

## DENSITY

Density is a means of measuring the intensity of development. For residential density, it is measured as persons per hectare or dwelling units per hectare. Recognizing the connection between density and quality of life, many municipalities are looking at increasing densities to:

- Conserve land, enabling the protection of open space, farmland and natural areas.
- Provide access to convenient and frequent transit.
- Support for housing choice and affordability.
- Improve walkability and access to services.
- Support community fiscal health by sharing and spreading costs of infrastructure across more households.
- Improve safety and security by increasing opportunities for social interaction and placing more eyes on the street.

The term density often connotes a picture of over-crowded, unpleasant areas predominated by blocky high-rise buildings. However, density is not about a specific building type and with good design, higher densities can be achieved without reaching to the sky (LGC, 2003). Key elements needed to make density work include:

- *Connected street system* - more direct routes, intersection and route options for multiple users.
- *Densities located appropriately* - higher densities on major roads and around transit and retail nodes.
- *Public realm design* - streets, parks and civic spaces designed for multiple uses and users.
- *Compatible mix uses* - shops, restaurants and services close to homes.
- *Place parking in alternate locations* - on the street, behind the building, underneath or as part of the building.
- *Scale, massing, orientation of buildings* - building facades engage with the sidewalk and street in front, and frame open spaces alongside.

St. Albert has an overall gross residential density of about 10 dwelling units (du) per hectare. Recognizing the need to maximize development of the remaining land in St. Albert and ensure economically viable development, Smart Growth St. Albert proposes to increase residential densities and provide guidance through Form-based zoning regulations to ensure design and density are combined to create vibrant, walkable new neighbourhoods.

### NOTE:

From now on we will be combining the brief and the bulletin. The Smart Growth Bulletin will now comprise a first page with a summary and the references to the right, with the full brief attached.

### **TO READ:**

*Visualizing Density* by Julie Campoli and Alex S. MacLean contains pictures from different cities of different density developments ranging from 2.5 du/ha to 740 du/ha. (Note: to convert du/acre to du/ha divide by 0.4)

#### *Find it at:*

[http://www.trilogyatcumberland.com/pdfs/Visualizing\\_Density\\_Catalogue.pdf](http://www.trilogyatcumberland.com/pdfs/Visualizing_Density_Catalogue.pdf)

### **TO WATCH:**

Take this quiz *How Dense Are You* and see if you recognize different types of density when you see them.

#### *Find it at:*

<http://www.lincolnst.edu/subcenters/visualizing-density/quiz/index.aspx>

### **TO DISCUSS:**

To discuss this week's topic, article or video, join our Smart Growth St. Albert Fan page on Facebook.

For additional links visit:

[www.stalbert.ca/smart-growth](http://www.stalbert.ca/smart-growth)

Send comments to:

[smartgrowth@st-albert.net](mailto:smartgrowth@st-albert.net)

### **PLACES TO SEE:**

Emerald Hills Urban Village is a 20 hectare (50 acre) development within Sherwood Park that will apply the Sustainable Neighbourhood principles (SuN). These principles include ecological preservation, environmental protection, waste free production and social equity. To implement these principles, Emerald Hills will provide a more compact development with a mix of employment, business and housing options. To find out more information, visit the Emerald Hills website at: <http://www.emerald-hills.ca/>

*The articles and videos referenced in the Bulletins do not necessarily reflect the position of the City of St. Albert and are meant to encourage debate and discussion.*



**SMART GROWTH BRIEF**

***DENSITY***

WHAT IS DENSITY?

Density is a means of measuring the intensity of development. Density is most often associated with residential development, where it is measured as persons per hectare or dwelling units per hectare. St. Albert uses dwelling units per hectare as specified in the Municipal Development Plan.

The term 'higher density' is used to refer to new residential and commercial development that is more intense (e.g. more units per hectare) than what is typically found in the existing community. It does not mean a specific type of development.

The term density often connotes a picture of over-crowded, unpleasant areas predominated by blocky high-rise buildings. This perception could come from images of some of the well-meaning but misguided efforts of urban renewal in the 1950s and 1960s, both in the UK and North America. Cities replaced entire neighbourhoods with 'high-rises in the park', eliminating street systems, social structures and street life. Many of these developments reflected the modernist movement of architecture and city building that favoured tall buildings surrounded by plain open space. No thought was generally given to how the space between the buildings would function, or what other social infrastructure or uses would be needed to support the higher density residential development.

A timeless example of improperly planned densification is Pruitt-Igoe in St. Louis. In the 1950s an entire neighbourhood was razed and replaced with new towers to provide a

**Figure 1**



*The high-rises of Pruitt Igoe in the 1950s surrounded by the type of development it replaced*

better community (as-defined by wealthy non-residents) for the residents of the existing neighbourhood, who were primarily poor African Americans, see Figure 1. Although the existing neighbourhood was perceived as shabby, it had strong social and community ties, successful local businesses and a well-connected street system, all of which were decimated in an effort to address citywide issues at a neighbourhood level, without consideration for the problems occurring elsewhere in the community.

The resulting towers, which actually created fewer dwelling units than had existed in the original neighbourhood, resulted in such a troubled area that in 1972, the entire development was levelled. The site is vacant to this day.

Since then, planners have learned much more about what makes higher density developments work.

WHY LOOK AT HIGHER DENSITIES?

There are a variety of reasons municipalities look at increasing densities.

*Land conservation and environmental protection*

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Increased densities reduce land consumption, allowing greater protection of open space, farmland and natural areas. Communities are realizing it is not sustainable or cost-effective to continue developing at the low, sprawling densities we currently have.

*Access to transit and alternative transportation choices*

Increased density makes various transportation alternatives feasible (LGC, 2003). People tend to make fewer car trips, and those they do make tend to be for shorter distances. Biking, walking and transit are much easier to use at least some of the time. And people have the option to live car-free, which provides households with significant savings.

*Support for housing choice and affordability*

Different housing types are more feasible at different densities. A mix of densities within the community ensures a variety of housing choices for residents, and the location of new higher density housing in appropriate locations within a community is important. Forcing higher density housing into developments that are not appropriate is not conducive to creating good urban environments.

Consider the apartments that are being built near big box store developments, see Figure 2. They reflect the same design principles as a big box store, completely self-contained without any thought to how they relate to neighbouring development. No matter how well-designed the building itself is, it is disconnected from its surrounding environment with no quality public realm. It puts local area housing in a regional commercial setting.

Demographics are changing and a significant change in the market potential for urban style housing is expected.<sup>1</sup>

**Figure 2**



*Connections are poor between large apartment buildings and the neighbouring commercial developments*

*Improves walkability and access to services*

Density works if it is built on a well-connected framework of streets. As well, it ensures there is a sufficient market threshold in an area to support local services. Together this improves opportunities for walking and cycling and encourages people to use these other forms for transportation, thus using their vehicles less.

*Supports community fiscal health*

By increasing densities, whether in new developments or through infill in existing developments, communities can gain economic advantages. Increased densities reduce infrastructure duplication, make efficient use of existing infrastructure capacity and reduce the cost per unit.

*Improves safety and security*

Increased densities in well-planned areas improve opportunities for social interaction and street life, and increase the number of dwelling units in an area, which deters crime (Hillier and Sahbaz, 2005). Density increases street life just by the nature of the number of people living nearby and they are more likely to take ownership of common spaces. With a variety of housing and lifestyles, people are likely to be around at all times, improving safety.

**HOW DO YOU MAKE HIGHER DENSITIES WORK?**

Higher densities can be achieved without reaching to the sky. It doesn't matter what form density takes, it can work, but only if the design of the building is done with consideration

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<sup>1</sup> For additional information, see Smart Growth Brief on Demographics.

for its context, how it relates to the streets, spaces and buildings around it, and the people and traffic that will be there.

What was it that made the old neighbourhood in St. Louis more successful than the brand new high-rises? It was the unconscious design of the whole area and how the individual pieces worked together. Planners and designers as early as a few far-sighted souls in the 1950s really began to try and articulate what made certain communities work better than others. Jane Jacobs (1961) was one who recognized many of the elements that made such neighbourhoods successful by observing her own Hudson Street neighbourhood in New York.

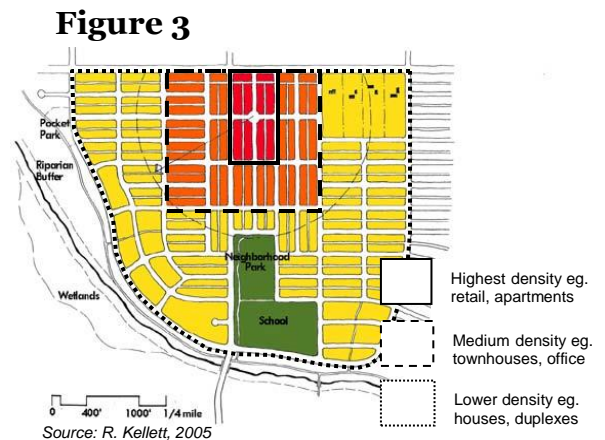
The solution is deceptively simple. Density demands design (LGC, 2003). Increasing density will only work if the elements of design are also considered. These elements cannot be cherry-picked, they all need to be considered in conjunction with each other. This brief outlines some of the key elements that need to be considered when designing for density that will work.

*Connected street system for multiple users*

A strong degree of connectivity is needed to make higher densities work. The grid and modified grid street systems have a much higher degree of connectivity due to more direct routes, more intersections and more route options.<sup>2</sup> As one looks at the street patterns of areas with increasing densities, the grid and modified grid predominate (Campoli and MacLean, 2007). The hierarchical street pattern is not seen in areas over 20 dwelling units per hectare. Any densities greater than 250 dwelling units per hectare are found on a true grid pattern.

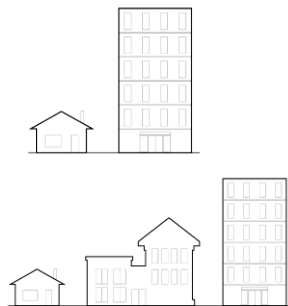
*Densities located appropriately*

Care must be taken to ensure that different densities are placed suitably within the framework of the street and the community. Figure 3 shows a neighbourhood with the highest densities concentrated in a core surrounded by development that is lower in density and moving out to an even lower density area a little farther from the core. Obviously single-family houses would not be appropriate in the high density core.



This concept can also be looked at on a

**Figure 4**



*The top figure shows an abrupt transition between buildings, while the bottom one shows a more gradual one.*

community scale with nodes like downtowns or transit-oriented development nodes having a much higher density of development than the neighbourhoods farther out. What is considered high density in a neighbourhood setting could be a four-storey apartment building while in a transit-oriented node, that would be considered a lower density development.

The transition between densities is also very important. Densities could change from lot to lot, from street to street, from block to block or from area to area. What is important is that the transition is seamless. Figure 4 shows the difference between an abrupt transition from a house to a high-rise, compared to one in which a more gradual adjustment in density is made.

<sup>2</sup> For more information see Smart Growth Brief on Street Systems.

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### *Public realm design*

One of the greatest benefits associated with high densities is the public spaces. There is less private open space for each dwelling unit but that is more than made up for with a high quality public realm. The streets are a significant part of the public realm and well-designed public spaces provide something for everyone to do, whether it be reading a book in a quiet shady spot, playing in the water, or wandering through a farmer's market. Funding for open space with higher densities is easier, because funding for park development is done on a per unit basis, meaning that the higher the density, the more funding available to build quality open space.

The failure of places like Pruitt-Igoe was largely due to the lack of consideration for the public realm of the area. In Figure 1, the open spaces between buildings have little to attract people on the ground.

### *Mix of uses*

A key benefit and contributing element of density is the ability to mix compatible uses, which can accomplish many objectives. It reduces the number of vehicle trips people need to make for local needs by placing everyday activities and requirements close enough to a large number of people for it to be economically viable. It generates activity throughout the day contributing to the viability and safety of a neighbourhood.

### *Parking placed in alternate locations*

Parking is a significant contributing factor to the success of increased densities. A common mistake in high density nodes, like transit-oriented development, is the application of parking standards similar to low-density developments. Communities have found that anywhere from 25 – 30% less parking is generally required in a high-density node serviced by transit. (LGC, 2003)

In addition, the streetscape and the public realm design that is key to the success of increased densities are harmed by the typical suburban parking lot between the building and public sidewalk. Parking needs to be provided in alternate ways: on the street, behind the building, underneath or as part of the building, as shared parking or in parking structures. Flex cars, bicycle parking and improved transit also encourage alternate transportation and reduce the need for parking.

### *Scale, massing, orientation of buildings*

The buildings themselves must be designed with consideration for how they work together, not just within the confines of an individual lot. With higher densities, there is no room for wasted space. The size, massing and orientation define the open spaces between buildings and the street, which in turn determines the quality of the public realm, see Figure 5.

Building facades need to engage with the sidewalk and street in front, and frame open spaces alongside. They need to work in harmony with the buildings next to them to create a vibrant, interesting, ever-changing streetscape.

**Figure 5**



*High-rise buildings like the ones proposed for the Grandin Mall development have a street-oriented building base, and narrow towers set back to provide a more pedestrian-scale at street level.*

## DENSITY IN ST. ALBERT

The overall density for St. Albert is about 10 dwelling units per hectare. The neighbourhood densities range from 7.8 to 12.87. The Municipal Development Plan currently requires a minimum neighbourhood density of 12 dwelling units per gross

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residential hectare in new development areas. A breakdown by neighbourhood is found in Appendix 1.

The 2007 annexation was based on a need for 994 hectares of land for residential development. Since the annexation, other demands for the land have resulted in less than two-thirds of that amount now being available for residential development. At the densities considered for the annexation application, approximately 10,300 households would have been accommodated. Now only 6,700 households could be accommodated if the historic density is maintained.<sup>3</sup>

In addition, limitations to the capacity of the existing infrastructure system mean that greater costs will be borne by new development in the annexed areas. If the development is done at densities comparable to the existing neighbourhoods of the city, the cost of development is not feasible. As a result, St. Albert's market share of new residential growth in the Capital Region will significantly decline.

### SMART GROWTH ST. ALBERT AND DENSITY

In order to maximize the development of the remaining land in St. Albert and ensure the development is economically viable, Smart Growth St. Albert proposes an increase in the overall residential densities. For residential neighbourhoods it would double the current gross residential density to require a minimum of 20 du per hectare and provide opportunities for high density nodes in a few transit-oriented development areas in key locations. While this may seem like a large jump in density over existing patterns, it is already being championed by local developers. As an example, Landrex's Erin Ridge North proposal includes a gross residential density of 16 du per hectare.

Smart Growth St. Albert would also provide guidance for the design elements such as how buildings relate to the street, facilitating a mix of compatible uses, allocating densities appropriately, and ensuring effective transitions between densities with the proposed Form-based zoning regulations<sup>4</sup>. The intent is to create a strong, inviting and vibrant public realm to accommodate increased densities.

### CONCLUSION

Density can add many benefits to a community but it must be done well, and the many elements that contribute to the success of density must be included. St. Albert has many reasons to increase the density of development and Smart Growth helps by providing the design guidance required for successfully incorporating higher density developments into a community.

### REFERENCES

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<sup>3</sup> These numbers are based on development in the conventional manner for St. Albert, not the Smart Growth approach.

<sup>4</sup> Proposed Form-based zoning regulations can be seen at <http://www.stalbert.ca/form-based-regulations>

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## APPENDIX 1

### *Densities of St. Albert neighbourhoods*

<b>Neighbourhood</b>	<b>Dwelling units/ hectare<sup>5</sup></b>	<b>Percentage of Open Space<sup>6</sup></b>
Akinsdale	10.44	10.71%
Braeside	8.34	20.53%
Deer Ridge	10.68	11.49%
Downtown	9.63	27.18%
Erin Ridge	9.69	14.01%
Forest Lawn	8.78	20.74%
Grandin	10.86	15.32%
Heritage Lakes	9.71	13.66%
Inglewood	12.31	10.95%
Kingswood	12.44	21.35%
Lacombe Park	9.14	13.88%
Mission	8.87	20.88%
North Ridge	11.59	14.06%
Oakmont	10.39	16.44%
Pineview	8.32	15.25%
Sturgeon	7.85	13.85%
Timberlea	12.87	47.33%
Woodlands	9.04	27.37%

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<sup>5</sup> Density is per gross residential hectare and is based on full build-out, 2006 data

<sup>6</sup> Includes Municipal Reserve, Environmental Reserve, Reserve, Parks, School Reserve, PULs and Undesignated parkland, 2006 data

