%	42,541	54%	12,200	94%
Semis	7,060	7,060	6,930	5%	2,100	4%	4,830	6%	130	1%
Rows	38,345	38,345	37,826	29%	9,974	19%	27,852	35%	519	4%
Apartments	40,916	40,916	40,786	31%	37,270	71%	3,516	4%	130	1%
Total	**144,212**	144,212	**131,233**	**91.0%**	**52,494**	**40.0%**	**78,739**	**60.0%**	**12,979**	**9.0%**

Difference between Greenfield Requirement and Supply		
Singles	-6,735	6735
Semis	-1,710	1710
Rows	7,908	-7626
Apartments	18,993	
Total	18,456	

Suburban Development Density (units per net hectare)		
	Target	**VURLS 2007**
Singles	26	21.3
Semis	34	32.1
Rows	45	45.8
Stacked Towns (stacked townhouses are a form of apartment)	150	130.8
Apartments	200	198.4

Net land requirement (ha)			Gross land requirement (ha)		
Singles	259.0	net ha	518.1	gross ha	Net-to-gross ratio 50%
Semis	50.3		100.6		
to allow for 40% townhouses and apartments:					
Rows *	112.6		225.2		
Apartments *	3.8		7.6		
Total	425.73	net ha	851.47	gross ha	

* land requirement based on 5,067 townhouses and 563 apartments (stacked townhouses)

Appendix 8 - Calculation of Projected Densities for Central Area, Mixed-Use Centres, Town Centres Arterial Mainstreets

(Density is expressed in People and Jobs per Gross Hectare)

Area name	Land Area (ha)	Jobs (2006 ES)	Dwgs (2006 Census)	Population (2006 Census)	ppd (1) (2006 Census)	2006 Density	Projected New Jobs	Projected New Dwgs. (2)	New population	ppd in new dwgs.	2031 Total Jobs	2031 total dwgs.	2031 Total Pop.	2031 ppd (proj.) (5)	2031 Density
Central Area	**268.0**	97,710	5,354	8,147	1.52	**395**	22,540	7,850	11,697	1.49	120,250	13,204	19,844	1.50	**523**
Tunney's-Quad MUC	**86.6**	15,873	1,844	2,057	1.12	**207**	2,042	1,325	2,147	1.62	17,915	3,169	4,204	1.33	**255**
Lees MUC	**15.6**	54	1,571	2,545	1.62	**167**	946	750	1,215	1.62	1,000	2,321	3,760	1.62	**305**
Bayview-Preston MUC	**82.0**	8,916	1,480	2,738	1.85	**142**	2,036	2,500	4,050	1.62	10,952	3,980	6,788	1.71	**216**
Blair-174 MUC	**60.5**	6,411	0	0		**106**	3,650	1,250	2,025	1.62	10,061	1,250	2,025	1.62	**200**
Confederation Heights MUC	**50.4**	3,682	0	0		**73**	3,589	950	1,758	1.85	7,271	950	1,758	1.85	**179**
Baseline-Woodroffe MUC	**140.6**	7,897	2,916	5,599	1.92	**96**	1,333	1,000	1,620	1.62	9,230	3,916	7,219	1.84	**117**
Hurdman MUC	**44.7**	142	1,414	2,272	1.61	**54**	500	1,000	1,620	1.62	642	2,414	3,892	1.61	**101**
Billings Bridge MUC	**42.6**	5,519	0	0		**130**	81	700	1,295	1.85	5,600	700	1,295	1.85	**162**
Cyrville MUC	**54.6**	2,162	124	300	2.42	**45**	750	1,800	3,330	1.85	2,912	1,924	3,630	1.89	**120**
Industrial MUC	**139.0**	4,120	902	1,692	1.88	**42**	1,067	500	925	1.85	5,187	1,402	2,617	1.87	**56**
Kanata West MUC	**254.2**	2,346	4	10	2.50	**9**	12,774	2,424	6,060	2.50	15,120	2,428	6,070	2.50	**83**
Mer Bleue MUC	**142.1**	0	0	0		**0**	8,000	800	1,528	1.91	8,000	800	1,528	1.91	**67**
Orléans TC	**83.2**	3,163	428	834	1.95	**48**	2,987	550	1,051	1.91	6,150	978	1,884	1.93	**97**
Kanata TC	**229.4**	3,818	1,653	3,771	2.28	**33**	5,462	1,072	2,048	1.91	9,280	2,725	5,818	2.14	**66**
Barrhaven TC	**217.1**	2,176	125	127	1.02	**11**	7,967	2,875	5,491	1.91	10,143	3,000	5,618	1.87	**73**

CALCULATION OF PROJECTED DENSITIES FOR ARTERIAL MAINSTREETS

(Density is expressed in People and Jobs per Gross Hectare)

Mainstreet	Land Area (ha)	Jobs (2006 ES)	Dwgs (2006 Census)	Population (2006 Census)	ppd (1) (2006 Census)	2006 Density	Projected New Jobs	Projected New Dwgs. (2)	2031 Total Dwgs.	Projected ppd in existing dwgs. (3)	Projected ppd in new dwgs. (4)	2031 Total Jobs	2031 Total Pop.	2031 ppd (proj.) (5)	2031 Density
Richmond (north of Carling)	**12.1**	653	1,225	1,980	1.62	**217**	66	0	1,225	1.49	1.49	719	1,819	1.49	**209**
Carling	**141.6**	21,215	2,528	4,705	1.86	**183**	1,655	1,500	4,028	1.71	1.49	22,870	6,558	1.63	**208**
St. Laurent	**128.6**	8,927	1,485	2,950	1.99	**92**	2,446	500	1,985	1.83	1.49	11,373	3,457	1.74	**115**
Bank	**144.8**	9,692	685	1,752	2.56	**79**	1,134	750	1,435	2.35	1.49	10,826	2,727	1.90	**94**
Merivale-Clyde-Baseline	**174.4**	7,357	620	1,370	2.21	**50**	4,348	1,000	1,620	2.03	1.49	11,705	2,749	1.70	**83**
Montreal East	**401.5**	11,508	2,145	4,760	2.22	**41**	2,601	2,250	4,395	2.04	1.49	14,109	7,726	1.76	**54**

NOTES:
(1) ppd = Persons per dwelling, based on custom Census counts of population and dwellings for the specified areas.
(2) Projected New Dwellings are per Targets in Figures 30, 35 and 39.
(3) Projected ppd in existing dwellings: decrease in average dwelling size of 8.1% per city-wide dwelling size projection.
(4) Projected ppd in new dwellings: projected at 1.49 assuming all new dwellings are apartments.
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