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A Prototype Internet Tool For Negotiated Urban Design



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A PROTOTYPE INTERNET TOOL FOR NEGOTIATED URBAN DESIGN:

**REVIEW, ASSESSMENT AND SURVEY OF “LAND USE
DENSITY” AS THE DOMINANT TOOL FOR SHAPING URBAN
DEVELOPMENT PROJECTS
and
CONCEPTUAL AND PROTOTYPE DEVELOPMENT OF THE
NEGOTIATED URBAN DESIGN TOOL**

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ABSTRACT

A Prototype Internet Tool for Negotiated Urban Design

By

William T. Perks and Terry Brooke

The purpose of the study was to create a prototype Negotiated Urban Design (NUD) Tool that provides an interactive forum for stakeholder engagement in Planning-Design-Development projects. The NUD tool is a venue for visualization of a range of residential densities and tests receptivity to various urban forms through a series of images. The NUD tool was simulated on a CD ROM and could be developed for web based access. It is intended to be expanded through participant use creating a national Best Practices Gallery.

A Prototype Internet Tool for Negotiated Urban Design
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Part 1 consists of an examination of various methods of density specification, analysis of the relationship between achieved density and specified density and a survey of practitioners' opinions on various methods of density specification.

Methods of residential density specification in four Canadian cities, Ottawa, Toronto, Calgary and Vancouver, were reviewed by examining zoning by-laws. Typical density measures were: dwelling units per hectare (acre), persons per hectare (acre), Floor Space Ratio or Floor Area Ratio and setback/building height. Each measure provides municipal planners with different types of information. For example, dwelling units per hectare may provide a good basis for estimating traffic generation from a development but provides little indication of the physical form of the development whereas setback/building height provides a good indication of the building envelope but provides little information as to the number of units/people in the project.

The examination of density achieved vs. density specified indicated expected results such as significantly higher densities in central areas but relatively small variations in density in suburban areas developed between the mid 1950's and mid 1990's. The small differences are most likely due to demographic shifts through time.

The survey indicated that there would be little consensus among practitioners on the best way to measure density. Respondents agreed that sustainable community design included housing affordability and that higher densities were one solution to housing affordability.

Part 2 dealt with the development of the Negotiated Urban Design (NUD) Tool. The tool is simulated on a CD ROM. It was beyond the scope of this research to create a fully functioning tool. It is intended that the tool would ultimately be web based for easy access and to promote stakeholder interactivity and engagement in the Planning-Design-Development process. The tool is primarily image based and seeks to determine and advise on participant preferences to streetscape and form with density specifications secondary.

It was proposed that the NUD tool be developed through participant use. One component would be a National Best Practices Gallery to demonstrate good solutions to medium range density. Participants would ultimately determine the content of the Gallery. The second component is a repertory grid of images designed to inform participants on density as well as determine urban form preferences based on visualization rather than specification.

The NUD tool would also have a local component in the form of a Current Proposal Gallery. Its function would be to act as a forum for the exchange of ideas about project conceptualization, form and density. Participants could make comments on current proposals and reference solutions that appear in Best Practices.

Un prototype d'outil Internet d'esthétique urbaine négociée
par
William T. Perks et Terry Brooke

RÉSUMÉ

La première partie est consacrée à l'étude de différentes méthodes de spécification de la densité, de l'analyse du rapport entre la densité obtenue et la densité spécifiée, et à un sondage visant à connaître l'opinion des praticiens sur les différentes méthodes de spécification de la densité.

Les méthodes de spécification de la densité des aménagements résidentiels dans quatre villes canadiennes, en l'occurrence Ottawa, Toronto, Calgary et Vancouver, ont été soumises à l'examen des règlements de zonage. Les mesures types en matière de densité portaient sur le nombre de logements par hectare (acre), le nombre de personnes par hectare (acre), le coefficient d'occupation du sol et la marge de recul / hauteur de bâtiment. Chaque mesure offre aux urbanistes municipaux des types différents de renseignements. Par exemple, le nombre de logements par hectare permet peut-être de bien estimer la génération de la circulation découlant de l'aménagement, mais fournit peu d'indication quant à la forme physique de l'aménagement, alors que la marge de recul / hauteur de bâtiment donne une bonne idée de l'enveloppe des bâtiments, mais renseigne peu sur le nombre de logements / d'occupants de l'ensemble résidentiel.

L'examen de la densité obtenue comparativement à la densité spécifiée corrobore les résultats escomptés, c'est-à-dire une densité beaucoup plus élevée dans les zones centrales, mais des variations de densité plutôt faibles dans les régions suburbaines aménagées entre le milieu des années 1950 et le milieu des années 1990. Les légères différences sont fort probablement attribuables aux fluctuations démographiques au fil du temps.

Le sondage indique qu'il n'y aurait pas de consensus chez les praticiens quant aux meilleurs moyens de mesurer la densité. Les répondants ont convenu que le concept de collectivité durable comprend la notion d'abordabilité du logement et que l'aménagement à haute densité constitue une solution au problème de l'abordabilité du logement.

La deuxième partie porte sur l'élaboration de l'outil d'esthétique urbaine négociée. L'outil fait l'objet d'une simulation sur le cédérom. La création d'un outil pleinement fonctionnel va au-delà de la portée de la présente recherche. Il était question que l'outil soit offert sur le Web pour en faciliter l'accès et promouvoir l'interactivité parmi les intervenants et l'engagement dans le processus de planification, de conception et d'aménagement. L'outil est principalement axé sur des images et vise à déterminer et à marquer les préférences des participants à l'égard des panoramas de rues et formes connexes, la spécification de la densité étant reléguée au second plan.

Il a été proposé d'élaborer l'outil en fonction de l'utilisation des participants. Un élément serait consacré à une collection nationale des pratiques exemplaires en vue d'exposer les

bonnes solutions en matière d'aménagement de densité moyenne. Les participants détermineraient en bout de ligne le contenu de la collection. Le deuxième élément consisterait en une grille répertoriée d'images conçues pour informer les participants sur la densité et pour déterminer les préférences de forme urbaine par voie de visualisation plutôt que par spécification.

L'outil comprendrait également un élément local sous forme de tribune de collection des propositions courantes. Elle tiendrait lieu de forum favorisant l'échange d'idées au sujet de la conceptualisation, de la forme et de la densité d'aménagement des projets. Les participants pourraient formuler des observations au sujet des propositions courantes et établir des renvois aux solutions figurant dans les pratiques exemplaires.



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Start the sequence by opening the file named "index". Please note that there are less potential conflicts if you use Microsoft Explorer vs. Netscape.

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PART 1

REVIEW, ASSESSMENT AND SURVEY OF LAND USE DENSITY

1.0 Negotiated Urban Design (NUD)

The project Terms of Reference commits the team to the conceptualization of an iterative process of Land Use Density specification, and a negotiated urban design model or practice procedure. Our conclusion was that this dual or combined process would operate with two operational components or principles:

- 1) a set of powerful guidelines or rules or images, The Best Practices Gallery, and
- 2) the relevant terms of condition for initiating, conducting and concluding negotiation between the development proponent and the municipal authority and the community at large at the earliest possible stage of bringing a development project into play, the Current Projects Gallery.

The process could be brief or lengthy depending on 'situational' circumstances. Both components make up the NUD Tool.

1.1 The Iterative Process...

Alexander et al. (*A New Theory of Urban Design, 1987*) showed that spaces are first generated, followed by pedestrian movements, then the architecture of built forms, streets and finally the subdivision. This, as such, would be an inversion of the customary plan-making subdivision process. Density in this process becomes, in some sense, a "dependent" variable (as opposed to "independent" as is now the practice). The pretense of density as the control variable is thus replaced by negotiable density outcome. A key condition to this process is that the scale of the project be 'small' -- just how small, we are not sure. Subdivision projects at a scale of 80 or more acres appear to us to be too big to negotiate at any one time. We would anticipate a series of iterations of this designing process, with each successful iteration a succeeding project is aggregated with the former one(s) until the desired community scale has been achieved.

1.2 Sustainable Community Design

The research indicates a diverse language and a variety of propositions concerning the definition and operationalization of sustainability in one or all communities and development projects. While one might adopt the nine performance criteria (page 5) proposed by Perks and van Vliet on the basis of empirical research into built sustainable community projects:

- 1) there is no agreement that all of these features must be present in a project to constitute sustainability and,
- 2) not all researchers or authors on sustainability would accept that projects have to be compact or more intensely developed than the present norms and standards called for in their jurisdictions.

The second observation flows from consideration of the local, cultural and ecological context. The feasibility of calling for greater density in a given project in a given local circumstance has to be mediated by a number of critical factors. Among these factors are local market conditions.

With respect to the favoured language of many experts and persons who have participated in “sustainable” community developments, a preferred disposition would be *“sustainable-minded”* or *“contributes to sustainability”*. Thus, the presence of one or two features that make a significant difference in the minds of the local community (the occupants of the housing) could mean, especially for them, a sustainable community.

The local community would also be as likely as not to support the notion that a holistic vision, plan, or strategy for the complete or optimal sustainable community is desirable, if not necessary. Hence, the value of urban design images, plans, etc., in negotiating the scope and environmental characteristics of a project.

In the face of the above and market conditions aside for the moment, a strong case can be made for increased density/intensification of the built form in suburban and vacant land site projects in the Canadian context. This points to the question of density. The approach being taken in designing the tool contemplates an ability to explore and evaluate alternatives and tradeoffs between a wide range of sustainable features and a stipulation of high, low or medium densities.

The assumption that higher density, in and of itself, is sustainable has to be questioned. It is true that higher densities can result in more efficient land use, and there is a good possibility that a more compact form will result in better utilization of services and less infrastructure; thus “contributes to sustainability”. However, as density increases, the ability to achieve other sustainable criteria can conceivably diminish. For example, in a high density area, access to sunlight for passive and active solar becomes more problematic, the ability to grow your own food would likely decrease.

To take three possible sustainability features at the level of the home property, low density development (as low as one acre lots, e.g.. Frank Lloyd Wright’s Broadacre) could score high on their ability to ensure passive solar, year round food production, and composting toilets. For another example, the reliance on single occupant auto travel to the city core could be offset by telecommuting. We recognize that a low development density would however seriously compromise the development of a sense of physical community, which one can achieve in a higher density area. On the other hand, high density itself does not necessarily guarantee agreeable, congenial urban form, nor necessarily ensure a vibrant street. The Broadacre residents tend to form communities based on other connections such as e-mail, telephone, internet,etc.

Given the above, we are beginning to understand that at any given or preferred density, we must trade off other factors of sustainability to achieve higher densities. The goal is to devise a more sustainable than current urban development practice despite what density is selected. The process of selecting a particular density related or linked to sustainability factors leads into the process of negotiated urban design. The tool is intended to be used by all parties, not just municipal officials and the developer, to understand the alternatives and trade offs (such as those noted above) and begin the process of negotiated urban design. Through this process, a successful outcome can be achieved in producing high density areas that have a sense of place.

A community based on the urban street or conversely, a low density acreage development in which a good majority of residents did , for example, grow food, relied on passive solar, employed composting toilets and telecommuted, are possible where desired. The process of negotiated urban design and use of the density tool would help guide all parties and prevent the building of high density developments that have no sense of place or the development of low density acreage subdivisions with residents who commute to the city centre.

2.0 Background

A comprehensive documentation and analysis of the regulatory environment and other planning and development instruments from the four subject municipalities was completed May to August 1999. This included not only the subject jurisdictions of Calgary, Vancouver, Ottawa and Toronto, but also other locales in North America. The object was to reference and draw density measurement procedures and subdivision process innovations from these areas. While there are several commonalities, there are also significant differences in the process of determining density in the subject municipalities. These differences can also be viewed with reference to several other (approximately 15) locales in North America that have been searched.

It was found that density is applied to residential development in essentially two different forms: unserviced land suburban development (greenfield sites), consisting primarily of low density single detached dwellings; and multi-family developments, including a range of medium to high density housing forms in both new and redevelopment scenarios. These two distinct applications exist in all four Canadian cities and have similar manipulative factors (e.g.. land dedications, road standards, building codes, urban design guidelines, etc.) present when determining the number of permissible lots or units. The values attached to these factors (e.g.. Floor Space Ratio, Municipal Reserves, etc.) can be widely varied from jurisdiction to jurisdiction. With respect to “maximum allowable density” there is no uniform practice across the four municipalities. In some municipalities, there may be no maximum allowable for certain types of projects in specified locations. In all of the subject cities, suburban raw land (greenfield sites) can be subject to minimum densities but it is often difficult to regulate minimum density (e.g.. Calgary has a minimum density via the “Sustainable Suburbs Study”, which is official City policy). However, unless this policy is adopted into the Area Structure Plan and is implemented via the Land Use By-Law, it is a very soft minimum. Since there are no minimum density requirements within a Land Use District, or lot size maximum, it is very difficult to regulate minimum suburban density. This results in a range of built densities and a variety of urban design scenarios.

The research on sustainability and sustainable community design (SCD), including studies and research reports related to density, have provided a foundation on which a comparative analysis can be made. This relates current practices to those that are considered more sustainable. The research included an investigation of built sustainable projects found in Europe and North America. Among the relatively few SCD frameworks, we have adopted Perks and van Vliet’s nine sustainable criteria as a generally applicable and fully embracing norm to aid in the development of the ‘tool’ and the negotiated urban design process.

Sustainable Community Design Criteria Nine Factors

(Perks and van Vliet - Sustainable Community Design CD Rom, 1998)

1. Building Ecology
2. Land Use / Landscape Ecology
3. Community Design
4. Energy
5. Water and Sewage
6. Transportation
7. Waste and Recycling
8. Community Management
9. Economic Viability

2.1 Suburban Development Density Calculations

Based on an examination of regulatory procedures, establishing the actual number of lots allowed in a potential subdivision development involves a similar and lengthy calculation in all municipalities. Although density is stipulated by zoning and land use designation prior to subdivision, the further application and/or negotiation of urban design, land reserves, road standards, etc., and/or policy directives can produce different and varied densities and urban forms. This pertains to the four subject cities.

The standard regulatory procedure in all four jurisdictions involves completion of a “data sheet”. This is operated based on a potential design scheme or plan for a specific parcel and anticipates ‘negotiation’. The important point for this research project is the data sheet, which is part of a larger application form, requiring detailed information on the subdivision and includes the following requirements in all locales:

- Total Site Size
- Total Units
- Units Per Hectare / Per Acre
- Road & Lane Dedication
- Open Space Dedication
- Other Land Dedications

Even though the process may be similar or even identical among the four cities, the terminology used and the density measurement actually applied to a specific parcel varies in each jurisdiction. It also varies among the actual development sites.

Density, in general, is calculated by dividing the gross developable area (total site area minus undevelopable land or lands readily conceded to the municipality because they defy conventional norms for marketable development) by the total lots and/or units. However, this is not a standardized procedure due to the definitional differences in 'undevelopable' land and the different land dedications, roads and other requirements that touch on either private or public parcels.

In it's simplest form, the following outlines the general suburban density calculation:

$$\frac{\text{Total Housing Units}}{\text{Gross Developable Area}} = \text{Density (units per acre or hectare)}$$

In determining allowable density (units per hectare or acre), those involved in the development are required to understand land use/zoning bylaws and other regulatory guidelines prior to the development application (permit) stage in order to ensure that their project is acceptable under the specific regulatory environment. Their understanding must include a detailed comprehension of land dedication requirements, how they are determined, their effect on density and road standards, and their effect on density. All of these factors must then be related to economic feasibility and market acceptance. Thus, not only is density stipulation deployed in anticipation of "negotiation", the negotiation is, generally speaking, exclusively market feasibility focused and most or all normative aspirations are forfeited. Why this is so and how it might be remedied or balanced has to be addressed in the tool.

The research on land dedications for parks and schools indicates that there are examples of "flexible" dedication requirements in contrast to a fixed density formula, based on a sliding scale. This differs significantly among the four subject municipalities, all of whom seem to incorporate a fixed formula regardless of size, population, etc. (e.g. 5% open space requirement for all new subdivision developments). As the ultimate density is partially related to open space and other dedication requirements, the process for determining the size of the land dedications is an important process. These alternative land dedication procedures were explored in the survey and interviews.

Alternate Density Measurement - Adams County Colorado

| | |
|------------------|---|
| Site Density: | Stipulated by local by-law |
| Land Dedication: | Sliding scale based on a predetermined land dedication by housing type for, School Sites, Neighbourhood Parks and Regional Parks. Dedications are essentially determined by the unit mix of the development, as each unit is differentiated by type (e.g.. single family, townhouse, etc.) and then allocated a different amount of dedication. This produces a sliding scale for dedications, based on the unit mix. The required dedications are based on averagehousehold size by housing type, which is taken from the 1980 U.S. Census of Population and Housing for the West Mountain Region. |

Land Area Required for Neighbourhood Parks Per Household:

| | |
|------------------------|---------------------------|
| Single Family | .020 acres per household |
| 2 to 4 Family Attached | .015 acres per household |
| Townhome | .013 acres per household |
| Garden Apartment | .012 acres per household |
| Mobile Home | .017 acres per household |
| High Rise | .0075 acres per household |

2.2 Multi-Family Development Density Calculations

Higher density projects (e.g.. multi-family developments) tend to be submitted to a different regulatory environment than suburban “subdivision” developments. Three separate approaches are used among the four subject municipalities in calculating multi-family densities. All three of the density measurements are used in Ottawa. One approach (Calgary and Ottawa) simply stipulates the allowable number of units per hectare or acre based on different types of land-use as defined in the City Bylaw. Some land use classifications (e.g.. RM7) are pro-rated based on the site size, which has a strong influence, if not determinant effect, on urban form. The significance of this procedure for this study is that for certain conditions, the density stipulation is ‘flexible’ upon site size, leading towards a sliding scale anticipated in a “Negotiated Urban Design” process.

2.2.1 Units Per Hectare - Multi Family Density Measurement: Calgary and Ottawa

$(\text{Site Size}) \times (\text{LUD's Density}) = \text{Total Units}$
e.g.. 2.5 ac x 45 UPA (RM3) = 112.5 units

Notes :

1. Density is predetermined by Land Use Designation in City's Bylaw Based on a specific number of units per acre.
2. Density is adjusted proportionate to the site size (excluding RM7 LUD).

In three of the jurisdictions, a more flexible process is applied to determine density. A Floor Space Ratio (FSR) is used in Vancouver, Toronto and Ottawa (where it is referred to as a Floor Space Index). A FSR measures the ratio of floor space of the proposed building(s) to the site size. This density calculation is considered to be more flexible than a "units per hectare" measurement because the maximum number of units is not allocated based on legislated zoning or land use classification. Still, there are differences among the four municipalities with portions of the developed floor space falling under the FSR and other portions not, which can again affect density (e.g.. balconies, storage areas, etc.).

2.2.2 Floor Space Ratio - Multi Family Density Measurement: Vancouver, Ottawa, Toronto

$(\text{Site Size}) \times (\text{FSR}) = \text{'Livable' Development Space}$
e.g.. 10,000 sq ft site x 2.00 FSR = 20,000 sq ft of livable space

Notes:

'Livable' Space is predetermined by a Floor Space Ratio (FSR) as outlined in the respective city's bylaw. The actual number of units and density are determined by the developer based on the amount of developable space and other factors such as market preferences, potential unit prices, etc.

2.2.3 Setback and Building Height - Multi Family Density Measurement: Ottawa

$\text{Site Area} - \text{Setbacks} = \text{Building Footprint}$
 $\text{Building Footprint} \times \text{Number of Storeys (Building Height)} = \text{Total Floor Area}$

Notes:

The total floor area is then divided into unit sizes that are determined by the developer. The number of units is contingent upon the total floor area and the unit size.

Even though these three distinct density measurements pertain to all four municipalities, there are several common factors that effect the density of the project. Landscaping criteria, building height restrictions, parking requirements, etc. are included among the factors that may affect the density outcome of a multi-family site project.

2.3 Calgary Case Studies

In addition to our examination of the regulatory environment, an analysis of eight (8) Calgary communities was completed to provide a basis of comparison between the policies that guide their development and the actual built communities. The community analysis also provides a basis of comparison for the communities and the project level developments of seemingly objective densities and they inform the task of formulating the 'Sustainable Community Design Tool' (see Appendix 1).

The eight (8) communities selected represent a cross section of the urban environment in Calgary, with representation from the 1950s through to the 1990s. These communities also encompass a wide range of housing forms and densities.

Table 1.0
Select Community Profile Summary

| Community | Build Out Period | Area Hectares | Acres | Population 1997 | 1993 | 1988 | Ownership Total | Own | Percent |
|-----------------|---------------------|------------------|---------|--------------------|--------|--------|--------------------|--------|---------|
| Central | | | | | | | | | |
| Connaught | 1920 - 1990 | 121.7 | 300.7 | 11,778 | 11,028 | 10,938 | 7,432 | 1,125 | 15% |
| Downtown* | 1920 - 1990 | 293.1 | 724.2 | 9,747 | 8,548 | 8,235 | 5,423 | 158 | 3% |
| Suburban | | | | | | | | | |
| Brentwood | 1950's | 314.6 | 777.3 | 6,544 | 6,659 | 6,858 | 2,567 | 1,966 | 76% |
| Varsity | 1960's | 674.7 | 1,667.2 | 12,578 | 12,676 | 12,818 | 5,200 | 3,356 | 64% |
| Silver Springs | 1970's | 489.4 | 1,209.3 | 10,236 | 10,283 | 10,272 | 3,476 | 2,905 | 83% |
| Scenic Acres | 1980's | 447.8 | 1,106.5 | 8,321 | 5,586 | 2,476 | 2,466 | 2,406 | 97% |
| Tuscany | 1990's | 530.6 | 1,311.1 | 646 | 46 | 4 | 236 | 231 | 97% |
| McKenzie Towne | 1990's | 1,128.3 | 2,788.1 | 348 | 9 | 5 | 146 | 137 | 93% |
| Total | | 4,000.2 | 9,884.4 | 60,198 | 54,831 | 51,610 | 26,946 | 12,284 | 45% |

Based on information from City of Calgary Civic Census 1997 and Community Profiles

* Includes Downtown Core, East Village, West End and Eau Claire

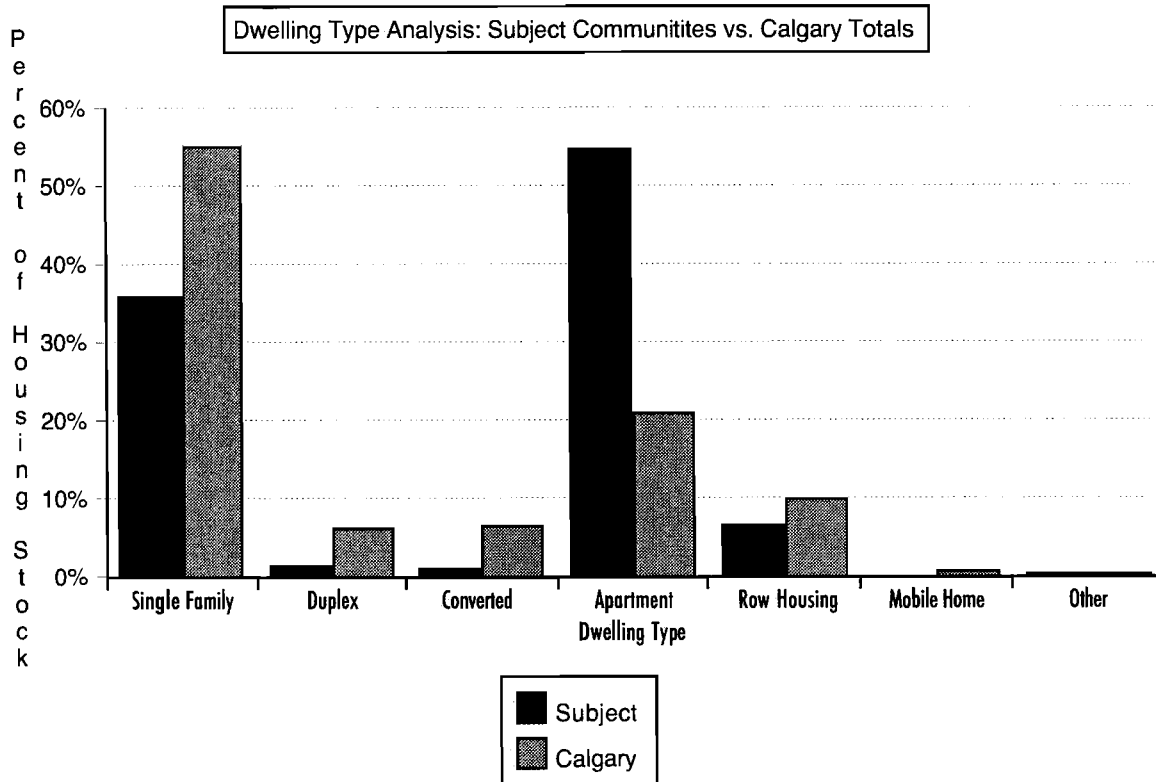
Further to the data in Table 1.0, the subject Calgary communities encompass a wide range of build out periods, population characteristics and community sizes.

The sample size represents 4,000 hectares of land and over 60,000 people. Population growth has remained relatively low in the central communities and those developed between 1950 and 1970. The communities developed post - 1980 have experienced significant growth. They have been built out over the last 20 years, or in some instances, they are continuing to be built out.

As expected, home ownership was lower in the Calgary downtown and Connaught. Given the community sizes, it is apparent that population densities are significantly higher in the more centrally located areas (refer to Table 3.0 and 4.0 for an extensive density analysis).

Graph 1.0

Dwelling Type Analysis - Subject Communities vs. Calgary Totals

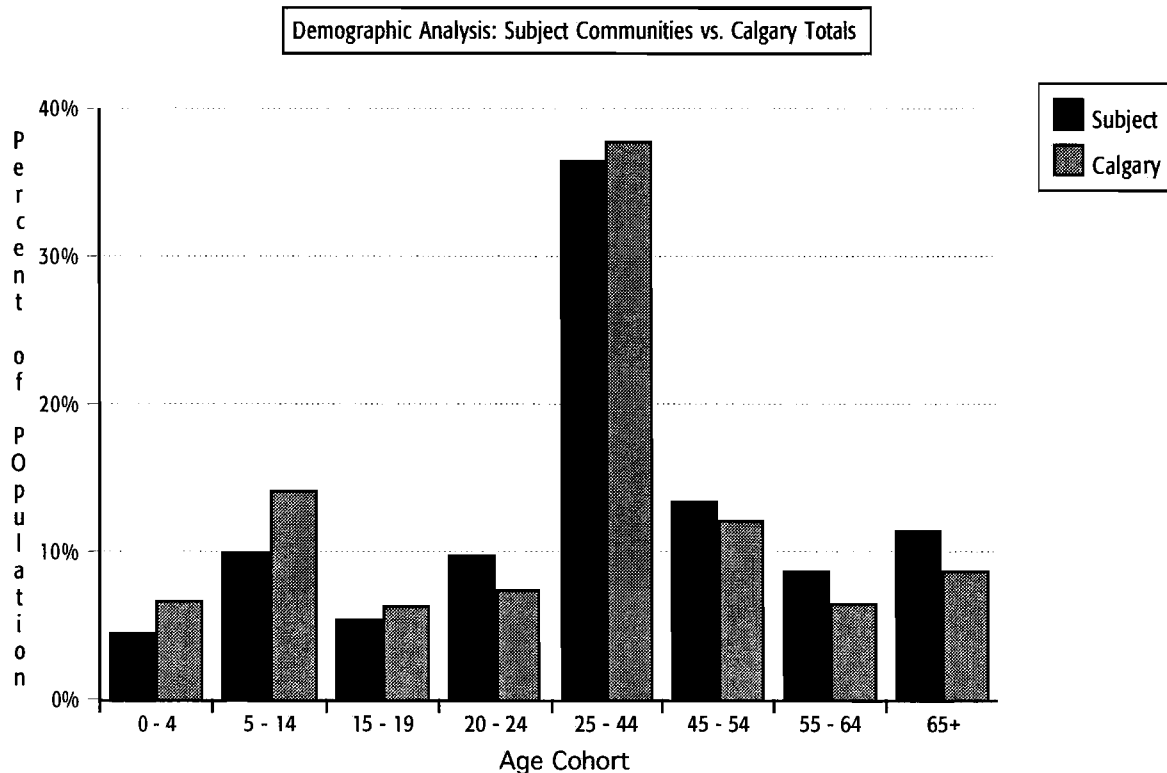


Based on information from City of Calgary Civic Census 1997

Graph 1.0 illustrates the housing mix of the subject communities as compared with the City of Calgary totals. As the Downtown and Beltline areas were included in the analysis, the mix of the subject communities includes a disproportionate amount of apartment style units, compared to the City of Calgary totals.

Graph 2.0

Demographic Analysis - Subject Communities vs. Calgary Totals



Based on information from City of Calgary Civic Census 1997

As indicated in Graph 2.0, the age cohort breakdown in the eight Calgary communities is relatively close to the City wide demographic breakdown, illustrating a representative sample market. At face value, this indicates that the age breakdown of residents is comparative to the City wide totals, thus providing a sample that is representative. These demographics play an important role in the demand for particular products, including real estate. In addition, the sample provides more validity for the conclusions that can be drawn from the eight communities.

Table 2.0**Existing Land Use Designation (percent of net area)**

| | Low Density Res | Multi Family | Direct Control | Urban Reserve | Open Space | Industrial | Comm. | Agricultural | Net Acres** |
|-----------------|--------------------|-----------------|-------------------|------------------|---------------|------------|-------|--------------|----------------|
| Central | | | | | | | | | |
| Connaught | 0.0 | 42.2 | 28.2 | 0.0 | 3.0 | 14.4 | 12.1 | 0.0 | 198.0 |
| Downtown | 0.0 | 0.9 | 31.1 | 0.0 | 15.5 | 8.4 | 31.1 | 0.0 | |
| Suburban | | | | | | | | | |
| Brentwood | 58.3 | 3.9 | 14.8 | 9.8 | 9.8 | 0.0 | 8.4 | 0.9 | 511.3 |
| Varsity | 37.6 | 2.3 | 12.3 | 13.0 | 13.0 | 0.0 | 0.9 | 18.1 | 1235 |
| Silver Springs | 47.5 | 5.6 | 3.9 | 5.9 | 35.6 | 0.0 | 1.5 | 0.0 | 931.4 |
| Scenic Acres | 54.4 | 0.0 | 15.2 | 15.3 | 15.3 | 0.0 | 0.3 | 0.0 | 701.1 |
| Tuscany | NA | | | | | | | | |
| McKenzie Towne | NA | | | | | | | | |

Based on information from City of Calgary Community Profiles

In Table 2.0, the land use designation (LUD) summary exemplifies allocation by use for central and suburban communities. This information will be developed as a comparative basis for the Sustainable Community Design Tool. It will provide a basis for what LUD's constitute as current practices and to examine what constitutes 'more sustainable' community design.

The allocation of LUD's varies greatly between central and suburban communities. As might be expected, low-density residential land use comprises a significant (if not predominant) portion of the suburban communities and higher-density multi-family land use is prevalent, if not exclusively, in the central communities in the form of Direct Control LUD. The Direct Control Designation in Calgary allows for more site specific projects and specifications. Also, commercial LUD's are much lower in the suburban communities - they range from 0.3% to 8.4% as compared to 31.1% downtown.

Although Municipal Reserves (public open space) is legislated at 10% for new communities, the sample communities have much larger areas dedicated to this use. The allocation of land use to open space includes environmental reserve, which accounts for its significant size in some communities. Although a 10% minimum requirement of open space is presently legislated, developers realize the value of this amenity space and subsequently have quite larger allocations for it. Additional open space reserve can affect the overall density of a subdivision, however the market appeal and lot prices achieved in developments with large park systems offsets the loss in units.

Table 3.0**Existing Land Use Allocation (percent of net area)**

| | Low Density Res | Multi Family | Commercial | Recreational | Institutional | Vacant | Industrial | Farmland | Net Acres** |
|-----------------------|--------------------|-----------------|------------|--------------|---------------|--------|------------|----------|----------------|
| Central | | | | | | | | | |
| Connaught Downtown | 5.7 | 30.7 | 45.3 | 1.2 | 06.4 | 10.7 | 0.0 0.0 | 0.0 | 198.0 |
| Suburban | | | | | | | | | |
| Brentwood | 57.4 | 3.2 | 14.5 | 1.4 | 11.0 | 12.4 | 0.0 | 0.0 | 511.3 |
| Varsity | 37.1 | 7.8 | 5.8 | 5.7 | 10.1 | 28.3 | 5.2 | 0.0 | 1,235.0 |
| Silver Springs | 51.9 | 4.4 | 1.5 | 2.8 | 3.9 | 35.5 | 0.0 | 0.0 | 931.4 |
| Scenic Acres | 47.2 | 0.5 | 0.1 | 0.6 | 3.5 | 46.6 | 0.0 | 1.5 | 701.1 |
| Tuscany | NA | | | | | | | | |
| McKenzie Towne | NA | | | | | | | | |

Based on information from City of Calgary Community Profiles

**Excludes roads and lanes

Table 3.0 provides a breakdown of existing land uses by community and an illustration of current land use practices. The breakdown exemplifies the disproportionate amount of space allocated to single family units compared to multi-family units in the suburbs. Approximately 4.6% of the existing land use in the suburban communities is allocated to multi-family uses. It appears that it is feasible both from a market and economic perspective to expand the amount of multi-family developments in the suburban context, and yet still provide a significant allocation for low density single family units. The question is, on what sites should it be located and how near to/or far from the readily apparent market housing units should these developments be?

Although our data indicates that recreational space comes well below the 10% legislated requirement, open space is persistently included in the vacant land use category. Table 3.0 also illustrates the switch from multi-family land use in the city centre to an emphasis on single detached housing forms in the suburbs.

Table 4.0
Gross Density Calculations*

| | Area Gross Ha | Gross Acres | Population 1997 | Dwelling Units | People Per Ha | Units Per Ha | People Per Acre | Units Per Acre |
|-----------------|------------------|-------------|--------------------|-------------------|------------------|-----------------|--------------------|-------------------|
| Central | | | | | | | | |
| Connaught | 121.7 | 300.72 | 11,778 | 7,746 | 96.77 | 63.64 | 39.16 | 25.75 |
| Downtown | 293.1 | 724.26 | 9,747 | 6,474 | 33.25 | 22.08 | 13.45 | 8.93 |
| Suburban | | | | | | | | |
| Brentwood | 314.6 | 777.39 | 6,544 | 2,600 | 20.80 | 8.26 | 8.41 | 3.34 |
| Varsity | 674.7 | 1,667.21 | 12,578 | 5,271 | 18.64 | 7.81 | 7.54 | 3.16 |
| Silver Springs | 489.4 | 1,209.33 | 10,236 | 3,504 | 20.91 | 7.15 | 8.46 | 2.89 |
| Scenic Acres | 447.8 | 1,106.53 | 8,321 | 2,618 | 18.58 | 5.84 | 7.51 | 2.36 |
| Tuscany | 685.21 | 1,693.18 | 646 | 360 | 0.94 | 0.52 | 0.38 | 0.21 |
| McKenzie Towne | 1,128.3 | 2,788.08 | 348 | 249 | 0.30 | 0.22 | 0.12 | 0.08 |
| Total | 4,154.81 | 10,266.74 | 60,198 | 28,822 | 14.48 | 6.93 | 5.86 | 2.80 |

Based on information from City of Calgary Civic Census 1997 and Community Profiles

* Gross residential area includes the total area within the community boundaries.

Note: Tuscany and McKenzie Towne are currently in the process of being built out, therefore, densities in these two communities will increase as more space is occupied. Currently, the density measures in these two communities are inaccurate because they are based on the gross community area, but only a portion is built out.

The eight (8) subject communities represent a wide range of gross densities for both people per hectare and units per hectare. As would be expected, relatively high densities are achieved in central communities - 63.64 units per hectare (25.75 per acre) in the Beltline in Calgary. Although the central communities have higher dwelling unit and population densities, they are only averaging 1.51 persons per unit, compared to the 2.65 people per unit expected and achieved in the suburbs (greenfield - city housing). This points to the viability of multi-family homes that can adequately house more than 1.51 persons, again with consideration to market and economic feasibility. The low number of people per unit in the central communities represents a window of opportunity to increase density even further in these areas.

In the suburban areas, densities of 5.84 to 8.26 dwelling units per hectare (2.36 to 3.34 per acre) were achieved. This is substantially lower than the central communities, it illustrates that there tends to be no middle ground between central and suburban communities. As infill development and redevelopment projects persist over time in more centrally located, established suburbs, densities in these areas should reach a middle ground between current densities in the central areas vs. the suburbs. However, the analysis indicates great possibilities to increase density in new suburban

developments, to initially achieve densities between existing suburban and central communities, not having to wait for years of infill and redevelopment.

Table 5.0 - Net Density Calculations*

| | Low Density Acres | Multi-Family Acres | Net Site Size | People Per Ha | Units Per Ha | People Per Acre | Units Per Acre |
|-----------------|----------------------|-----------------------|------------------|------------------|-----------------|--------------------|-------------------|
| Central | | | | | | | |
| Connaught | 11.29 | 60.79 | 72.08 | 403.77 | 265.54 | 163.40 | 107.46 |
| Downtown | 3.87 | 10.46 | 14.33 | 1,680.76 | 1,116.36 | 680.18 | 451.77 |
| Suburban | | | | | | | |
| Brentwood | 293.49 | 16.36 | 309.85 | 52.18 | 20.73 | 21.11 | 8.39 |
| Varsity | 458.2 | 96.33 | 554.53 | 56.04 | 23.48 | 22.68 | 9.50 |
| Silver Springs | 484.33 | 40.98 | 525.31 | 48.14 | 16.48 | 19.48 | 6.67 |
| Scenic Acres | 330.91 | 3.51 | 334.42 | 61.48 | 19.34 | 24.88 | 7.82 |
| Tuscany | NA | | | | | | |
| McKenzie Towne | NA | | | | | | |
| Total | 1,582.09 | 228.43 | 1,810.52 | 82.15 | 39.33 | 33.24 | 15.91 |

Based on information from City of Calgary Civic Census 1997 and Community Profiles

*Net residential was calculated by subtracting all non residential uses from the gross site area, including roads, open space, vacant space, commercial, industrial, institutional, agricultural. Net Community area includes only those portions of the area with existing residential development. Gross Community area is the total area within the community boundaries.

Tuscany and McKenzie Towne information is unavailable as these new communities are not fully built out and data on the amount of existing built out space is unavailable.

On a net basis, several of the same key findings remain consistent with those indicated in the gross density analysis. Central community densities increased from 13.9 units per acre gross, to 164.6 units per acre net and suburban densities increased from 2.9 units per acre gross to 8.5 units per acre net (excluding McKenzie Towne and Tuscany). This illustrates the drastic difference between measuring density on a gross and net basis. As the density more than doubles in the suburban areas on a net basis, Table 5.0 shows the significant requirement of non-residential uses, such as parks and roads. In the central regions, it illustrates the significant amount of land being used for commercial, office, retail, and roads.

2.4 Conclusion

The previous information begins to tell us how a “negotiated urban design” tool will have to be defined, constructed and operated. In brief, “zoning - density” is neither a verified practice or a satisfactory policy type stipulation however it may be legislated. Our review and analysis of the regulatory procedures for determining density in four Canadian municipalities and other areas throughout North America, combined with the research on sustainable community development, provides part of the foundation upon which to build our “Sustainable Community Design Tool”. Additional information has been incorporated since the completion of the Questionnaire Survey.

The analysis of the eight Calgary communities establishes a norm for suburban and multi-family densities. This information will be gauged against or reconciled with, the Sustainable Community Design Tool in order to ensure that the Tool produces results that are more sustainable than the existing communities in these four (4) cities. After the subject community analysis was completed, the question of desired vs. achieved density was raised. We intend to examine what density goals were set out by the City prior to the development of the built out communities (1950’s to 1970’s era communities). How, and why, density was lost or gained in the eight communities is important to the development of the “Tool”, as this needs to be mitigated in the design - development process.

3.0 Survey of Practitioners of Density and the Development Process

A copy of the survey is included in Appendix 3, and a detailed compilation of responses is found in Appendix 4.

The survey took place in late 1999. A total of 49 potential survey respondents were mailed a copy of the survey, asked to complete and return by mail. The total number of respondents was 12. In part, the time of year that the survey was conducted – at the beginning of the Christmas holiday period -- may have been a limiting factor; although, as well, the pretest respondents had indicated that the survey was long and very time consuming to complete. Thus, the number of respondents does not allow for a reliable statistical analysis, we considered the overall trend of the responses to be indicative of the practitioners.

The following is a point-form summary of responses that were considered important.

- the respondents had a cross section of experience with density ranging from greenfields sites to intensive urban re-development.
- for greenfield sites, the most common measure of density was units per hectare (acre).
- density specifications, such as units per hectare (acre) or floor area (space) ratio were a consistent and commonly used measure of density.
- the most common density specification for in-fill and re-development projects and zoning was units per hectare (acre) combined with floor area (space) ratio.
- respondents were very familiar with the formulaic expression of density such as: site area times the specified units per hectare (acre) or gross building area divided by the site area.
- respondents were split over whether or not the density specification had a significant impact on the urban design and other qualities of the final project.
- a few respondents stated that density specification was an inadequate tool; and that policies should favour urban form and design oriented approaches.

- most respondents thought density specification to be a satisfactory tool for stipulating the final product in the case of greenfields sites.
- respondents were less satisfied that density specifications were satisfactory in stipulating the qualities of redevelopment and infill sites.
- in the case of greenfields sites respondents indicated the ideal mix to be 60% single family homes, 30% row or townhouses and 10% apartments, there was significant variation in the range of ideal housing mix.
- 10 respondents indicated that commercial uses such as retail and offices are ideal for mixed residential-commercial areas. The other two indicated that commercial should not be mixed with residential.
- in general, respondents tended to be neutral on whether or not density specifications are an indicator of livability.
- respondents generally indicated that there was local market support for a range of densities.
- respondents were evenly split on whether or not there should be a minimum density specification.
- respondents were also split on whether or not density should be specified as a maximum.
- respondents tended to agree that sustainable community design included housing affordability.
- most respondents indicated that there had been some but no significant progress in the delivery of affordable housing in the past 5 years.
- most respondents thought that higher densities provided a solution to housing affordability.

PART 2

THE PROTOTYPICAL NEGOTIATED URBAN DESIGN TOOL

4.0 Preamble

Part 2 provides a description of the development, structure and functionality, and the possibilities for uses and operations of the Negotiated Urban Design (NUD) Tool.

The Tool is demonstrated in the CD-ROM product that accompanies, and forms an integral part of, this Final Report.

Part 2 of the Report serves as an explanatory aid to the review of content and navigational features of the CD-ROM. This aid is presented in three sections:

Section 5 provides an overview description and explanation of the Nature and Purposes of the Tool.

Section 6 deals briefly with the scope of the NUD Tool.

Section 7 discusses the Structure, Functionality and Maintenance features of the Tool and its component sites and pages.

5.0 NATURE AND PURPOSE OF THE TOOL

The Tool is a website designed for citizen interactivity and *engagement* in Planning-Design-Development projects.

Interactivity would embrace the full set of actors in urban development, from stakeholder- residents of neighbourhoods through to the many development industry professionals who initiate and shape developments, and the several municipal agencies responsible for adjudicating development plans and building proposals.

Operationally- and psychologically- speaking, "engagement" makes a better fit with our conception of the NUD Tool than does the traditional term, "participation".

In brief: 'Engagement' better captures for us the notion of a tool that invites and sustains community or individual action linked to a fully--shared commitment among all of the actors (players) in a development project to search for and achieve "better", more thoughtful, creative inputs and design product.

More accurately, the NUD Tool is a multiple tool, a multiplicity of tools formed out of a clustering of websites that can be visited via a single URL. A tool – for example the Repertory Grid Sequence (a project density visualization "test" and "receptivity" polling" sample; see Section 3) – can be accessed and deployed independently of the other tools or two or more tools are deployed, iteratively or sequentially, as the player finds needful, desirable or instructive as they work their way through whatever self-assigned task they have taken on.

The purposes of the Tool are multifold; they range across a broad spectrum of uses or functions. At one end of the spectrum, the Tool can serve:

Curiosity-driven, information-gathering on the part of citizens, individuals, interest groups, community associations, professional practitioners and municipal elected and administrative officials; learning and professional development; and topic-specific inquiry within the theory and practices of planning-design-development, and sustainable community design.

At the other end of the spectrum -- and for the same types of players just noted – a set of 'activist' interests, professional or secular, political or administrative, can be served:

Ranging from one way-commentary on issues and concerns in a development proposal; through engagement in expressing preferences and ideas, to developing consensus among the players, through to initiating alternative or counter-proposal design solutions or prospectives related to site specific projects.

The CD-Rom illustrates in part only a fully-functional website version of the NUD Tool. Our development of the content reflects the extent possible given the project funding. At the same time, we would note that our conception of the Tool anticipates that its full content develops out of the interactive use by all of the engaged participants/users – at both local and national levels, by both individuals and public agencies.

As we proceeded with developing the CD-ROM/website demonstration product, we came to the conclusion that more than one development agency will be needed to develop the distinctive (sub) tools and clusters of websites. And, for system maintenance and operations (system server), at least one national agency and the several large-city and municipal regional administrations across the country would have to assume responsibility. (See Section 2, below).

The Tool as worked out at this stage includes a number of interactive features which could no doubt be expanded upon in succeeding stages of development. For example, a chat room could be created to allow participants within a community to have interactive dialogue. The system could conceivably also be expanded to allow the actors in one community to interact with individuals, agencies, interest groups in other communities, within their own provincial jurisdictions or across jurisdictions.

The interactivity features proposed at this time reflect our conviction, based on research and consultations with people in practice, that strengthened and more informative dialogue joined to visualization media is needed.

The proposed features are also in part the by-product of our frustrations in trying to survey a variety of professionals across Canada (Part 1 of the Report) and getting only limited numbers of responses, and truncated information within the responses. Moreover, word-text formatted, mail-out survey-questionnaires (and to a great extent, advocacy-type public forums as well) are inadequate to the task of shaping consensus based plan-making and site design -- most especially where issues such as "density", "intrusive" building form, community-compatible architectural character, traffic and parking, displacement of affordable housing, etc. are woven into a development project proposal.

Web-based surveys and opinion polling would allow for the elimination of paper, administrative routines, and the problems of securing returns delivery.

By contrast, and insofar as it is used for survey, polling, and information exchange and sharing, the Negotiated Urban Tool has three unique features that move us forward toward more authentic and more fully-engaged participation of all actors in the Planning-Design Development process.

First: the structuring of content and the shaping of dialogue are now a function of the use and the needs of the actors-users rather than a prescriptive, end-game, advocacy "solution" offered by 'experts', be they development industry proponents or municipal project planners.

Second: The engagement of the actors-users benefits by quantum leaps over word-text surveys, etc. from an easily-accessed repertory (galleries) of photographic and other images. Projects under review can be "visualized" from a number of perspectives – contextual environments, the site characteristics and site planning, building massing, architectural 'style' and the treatment of street frontages and other development requirements. The users' perceptions of density and housing and traffic issues can be self-tested, compared, and reconciled with imagery of best practice projects already built, as well as with graphic representations of the specific project they have elected to review.

Third: The actors-users are not confined to simply "responding". They can, for example, broaden the market terms or the design criteria or standards of a given project by bringing their own imagination and creative capacities to bear ; they can "open up" the planning-design program to fresh considerations and questions, and to alternative design solutions they themselves can envisage. Inputs and feedback, in data, information and graphic images digitally rendered can be entered into the dialogue.

6.0 SCOPE OF THE TOOL AND DEVELOPMENT AGENCIES

6.1 At The National Level

Two components of the proposed web based tool could best be developed by, and operated, at a national level.

One would be a **Best Practices Gallery**, a central source of two main categories of projects: one that demonstrate good solutions for *mid-range density* projects; and a second category that covers projects that demonstrate one or more significant features of *sustainable community design*.

We would expect that as the Gallery develops over time both categories will increasingly be embraced within projects selected for the Gallery.

We would also expect that in the initial stage of development, some projects will be only sparsely illustrated by photo and other graphic images, while others may be abundantly illustrated; but over time, both illustration materials and other information can be added to the project 'file' as they become available. All projects, whatever their planning-design scope and magnitude of development would be supported by "case study" type information, data, commentary, etc. entered in a more or less uniform format that allows for comparative review or study.

The Best Practices Gallery would serve in a general sense the urgent need for inspirational as well as inspirational images, and factual data which, in the Canadian context, is sadly lacking and otherwise unavailable in easily-accessible form to professional practitioners and the ordinary urban resident alike.

We propose that a small group of professionals and lay people comprise *a national panel* that reviews projects that have been submitted to determine which should appear in the Best Practices Gallery. The panel need only meet via E mail and internet in order to review and select projects. The NUD Tool website would have a link to provide the user with a contact address and to inform them of the formatted content requirements should they wish to submit a project for consideration.

The primary benefit of a national web-based Best Practices Gallery is the potential exposure to non professionals; in particular, community associations, public interest groups -- and "just plain folks", individuals who want to initiate, of their own volition, an engagement with their local municipal planning design-development process.

A second part of the national-based component would be the **Repertory Grid**. This is described in Section 3, and illustrated in the CD-ROM.

The Repertory Grid is designed to extract from participants features related to building or urban design projects that they determine from viewing photographic images. For example, the Grid simultaneously presents three photographs of buildings with the most obvious difference being building height and massing. The participant must indicate in what ways the images in two of the photos are similar and how the third is differs from them.

The participant's response produces a bipolar construct, in this case "tall buildings ... low buildings". The participant proceeds through a series of variant triad photos. The constructs are fashioned entirely by the participant's responses; and a set of constructs most likely to have been have been based on urban design features are created in a final outcome.

The participant is then asked about their own preferences regarding the constructs they created. The results provided to the participant are a series of statements about their preferences; and then links to projects in the Best Practices Gallery can reveal to the participant projects that have features corresponding to their preferences.

The benefit to having the Repertory Grid operated by a national agency is a unitary, consistent standard of 'terms', method of execution, to determine and depict peoples' constructs of the relationship between a density number and an actual or a proposed architectural environment.

It is our view that if stakeholders in the planning process can focus on the quality of community/streetscape fit through visualization rather than the mere specification, a range of mid-range density development options would be available. The Repertory Grid and Best Practices Gallery would demonstrate that a specific density specification, e.g. 50 units per acre, could be accomplished in a variety of highly acceptable urban forms.

The more the grid is used, the more information there would be to validate the results. The photographic content of the grid would not have to change often, but responses to images could be monitored to determine if there is a convergence on design attributes that the grid is intended to represent.

6.2 At A Local Level

As described in the preceding section, the core of the *density tools* would be locally-operated web sites that are linked to the central, 'national' web site described above. Since planning is very much a local community-specific activity, the website maintained in each municipal administration – or associations of municipalities in a given provincial jurisdiction -- would be developed in their content around a functional framework and a formatting of interactive exchanges such as we have proposed.

The core of the local site is the ***Current Proposals Gallery***. This presents projects that are currently in one or other stage of the planning process and seeking approval (development approval, etc.). This part of the site would provide an interactive forum for individual, community and professional dialogue. It is the venue for *Negotiated Urban Design*.

In the ideal situation, a project would be adjudicated according to its fit into the streetscape and the neighbourhood's cultural- 'vocational' context. The emphasis being on fit rather than a closely-defined land use designation and simplistic specifications such as a density-height control figure. Although measures such as density have some relevance in the planning and approval process, it is (most) often the case that a density figure does not of itself give a sense of the project in its contextual streetscape. For the ordinary person – and for many professional practitioners as well -- it cannot be readily or easily 'transcribed' into an image of what will be, or what range of design possibilities are opened to situation and context pertaining to the actual site of a proposed development.

On the other hand, the power of computers now provides a relatively easy and cost effective way to visualize a project in three dimensions, in its neighbourhood setting, and in current and possible-futures development contexts. And computerized, multimedia visualization can now be fully utilized by professionals and communities to achieve design that contributes to place making that is not limited to some prescriptive fulfillment of a zoning by-law.

The local-level tool/website manager (managing agency) would also be responsible for developing or providing links to local planning resources such as by-laws and community plans; and in addition, links to other web sites and resources that the local operators/users consider important.

2.3 Operation of the NUD Tool

The tools have the potential to be operated on many different levels by many different types of users. The following describes how a stakeholder such as a community resident could use the Negotiated Urban Design Tool.

Scenario 1: Infill and Re-Development

A development is proposed for a property within an established community. The property could be one large lot, a few lots, or a street block assembled by the developer. The community planner would obtain computer visualization from the proponent and have the local web master post the information to the site. The community association would be notified by Email that the information is available for review. The community association notifies interested residents.

A resident living near the proposed development seeks information and goes to the Urban Density Planning website. A number of choices are open to them. The individual could go directly to the Current Proposals Gallery and consult, review the posted images and information for the project of interest to them. However, they are encouraged to complete the Repertory Grid and view the Best Practices Gallery, to assist them in reviewing the proposal that was initially of interest.

Completion of the Grid to indicate preferences and references to Best Practices provides the participant with a relevant library of images on which to base and develop their comments about a particular development proposal. The user/participant can provide their comments via the web site; and these can be posted so that others, including neighbours, the municipal planner, the architect and the developer can respond.

In this manner a dialogue is created that is focused on processes of visioning and visualization urban form and density rather than relying on only density specification such as by-laws and community plans.

Scenario 2: In Anticipation of Planning-Development Proposals

Knowing that development proposals are likely to come forward, it would also be possible for a community to use the tools in a community planning process that contributes to visualizing what the community should look like in spatial developments, in architectural-building massing terms, and in other features.

A number of participants could do a "run through" of the tools; and their preferences used to create a catalogue of images and ideas that would reflect a certain set of aspirations, perhaps 'demands', and criteria for project acceptability within the community.

This could be used to develop official community plans or community development guidelines to be forwarded to the developers as they begin their planning and design studies. And, we can envisage that the community could enter into the process -- long before they are faced with the developer's chosen design -- their own 'specifications' for achieving a variety of community. For example: a proportion of affordable housing, a proportioned distribution of housing units across the demographic-household spectrum, the designation of common amenity areas for multi family housing, proportions of commercial-retail floor space to housing, ecological landscaping requirements, energy-conserving features, and re-cycling/re-use facilities incorporated into building projects.

6.4 Development of the Repertory Grid

The repertory grid is a way to present images to people, determine what attributes they think are important in a particular group of three images, and then have the people express their preferences relating to those particular attributes.

In our CD-ROM demonstration, this was accomplished by selecting a total of ten images (photographs) of a range of mid-density residential developments. The ten images are presented to the participant in ten groups of three. The participant is asked to indicate which two of the three images are similar and what is the reason for the similarity. Then they are asked what is different about the third image that they did not select. This creates a bipolar construct.

For example, three images show buildings of different heights but one is significantly taller than the other two. It is likely that the participant will indicate that two images are similar in that they are of lower buildings and the third is different because it displays a tall building. The resultant construct is low "buildings - tall buildings". For each of the ten image triads shown to them the participant generates and articulates, of their own accord, a *bipolar construct*.

These constructs give expression to the participant's chosen attributes. The participant then rates each one of the images individually according to the attributes expressed in the construct relevant to the image. The rating is done on a scale of 1 to 5 where 1 is the most preferred and 5 is the least preferred. The outcomes of the rating procedure indicate the individual's preferences.

The responses are then subjected to cluster analysis, a statistical method used to group together objects or concepts into homogeneous classes on the basis of similarities.

The final results of the Repertory Grid analysis can be used in three ways.

One: The individual's preferences could be matched up with images, data and information on projects considered to have attributes consistent with the preferred constructs. This would require that projects within the Best Practices Gallery be rated or judged beforehand, and by descriptors consonant with both the ordinary language of participants and the specialist language of planning and design professionals. The functionality of the website NUD Tool that we have devised enables a linkage to the Gallery and the appropriate match ups while the participant is online. From

there, the participant can continue on with 'entering' comments queries, suggestions and recommendations, references to the match ups, etc. and directing these to other interested parties. In instances where a Current Project is being reviewed, the comments, etc. could be directed as well to the designated actors identified by the local (municipal administration) webmaster at the time the Project was posted.

Two: In instances where an area planning or a neighbourhood/district urban design is underway, participants' ratings, commentaries, etc. could be assembled by the municipal planning authority and injected into the process in a number of ways. For example: In a "news" publication circulated to community groups, and the industry and professional actors engaged in the project; by convening a co-design or consultative forum that works out conceptual designs that variously incorporate and discard the constructs/preferences in a consensus-building exercise; the municipal planning authority might proceed directly to modifying terms and conditions or criteria and objectives for the planning/design project.

Three: Where groups of participants are engaged in the Repertory Grid procedure, a 'supergrid' based on the responses of the groups can be created. This provides for cluster analysis of a large amount of preference data and the generation of an interpreted version of constructs which can be used to develop a series of common constructs or characteristics. These interpreted or common constructs can then be used in rating a particular project.

7.0 STRUCTURE, FUNCTION AND MAINTENANCE

Refer to Figure 1 and the CD Rom.

7.1 Home Page

The home page provides links to Tools, Projects, Library, Search, Contacts and About. The three major linkages -- Tools, Projects and Library -- have more prominent centre links whereas all have left side navigation icons.

Home Page also provides a 'News' link and links to three questions. The 'News' link content is to be provided by the local web site manager. For example, if a new proposal has been recently posted to the 'Current Proposals' page then it could be noted here; or if a new project has been added to the national 'Best Practices' projects, it too could be noted here.

The questions listed are: "What is Negotiated Urban Design?", "Who should use this site?" and "How can this site help me?" The specific content of the answers to the questions or even the questions themselves could be modified by the local (municipality) web site manager.

7.2 Tools Main Page

This page provides the introduction and access to two key site components: the Repertory Grid sequence and the Current Proposals sequence.

7.3 Projects Main Page

This provides access to the Best Practices (case study) projects. The projects are indicated by a photo, name and location and are linked to the national Best Practices web site.

The Best Practices site is maintained on a national basis. Projects are submitted for consideration, and a panel of lay and professional people would determine if it should be presented in the project gallery. The panel need meet only via e-mail and internet. Project details would be submitted by any interested party, planner, architect, urban designer, developer, homebuilder, etc. The page would provide a link for submission of projects -- who to contact, and the information requirements or content such as building plans, context, photographs etc.

Specific content requirements and guidelines would be developed by the review committee. It would be up to the individual submitting the project to provide content in a suitable digital format.

The national web master would be responsible only for the posting of the content and maintenance of the proper linkages.

On the CD-ROM that accompanies Part 2 of the Report we have provided a representative project summary for Connaught Gardens, Calgary, Alberta.

7.4 Library Main Page

Content of the Main Page would be determined by the local (municipality) web manager. Typically it would provide links to other web sites of interest and also to books and articles. It could also serve as a repository for local 'Current Proposals' which have obtained approval status or have been withdrawn or deferred. This archive could provide a briefing on how and why various aspects of the proposed development were changed in response to dialogue and other activities engaged on the Negotiated Urban Design Tool (and, conceivably, in response to other procedures deployed, or inputs made by the approving authority (ies)).

7.5 Search Main Page

This page would simply provide within-site and off-site search capabilities.

7.6 Contacts Main Page

This would be a locally managed page that could establish some national contacts (at, say, the discretion of the local web manager).

7.7 About Main Page

This provides information about the local web site operator. For example, if the site was being operated by a municipality, this would provide information about their involvement and use of the web site.

7.8 Tools - Repertory Grid Sequence

This could be a nationally based web site to which the local sites are linked. It is possible that more than one grid could be developed to specifically address design constructs relevant to particular types of development.

On the CD-ROM, we provide a simulation of the Grid procedure as applied to a mid-range density applied to a redevelopment site or an infill site.

Other Repertory Grids will have to be developed to deal with greenfields developments and, conceivably, for commercial mixed-use districts as well.

We have been advised by our web consultants that this section will require a significant amount of computer programming due to its interactive nature.

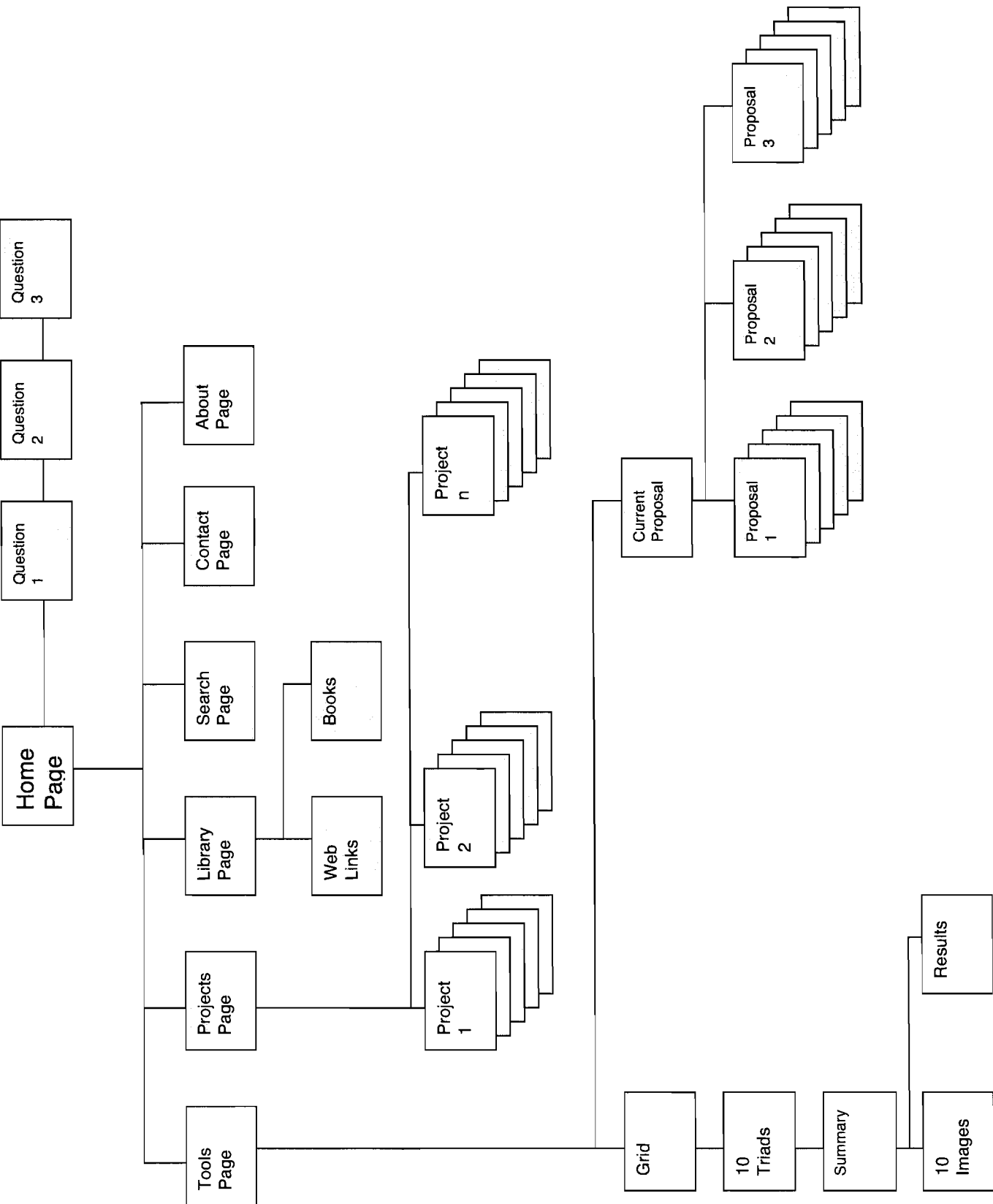
7.9 Tools - Current Development Proposals Sequence

This is a locally-based component of the site that presents active project proposals – mainly, projects that are before the municipal authorities for development review and approval. This (sub) tool allows users to "see"—visualize projects, review their design qualities, examine comments and issues, etc. raised by others, and to provide their own feedback or inputs.

In addition to structure word-text responses, such feedback/inputs could include sketches, graphic illustrations and diagrams, drawings, photos, etc. produced by the users themselves and submitted in digital form via the internet. References to Best Practices available on the internet -- local, national, international -- could also be submitted.

There also would be links to local web sites such as the local planning department's explanation of the development approval process, zoning (land use) and urban design guidelines, environment and sustainability policies and bylaws, etc.

Figure 1 NUD Tool Site Map



APPENDIX I

Preliminary Suburban Development Density Model

This chart represents the interface for an unserviced suburban land development density calculator. The data is based on an example from Calgary, using typical suburban densities. The bold figures represent input cells.

SITE SPECIFICATIONS

| | | Acres | Hectares | | | |
|----------------------------|--|--------------|----------|--------------------------------|---------------------------|-------------------------|
| Total Site Area | | 160.0 | 64.7 | | | |
| Environmental Reserve (ER) | | 0 | 0 | | | |
| Land Purchase Area | | 0 | 0 | | | |
| Gross Developable Area | | 160.0 | 64.7 | | | |
| | | Net Area | | "Grossed-Up" Area | Projected # of Lots/Units | Maximum # of Lots/Units |
| Low Density Res. | R-1 | 88.0 | 35.6 | 160.0 | 672 | |
| | R-1A | 0 | 0 | 0 | 0 | |
| | R-2 | 0 | 0 | 0 | 0 | |
| | R-2A | 0 | 0 | 0 | 0 | |
| | other | 0 | 0 | 0 | 0 | |
| Other Res. | | 0 | 0 | 0 | 0 | |
| | | 0 | 0 | 0 | | |
| | | 0 | 0 | | | |
| Other LU's | Commercial | 0 | 0 | 0 | 0 | % of GDA |
| | Industrial | 0 | 0 | 0 | 0 | % of GDA |
| | Other | | | | | |
| Unsalable land | Other (Storm Water, add'n amenity, inefficiencies) | 11.2 | 4.5 | | 7.0% | % of GDA |
| | Roads and Lanes | 44.8 | 18.1 | | 28.0% | % of GDA |
| Reserves | Open Space | 16.0 | 6.47 | | 10.0% | % of GDA |
| | Total | 160.0 | 64.74 | 160 | | |
| | Efficiency Ratio (Salable to Gross Area) | | 0.55 | GDA - Roads - Other - Reserves | | |
| | Density (UPA) | 4.2 | 10.37 | | | |
| | Total Lots and Units | 672 | | | | |

LOT SPECIFICATIONS

| Zoning | Net Residential | Lot Size | Lot Width | Lot Depth | Salable Front ft | Density | Lot Price | Gross |
|--------|-----------------|----------|-----------|-----------|------------------|---------|-----------------|--------------|
| | Area (sq ft) | (sq ft) | | | Per Acre | (UPA) | | Revenue |
| R-1 | 3,833,280 | 5,704 | 50 | 114 | 210 | 4.2 | \$95,000 | \$63,840,000 |
| R-1A | 0 | na | 30 | na | 210 | 7 | \$82,000 | 0 |
| R-2 | 0 | na | 25 | na | 240 | 9.6 | \$76,000 | 0 |
| R-2A | 0 | na | 15 | na | 230 | 15.3 | \$69,000 | 0 |
| Other | 0 | na | 0 | na | 0 | | | 0 |

APPENDIX 2

Preliminary Multi-Family Density Model

This chart represents the interface for a multi-family development density calculator. The data is based on an example from Calgary, using RM7 density (130 to 160 units per acre). The bold figures represent input cells.

| Site Description | | Feet | Metres | |
|----------------------|-------------------------|------------------|----------|--|
| Lot Dimensions | Frontage | 125 | 38.09 | |
| | Side 1 | 130 | 39.62 | |
| | Side 2 | 130 | 39.62 | |
| | Rear | 125 | 38.09 | |
| | Gross Site Size | 16,250 | 1,509.67 | |
| Setbacks | Front Yard | 20 | 6.09 | |
| | Side Yard | 10 | 3.04 | |
| | Rear Yard | 25 | 7.61 | |
| | Net Site Size | 8,925 | 829.15 | |
| Landscaping | | | | |
| | Landscaping Requirement | 40% | 40% | gross site area |
| | Landscaping sq ft | 6,500 | 603.86 | |
| | Actual Landscaping Area | 6,500 | 603.86 | |
| | Difference | 0 | 0 | negative indicates additional floorplate space |
| Parking | | | | |
| | Parking Requirement | 1 | per unit | |
| | Total Stalls | 50 | | |
| Building Description | | | | |
| | Zoning / LUD | RM7 | | |
| | Gross Site Area | 16,250 | 1,509.67 | |
| | Site Coverage | 9,750 | 905.80 | |
| | Site Coverage Ratio | 60% | 60% | gross site area |
| | Proposed FAR / FSR | 3.69 | | |
| | Gross Floor Area | 59,962.5 | 5,570.69 | |
| | Avg. Gross Unit Size | 1,200 | 365.75 | |
| | No. of Units | 50 | | |
| | No. of Storeys | 6.15 | | |
| | Ceiling Height | 9 | 2.74 | |
| | Building Height | 55.35 | 16.87 | |
| | Max. Building Height | | | |
| | Units Per Acre | 133.9 | | |
| | Units Per Hectare | 330.9 | | |
| | Average Unit Price | \$210,000 | | |
| | Gross Revenue | \$10,493,437 | | |
| | Price Per Sq Ft | \$175 | | |

APPENDIX 3

DENSITY AND THE DEVELOPMENT PROCESS - A survey in four Canadian municipalities

The attached Questionnaire is part of an External Research Project (ERP) commissioned by Canada Mortgage and Housing Corporation (CMHC).

The Research Project

The intent is to review and analyze the concept, measures and applications of "Density" as a regulatory tool in residential development projects; and secondly, to gather the opinions and views of practitioners on the adequacy, advantages, and effectiveness of both density specifications and the planning-design-development process (procedures) in producing more sustainable, more affordable, and more liveable communities.

The Questionnaire

Four municipalities have been selected -- Vancouver/Lower Mainland, Calgary, Ottawa-Carleton, Toronto. In each area, we are approaching a small sample of persons experienced in one way or another with planning-design-development of communities or residential projects -- viz. municipal officials, municipal politicians, developers, planning/design consultants, and community association representatives.

The assembly of Questionnaire responses, data entries and analysis are controlled so that **no individual can be identified with her / his Questionnaire responses. Confidentiality is ensured.**

For contacts or further information, see page 2.

The Questionnaire should take approximately 30 to 45 minutes to complete. Your assistance in this research project will be greatly appreciated.

Thank you.

William T. Perks

Terry Brooke

August 6, 1999

CONTACTS

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QUESTIONNAIRE...

DENSITY AND THE DEVELOPMENT PROCESS

ALL RESPONSES ARE CONFIDENTIAL.

Introduction

1. We would like you to share your experience about development or subdivision projects in which you were directly involved in and in which density specification has played some part.

The types of projects we selected are

- a) subdivision or unserviced land;
- b) suburban multi-family;
- c) redevelopment multi-family;
- d) mixed use project;
- e) other (please describe)_____

List two and no more than five distinct projects (**a to e** above) with which you are / have been associated during the past five years.

| Municipality | Year | Project Type | Approximate Site Size acres/hectares; sq ft/sq metres |
|--------------|------|-----------------|--|
|--------------|------|-----------------|--|

Density Definitions and Calculations - Greenfields Sites

2. In your experience, how is Density defined in the case of a Greenfield site ? Check off the one most commonly used:

Units Per Acre / Hectare _____
 Persons Per Acre / Hectare _____
 Combination of Persons & Units Per Acre / Hectare _____
 Other (please specify and explain) _____

3. When calculating density, there are a number of possibilities for the inclusion (or exclusion) of certain land areas to be used in the calculation:

- ____(i) total land area within the project boundaries
- ____(ii) total project land area less areas considered undevelopable or legislated to be (eg. high gradient slopes, ravines, ecologically sensitive areas, etc.)
- ____(iii) total land area less all reserve dedications required by stature (eg. school reserve, municipal reserves such as parks etc.)
- ____(iv) total land area less public roadways (rights of way)
- ____(v) total land area less the sum of (iii) and (iv)
- ____(vi) total land area less the sum of (ii) and (iii) and (iv)
- ____(vii) don't know

Comments: _____

4. Considering the municipalities in which your projects occur, would you say that density is always and consistently used with a common measurement formula?

yes ____ no ____ don't know ____

Density Definitions and Calculations - "Net" Sites

5. In the municipality / region in which you practice , how is density defined? Please check as many as apply.

Floor Area Ratio _____
 Floor Space Ratio _____
 Floor Area Index _____
 Bedroom Count _____
 Other (please specify and explain) _____

6. Considering the density definition you most frequently deal with, how is the calculation made? Write as a formula or simple statement.

7. Recalling the projects you indicated in Question 1, would you say that the formula applies to all of them?

yes _____ no _____ don't know _____

8. If you responded NO to Question 7, please indicate the various density definitions / calculations used with the corresponding project type (**b, c, d, e** only from Question 1). List the project type in the right hand column.

| | | |
|----|-------|-------|
| 1. | _____ | _____ |
| | _____ | |
| 2. | _____ | _____ |
| | _____ | |
| 3. | _____ | _____ |
| | _____ | |

Density and Urban Design / Housing Environment

9. In your opinion, do the density guidelines (definition, method of calculation, etc.) you usually work with influence significantly the qualities of the project end product?

yes ____ no _____ no opinion ____

10. In your opinion, are there additional planning or urban design tools that would help improve the built form product when density is being applied as a performance standard or regulation in the development process?

yes ____ no ____ no opinion ____

11. If you responded YES to Question 10, please describe and explain your ideas / suggestions.

12. Considering residential neighbourhoods, is a density specification a satisfactory proxy for envisioning or stipulating the qualities of the built product?

greenfield sites:

satisfactory____ sometimes satisfactory____ neutral ____ seldom satisfactory____ unsatisfactory____

redevelopment / infill sites:

satisfactory____ sometimes satisfactory____ neutral ____ seldom satisfactory____ unsatisfactory____

13. Describe the ideal housing mix for a greenfield site project - whether it is currently permissible or not in your area. Why would this mix be ideal?

14. Describe the ideal housing mix for redevelopment / infill contexts. Why would this mix ideal?

15. Describe the ideal housing mix for residential-commercial mixed environments. Why would this mix be ideal?

Calculating Density

16. What importance do other factors or regulatory requirements play in the actual density outcome for a project proposal? Please respond for each item.

| Item | Quite Important | About as Important as other Specifications | Not Important |
|------------------------------|-----------------|--|---------------|
| Landscaped Area Requirements | _____ | _____ | _____ |
| Setbacks | _____ | _____ | _____ |
| On Site Parking Requirements | _____ | _____ | _____ |
| Site Coverage | _____ | _____ | _____ |
| Height Restrictions | _____ | _____ | _____ |
| Market Considerations | _____ | _____ | _____ |
| Other_____ | _____ | _____ | _____ |
| _____ | _____ | _____ | _____ |
| _____ | _____ | _____ | _____ |

17. In your opinion, does the maximum density stipulation for a site serve satisfactorily as an indicator for livability features that will come out of the project.

satisfactory____ somewhat satisfactory____ neutral ____ seldom satisfactory____
unsatisfactory____

18. Considering greenfield sites only: In your area, how often are projects completed where amenity space(s) over and above the required municipal dedications are provided with no credit given to the developer?

always____ frequently____ occasionally ____ never _____

Intensification/ Higher Density

“Higher density”, “intensification”, “compact urban form”, etc., are frequently proposed or encouraged by municipalities as a key measure to advance sustainable community design.

19. In your municipality / region, what types of higher density projects are/are not currently supported by the market in a suburban setting.

| Project Type | Market Support | No Market Support |
|----------------------------|-------------------|----------------------|
| Single Family Home | | |
| Row / Townhomes | | |
| Apartment Condos | | |
| 5 - 20 units | | |
| 21 - 50 units | | |
| 50+ units | | |
| Duplex* | | |
| Fourplex* | | |
| *up - down or side by side | | |
| Other | | |
| _____ | | |
| _____ | | |
| _____ | | |

Achieving Higher Density

20. Approximately what percentage of land in a greenfield site project should be allocated to higher-density product? (Consider anything over 10 housing units per acre “higher density”)?

less than 10%
 11% to 20%
 21% to 30%
 31% to 40%
 41% to 50%
 over 50%
 no opinion

21. Do you believe that there should be minimum density specifications?

yes no no opinion ____

22. Do you believe that there should be maximum density specifications?

yes no no opinion ____

Sustainable Community Design

23. In your opinion, should sustainable community design mean -- among other things -- affordable product for the consumer?

yes ____ no ____ no opinion ____

comments

24. Have you visited the Sustainable Community Design web site,
www.umanitoba.ca/faculties/architecture/la/sustainable/index.htm

yes ____ no ____

Affordable Housing

25. Within your municipality / region, what progress has there been in the past 5 years in delivering more affordable' housing?

- __ none
- __ some progress but not significant
- __ considerable progress
- __ significant progress

26. If you indicated some, considerable or significant in Question #25, would you say this has been due to: (check as many as apply)

Market Forces:

- housing supply exceeding demand
- low interest rates
- innovative housing products such as 'Sprout' and 'Grow homes'
- other, please explain _____

Government Policies and Programs:

- availability and level funding of federal/provincial housing programs
- inclusionary zoning
- cost reducing site development standards
- intensification (higher density) regulatory/zoning changes
- regulatory or policy changes in the approval process - reduced time for approvals
- implementation of sustainable housing policies
- private/public partnerships
- other, please explain _____

comments? _____

27. In your opinion does building at increased density necessarily result in more affordable housing?

yes ____ no ____ don't know ____

comments? _____

28. In your experience of planning or designing, or reviewing multi-family housing project, "People respond to light and circulation patterns in the design of buildings but react to a density number".

strongly agree ____ agree somewhat ____ disagree ____ don't know ____

Thank you for completing this Questionnaire.

Summary results of the Questionnaire will be available via e-mail. Please indicate your email address: _____

PLEASE RETURN BY THE ENCLOSED RETURN-ADDRESSED ENVELOPE.

APPENDIX 4

SUMMARY OF 12 RESPONDANTS
NOVEMBER 30, 1999

Introduction

1. We would like you to share your experience about development or subdivision projects in which you were directly involved in and in which density specification has played some part.

The types of projects we selected are

- | | |
|----------|---|
| 5 | a) subdivision or unserviced land; |
| 8 | b) suburban multi-family; |
| 6 | c) redevelopment multi-family; |
| 2 | d) mixed use project; |
| 0 | e) other (please describe)_____ |

List two and no more than five distinct projects (**a to e** above) with which you are / have been associated during the past five years.

No summary to 2nd part, each urban area represented

Density Definitions and Calculations - Greenfields Sites

2. In your experience, how is Density defined in the case of a Greenfield site ? Check off the one most commonly used:

- | | |
|---|----------|
| Units Per Acre / Hectare | 8 |
| Persons Per Acre / Hectare | 1 |
| Combination of Persons & Units Per Acre / Hectare | 3 |
| Other (please specify and explain) | 0 |

no comments, I said question unclear

3. When calculating density, there are a number of possibilities for the inclusion (or exclusion) of certain land areas to be used in the calculation:
- (i) total land area within the project boundaries
 - (ii) total project land area less areas considered undevelopable or legislated to be (eg. high gradient slopes, ravines, ecologically sensitive areas, etc.)
 - (iii) total land area less all reserve dedications required by stature (eg. school reserve, municipal reserves such as parks etc.)
 - ____(iv) total land area less public roadways (rights of way)
 - ____(v) total land area less the sum of (iii) and (iv)
 - ____(vi) total land area less the sum of (ii) and (iii) and (iv)
 - (vii) don't know

Comments: _____

4. Considering the municipalities in which your projects occur, would you say that density is always and consistently used with a common measurement formula?

yes 11 no 0 don't know 1

Density Definitions and Calculations - "Net" Sites

5. In the municipality / region in which you practice , how is density defined? Please check as many as apply.

| | | |
|------------------------------------|-------|-------|
| Floor Area Ratio | 5 | |
| Floor Space Ratio | | 5 |
| Floor Area Index | | 1 |
| Bedroom Count | _____ | |
| Other (please specify and explain) | | _____ |

upa 7 , i think we forgot upa

6. Considering the density definition you most frequently deal with, how is the calculation made? Write as a formula or simple statement.

7 response 1 - site area x units per unit of measure (acres hecatares square metres)

5 response 2 - gross building area divided by site site

7. Recalling the projects you indicated in Question 1, would you say that the formula applies to all of them?

yes 11 no 0 don't know 1

8. If you responded NO to Question 7, please indicate the various density definitions / calculations used with the corresponding project type (**b, c, d, e** only from Question 1). List the project type in the right hand column.

no one responded no

Density and Urban Design / Housing Environment

9. In your opinion, do the density guidelines (definition, method of calculation, etc.) you usually work with influence significantly the qualities of the project end product?

yes **4** no **5** _____ no opinion **3**

10. In your opinion, are there additional planning or urban design tools that would help improve the built form product when density is being applied as a performance standard or regulation in the development process?

yes **3** no **2** no opinion **7**

11. If you responded YES to Question 10, please describe and explain your ideas / suggestions.

1) density not relevant, only final urban form, each project should come forward based on own merits

2) policies which outline/favour good urban design/form

12. Considering residential neighbourhoods, is a density specification a satisfactory proxy for envisioning or stipulating the qualities of the built product?

greenfield sites:

satisfactory **5** sometimes satisfactory **4** neutral **3** seldom satisfactory ____ unsatisfactory ____

redevelopment / infill sites:

satisfactory **1** sometimes satisfactory **7** neutral **4** seldom satisfactory ____ unsatisfactory ____

13. Describe the ideal housing mix for a greenfield site project - whether it is currently permissible or not in your area. Why would this mix be ideal?

| | range of responses | typical |
|----------------------|---------------------------|----------------|
| single family | 40 to 85% | 60% |
| row/townhouse | 20 to 30% | 30% |
| apartments | 5 to 20% | 10% |

14. Describe the ideal housing mix for redevelopment / infill contexts. Why would this mix be ideal?

this questions crashed, one vancouver respondent said mix townhouse and apartment, one put big ?, and a few said sites to small to mix

15. Describe the ideal housing mix for residential-commercial mixed environments. Why would this mix be ideal?

7 said mix retail and apartment
 3 said retail/office/apartment mix
 2 (who I think are more greenfields) said don't mix

Calculating Density

16. What importance do other factors or regulatory requirements play in the actual density outcome for a project proposal? Please respond for each item.

| Item | Quite Important | About as Important as other Specifications | Not Important |
|------------------------------|-----------------|--|---------------|
| Landscaped Area Requirements | 7 | 4 | 1 |
| Setbacks | 5 | 2 | 5 |
| On Site Parking Requirements | 8 | 4 | 0 |
| Site Coverage | 2 | 7 | 3 |
| Height Restrictions | 4 | 7 | 1 |
| Market Considerations | 4 | 7 | 1 |
| Other _____ | _____ | _____ | _____ |
| _____ | _____ | _____ | _____ |
| _____ | _____ | _____ | _____ |

17. In your opinion, does the maximum density stipulation for a site serve satisfactorily as an indicator for livability features that will come out of the project.

satisfactory____ somewhat satisfactory 4 neutral 6 seldom satisfactory 2
unsatisfactory____

18. Considering greenfield sites only: In your area, how often are projects completed where amenity space(s) over and above the required municipal dedications are provided with no credit given to the developer?

always 2 frequently 3 occasionally 1 never 1
5 said don't know

Intensification/ Higher Density

“Higher density”, “intensification”, “compact urban form”, etc., are frequently proposed or encouraged by municipalities as a key measure to advance sustainable community design.

19. In your municipality / region, what types of higher density projects are/are not currently supported by the market in a suburban setting.

| Project Type | Market Support | No Market Support |
|----------------------------|----------------|-------------------|
| Single Family Home | 12 | 0 |
| Row / Townhomes | 10 | 2 |
| Apartment Condos | | |
| 5 - 20 units | 9 | 3 |
| 21 - 50 units | 7 | 5 |
| 50+ units | 7 | 5 |
| Duplex* | 10 | 2 |
| Fourplex* | 7 | 5 |
| *up - down or side by side | | |
| Other | | |
| _____ | | |
| _____ | | |
| _____ | | |

Achieving Higher Density

20. Approximately what percentage of land in a greenfield site project should be allocated to higher-density product? (Consider anything over 10 housing units per acre as “higher density”)?

| | |
|---------------|---|
| less than 10% | 2 |
| 11% to 20% | 3 |
| 21% to 30% | 3 |
| 31% to 40% | 1 |
| 41% to 50% | 1 |
| over 50% | 0 |
| no opinion | 2 |

21. Do you believe that there should be minimum density specifications?

yes 4 no 4 no opinion 4

22. Do you believe that there should be maximum density specifications?

yes 5 no 5 no opinion 2

Sustainable Community Design

23. In your opinion, should sustainable community design mean -- among other things -- more affordable product for the consumer?

yes 7 no 2 no opinion 3

comments , none

24. Have you visited the Sustainable Community Design web site,
www.umanitoba.ca/faculties/architecture/la/sustainable/index.htm

yes 1 no 11

Affordable Housing

25. Within your municipality / region, what progress has there been in the past 5 years in delivering more affordable' housing?

4 none
7 some progress but not significant
1 considerable progress
0 significant progress

26. If you indicated some, considerable or significant in Question #25, would you say this has been due to: (check as many as apply)

Market Forces:

2 housing supply exceeding demand
9 low interest rates
3 innovative housing products such as 'Sprout' and 'Grow homes'
0 other, please explain _____

Government Policies and Programs:

- 2 availability and level funding of federal/provincial housing programs
- 1 inclusionary zoning
- 3 cost reducing site development standards
- 4 intensification (higher density) regulatory/zoning changes
- 3 regulatory or policy changes in the approval process - reduced time for approvals
- 4 implementation of sustainable housing policies
- 4 private/public partnerships
- 0 other, please explain _____

comments? _____

27. In your opinion does building at increased density necessarily result in more affordable housing?

yes 7 no 3 don't know 2

comments? land costs are reduced

28. In your experience of planning or designing, or reviewing multi-family housing project, "People respond to light and circulation patterns in the design of buildings but react to a density number".

strongly agree 0 agree somewhat 5 disagree 3 don't know 4

Thank you for completing this Questionnaire.

Summary results of the Questionnaire will be available via e-mail. Please indicate your email address:

PLEASE RETURN BY THE ENCLOSED RETURN-ADDRESSED ENVELOPE.

REFERENCES

Berridge Lewinberg Greenberg Dark Gabor Ltd., Cosburn Patterson Wardman Limited and Glatting Jackson Kercher Anglin Lopez Reinhart, "The Integrated Community : A Study of Alternative Land Development Standards", Canada Mortgage and Housing Corporation, 1996.

City of Calgary, 1997 City of Calgary Civic Census : Information by District and Ward, 1997

City of Calgary, City of Calgary Community Profiles, 1994

Epp, Peron, Perks, Sale, van Vliet, "Sustainable Community Design" CD-Rom, Canada Mortgage and Housing, 1998

Internet Resources:

| | |
|--|--|
| Cyberbia | www.arch.buffalo.edu/pairc/ |
| Adams County Colorado | www.co.adams.co.us |
| City of Calgary | www.gov.calgary.ab.ca |
| City of Vancouver | www.city.vancouver.bc.ca |
| City of Surrey | www.city.surrey.bc.ca |
| City of Toronto | www.city.toronto.on.ca |
| City of Ottawa | www.city.ottawa.on.ca |
| Intergovernmental On-Line Information Kiosk | www.intergov.gc.ca |