

# Emerald Hills Urban Village

## FOUNDATION RESEARCH BULLETIN

Design Centre for  
Sustainability at UBC

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### LAND

#### 1.0 Why is land a key theme?

Globally, the population is increasing exponentially while the amount of available land on the earth remains fixed. The challenges of how and where to accommodate the growing population is being felt all over the world as communities struggle with providing housing, servicing larger centres, and securing land for valuable resources (such as food, water, energy, etc.) that can provide for the increasing demands.

By optimizing the economic, social and ecological impact of buildings and infrastructure land is used more efficiently. Innovative development standards, such as "green" infrastructure and buildings or natural drainage systems, can result in lower impact solutions that cost municipalities, residents and businesses much less over the long term.

This research bulletin will discuss general design strategies that can be applied towards capitalizing upon the EHUV site area in order to reduce land consumption. Further design strategies to this effect are provided in corollary research bulletins, most significantly Natural Habitat, Equity, Transportation, and Well-Being.

#### 2.0 Why is land important to Emerald Hills Urban Village?

Alberta is not confronted with the challenges of a limited land base as directly as other communities in Canada. As a result, like many communities in Alberta, sprawling, low-density development is common in Strathcona County. According to the Community Profile for Strathcona County, the majority (85%) of the housing inventory within Strathcona County is categorized as single detached dwellings<sup>1</sup>. However, this type of development can not continue to be sustained by the County as the population increases dramatically.

Currently, Sherwood Park has a capacity of approximately 75,000 people. By 2026, it is estimated that the total population of Strathcona County will be over 135,000<sup>1</sup>. As a result of this population growth, the Sherwood Park Urban Service Area it is "projected to be fully built out 2017"<sup>1</sup>. As stated in the Draft Municipal Development Plan, this will "increase pressure on not only the rural forms of living, but also for the community to continue to provide further opportunities for urban forms of development over the next several years"<sup>2</sup>.

The efficient use of land in Strathcona County is critical with continuing growth pressures and the significant portion of relatively intact forest and wetlands within the county which need conservation. The development of the Emerald Hills Urban Village presents an opportunity to be a model for efficient land use by creating a compact development, mixing uses, reducing infrastructure footprints and aiding in habitat conservation.

<sup>1</sup> Strathcona County Municipal Development Plan Review, Fall 2006.

<sup>2</sup> Strathcona County Draft Municipal Development Plan, Section 3.1, August 2006.

### 3.0 How can EHUV impact on this theme?

The Emerald Hills Urban Village site area presents an opportunity for a strategic land use design which knits buildings and spaces together in an efficient, coherent, and walkable pattern. Incorporating the following strategic designs into the EHUV site plan can help reduce the consumption of land necessary for a thriving and sustainable community.

#### 3.1 What strategies are relevant for EHUV?

##### USE MIX

###### Increase mix of uses on site.

There are a number of benefits associated with creating a diverse mix of uses in close proximity. In mixed use developments, automobile oriented commercial is replaced by pedestrian oriented retail which has the potential to enliven streets and enhance walkability. With more citizens walking or biking in a pedestrian friendly neighbourhood, the benefits extend into the individual well-being and a greater sense of community. Mixed land use can also have economic benefits. Commercial uses in close proximity to residential are often reflected in higher property values.<sup>1</sup>

###### Design measures:<sup>2</sup>

- Build on a site smaller than 7 acres.
- Include a residential component in the project and ensure that no more than 90% of total interior square footage comprises any single use type.
- Within 1/2 mile walking distance of at least six examples from the following uses: police/fire station, post office, place of worship, park, library, school, convenience store, laundry/dry cleaner, supermarket, other neighbourhood-serving retail, medical/dental office, other office building, pharmacy, restaurant, other major employment centre, community or civic centre.
- A pedestrian must be able to reach the uses via pedestrian routes that do not necessitate crossing any streets that have speed limits greater than 50 miles per hour, or have no pedestrian crossings where vehicle traffic stops.

##### RESIDENTIAL DENSITY



Fig.1 Radburn, N.J. encouraged a mix of uses and a compact centre.

<sup>1</sup> Smart Growth Online. 2006.

<sup>2</sup> LEED-ND. 2005.

## Increase residential density



Fig.2 Orenco Station Hillsboro, Oregon. Residential density is approximately 18 units per acre.

In addition to using land more efficiently, there are a number of advantages to increasing density through lot size and design. As noted in a report from Canadian Mortgage and Housing Corporation (CHMC), the advantages include reducing infrastructure and maintenance costs, lower total land cost per unit, reducing amount of building materials, and enhancing sense of community.

Higher residential density also supports transit services. In order to support regular, half-hour bus transit service, density needs to begin to be at around seven dwelling units per acre<sup>3</sup>. With doubling residential density, a 20-30% reduction in vehicle miles travelled per household and per capita is shown.<sup>4</sup>

### Design methods:

- Build residential components of project at an average density of seven or more dwelling units per acre of buildable land available for residential use.<sup>5</sup>
- Design and build to achieve average densities or intensities:<sup>6</sup>
  - 15 to 21
  - 22 to 27
  - 28 to 34
  - 35 to 39
  - 39 and higher

LEED points available range from one for the lowest density up to 5 for 39 or greater.

- Use small-lot design to achieve density. Small houses on small lots can achieve a gross density of 8 to 11 units per acre whereas a more conventional single detached development would only yield 5 to 7 units per acre.<sup>7</sup>
- Use narrow lots, and follow conventional patterns of surrounding neighbourhood. With narrow lots, the pattern of site development can be followed but more units per area can be achieved.<sup>8</sup>
- Zipper lots can achieve the same gross density as on-street town houses (around 15 units per acre). Single detached house on 33 by 130 foot lot that has the rear yard connected with neighbouring rear lots in a zipper lot fashion.<sup>9</sup>

<sup>3</sup> Ibid.

<sup>4</sup> Ibid.

<sup>5</sup> Ibid.

<sup>6</sup> Ibid.

<sup>7</sup> Canadian Mortgage and Housing Corporation (CMHC). 2005.

<sup>8</sup> Ibid.

<sup>9</sup> Ibid.

## COMMERCIAL DENSITY

### Increase commercial density



Fig.3 Village at Park Royal in West Vancouver, British Columbia. Example of the lifestyle mall concept.

Increasing commercial density can lead to concentrated vibrant centres that facilitate neighbourhood accessibility, interaction and exchange.<sup>10</sup> By increasing density, there is a greater possibility for a diversity of commercial spaces such as office, retail and even public institutions such as a library. There is also a greater possibility of creating a more walkable destination for the surrounding area as many of their daily needs can be satisfied in a dense and diverse commercial area.

#### Design measures:

- Build commercial components of project at an average intensity of a floor area ratio of 0.50 or greater.<sup>11</sup>
- Design and build to achieve average densities or intensities:<sup>12</sup>
  - .75 to < 1.
  - 1.0 to < 1.5
  - 1.5 to < 2.0
  - 2. to < 2.5
  - 2.5 and higher

LEED points available range from one for the lowest density up to 5 for 2.5 or greater.

- Manage parking to avoid allocating large areas of land for parking. For example, use structured or underground parking.
- Incorporate office or residential activities above commercial uses that involve more frequent public interaction.<sup>13</sup> This aids in creating a lively and attractive street front.



Fig.4 Garrison Woods in Calgary, Alberta.

## SITE COVERAGE OF ASPHALT

### Reduce parking footprint

Reducing site coverage for parking is a logical result in creating a safe pedestrian scaled environment. Safe, pedestrian scaled environments encourage walking and cycling, which thereby decreasing vehicle use and reducing parking demand. Minimizing the area required for surface parking also makes more land available for housing or commercial, reduces the amount of impermeable surfacing and can help improve the connectivity of a site.

#### Design measures:

- Set low minimum requirements to ensure that adequate park

<sup>10</sup> TDM Encyclopedia. 2005.

<sup>11</sup> LEED-ND, 2005.

<sup>12</sup> Ibid.

<sup>13</sup> TDM Encyclopedia. 2005.

ing is provided but not over built.

- Use no more than one row of parallel angled, or perpendicular parking spaces to separate the front of buildings from the street.<sup>14</sup>
- Use no more than 20% of the project land devoted to residential and/or commercial and or commercial uses for surface parking facilities. Underground or multi-story parking can provide additional capacity if necessary.<sup>15</sup>
- Provide pedestrian and bicycle amenities. For example, all commercial and non-residential zones in mixed use areas must provide bicycle parking. Shade, rain and snow protection, shallow building setbacks, and minimum number of vehicular entries crossing side walks also help establish a more pedestrian-oriented environment.
- Consider building above ground parking or underground parking structures in order to achieve greater density.

## HABITAT RESTORATION

### Support off-site land conservation



**Fig.5 Pringle Creek, Salem Oregon. Restored creek and wetlands (nearly 15% of site) and created bordering riparian zone.**

The value of habitat and open space spans economic, social and environmental benefits. Open space is proven to add value to adjacent or nearby properties. Typically, properties adjacent to open space amenities traditionally sell for more than property several blocks away.<sup>16</sup> Furthermore, by avoiding building infrastructure to fulfil the natural function of an area-controlling floods, drainage and detention- there would be a cost savings by avoiding the unnecessary replacement of the natural system with a constructed system.<sup>17</sup> For strategies on habitat see Foundation Research Bulletin 2, Natural Habitat.

#### Design measures:

- Acquire fee title or conservation easements on off-site land that is equal to or larger than 50% of the area of the project or five acres, whichever is larger, and ensure the protection of the land from development in perpetuity.<sup>18</sup>
- The land must be within 200 miles of the project, and must be identified by local, state or national government as important for conservation for natural or cultural purposes.<sup>19</sup>

## 4.0 What policies and/or programs will add value?

- Create a platform for businesses and community groups, with which they can organize and co-ordinate space-

<sup>14</sup> LEED-ND, 2005.

<sup>15</sup> Ibid.

<sup>16</sup> Porter, Douglas R. 2002.

<sup>17</sup> Ibid.

<sup>18</sup> LEED-ND, 2005.

<sup>19</sup> Ibid.

sharing to maximize usage of existing buildings and facilities.

- Create a policy to ensure that all new residential development is within a 5-minute walk (approx. 400m radius) of basic services and transit, and within a 10-minute walk of value-added greenspace.
- Ensure higher density developments complement existing context, are human-scaled, and are aesthetically articulated in form.
- Design a complete community (ie. incorporate social, environmental, economic and cultural elements), and ensure all spaces are integrated and connected by pedestrian paths. Ensure communities can be connected throughout the region with a minimum of infrastructure (ie. build communities close together).
- Combine research efforts and inclusive, multi-stakeholder, informational and idea-building workshops and forums to plan for community and regional growth.
- Create municipality-led workshops for regional and local planners and developers on strategic approaches for transit-oriented development.<sup>20</sup>
- Create workshops and information sessions to build frameworks around brownfield restoration and reuse, combined with GIS information-sharing as part of a regional brownfields assessment process.<sup>21</sup>

## 5.0 What other resources are available?

Foundation Research Bulletins:

#5: Transportation, for more on street design in building sustainable communities.

#11: Equity, for more on housing density options.

#2: Natural Habitat, for more on habitat creation and connectivity.

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<sup>20</sup> The Growth Management Institute. 2000. <http://www.gmionline.org/home.htm>.

<sup>21</sup> Ibid.

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Figure 1: Radburn, N.J. <http://www.radburn.org/>

Figure 2: Orenco Station, Hillsboro Oregon. <http://www.orencostation.net/>

Figure 3: Village at Park Royal, West Vancouver, British Columbia <http://www.mcmparchitects.com>

Figure 4: Garrison Woods, Calgary Alberta. <http://www.garrisonwoods.com/>

Figure 5: Pringle Creek Community, Salem Oregon. <http://www.pringlecreek.com/explore.htm>

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