PLACES AND PEOPLE: PLANNING NEW COMMUNITIES

PLACES AND PEOPLE: PLANNING NEW COMMUNITIES

EDITED BY
Sasha Tsenkova

Cities, Policy & Planning
research series

ENVIRONMENTAL
DESIGN | UNIVERSITY OF
CALGARY

Sasha Tsenkova is Professor of International Development and Planning at the University of Calgary. She has a PhD in Architecture (Prague) and a PhD in Planning (Toronto). Dr. Tsenkova brings interdisciplinary and multicultural insights to her work on housing and urban development and has published extensively on these issues.
http://www.ucalgary.ca/~tsenkova

CONTENTS

LIST OF BOXES, FIGURES, AND TABLES

LIST OF BOXES

LIST OF FIGURES

LIST OF TABLES

ACKNOWLEDGEMENTS

Dr. Sasha Tsenkova
Professor
Faculty of Environmental Design
University of Calgary

PREFACE

Calgary has seen unprecedented growth shaping a wide range of new communities. At Hopewell, we are committed to creating distinctive communities built upon strong social, functional and aesthetic components. Calgary's five-time "Developer of the Year" Hopewell Residential Communities is a leader in community design, land development, architectural integrity, marketing and sales. With a family of award-winning communities throughout Calgary, we strive to create rich environments -- leaving a legacy of communities that retain their high value. Hopewell has a reputation for progressive concepts that preserve the land's historic and natural balance, enabling residents to connect with the heritage and habitat of their surroundings. We see that the past and future meet as one. Preserving the past and the environment wherever possible is a sign of respect in what we do. Hopewell plans and builds its communities with special attention to creating a social fabric, which means planning areas with amenities that appeal to children and parents alike as well as areas for private reflection and community centres.

By embracing new thinking we continue to introduce innovations to future communities. The pursuit of excellence and innovation involves active collaboration with designers, architects, planners, builders and future urban professionals. Beyond Hopewell's creative architecture, distinctive community design and marketing innovations, we believe that it is important to explore new ideas through a variety of collaborative approaches to create unique new communities in the future. Hopewell's talented team was excited to share its community planning experience with students at the Faculty of Environmental Design. We were very pleased to work with Professor Tsenkova to create a positive environment that stimulates learning and creativity. The students' commitment and dedication to planning innovation is clearly articulated in this publication. Their vision for a new community in Calgary—Mahogany—advocates socially inclusive community living and protection of the environment.

Lesley Conway, MBA
President, Hopewell Residential Communities
2004 MAX Award Recipient

CHAPTER 1

CITY PLANNING & URBAN DEVELOPMENT: DIVERSITY, SUSTAINABILITY & THE PURSUIT OF EXTRAORDINARY ENVIRONMENTAL DESIGN

Professor Brian R. Sinclair, FRAIC, AIA

"Where we have … distinctions between cities and suburbs, we have the last intact Medieval English system of government and taxation anywhere in the world … We need to look at these metropolitan regions as units."

- Robert Yaro (Harvard Magazine: 2000)

Complexity of our urban environments is escalating in modern times, driven by such factors as the power and pervasiveness of high technology, the availability and ubiquity of convenient transportation, and the marketing and exporting of contemporary, often 'Western' and arguably unsustainable lifestyles. Urbanization is on the rise globally, with over half of the world's population now residing in cities and towns. Around the planet we see the remarkable growth and development of urban settlements, most notably in recent years in the Asian region. Growth, however, is not restricted to China and India – closer to home, Calgary proves one of Canada's fastest growing cities. With a vibrant economy and plenty of confidence, the city is experiencing unprecedented expansion, unanticipated challenges, and remarkable opportunity. By many measures, Calgary has now moved into position as an emerging global city. With a population pushing a million, and prosperity the overall order of the day, the brass ring beckons. Future evolution of the city and its fabric are hotly debated in political, planning and design circles. There seems to be an understanding that, unlike much of the city-building that transpired during the previous oil boom of the 1980's, today's growth and development must be more informed, very inspired and highly responsible.

In moving forward we need to seek quality and value in our environments (physical, social, cultural, etc.) within a framework of moderation and balance. Too often the landscape of decision making is polarized, with plenty of black and white and inadequate shades of grey. Yet, it seems that a fuller spectrum of choices, conceptions and constructions would be beneficial.

The dualistic posturing that sets suburban development into antagonistic tension with inner city efforts seems counterproductive and superficial. Rather than casting the problem as 'them versus us' and 'either/or', it seems productive to consider both and push for scenarios and solutions that result in a better city at day's end. My experiences with Calgary, as a native of the city and as an expatriate returning home in 2003 after a long self-imposed exile, give me great cause for optimism and encouragement. Unlike Calgary of the 1980's, the city today seems primed for bold and brave steps in urban planning, design and development. At a recent dinner meeting of community leaders, initiated by Colin Jackson of the Epcor Centre for the Performing Arts, we explored dimensions of Calgary that present us with the ingredients for the exceptional. Discussion around the table and among colleagues pointed to a more enlightened citizenry, a more design-savvy clientele, a more progressive bureaucracy, and more possibilities to move us toward 'tipping points' or 'triggers' for extraordinary gestures and moments.

With prosperity and growth come new realities, both good and not so good. Calgary is encountering a boom market, with resultant escalation of costs for housing, retail and office space. Pressures to keep costs affordable have translated into annexation and growth at the urban edges. Canada, like our neighbors to the south, has experienced overall increases in average house sizes over the past many decades. In the US an average home in 1950 was 1000 square feet in area – today the number is in the vicinity of 2000 square feet. North Americans want more space, more stuff, and a higher standard of living. The situation,

however, is not simply bigger houses at the periphery. In fact, in a city like Calgary where space comes at a premium, we see suburban desires countering migration to the inner core. More square footage and longer commutes versus less square footage and increased convenience. Clearly this is an oversimplification of a complicated system – yet this balance between suburban/exurban development and inner city intensification is expected in the evolution of the city and can be viewed as a positive circumstance. We need to accept that development will concurrently transpire at centre and edge, and then work hard to ensure that both scenarios unfold to our greater benefit. This aspiration could translate as smart growth, densification at transit nodes, more transit-oriented development, increased prevalence of mixed-use projects, greater attention to architectural quality, enhanced public space, innovations to bylaws and regulatory environments, creativity in city planning models & methods, promotion of open building concepts, and heightened focus on sustainability and ecologically-sensitive design.

Vitally related to such topics is the over-arching issue of public and population health. For many years politicians and communities have failed to fully understand the key roles design and planning play in health and wellness. For environmental designers, physical determinants of health tend to be better understood. From livability of neighborhoods and walkability of streets, to messy vitality and the juxtaposition of activities, architects, planners and urban designers tend to realize that cities are highly complex and often complicated manifestations.

Clinical zoning and segregation of uses serve to disconnect people and place. Separation of disparate users, based on arbitrary policy and isolated procedures, tends to significantly reduce the richness of districts and precincts. Simplification of design, in two, three and even four dimensions, dilutes the impact of cities, streets, buildings and interiors. Major studies by the US Center for Disease Control (CDC) underscore the urgent need to reconsider how we plan, design and build our cities and their constituent parts. Less time in the car, more time with neighbors, a stronger commons, less privatization of public space, higher emphasis on design, more attention to pedestrian scale, easier access to amenities, highlighting of holistic thinking and integrative intervention – such aspects of cities seem sensible yet prove increasingly allusive in an ethos of fragmentation, bureaucratization, division and disconnection. Calgary, given the remarkable opportunities that are on our doorstep, is positioned to critically question its path and dramatically alter its future.

Sustainability looms large on the agenda of city building, and especially in a city funded and fuel by the energy sector. Calgary in numerous ways is leading exploration and experimentation into sustainable design and planning. The City of Calgary has taken a progressive and aggressive stance on sustainability, promoting triple bottom line (economic, social, environmental) approaches to its missions, mandates and activities. From LEED aspirations in publicly funded buildings and wind-powered light rail transit, to green developments and the Imagine Calgary initiative, the municipal government is pushing some edges and testing some ideas that promise to benefit the public and positively shape the fabric. While the core versus edge dualism & debate plays out in the broader community, the bureaucracy is increasingly enlightened about and committed to providing leadership in its pursuit of sustainable environmental design. Cities and buildings are major contributors to green house gas emissions and global warming. Buildings and the construction industry are major contributors to landfill and the large waste problem. Buildings, automobiles and urban-based industry prove major consumers of energy. Water is increasingly a scarce and valuable resource. Congestion on streets is escalating. Perhaps, like Bangkok realized decades ago, the battle against traffic congestion is expensive and futile – perhaps the infrastructure dollars could be more wisely invested to improve our quality of lives and buttress our efforts to attain global city stature and status. Rather than engineering exercise out of communities we need to reconsider how we conceive & construct communities that prove models of sustainable design to nations around the planet. I suggest Calgary is poised to embrace such challenges and, in the end, create a world-leading city that

protects our resources, supports our lifestyles, promotes innovation, fosters public health, encourages civil society, respects our geography, honors our history, demonstrates our leadership, and celebrates our accomplishments. Why would we aim for and expect anything less?

The current volume considers a broad range of topics and questions that are germane to the future of the city and our approaches to design, planning and development. Precipitated through the support, encouragement and engagement of several key individuals from the local development industry, and explored through the vehicle of environmental design curriculum (most notably a community planning studio), the present publication captures a broad range of thinking on Calgary and on the parameters, promise and potential of the modern city. From planning principles and consideration of the suburbs, to sustainable design and information technology, the various papers challenge us to reconsider the city. They present us with ideas and examples that demand our thoughtfulness, criticism, and [re]action. The authors, who include students, practitioners, experts, and authorities with jurisdiction, call on us to carefully examine the status quo, consider the alternatives, and imagine the possibilities.

Calgary is at an amazing juncture. Increasingly well connected, undeniably well resourced, and willing to experiment, invent and innovate, our seeing, thinking and acting today will define the shape, texture and quality of tomorrow. Fasten your seatbelts, drive safely, and enjoy the trip – the destination will surely make your efforts most worthwhile.

Photos in this chapter are copyright Brian R. Sinclair (2006)

Brian R. Sinclair, FRAIC, AIA, is Professor and Dean of the Faculty of Environmental Design (EVDS) at the University of Calgary. Brian holds postgraduate degrees in the fields of both architecture and psychology. His expertise and experience spans the breadth from science to art. He is an educator and practitioner, an academic and an administrator. In 2005 Dean Sinclair was appointed as Special Advisor to the President on Design – in this capacity he oversees and advises the institution regarding landscape, urban, architectural, interior design and sustainability initiatives.

CHAPTER 2

PLANNING NEW COMMUNITIES

Sasha Tsenkova, PhD, MCIP, MIUA

INTRODUCTION: COMMUNITY PLANNING AND SMART GROWTH

As Calgary approaches the one million population mark, the pressure to accommodate growth and to provide new infrastructure in developing communities is intensified. The concept of 'smart growth' is advocated as a way of controlling urban sprawl and problems such as traffic congestion, long commutes, air pollution, inefficient use of infrastructure, degradation of natural areas, and the premature conversion of agricultural land. Smart growth does not mean the abandonment of suburbs, but it means reconsidering how and where new development is built. Cities need to introduce policies that ensure more compact suburban residential developments designed to support transit and mixed-use (Chiras & Wann, 2003).

The City of Calgary has been proactive in creating a more sustainable suburban form through the *Sustainable Suburbs Study* adopted by Council in

1995. The study encourages the development of suburban communities that are attractive and livable in

The City of Calgary
General Residential
Built Up Area
September 2000

Residential Suburban Growth 1970 to 2000

- 1970 General Residential Built Up Area (135 sq, km., 52 sq. miles)
- 2000 General Residential Built Up Area (305 sq, km., 118 sq. miles)
- 1997 Industrial Built Up Area (65 sq. km, 25 sq. miles)
- Transportation Utility Corridor
- City limits Gross City Area: 721.73 sq. km. , 278.66 sq.mi.

1970 Population = 385,436 People
2000 Population = 860,749 People

People added over 30 years = 475,313
(average of 15,843 people/year)

General Residential Land
Absorbtion between 1970 and 2000
was 170 sq. kilometers or 66 square miles

Figure 2.1 Urban Growth in Calgary, 1970-2000

a manner that is sensitive to the environment and reduces auto dependency. Today Calgary's population is growing faster than the built-up area and suburban densities have increased from a range of 5 to 5.5 units per acre to 6.5 to 7 units per acre. Figure 2.1 compares the size of the residential built-up area in 1970 with 2000. While the pattern of extensive growth is no doubt visible, since the 1990s the population has grown at a faster pace than the built-up area (21% and 15% respectively).[1] In addition to promoting greater variety of uses and higher densities in Calgary's suburbs, the City is implementing policies that encourage mixed-use development in the downtown and inner city communities. Recently, the City of Calgary has become actively involved as landowner and joint venture partner in developing the East Village downtown, while the Canadian Forces Base has been transformed into the award-winning community of Garrison Woods, providing a variety of housing choices as well as retail.

Despite these positive trends in reversing urban sprawl, the planning of new communities in Calgary remains a significant challenge. This chapter reviews the most important elements of the community planning process, its institutional framework and the critical links between planning policy formulation (goals, objectives and planning instruments) and major thematic areas of the plan. The planning of new communities is presented as a strategic visionary process guiding future development with a particular reference to important normative requirements related to the provision of community services (schools, transit, parks, community facilities), housing, and employment/retail. Drawing on community planning practice in Calgary, the chapter outlines the essential characteristics of the process (plan-making) and the product (community plan).

THE PLANNING OF NEW COMMUNITIES: MAJOR CONCEPTS

Strategic spatial planning is an active "social process through which local communities respond to internal and external challenges with respect to the management of local environments (Healey *et al.*, 1997:293). It builds on and transforms established ways of doing things (institutional relations) and accepted ways of looking at things (policy agendas), in order to create locally new institutional capacities for influencing the future (Albrechts *et al.*, 2003). The strategic spatial planning process does not follow a well established trajectory, but generally incorporates the following stages: i) scan the environment; ii) select key issues; iii) set mission statements or broad goals; iv) undertake external and internal analyses; v) develop goals, objectives, and strategies with respect to each issue; vi) develop an implementation plan to carry out strategic actions; and vii) monitor and update (Kaufman & Jacobs, 1987). A key feature of the strategic spatial plan is the *SWOT analysis* (strengths, weaknesses, opportunities, and threats) as a basis for devising policy strategies to achieve goals and objectives in priority areas. Another distinguishing characteristic

---

[1] From 1970 to 1981 the population in Calgary increased by 57%, while the built-up area increased by 74%. In the following decade these figures were 14% and 17%.

feature is its orientation towards action, implementation and results. The institutional capacity to collaborate during the strategic planning process (plan-making) is perceived to increase the effectiveness of implementation. This institutionalisation could be initiated during the strategic planning process by a planning team, which may fuel fora for dialogue, decision-making and collaboration. The formal arenas could be complemented with informal ones where new people, new alliances, new networks and new ideas are brought together to articulate strategic priorities and approaches (Albrechts *et al*, 2003).

The planning of new communities applies the classic strategic planning model establishing relationships between past, present and future to design alternative strategies for plan implementation. The approach is schematically presented in Figure 2.2. Linking the past with the present is guided by exploration of 'where are we now', while linking of the present to the future--by 'where do we want to be' (Abott, 2005). The future reflects a community vision usually developed with some degree of consultation with major stakeholders. The planning process explores different alternative futures and attempts to incorporate the most appropriate one in the community plan. Selecting priorities and designing alternative course of action essentially responds to the fundamental question 'how do we get there'. This formulation of planning policies implies a good understanding of trends, patterns of change in the natural, built, organizational and social environment and clear definition of ways to influence the implementation process (Salet & Faludi, 2000).
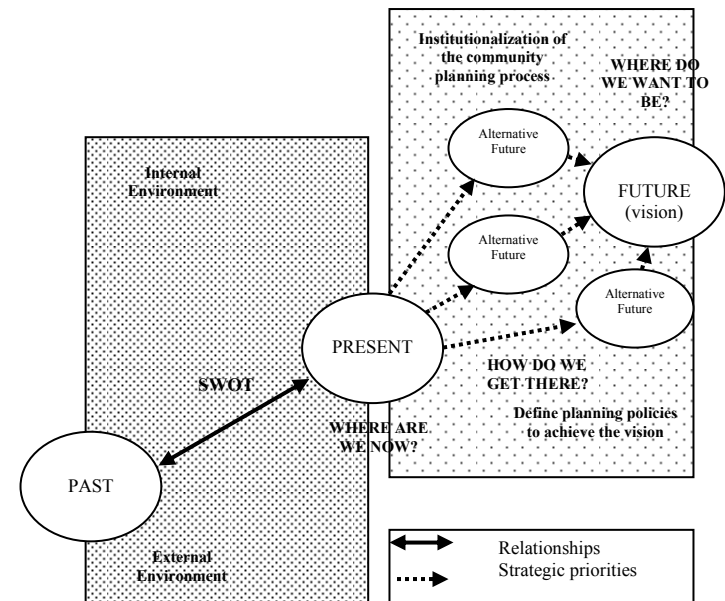
Figure 2.2: Strategic approach to community planning

The planning of new communities as a forward looking activity is selective in its analysis of elements in the past and present (Friedman, 1987). Often planners assume that natural, economic, social and political processes that have linked events in the past will continue to link the present to the future. Knowledge of the future in planning terms is often unknown and uncertainty, both within the internal and external environment, is a major constraint (Abott, 2005). In addition, the process of plan-making is embedded in the external environment; these contextual influences have a critical way of influencing both the decision-making process and the choice of strategic priorities.

THE COMMUNITY PLAN-MAKING PROCESS

The planning of new communities can be unwrapped into the following stages: SWOT analysis, selection of key issues/priorities and the development of goals, objectives, and planning policies in key priority areas (Kaufman & Jacobs, 1987). Since the institutionalization of the process is an important element, formal arenas—the community planning team and key decision-makers—play an important role in presenting the strengths and weaknesses of the present and in articulating future planning policies (Albrechts, 2001). Studies indicate that the planning of new communities tends to involve a wide range of partners in policy formulation (Hodge, 2003; Porterfield & Hall, 1994). The mobilization of this wider coalition—senior level governments, landowners, developers, non-profit agencies and business interests—in support of the plan-making process is essential. Community planning can be demanding in terms of institutionalization—it requires extensive consultation to establish legitimacy, representation and ensure diversity of input (Bryson *et al.*, 1986; Salet *et al.*, 2003).

Much of the discussion in the literature has centered on the plan-making process, on mobilization of stakeholders and development of collective power, on 'top down' vs. 'bottom up' approaches (Baker, 2001; Faludi, 1996). The advantages are usually associated with the process itself—it is in this process that the wider consideration of alternatives, the stimulation of discussion, and a framework for planning policy formulation is created (Roseland, 2005). Some of the disadvantages are associated with the lack of clear links between vision, priorities and planning policies formulated by the higher level of decision-making (planning team) and the actual input from stakeholders. The formal planning team from the very start is usually complemented with informal participation of experts and institutional stakeholders. The process of engagement can involve visioning workshops, design charettes, round table discussions, surveys and other forms of public consultation. Facilitated discussions, 'dotmocracy' voting on priorities and reporting of results to the planning team can ensure that different views are taken into account and the process is transparent. These modes of participation are schematically represented in Figure 2.3. The extent of stakeholder input into the plan-making process poses challenges and risks. It can generate a huge amount of information, not necessarily consistent, as well as multiple revisions of planning policies to reconcile different opinions. Consensus building can be time consuming and demanding in terms of resources as well (Kelly & Bacher, 2000).

COMMUNITY PLANS: THE CHOICE OF PLANNING POLICIES

The planning of new communities in Alberta is embedded in the hierarchical structure of planning policies and documents outlined in the *Municipal Government Act*. While a number of other important sector specific strategic policies need to be taken into account, the following hierarchy of planning usually applies. Municipal Development Plans provide a broad land use pattern and transportation network for the entire city. Community Plans provide a policy

framework for the redesignation, subdivision and development of land within a specific area of the city.[2] They have a regulatory function and a growth management function associated with the timing, direction and rate of suburban growth. Community plans, when approved, are complemented by Outline Plans identifying basic subdivision patterns, comprehensive servicing, financing and development issues. Furthermore, suburban development is conditional upon the approval of Subdivision Plans creating private lots, roads and reserve land through a legal plan in conformity with Community Plan land use designation.

The planning of new communities essentially transforms raw land into a variety of land uses designed to accommodate urban growth over a period of 10 to 15 years. The Community Plan usually incorporates a system of goals, objectives and planning policies designed to regulate the development process in a rational and coherent manner. Key milestones and outcomes of the process—the SWOT analysis, formulation of a vision, goals/objectives, and planning policies—are explicitly linked to modes of public participation to ensure community input and shared ownership.

The policy framework of the community plan itself, as presented in Figure 2.3, is thematically linked to the provision of three major building blocks of the community plan—community services, housing, employment & retail. As the tree-shaped diagram indicates, these major blocks 'branch out' into a number of other planning policy issues related to the provision of schools and parks, transit/roads and technical infrastructure and community facilities. While this is mostly associated with the public realm in new communities, the planning process needs to accommodate other essential land uses such as housing, retail and office/light industrial. These functional elements (live, work and play) are connected through the technical infrastructure and open space networks in a system defining the built form of the new community.

While these are the most essential characteristics of the process (plan-making) and the product (community plan), the implementation process creates a wide range of outcomes—ranging from successful and desirable communities to planning failures. Some comparative studies have explored the diversity of that experience emphasizing the importance of a well designed planning policy framework to guide the development process and market responses (Kelly & Becker, 2000; Roseland, 2005). The formulation of planning policies is indeed a challenging task. Their implementation is facilitated by the choice of policy instruments or packages geared towards a particular objective or outcome. For example, policies to ensure housing choices can be supported through a mix of normative policy instruments and some incentives to ensure adequate market response.

---

[2] In the case of new communities the Community Plan is called Area Structure Plan.

**MODE OF
PARTICIPATION**

**KEY MILESTONES
AND OUTCOMES**

Planning team
Analysis of trends

Scan internal &
external
environment

Workshops &
community
projections

Develop vision &
goals

Surveys

Open house/ public
consultation

Develop objectives
& planning policies

**Community
Services**

**Schools &
Parks**

**Transit, roads,
infrastructure**

Housing

Media & web
dissemination

**Employment
& retail**

**Community
facilities**

Consultation
with major
institutions

Incorporate input,
validate

Approve
Community Plan

Figure 2.3 The community planning process

The choice of policy instruments is shaped by the nature of development, a variety of contextual factors, strategic planning policies, the choices of decision-makers, and the responses by the marketplace. Notwithstanding the diversity of arrangements, policy instruments can be grouped into the following categories: *voluntary* (community, non-profit, markets), *mixed* (information, subsidy, taxation) and *compulsory* (regulation and direct provision) (Chiras & Wann, 2003). The planning of new communities uses mostly regulatory instruments to define land use districts, densities, types of uses and development opportunities. It plays an essential role in setting the framework for direct public provision of transit, schools, fire/police and other much-needed community services. In the ladder of policy instruments, community plans draw extensively on compulsory instruments to manage new development (see Figure 2.4). While these are mostly normative planning requirements, the spectrum of 'enabling' policy instruments might include subsidies and tax incentives to provide non-market housing, mix-use development in neighbourhood nodes or recreational opportunities. The use of these instruments differs widely from one jurisdiction to another and tends to be limited in Calgary. For example, density bonusing is applied in the city (not necessarily in the suburbs) as a particular form of subsidy to generate desirable market responses. The City also acts as a landowner of employment center land in suburban locations to improve the jobs/housing balance.

These developments sketched in broad strokes, are comparable elements of planning policy applied in community plans. Yet, some specific arrangements, and the response of different suburban markets determine a range of 'enabling' planning strategies to

ensure housing choices, adequate provision of schools and open spaces and access to jobs and retail.

Low level of state involvement

Family & Community

Voluntary organizations → Voluntary Instruments

Markets

Information

Subsidies & grants → Mixed instruments

Taxes & user fees

Regulation → Compulsory instruments

Public provision
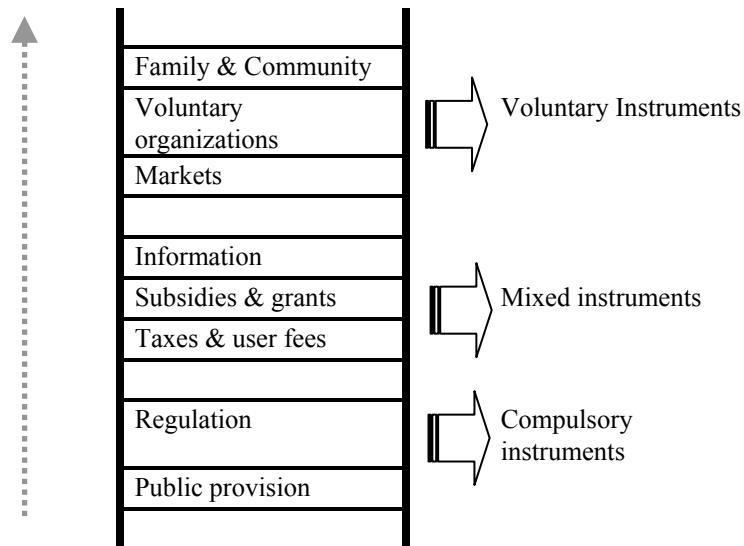
High level of state involvement

Figure 2.4 The ladder of policy instruments
Source: Adapted from Tsenkova 2003

THE BUILDING BLOCKS OF COMMUNITY PLANS

The planning of new communities begins with a population forecast and analysis of demographic trends in suburban markets. To evaluate potential uses, it is important to know how many people will be living in the community, and thus the amount of land required for community services, housing, retail/employment land

uses (see the major building blocks in Figure 2.3). The basic calculation relates the gross developable area of the community—total area less environmental reserve and land purchase areas for high schools, major interchanges and recreational centers—with an average density of 6 to 8 units per gross developable acre. Recent trends in Calgary's new communities suggest that the average density tends to exceed 7 units per acre (UPA) due to a higher share of multifamily and medium density housing.

Community Services

Community services are an essential requirement for the development of a healthy and livable environment. In terms of land use, schools and roads consume a larger share of gross developable land. School sites are chosen to mimic growth patterns of the community. In practice, school sites are taken out of the municipal reserve dedicated by developers for public/community spaces. The municipal reserve in the province of Alberta is 10% of gross developable land.

Schools

Elementary schools normally require six to eight acres of land, while secondary schools need 15 to 20 acres. Calgary Board of Education (CEB) and Calgary Catholic School Board (CCSB) have established threshold guidelines for the planning for school sites in new communities (see Table 2.1). The guidelines look at the total population, average household size and number of children in accordance with projected

demographic and density recommendations, to reserve land for elementary and junior high schools.

Table 2.1 Threshold population for schools in new communities

	Calgary Board of Education	Calgary Catholic School Board
Elementary	6,000	8,000-10,000
Junior High	12,000-15,000	**
Elementary/Junior High	*	12,000-13,000
Senior High School	30,000-50,000	100,000-120,000

The CBE's policy is to construct stand alone elementary and junior high schools. By contrast, CCSB combines junior high schools with elementary schools as a joint use site.

Roads, circulation and transit

New communities are often labeled as auto dependent with road patterns creating a myriad of cul-de-sacs with uniform single-family homes. The choice of road patterns is important since it also affects the availability of land for residential, employment and community land uses. The traditional curvilinear pattern in the suburbs is in fact the most efficient. It consumes less than 25% of the developable land, while the grid pattern needs about 30% (Kelly & Becker, 2000). Pedestrian movement, including sidewalks and trail systems, brings vibrancy and connectivity to the community. The planning for pedestrian circulation establishes the links between major anchors of community life (schools,

community centers, parks) and destinations (community retail and employment).

One of the important public services required in new communities is a well designed public transit system making forms of transportation other than the automobile feasible and attractive. An important rule in community planning takes into account walkable distances to the nearest transit stop based on the assumption of four blocks or five-minute walk.
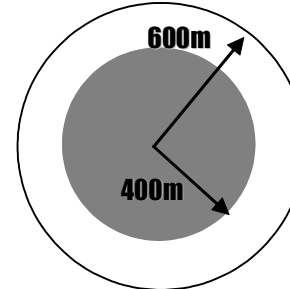
Figure 2.5: Walkable distances

The thresholds for walkable distances are:
- Light railway transit station—600m serving an area with approximately 7,533 residents[3]
- Bus stops on residential streets—400m serving an area with 3,348 residents (Figure 2.5)[4]

The distance between Light railway transit stations is 1.6 km, while bus stops are at 300m for primary

---

[3] Based on gross developable density of 8 UPA, and considering 3 persons per occupied dwelling within an area of 358.7 acres.
[4] Based on gross developable a density of 8 UPA, and considering 3 persons per occupied dwelling within an area of 194 acres.

collector streets and 250m for collector streets (City of Calgary, 2004)

Community facilities

The planning of new communities requires the provision of fire stations, emergency medical treatment services and libraries which will service the community. The land requirements are in the range of 1 acre or less, but the capital cost to a municipality can be quite high. It is thus imperative that the site selection ensures the most efficient access based on response time and distance. In addition, sites for community centers and faith facilities are usually provided for 5,000-10,000 residents in close proximity to neighbourhood nodes, schools and parks to enhance community interaction (Porterfiled & Hall, 1996). The community planning process also involves identifying the location and phasing of infrastructure and public utilities, including storm water management, sanitary sewer, and water.

Housing

Residential land uses absorb most of the gross developable land in new communities. Given the long-term planning horizon of 15-25 years, population projections are helpful in estimating the amount of housing that will be required in the future. Figure 2.6 presents the main elements in the analysis that need to be considered. On the demand side, perhaps the most important factors are related to demographic changes and trends in income distribution. On the supply side, factors such as preferred housing types and

corresponding trends in the prices of housing define the type of suburban marketplace in the new community.
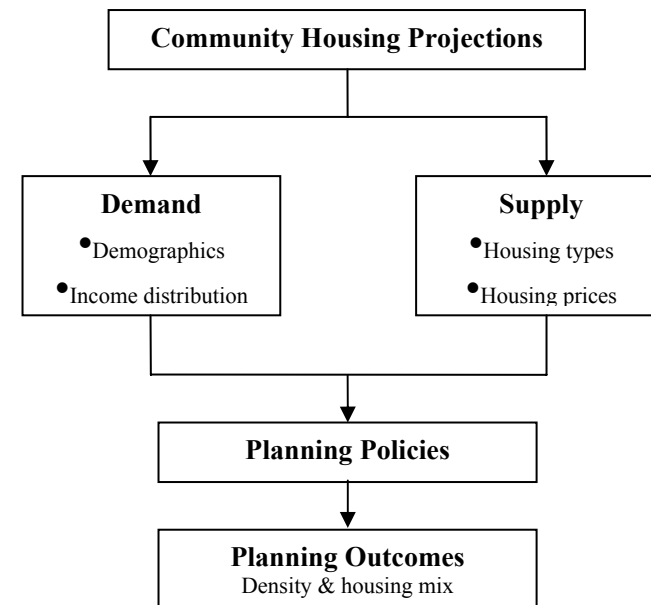
Figure 2.6: Planning for housing in new communities

The standard planning instruments through which a mix of housing types and household needs can be accommodated are the average residential density and zoning designation. These correspondingly influence the formulation of specific residential planning policies. For example, areas zoned exclusively for single family homes on larger lots will produce uniform patterns of development and will exclude access to housing for a wide variety of households, such as seniors, young

professionals, single parent families, etc. Table 2.2 shows the links between housing types and gross densities in the three major categories of housing generally used—low, medium and high density.

Dwelling Type	Gross Density

Low Density
Single detached on:
    60' lots
    50' lots
    40' lots
	5-8 upa
	
	5 upa
	6 upa
	8 upa

Medium Density
Small Singles on 30' lots
    Semi-detached on 30' lots
    Semi-detached on 27' lots
    Interlots, Quattroplex, Uniquattros
    Street Townhouses
    Courtyard Townhouses
	11-18 upa
	11 upa
	11 upa
	12 upa
	14 - 16 upa
	15 upa
	18 upa

High Density
Stacked Townhouses
    Walk-up Apartments
    Low-rise Apartments
    Four to eight storey
    Eight + storeys
	20+ upa
	20-25 upa
	20-25 upa
	30-40 upa
	40-80 upa
	80+ upa

Table 2.2: Increasing density through lot size and housing type
Source: CMHC, 2003

Higher density housing, which consists of stacked townhomes and walk-up apartments, can accommodate 25 UPA, while the more traditional single family detached homes on 60-foot lots has a density of 5 UPA. Usually new communities have a mix of housing types within specific neighbourhoods ranging from low- to medium-density housing. It is important to decide on a generic split between single and multifamily housing, which in the suburban context of Calgary is close to 80/20.

Community Employment and Retail

For new communities to be sustainable, some land for employment should be considered, whether in the form of employment centers, service nodes or work/live units. Future residents require local employment opportunities and the ability to live close to employment thus being less dependent on long commutes.

Employment centers

In most large Canadian cities the suburbs play an increasingly important role as places of employment rather than solely places of residence. Although suburban offices are a relatively new trend in Calgary's marketplace, the city will require an additional 18.8 million square feet of office space within the next 20 years, with close to 50% being absorbed in the new communities (City of Calgary, 2003). Some general rules of thumb can be applied in the planning of suburban employment centers:

- Floor Area Ratio (FAR) of 0.4 can be used to determine the amount of land, surface parking and open space;
- Close to 40 jobs for every 10,000 square feet of built office space could be expected in suburban office environments.

Retail nodes

The planning for retail land uses in new communities uses the hierarchical system based on service thresholds. Regional commercial nodes, the largest in commercial hierarchy, are usually anchored by big box retail and meant to service a population of over 100,000 within a four mile radius. The land allocation is in the range of 35-45 acres. Commercial community nodes are meant to service a population of between 10-15,000 people within a two-mile radius, usually require 10-35 acres. Neighborhood retail nodes are meant to service individual communities. They are usually intended for residents within a half-mile radius and occupy up to 10 acres of land (City of Calgary, 1995). The Retail Floor Area (RFA) can be determined by using the following formula:

RFA=Net Developable Land x Density x Household Size x Square Ft/Person

CONCLUDING COMMENTS

Recent planning experiences in Canadian cities indicate a growing interest in 'smart growth' and different ways of suburban development. In their search for new planning paradigms, Canadian cities experiment with new planning practices to create more sustainable and livable suburban communities. Despite some positive trends in reversing urban sprawl, the City of Calgary needs to become more systematic in the implementation of urban growth management policies to ensure more compact, transit-oriented, mixed-use suburban developments. A more sustainable suburban form can be achieved in a variety of ways. It implies a strong commitment to coherent vision, goals/objectives and planning policies that support healthy and complete communities. Drawing on community planning practice in Calgary, this chapter has outlined the essential characteristics of the process (plan-making) and the product (community plan) with a particular reference to important normative requirements related to the provision of community services (schools, transit, parks), housing, and employment/retail. The approach advocates a vision of community planning that is people sensitive and strives to promote the social fabric in new communities by integrating walkable scale retail with workplaces and residential areas. It is based on the idea that people will be able to live within walking distance of working, entertainment and community-based recreation. This model promotes the integration of major building blocks of the community plan into a planning policy framework for the development of a convenient, safe and evolving community where people can live and work. The provision of a well designed, high quality public realm (schools, parks, infrastructure, and pathways) is critical for the success of the community planning process, as is the provision of a variety of affordable housing types, designs and streetscapes.

Sasha Tsenkova, PhD, MCIP, MIUA, is Professor of International Development and Planning at the University of Calgary. She is the Director of Cities, Planning & Policy research lab at EVDS and Planning Program Coordinator. www.ucalgary.ca/~tsenkova

REFERENCES

Abott, J. (2005) Understanding and Managing the Unknown. The Nature of Uncertainty in Planning. *Journal of Planning Education and Research*, vol. 24, pp. 237-251.

Albrechts, L., Alden, J. and Pires, A. (Eds) (2001) *The Changing Institutional Landscape of Planning.* Aldershot: Ashgate.

Albrechts, L., Healey, P., and Kunzman, K. (2003) Strategic spatial planning and regional governance in Europe. *APA Journal*, 69, (2), pp. 113-129.

Baker, M. (2001) Some reflections on strategic planning processes in three urban regions. *Planning Theory and Practice*, 2, (2), pp. 230-235.

Bryson, J. and Crosby, B.C. (1989) The design and use of strategic planning arenas, *Planning Outlook*, 32 (1), pp. 5-13.

Chiras, D. and Wann, D. (2003) *Superbia: 31 ways to Create Sustainable Neighbourhoods.* Gabriola Island: New Society Publishers.

Canada Mortgage and Housing Corporation (CMHC) Increasing Density through Lot Size and Design - How the Strategy Works http://www.cmhc-schl.gc.ca/en/imquaf/afho/afadv/cohode/indelsde/how.cfm

The City of Calgary (1995) *Sustainable Suburbs Study*. Calgary: City of Calgary Planning Department.

The City of Calgary (2003) *Calgary and Region: Socio-Economic Outlook 2003-2008*. Calgary: City of Calgary Planning Department.

The City of Calgary (2004) *Transit Oriented Development Guidelines*. Calgary: City of Calgary Planning Department.

Faludi, A. (1996) Framing with Images. *Environment and Planning B: Planning and Design* 23, pp. 93-108.

Friedman, A. (2002). *Planning the new suburbia: Flexibility by design*. Vancouver, BC: UBC Press.

Friedman, J. (1987) *Planning in the Public Domain: From Knowledge to Action*. Princeton NJ: Princeton University Press

Healey, P., Khakee, A., Motte, A. and Needham, B. (1997) (Eds) *Making Strategic Spatial Plans: Innovation in Europe*. London: University College London Press.

Healey, P., Khakee, A., Motte, A. and Needham, B. (1999) European developments in strategic spatial planning. *European Planning Studies*, vol. 7 (3), pp. 339-343.

Hodge, G. (2003). *Planning Canadian communities: An introduction to the principles, practice, and participants, 4th ed*. Scarborough, Ontario.: Thompson Nelson.

Kaufman, J. and Jacobs, H. M. (1987) A public perspective on strategic planning, in: C. Scott and S.Fainstein (Eds) *Readings in Planning Theory*, pp. 323-343. Cambridge: Blackwell Publishers.

Kelly, E. and Becker, B. (2000) *Community Planning. An Introduction to the Comprehensive Plan*. Washington DC: Island Press.

Porterfield, G. and Hall, K. Jr (1996) *A Concise Guide to Community Planning*. New York: McGraw Hill.

Radford, K.J. (1980) *Strategic Planning: An Analytical Approach*. Virginia: Reston Publishing Co. Inc.

Roseland, M. (2005). *Toward Sustainable Communities: Resources for Citizens and their Governments*. Gabriola Island, BC: New Society Publishers.

Salet, W. and Faludi, A. (2000) (Eds) *The Revival of Strategic Planning*. Amsterdam: Koninkklijke Nedelandse Academie van Wetenschappen.

Tsenkova, S. (2003) Housing Policy Trajectories in Central and Eastern Europe. In Tsenkova, S. and Lowe, S (eds) *Housing Change in East and Central Europe: Integration or Fragmentation*. Aldershot: Ashgate Publishing Limited.

CHAPTER 3

FROM ISOLATION TO INTEGRATION: PUTTING SUBURBS IN THEIR PLACE

Alexander Krause and Arif Sayani

"We must not build housing, we must build communities."

- Mike Burton

INTRODUCTION

The concerns relating to current suburban planning practices have been well-documented. The negative effects of suburban developments such as sprawl, boring designs, and lifeless communities have left us all thinking of not only what is wrong with how we build suburbs, but also what we can do about it. Indeed, the challenge is to move beyond criticism of suburbs and to try to develop strategies that address the concerns in a practical manner. Pressure for suburban expansion is not going to dissipate any time soon, especially in cities that have an abundance of available land on the periphery. Suburbs are simply a reality in most cities and it is therefore critical that planners and civic leaders take steps towards improving the ways in

which they are designed and planned. With effective planning, suburbs can once more be vibrant communities that focus not only on the well being of residents, but also of economies and environments as well. This chapter discusses the history of suburbs, the current state of their development, and outlines some of the new planning approaches that are emerging to create better suburban communities.

WHERE ARE WE AND HOW DID WE GET HERE?

Before examining the current state of suburban planning it is imperative to review the history that has led to the widespread acceptance of suburbs. The origins of suburbs can be traced back to the industrial revolution. As inner city living conditions became unacceptable there was a growing desire – particularly by the wealthy elites – for new living space. While the work of urban reformers during the industrial era has been well-documented, the greatest contribution to the modern suburb may have been Ebenezer Howard's Garden City. Howard proposed the development of new planned communities separate from existing industrialized cities (Friedman, 2002; Hodge, 2003). This physical change forever altered the thinking towards urban living since for the first time it became acceptable and fashionable to live outside the core city.

The Garden City concept tried to offer the services and amenity of cities but within an idealized rural and country lifestyle (Friedman, 2002; Hodge, 2003). Several towns were built in England using this concept and they still exist today. In North America, the Garden

City concept was used in creating a multitude of small towns that contained features of complete communities – schools, businesses, shops, public transport, and a variety of housing (Hodge, 2003). In addition to the Garden City, another influence on modern suburbia was the railway suburbs of the late 19th century (Hall, 2000). Sometimes referred to as "Garden Suburbs", these communities offered a "generous residential environment…usually located just beyond the built-up urban area" (Hodge, 2003, 48). Bedford Park in Chiswick and Hampstead in London, England are prime examples of Victorian railway and garden suburbs which were spatially separated from their core city's and promoted nature, open space, and desirable living conditions (Hall, 2000). Interestingly, Victorian suburbs of the 19th century were designed around rail transportation and emphasized the clustering of shops and amenities around transit station nodes (Hall, 2000). Indeed, it may seem rather odd to think that early suburbs did create complete communities with sophisticated layouts and designs, a stark contrast to what we encounter today, but one from which we can learn many lessons.

The Garden City philosophy and the Victorian railway and garden suburb served to initialize the concept of spatial separation between inner city and residential areas, which became a popular planning ideal as the automobile became mainstream post World War I. The later work by planners Clarence Stein and Henry Wright – most notably with the Radburn plan – illustrates the application of Howard's ideals in the North American context (Friedman, 2002). In the post World War II era, technologies such as the automobile gained prominence on the assumption of cheap energy and land being everlasting. The ease of automobile travel thus resulted in the design of suburbs without local businesses, amenities, or employment (Friedman, 2002). Moreover, design once centered on public transportation gave way to roads and freeways and an emphasis on the private automobile. Where the Garden City and Victorian railway suburbs had included all functions of daily life into its design (Hall, 2000), suburbs that separated functions and uses were now being developed. Not only could individuals drive long distances to work, but their daily activities took them further and further from their communities. As a result, the development of homogeneous residential suburbs gradually became institutionalized in North America.

More recently, spatial urban expansion has been termed "sprawl". This term has become derogatory in nature since it is widely considered the worst form of urban development. Widespread low-density development outside the core city, characterized by "overly wide streets with no urbanity" and "huge detached houses that have no relation to the streetscape or landscape" is the trademark of sprawl (Hall, 2000, 33). Figure 3.1 shows an example of widespread low-density development. In many instances, sprawl is simply considered unplanned growth. It is now widely recognized that unfettered suburban expansion has negative environmental and economic consequences; however, a firm solution remains elusive. Generally, many people desire a suburban lifestyle, but planners must balance this

demand with responsible and effective development strategies that mitigate negative side effects.

Figure 3.1 Example of land consumptive low-density development
Source: http://www.nativeecosystems.org/images/sprawl_douglas_county_full_size.jpg

WHAT IS PERPETUATING THIS FORM?

Values are a significant factor perpetuating the existing form of suburbs. In the West in particular, there is an affinity to the idealized country lifestyle associated with private home and land ownership. This ideal is reflected in the marketing of country homes in many new suburbs. As Chiras and Wann (2003) put it, suburbs provide urban residents "nature without the mud" (4). This historically rooted value is evident in the relatively low priced real estate offered in suburbs that encourage private home and landownership over inner city rental opportunities. Furthermore, since land is abundant in many parts of North America, there has been little demand or immediate need for compact growth (Kelbaugh, 2002). With an abundance of land, the notion of higher density development is often considered unnecessary.

Another important factor influencing suburban development is pressure for growth. Generally, growth is considered positive and necessary for a successful community. This is based on the concept of the urban growth machine first postulated by Harvey Molotch in 1976 (Fodor, 1999). In essence, the urban growth machine concept explains "the various political and economic constituencies that act in their common financial interest to perpetuate growth in a typical city" (Fodor, 1999, 29). Thus, the endless desire for growth has become an institutionalized value in civic politics. Other factors such as migration and economic development opportunities also influence growth. Managing growth in an effective manner is therefore the challenge facing most cities. It is critical to acknowledge this reality in order to effectively plan new suburban communities.

THE COSTS OF CONVENTIONAL SUBURBAN COMMUNITY PLANNING

Although popular, conventional suburban developments come at a number of costs. These costs have been recognized for over thirty years and remain the core of criticism towards suburbs. In 1974, the Real Estate Research Corporation in the United States published a study entitled *Cost of Sprawl* in which the financial impact of suburban expansion was evaluated.

It was found that the development of generic suburbs comprise a number of costs including direct capital costs, operational costs, as well as environmental and social costs (Fodor, 1999). Obviously, the economic costs are relatively easy to determine; however, social and environmental costs are more difficult to quantify. The following sections will explore some of the economic, social, and environmental costs associated with conventional suburban development.

Economic Costs

Suburbs are generally regarded as unsustainable (Kelbaugh, 2002). The economic problem of conventional suburban development is a paradoxical one. Peripheral land is often cheaper allowing for the sale of lower priced homes. These peripheral suburban areas, however, are often more costly to service. Indeed, local governments often argue that suburban developments and associated sprawl benefit local economies by increasing revenue from property, sales, and income taxes. Yet, they often disregard the true costs which are associated with providing basic services such as roads, sewers, and schools. Furthermore, regardless of whether it is municipalities or developers paying for these services, the costs tend to be shifted to existing residents through higher local taxes (Morris, 2005).

While these are broader costs associated with municipal spending and developers' investment, what about the more personal costs to individuals aside from taxes? Morris (2005) points out that over the span of thirty years, the average American family will spend

somewhere around US$560,000 on automobiles based on vehicle cost, insurance, gas, and regular maintenance. This is a significant amount of money and as Morris (2005) points out, very little is left "to show for it except a gas guzzler leaking oil in the driveway" (24). By contrast, Morris (2005) suggests that a couple would spend only US$60,000 on personal use of public transportation over the same period, a savings of half a million dollars. While these figures are based on the average American consumption, similar trends can be found in Canadian society. American studies have shown that households in auto-oriented communities spend close to US$8500 on automobile costs per year, approximately 20 percent of their household expenditures (Roseland, 2005). Canadian data shows that households spend close to CAD$9000 on average on automobile costs, a remarkably similar figure to the American data (Roseland, 2005). Notwithstanding methodological differences, indeed, the lesson of economic costs due to suburban development and urban sprawl is easily identifiable in any society.

It is often pointed out that the cost of suburban development is subsidized (Kelbaugh, 2002). In fact, many critics argue that suburbs would be less popular if citizens were forced to pay their true cost (Kelbaugh, 2002). Although automobile and commuting costs may be ignored for personal reasons, increased housing prices would likely reduce the appeal of suburbs. The idea is not to try to eliminate suburbs through pricing, but instead trying to balance the cost share relative to taxes. In fact, the cost imbalance between infill development and new suburban development has led

to disinvestment in many inner city areas (Kelbaugh, 2002). The need for more efficient development is therefore paramount to produce more economically feasible communities.

Social Costs

Suburbs are often criticized for their social homogeneity. Historically, suburbs were an escape for the middle class segment of society (Hall, 2000; Kelbaugh, 2002). Although the conditions of the middle class "white flight" are no longer the same, suburbs remain a predominantly middle class phenomenon. Sociologists have documented how suburban residents attempt to reinforce their social and economic status by residing in close proximity to others of similar socioeconomic status. It is for that reason that there is often opposition to higher density development or the inclusion of low-income housing in existing or new suburbs (Kelbaugh, 2002). Such social segregation is destructive, however, since it contradicts the very notion of a vibrant community. Typical suburbs lack public and community space which is vital for social interaction and the formation of community spirit (Chiras and Wann, 2003). The advent of attached garages has made it possible to enter and exit the home without stepping foot outside or engaging with neighbours. In essence, many conventional suburbs have become residential enclaves lacking any sense of community.

While the lack of vibrant communities may be a social cost that individuals are willing to pay in exchange for private home ownership, garages, and private backyards, there are serious negative consequences that must also be recognized. Douglas Morris (2005) has outlined several of these in *It's a Sprawl World After All* and argues that suburban sprawl has a strong connection to a breakdown in American society that has left individuals feeling isolated and disconnected from their communities. While loneliness and depression are some of the effects that Morris ascribes to suburban sprawl, the link to an increasingly violent American society is a unique one. Morris (2005) argues that "sprawl has loosened the bonds of civility, which in turn has promoted violence in the hearts and minds of those predisposed to act upon their baser instincts" (80). Morris notes that the causal relation is difficult to define but insists that the two together should be considered more seriously.

The list of authors attributing society's ills to suburbs continues to grow. While authors such as Morris and Duany have linked youth violence, suicides, and road rage to suburban sprawl, others have attributed increasing health problems to suburbs as well (Grant, 2006). Studies show that higher levels of obesity are found in suburbs in comparison to urban areas, indicating that their unwalkable designs are having increasing effects on our lives beyond the inconvenient (Grant, 2006).

We may consider such arguments as bold, in that they attempt to link suburbs and their bad designs to bad behaviour (Grant, 2006), but regardless of this research we can see for ourselves how people live their lives in suburbs. The feeling of isolation can be overwhelming as individuals find limited opportunities

for networking, for social interaction, and for engaging in community life. The isolation of the suburbs is one that is felt by all groups. Children may live in safe environments but lose much of their autonomy amid unstimulating environments (Grant, 2006). As Grant (2006) further points out, when these children are unable to even walk to school or to after school activities, their parents are forced to drive them from place to place, thereby increasing the need for car use and also increasing the number of accidents. The elderly are perhaps even more prone to isolation as they find themselves further and further from much needed daily activities.

It should come as no surprise that authors are increasingly trying to link such negative effects to the quality and design of suburbs. Identifying a link and therefore a cause implies that a solution can be found by changing the form and function of new suburbs. Whether this will work remains to be seen. What should be understood is that an increasing awareness of the effects that suburbs have on us is a sign that people are no longer willing to make the tradeoff between values such as cheap houses and perceived safety at the cost of their communities.

Environmental Costs

Perhaps the most well cited environmental problem of suburban development is the loss of natural and agricultural land. Conventional new suburban development is often wasteful of land through the creation of large lot sizes and inefficient road layouts (see Figure 3.2). To make matters worse, these large

lot and housing sizes are not relevant to the needs of a changing demographic (Friedman, 2002). Moreover, development often covers environmentally sensitive areas since the value of wetlands and natural habitat is either unrecognized or ignored. Increased stormwater runoff is just one of the consequences of poorly planned development over natural habitat (Kelbaugh, 2002). Another well cited result of suburban development is increased air pollution. The spatial separation of suburban residences from shopping and employment combined with reduced transit service has resulted in the increased reliance on automobile travel. Since it is difficult to quantify environmental impacts, the environmental cost of conventional suburban planning is often simply neglected. New suburban community planning practices must consider environmental impacts and employ strategies to minimize negative effects.

Figure 3.2 Typical suburban road layout which promotes automobile use
Source: Sasha Tsenkova

WHERE DO WE GO FROM HERE? MOVING FORWARD

Conventional suburbs have a number of social, economic, and environmental costs. In essence, suburbs have become boring places whose mundane architecture and design has led to a lack of social interaction and sense of place (Fodor, 1999). Although economics are often the limiting factor, the *Cost of Sprawl* study and others like it have demonstrated that developing compact communities is in fact less costly than conventional residential sprawling developments (Fodor, 1999). The notion of compact design and the integration of services is now the focus of new suburban planning practices. A number of innovative planning approaches now exist that help to mitigate the economic, social, and environmental costs of conventional suburban development.

THE SEARCH FOR SUSTAINABILITY

Increasingly, concern is mounting over the current approach to suburban development. Land and the natural environment is a finite resource, yet society's footprint is continually expanding. Concern over the current pattern of growth has led to calls for sustainable forms of development that attempt to balance growth with resource consumption (CMHC, 2000). In 1987, the United Nations World Commission on Environment and Development (the Brundtland Commission) released a report defining sustainable development as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (WCED, 1987,

8). Sustainable development is an attempt to harmonize social, economic, and environmental goals. In essence, sustainable development accepts that halting growth is unreasonable and recognizes that new development must be sensitive to the world's finite resources (CMHC, 2000). Social equity also plays an important role since development must also be socially inclusive. While a definite understanding of what sustainable development should look like remains in question, most new planning approaches incorporate varying degrees of sustainable principles. Some of these new planning approaches include New Urbanism or neo-traditional design, Smart Growth, flexible design, and Transit Oriented Development, which will be briefly examined in the following sections.

THE EMERGENCE OF NEW URBANISM

Sustainability is dependent on context. As such, sustainable planning principles suitable for an urban inner city context may not be effective in a suburban setting. The intent of new suburban design is to use good planning practices to create more sustainable communities. Suburban planning must focus on creating livable communities rather than simply residential developments. This shift in thinking must take place not only in discourse, but also in practice. Perhaps the most recognized recent trend towards the improvement of suburban planning is New Urbanism and the neo-traditional design movement. New Urbanism prescribes strategies for the rival of sense of place, community spirit, and social interaction in the development of new suburban communities (CMHC, 2000; Grant, 2006). The strategies offered under the

label of New Urbanism are generally accepted as "good planning principles" regardless of name. As such, New Urbanism has been referred to as a new planning paradigm (Kelbaugh, 2002). Ironically, many of the principles advocated under this paradigm are simply a revival of traditional planning practices.

The underlying concept of New Urbanism is the re-creation of traditional small town living within a modern urban setting. Conventional homogeneous residential suburbs have broken down the integrated nature of traditional communities. New Urbanism attempts to remedy this breakdown by creating 'complete' communities that offer residential and commercial opportunities within a walkable and compact setting. Given the numerous costs associated with suburban development, compact design is imperative. Compact communities reduce servicing and infrastructure costs, utilize land more efficiently, and facilitate the provision of transit (Hall, 2000). Density and compactness is also the precondition for the creation of socially vibrant neighborhoods. Finally, denser and more compact communities also reduce development footprints, offer services within walkable distances, and preserve ecologically sensitive spaces (Kelbaugh, 2002).

New Urbanism is also about place making. The social interaction and community spirit that is a hallmark of small towns and dense urban areas is simply lacking in conventional suburbs. New Urbanism tries to recapture this community spirit through design. Some authors suggest that creating place and fostering a lost sense of community in suburban settings should be the main focus of community planning (Kelbaugh, 2002).

A sense of community is created through the design of urban villages often centered on a "Main Street" or central public square (CMHC, 2000). New Urbanism also advocates the use of traditional architecture with front porches and rear lane garages to attempt to improve social interaction (see Figure 3.3). Other design features such as centralized mailboxes and community gathering places further try to recapture community spirit and foster citizen interaction. New Urbanism and other new planning approaches advocate pedestrian accessibility and a public framework of paths, parks, and open space for social, environmental, and economic benefits (CMHC, 2000).

Figure 3.3 Suburban New Urbanist design featuring traditional architecture with front porch layout and no front garages.
Source: Alexander Krause

Developing community at a human scale is an important part of New Urbanism and suburban community planning. Human scale is achieved through the creation of homes that feature unique identity and foster a sense of place (CMHC, 2000; Kelbaugh, 2002). Moreover, New Urbanism offers a mix of housing typologies and a greater selection of smaller sized homes (CMHC, 2000; Kelbaugh, 2002). Just as important as a mix of housing typologies is a mix of land uses within new suburban communities. Mixed-use neighborhoods are efficient since they concentrate jobs, services, and housing within a walkable setting. Furthermore, mixed-use developments have been attributed to reduced automobile traffic as it eliminates the need for car trips (Kelbaugh, 2002).

While the planning principles found in New Urbanism are considered good, their implementation in developments face challenges. One such example is that of Celebration in Florida which has adopted New Urbanism principles to create a vibrant community that will eventually be home to 20,000 residents (Morris, 2005). However, as Morris (2005) points out, communities such as Celebration are not perfect as their public components are privately run which could potentially lead to segregation and exclusion. Another challenge facing New Urbanism developments is that they typically consume new land far removed from central cores and therefore lack vital public transportation links. Residents without adequate public transportation resort to automobile use which is inherently contrary to New Urbanism principles (Hall, 2000). Furthermore, some developments altogether abandon the key principle of a main street due to costs

or complexities in zoning changes. Walking is therefore reduced and as Morris (2005) points out, "the houses may have front porches, but if no one is walking, porches have little impact on social interaction" (41). Nevertheless, the increase in New Urbanism developments is a positive sign recognizing that there is a problem with conventional suburban development and more importantly, something is being done about it.

THE OVERARCHING GOAL OF SMART GROWTH

Smart Growth is another concept developed to address the problem of unfettered urban expansion. Fodor (1999) suggests that the idea of smart or planned growth is simply to "influence the quality of growth and to minimize its negative effects" (27). Smart Growth principles stipulate that developments include a mix of land uses, utilize compact building design, offer a range of housing typologies, create walkable neighborhoods, foster uniqueness and strong sense of place, and preserve existing open space and environmentally sensitive areas (Principles of Smart Growth, 2006). Moreover, Smart Growth encourages new developments to link to existing communities, provide a variety of transportation choices, and embrace as well as support private sector involvement and innovation (Principles of Smart Growth, 2006). Essentially, Smart Growth is about creating lively communities through a mix of housing types, prices, and land uses. Smart Growth is therefore a direct response to traditional suburban development as it emphasizes social and economic heterogeneity while preserving and embracing environmental features.

While it seems like a logical concept, the idea of minimizing negative growth effects is not always practiced as a result of pressure for rapid development. Moreover, some critics suggest that there is no such thing as 'smart' growth because all growth invariably consumes open space and agricultural land (Fodor, 1999). For that reason, smart or planned growth is sometimes considered an ineffective way of dealing with the challenges of suburban expansion. Nevertheless, from a pragmatic perspective – realizing that growth cannot simply be halted – Smart Growth principles provide a framework from which suburban development can be improved and its negative impacts lessened. Regardless of new suburban community planning approach, the main idea is to reduce human impact while creating socially vibrant living areas. As the debate over planned growth versus growth control continues, it is vital that approaches be developed to improve suburban planning practices in order to realistically deal with the current situation.

SUBURBS: A PLACE FOR INNOVATIVE IDEAS, STRATEGIES, AND APPROACHES

Rather than criticizing suburban development, it should be considered an opportunity for the implementation of new strategies and innovation in planning and design. Suburbs are often criticized for their generic and placeless design. The inclusion of unique urban villages and neighborhoods is therefore an effective strategy for the design of new suburban communities. New communities must be interesting places to live that create a sense of place and foster social inclusion.

For example, historically significant features should be preserved and incorporated into new suburban design to give ordinary developments meaning and sense of place (Friedman, 2002; Kelbaugh, 2002). Essentially, the spirit of place and vibrant street life of dense urban areas must be captured and transferred to the suburban setting.

While innovation and unique design is often frowned upon in the suburban context for its perceived risk, it has the potential to be utilized as a marketing tool. The creation of livable mixed-use communities with unique identities has the potential of being marketed as contrary to the bland suburban developments that represent the status quo. Furthermore, abundant parks and open spaces not only serve social and environmental purposes, but also make for a more attractive and marketable community. Another prime example of marketable innovation is the use of geothermal heating in new suburban communities. Geothermal heating meets the environmental principles of sustainable development and can also be marketed for homeowner cost savings. Many social and environmental design features are more costly at initial development; however, these features are becoming popular to a growing segment of society.

The Need for Flexibility

Ironically, the strict separation of land uses which was once considered a great benefit of planning is now considered a limiting factor in the design of better suburbs. Where zoning was once promoted as a way of protecting positive community aspects from being

overrun by less desirable elements such as automobiles, gas stations, and huge lots, it has now evolved into something that is primarily exclusive instead of inclusive (Morris, 2005). In fact, Kelbaugh (2002) suggests that "[t]he biggest perpetrator of sprawl is zoning that segregates different land uses into large, single-use zones that are monocultures" (25). Human activity thus conforms to the activities assigned to land. In many cases, our only choice is to use automobiles to get from one activity to another. As Morris (2005) states, "zoning puts the needs of the car above the needs of the people" (150).

With these problems in place the question becomes, what can be done about zoning? As Friedman (2002) argues, "zoning is likely to function as too rigid a control during times of change and, in doing so, institutionalize mistakes" (17). Our society is dynamic, yet zoning does not respond to our changing needs. Modern zoning should therefore acknowledge a need for flexibility by allowing mixed uses in suburban areas as well permit the inclusion of accessory units, suites and granny flats (Fodor, 1999; Friedman, 2002).

Flexible zoning is advocated by a number of authors as an essential element to the creation of better suburban communities. It is evident that the rigidity of some zoning codes simply does not allow for innovation since it contradicts historical planning notions. By creating more flexible zoning, planners would be able to create plans and develop strategies that would be more responsive to the needs of an evolving society (Friedman, 2002). As an example, with flexible zoning codes, garage apartments and rear lane granny suites

can be implemented to provide affordable rental space, offer home owners an added income source, and accommodate the needs of an aging population (Friedman, 2002; Kelbaugh, 2002). Furthermore, flexible zoning would also allow developers to adjust to changing market needs over time. Risks associated with new housing forms often prevent developers from experimenting with change. With added flexibility, developers could offer a greater variety of housing typology and adapt more easily if the market does not respond or tastes change.

Flexibility is one of the central features to new suburban community planning. Friedman (2002) argues that suburban developments should be designed in stages to reflect construction demand and societal needs. Conventional suburban community plans require a prediction of housing breakdown. This breakdown is essentially an educated guess as to what society's housing needs will be twenty to thirty years in the future. Flexible zoning codes would allow land uses to change with demand. As Friedman (2002) puts it, "the new flexible suburb is one that allows residents to experience domestic life in highly relevant housing" (110). Furthermore, by constructing new suburban communities in stages, developers are able to change the housing breakdown in relation to demand. This ensures that unmarketable homes are not built and that new suburbs reflect relevant current needs (Friedman, 2002). The concept of flexible housing advocated by Friedman (2002) would also allow homes to physically adapt to changing family needs.

Greener Suburbs

The inclusion of green space is paramount to new suburban design. Green space provides both social and environmental elements to residents. Greenways and trail systems provide the added role of facilitating movement throughout the community. Parks and pathways add beauty to community design and offer passive recreation opportunities. Kelbaugh (2002) emphasizes the importance of greenways as a potential method for protecting natural habitat and wildlife corridors as well as creating bicycle and walking paths. Moreover, in some contexts, greenways can serve the added purpose of retention ponds or runoff trenches (Kelbaugh, 2002).

The economic benefits of green space should also be considered. Studies show that green elements which are well positioned around structures have the ability to provide shade and wind mitigation which can reduce annual residential energy costs by about 20-25 percent compared to unsheltered structures (Roseland, 2005). Furthermore, the urban heat island effect created by urban surfaces such as concrete, asphalt, and brick is reduced by an abundance of green elements which "absorb and metabolize solar energy, helping to moderate hot temperatures" (Roseland, 2005, 47). Of course, this has the benefit of increasing personal comfort and reducing energy costs related to cooling (Roseland, 2005). Another benefit of increased green infrastructure is improved drainage of stormwater by properly absorbing rainfall and reducing the need for expensive sewer systems that need to accommodate large runoffs (Roseland, 2005).

In addition, Kelbaugh (2002) among others argue that alleyways in suburban residential communities should be made as greenways to minimize pavement and provide open amenity space. Kelbaugh (2002) further suggests that alleyways could serve their standard utility access purpose as well as allow for access to additional suites and garage apartments. The use of a modified grid road system would further serve to minimize the footprint of new developments, reduce environmental impacts, and maximize green space corridors (Fodor, 1999). The protection of open space and natural land not only serves environmental concerns, but also serves to create more enjoyable communities. Such innovative ideas are relatively simple and help to create more livable suburban environments.

The Issue of Transportation

Intimately tied to New Urbanism, Transit Oriented Development (TOD) is based around the premise that current development patterns are unsustainable and that land uses focused around transportation patterns can lead to more sustainable communities (Grant, 2006). Public transportation systems are used to structure development areas around transit nodes effectively allowing residents to walk to services instead of using their cars. These nodes effectively become town centres with residential developments arranged around them in decreasing densities. The emphasis on spatial organization rather than design formulas has made Transit Oriented Development widely appealing in the use of suburban planning.

Hall (2000) argues that the key to successful suburban planning lies in the effective provision and incorporation of good public transportation. This transit-oriented design in conjunction with shopping and services in close walking proximity is believed to be the recipe for a successful suburban community (Hall, 2000). In fact, Hall (2000) believes that "what the New Urbanism should be about…is recapturing not merely the form but also the functioning of the Victorian suburb (32). In a sense, Hall (2000) is advocating the re-emergence of the Victorian suburb because of its successful emphasis on transportation, proximity of local services, and amenity space. Although the concentration of local services is easily achievable, providing efficient public transportation is most often the limiting factor.

CONCLUDING COMMENTS: INCREMENTAL IMPLEMENTATION

Change to the current practices in suburban planning is essential for the creation of more sustainable and livable communities. As desire for the suburban dream continues, it is critical that more innovative approaches be implemented in the creation of new suburbs. Indeed, we must move beyond the simple development of suburban housing tracts and rediscover the art of designing complete and lively communities. Through the principles of Smart Growth, the place making attributes of New Urbanism, the incorporation of flexible design initiatives, and the provision of public transit oriented development, suburban communities can become highly desirable places to live while being socially, environmentally, and economically responsible. From a private development point of view, the creation of unique and environmentally responsible suburban communities also has great marketing potential. Surprisingly, however, reluctance towards innovation is often attributed to risk and lack of market demand. As Kelbaugh (2002) argues "[w]here people make their home is not the place for avant-garde or radical experiments" (12).

As such, we recommend an incremental approach whereby varying degrees of suburban innovation can emerge depending on context and site specific conditions. By providing innovation at incremental levels, market acceptance will gradually occur. The notion of incremental change should not be used as a justification for slow progress, however, because new suburban planning practices are needed immediately. Indeed, the danger lies in having private developers commit to a good practice only to have them "cherrypick the easy elements of it: attractive townhouses, front porches, and false dormers." (Grant, 2006, 212). While it is relatively easy to advocate a number of better suburban planning principles, implementation will require time to gain acceptance. As outlined earlier, many people still seem to value the unsustainable lifestyle associated with large plots of land and single-family dwellings. Changing this trend and introducing ideals that counter the existing value system will therefore require careful implementation.

Alexander Krause and Arif Sayani are Graduate students of Planning in the Faculty of Environmental Design at the University of Calgary.

REFERENCES

Canada Mortgage and Housing Corporation (CMHC). (2000). *Practices for sustainable communities.* Ottawa: CMHC

Chiras, D. and Wann, D. (2003) *Superbia: 31 ways to Create Sustainable Neighbourhoods.* Gabriola Island: New Society Publishers.

Fodor, E. (1999). *Better not bigger: How to take control of urban growth and improve your community*. Gabriola Island, BC: New Society Publishers.

Friedman, A. (2002). *Planning the new suburbia: Flexibility by design*. Vancouver, BC: UBC Press.

Grant, J. (2006). *Planning the good community: New Urbanism in theory and practice*. New York, NY: Routledge

Hall, P. (2000, Fall). Retro Urbanism. *Harvard Design Magazine*, *12*, 30-34.

Hodge, G. (2003). *Planning Canadian communities: An introduction to the principles, practice, and participants, 4th ed*. Scarborough, Ont.: Thompson Nelson.

Kelbaugh, D. (2002). *Repairing the American metropolis: Common place revisited*. Seattle, WA: University of Washington Press.

Morris, D. (2005). *It's a Sprawl World After All.* Gabriola Island, BC: New Society Publishers.

Principles of Smart Growth. (2006). Retrieved March 20, 2006, from http://www.smartgrowth.org/about/principles/default.asp

Roseland, M. (2005). *Toward Sustainable Communities: Resources for Citizens and their Governments*. Gabriola Island, BC: New Society Publishers.

World Commission on Environment and Development. (1987). *Our Common Ground.* Oxford: Oxford University Press.

CHAPTER 4

PLANNING SUSTAINABLE COMMUNITIES: CASE STUDIES

KRONSBERG, GERMANY

Alexander Krause and Arif Sayani

RATIONALE

Although in a suburban setting, Kronsberg has become a model community for global replication. The development has followed the key principles outlined by United Nations Agenda 21 as a model sustainable development (City of Hannover, 2004a; Rumming, n.d.). Kronsberg demonstrates that sustainable developments – even within a suburban setting – are environmentally and socially feasible. The primary innovations which have been implemented in Kronsberg are in the ecological realm.

CONTEXT

Kronsberg was built for the 2000 World Exposition on a 1,200 hectare site located in the southeast city limits of Hannover, Germany (City of Hannover, 2004b). At a

total cost of €2.2 billion, the project aimed to build an ecologically-sound suburban community with the hopes of inspiring worldwide replication (City of Hannover, 2004a). Once built-out, Kronsberg is expected to have a total population of 15,000 residents and approximately 6,000 dwelling units (Rumming, n.d.). As of 2004, approximately 3,000 dwellings have been built with a population of nearly 6,600 residents (City of Hannover, 2004a). Kronsberg is projected to have a maximum net density of 108 people per acre or 44 dwelling units per acre (UPA). At present, the net density is approximately 48 people per acre or 22 UPA.

Kronsberg is comprised of predominantly high-density apartment style dwellings with no single-detached dwellings (Figure 4.1). Three train stations within the community link Kronsberg to the city centre and ensure train service is no more than 600 metres walking distance for residents (City of Hannover, 2004a). Transportation is a vital aspect of the development since Kronsberg is located 30 to 40 minutes by car from the central city and 20 minutes by rail (Der Kronsberg: Schnell in die City, n.d.). Overall, Kronsberg offers a full range of services within the community such as daycares, schools, healthcare facilities, shopping, and jobs in order to minimize the need for travel.

Figure 4.1 Aerial View of Kronsberg (2002)
Source: City of Hannover, 2004b

INNOVATION

Kronsberg's environmental and ecological targets are the community's most innovative feature:

- Reduce CO_2 emissions and household energy consumption by 60-80%:
  o Use of wind turbines (City of Hannover, 2004b; Rumming, n.d.)
  o Use of passive heat recovery methods (City of Hannover, 2004b; International Energy Agency, n.d.)
  o Offer incentives for the use of energy efficient appliances (Institute für Energie und Umweltforschung , 2003).
  o Adjust building heights, orientation, and density according to area's natural contours in order to maximize sunlight (City of Hannover, 2004a)

  o Use of photovoltaic solar panels
  o Manage water so the area's natural water balance remained the same after development:
  o Natural absorption of rainwater thorough storm water ponds and drainage ditches (City of Hannover, 2004b; Rumming, n.d.)
  o Open ponds and watercourses for amenity purposes (Figure 4.2).

- Incorporate the naturally surrounding woodland and countryside into the community for recreational and amenity purposes (City of Hannover, 2004a):
  o Natural 'commons area' maintained by grazing sheep
  o Mandatory tree planting based on construction (ie: parking spaces, paved area, built area). For example, one tree for every five parking spaces (City of Hannover, 2004a).

- Reduce household waste by 50%:
  o Mandatory waste collection sites for each building which encourage users to sort waste and recyclables (City of Hannover, 2004b)
  o Private and communal compost sites (City of Hannover, 2004a)
  o On-site community recycling depot and containers (City of Hannover, 2004b).

Figure 4.2 Ponds and Ditches as Water Management and Public Open Space *Source*: Hartl, (n.d.) and Rumming (n.d.)

Socially, Kronsberg aimed to achieve a strong balance characterized by diversity and the development of social infrastructure (City of Hannover, 2004a):

- Attract young families by designating housing specifically for their needs and setting an upper price limit.
- Provide a public forum and meeting places through the Kronsberg Arts and Community Centre, public

library, youth agency, meeting rooms, community hall, and workshops/studios (City of Hannover, 2004a).

- Fully integrate minority groups into the community:
  o Create a housing project for disabled persons by providing specially designed apartments which are distributed among regular housing and remain close to a central care point.
  o Create an international housing project with the intention of achieving social harmony between German and foreign residents. One third of all residences are reserved for immigrants while ten percent of all residences are designed according to Islamic beliefs (City of Hannover, 2004a).

Economically, Kronsberg attempted to incorporate ecological features which would ultimately result in cost savings based on economic viability and feasibility models. Another economic initiative lies in the strong live-work component within the development, as there are a significant number of jobs in the immediate vicinity. The retail shops and service industries in the district provide local jobs while nearby banking and data centres provide approximately 3,000 office jobs in close proximity (City of Hannover, 2004a).

ANALYSIS

Overall, the innovations implemented through policies and design were successful in comparison to conventional developments, especially ecologically. Due to these innovations, the development achieved:

- A 74% reduction in CO_2 emissions per resident (Institute für Energie und Umweltforschung, 2003);
- Savings of €4 million due to environmental credits based on water management;
- A 30% reduction in domestic waste production (City of Hannover, 2004b);

It is important to note that domestic electricity reduction aims encouraged through the voluntary use of efficient appliances has not been considered a successful program. This suggests that there can be ineffectiveness when creating targets based on non-mandatory enforcement.

The most significant issue in regards to sustainability lies in the high number of grants and subsidies required to not only implement such innovations, but also continue sustaining them. Much of the technology used throughout Kronsberg was subsidized (City of Hannover, 2004a).

Kronsberg is a truly world-class community and readily serves as a model for future developments. Transferability to other communities was a key concept when Kronsberg was developed. While many aspects can certainly be replicated, the overall duplication of a community such as Kronsberg is economically questionable. This is due to the high amount of government subsidies used throughout the development process as well as the continued reliance on funding to keep certain elements operational. Kronsberg benefited from strong government support as a result of the World Exposition, which is an advantage not available to most cities.

MCKENZIE TOWNE, CALGARY

Giovana Beltrao and Cheryl Corman

RATIONALE

McKenzie Towne exemplifies a number of the 'new-urbanism' and 'neo-traditional' principles, while being located in a suburban location. The importance placed on walkability and transit oriented development (TOD) within the 'new-urbanism' approach is a shift from the more traditional suburban design which emphasizes the automobile. Urban 'vitality' is also an aim in 'new urbanism'; modified grid layouts, narrowed streets, smaller lot size, front porches, open spaces, and other ideas may be considered to contribute to 'vitality' in suburban settings and reflect societal valuing of a 'sense of community' and a 'sense of place'.
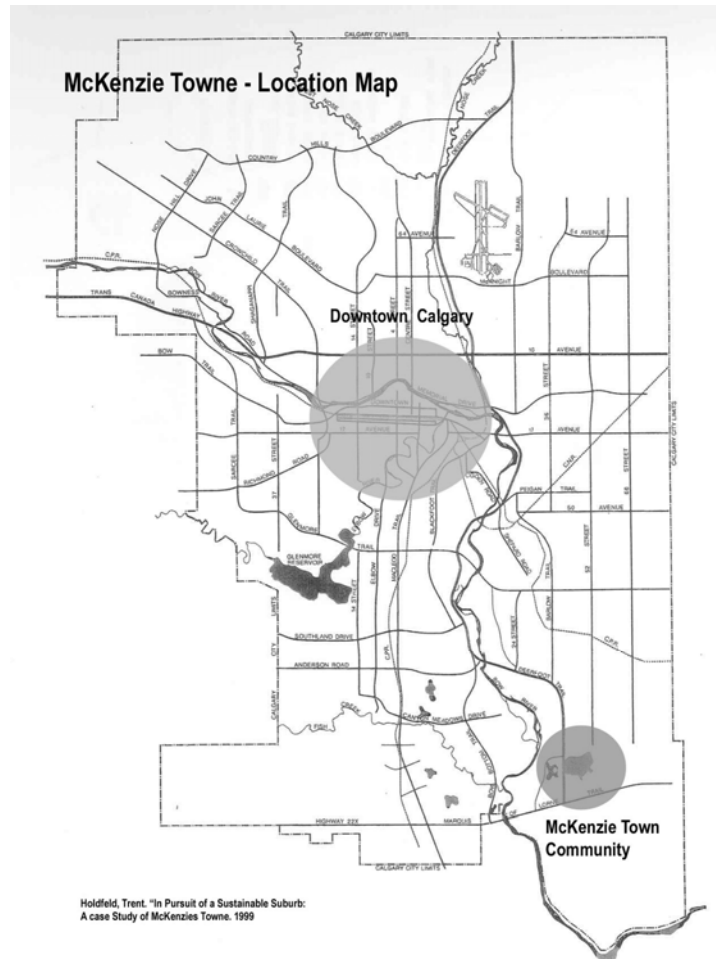
Figure 4.3 McKenzie Towne Location Map
Source: Holfeld, 1999

CONTEXT

McKenzie Towne, a suburban community on the edge of southeast Calgary, was planned and developed in the 1990's upon a "flat to gently undulating prairie drylands" (Figure 4.3) (Perks and Moors, n.d.). McKenzie Towne occupies approximately 1,050 acres and the gross developable area in McKenzie Towne is 962 acres. Currently, population estimates sit at approximately 6,000 people and the projected future population for McKenzie Towne is 20,870 people (City of Calgary, 2004, p.6).

The development aimed to produce a primarily residential community with diverse housing typology and density. The urban fabric accommodated mixed use with emphasis on residential, commercial, and both open and green public spaces. The hierarchy of streets accommodating multi-use and the pathways, community nodes, and main Commercial Street (High Street) allows for friendly interaction among residents.

INNOVATION

To meet this vision, the development had a large number of objectives:
- Create a strong and distinct identity with a strong social focus based on public facilities and areas
  - Unique architectural styles
  - Commercial, public and cultural facilities (ie: community hall, schools, and churches)
  - A vibrant High Street as the geographic, commercial and social centre of the community

- Provide commercial vitality and local employment
- Accommodate a diversity of housing types and styles
  - Traditional architectural styles, unique within the geographical and surrounding context (Figure 4.4)
  - An assisted living retirement home
- Provide recreational amenities with both open/natural space and pathways
  - Storm water ponds
  - Regional pathway
  - Sports fields/playgrounds
- Provide numerous transportation options
  - Pathways connecting neighbouring communities, parks, and natural features
  - Two future Light-Rail transit nodes
- Have a wide range of land uses, housing typologies and densities to ensure diversity and vibrancy
  - A density target of 6 to 8 units per acre, accommodating a total population of approximately 20,000 (City of Calgary, 2004, p.20).

The local Land Use/Master Plan considers McKenzie Towne to be the first 'neo-traditional' neighbourhood development in Canada (Demographia, 2000). The 'neo-traditional' or 'new-urbanism' concepts implemented in McKenzie Towne were largely developer initiated and do not reflect a shift in this direction within City of Calgary planning as a whole.

Figure 4.4 McKenzie Towne Architectural Styling
Source: Authors' photos

According to the City of Calgary, the land use planning of McKenzie Towne has "led to the introduction of innovative roadway, servicing, and architectural standards that are unique to this community" (City of Calgary, 2004, p.6). The phased development with respect to schools and public transit may be considered an innovative form of implementation in that these services are provided when a certain level of demand is realized.

Innovations in terms of design lie in the emphasis on transit and walkability within McKenzie Towne. This can be considered an innovative practice relative to typical automobile-focused suburban developments that often do not even include sidewalks. With respect to transportation design, the use of roundabouts (traffic circles) could also be considered innovative as a means of easing traffic congestion. The idea of front porches providing "eyes on the street" and

encouraging, but not guaranteeing, a stronger sense of community may also be considered an innovative approach to land use planning. Connected to this is the detachment and relocation of the residential garage to the back lane which both de-emphasizes the automobile and reflects new societal values with respect to reduced car usage. The wide variety of architectural styling permitted is innovative in that it allows for greater diversity in the streetscape.

ANALYSIS

Many of the objectives outlined by the development have yet to be met or addressed:

- The number of employment opportunities in the commercial/employment area is much less than the number of employable residents and is not of the type "likely to attract the middle income people who purchase homes in the development" as they are primarily within the service industry (Demographia, 2000). Also, a walkable distance (~400 m) from all points in the villages is not maintained.

- There is a diversity of housing styles, but housing type is dominated by the single family home. Tenure within the neighbourhood is 96% owned. "Virtually all new dwelling units are `market housing', for home ownership. There is no assisted housing program to speak of" (Perks and Moors, n.d.). As of 2000, 4.6% of the population in McKenzie Towne lived in low income households (City of Calgary, 2004, p.2). Of the tenant households, 44.4% are spending

more than 30% of household income on shelter (City of Calgary, 2004, p.7). These conditions reflect a lack of diversity. According to a 1999 survey, residents do not support "providing more housing for lower-income families" and "80% of respondents either disagree or strongly disagree with the statement that McKenzie Towne should provide more housing for lower income families" (Holfeld, 1999, p.156).

- Current transit options are limited to infrequent bus service. While development has been planned around future train service, the LRT will not likely be extended to this area for approximately 20 years. The previous survey displays a lack of support for public transit; "only 23% of residents surveyed use transit on a daily basis and 60% of surveyed residents never ride transit" with the main reasons for not using transit being car ownership, inconvenient transit service schedule, and excessive travel time (Holfeld, 1999).

- According to a 1999 study, it does not appear that density targets of 6-8 UPA is or will be realized (Holfeld, 1999). The study calculated the current density to be about 3.9 UPA. Even if the commercial area is deducted from the total developable area, a density of only 4.6 UPA is achieved. This study displayed that "33% of respondents either agree or strongly agree with increasing the size of lots" in the community and "the number one recommendation for improving housing in the community is to increase the lots size" (Holfeld, 1999). This

indicates that within the community there is not support for higher density development.

Within the Calgary context, development strategies seem appropriate when considering marketability, overall efficiency, and provision of services. Based on the population growth, the development appears to be both marketable and economically feasible from the developer's perspective. However, economic feasibility from the residents' perspective is questionable.

McKenzie Towne does not appear to achieve the 'work, live, play' balance promoted by the 'complete communities' concept. McKenzie Towne does not provide a sufficient number or diversity of local jobs nor does it realize the level of housing density to support public transportation infrastructure. Although McKenzie Towne does provide for the recreational aspect of 'play', the cultural component that would 'fascinating experiences' within the community appears to be largely lacking.

In terms of environmental sustainability, McKenzie Towne is similar to most North American suburban developments. Innovative practices relating to alternative energy generation, energy efficiency, water conservation, rainwater harvesting, material reuse, landscaping with native plants, local food production, etc. have not been implemented and do not seem to have been a priority in this development.

There is innovation within the community in comparison to typical suburban development, especially in terms of architectural styles and creating a sense of place. Unfortunately, a number of key areas in regards to social, economic and environmental sustainability appear to have been ignored, resulting in a community which is neither sustainable nor innovative.

RANCHO VIEJO, NEW MEXICO

Elizabeth Austrom and Melissa Bain

RATIONALE

The community of Rancho Viejo is designed as a collection of villages "to reflect the form of traditional communities found in Northern New Mexico" (City of Tuscan, et al., 2004, p.19). Smart growth principles are driving the development. The goals of Rancho Viejo development are linked to "creating a new development pattern as an alternative to sprawl" (Santa Fe County Land Use Department, 2005, p.14).

CONTEXT

Rancho Viejo is a community on the outskirts of Santa Fe, New Mexico. It is a 21,000 acre site, of which "approximately 6,000 acres lie within the Community College District of Santa Fe County" (City of Tuscan et al., 2004, p.19). The entire Rancho Viejo development consists of a collection of 11 distinct, yet interconnected, villages. The various villages are

constructed in "'clusters' each with a distinct mixture of housing types, including residential and mixed use units, as well as "compound-type dwellings drawn from local patterns" (City of Tuscan, et al., 2004, p.20). A traditional Spanish architectural style, distinct to each village within Rancho Viejo, works to incorporate local culture and tradition, while ensuring variety (Figure 4.5). Rancho Viejo currently contains two completed communities of approximately 300 units (Porter, et al., 2005).

The development is guided by Smart Growth principles. The goals outlined in the Rancho Viejo Vision Plan place great emphasis on "conserving water, protecting the environment, creating affordable housing, and fostering economic vitality" (Porter, et al., 2005). The above outlined goals all fit into the category of smart growth.

Fundamental to the goals and objectives of the Rancho Viejo development is creating a diverse, compact, walkable closely-knit community (Porter et al., 2005). A goal of the community is to capture "the culture and ambiance of the region" through the community design (Santa Fe, 2005). A "holistic approach to community development" is a larger umbrella term to describe the objective of the community (Santa Fe, 2005). Encompassed in this larger goal is the incorporation of mixed-use land, transportation choice, compact community village centers, a range of housing choices, including affordable housing, and a walkable, attractive area creating a distinct sense of place that fits into the surroundings (Porter, et al., 2005).

Consultation with residents has also outlined three primary principles; protecting the value of the natural land, implementing new ruralism in a way that would fit the land and be highly walkable, and utilizing density to avoid perpetuating NIMBYism (Porter, et al., 2005).

Figure 4.5 Architectural Styling
Source: Design Workshop, 2004

INNOVATION

There have been a number of innovations within the community:

- Within each village exists a pedestrian-oriented "central community-gathering space, similar to the traditional plaza" (Porter, et al., 2005). These will ultimately serve a commercial purpose as well (City of Tuscan, et al., 2004).
- The development places a great emphasis on the goal of maintaining natural and urban open spaces, as it considers the preservation of substantial amounts of open space a means to contain sprawl (Santa Fe, 2005). The total Rancho Viejo area also is comprised of 50% natural open space and parks (City of Tuscan, et al., 2004, p.20). These open areas include parks, village centers, and walking trails.
- Zoning which is based upon an analysis of developable areas, the built out capacity and the lands that need protection; resulting in village-style clustering and allowing for large swaths of land to remain open (NM APA, 2003). High density development thus occurs on the flat grassland meadows as they are free from development obstacles and require the least site disturbance and grading to accommodate development (Porter, et al., 2005).
- Phased development in order to reduce initial costs and debt, along with being flexible to market needs and demands (Porter, et al., 2005).
- Land value based on the amount of development rather then on traditional acreage.
- The development is planning to eventually have multiple options in terms of transportation once population growth and demand warrants.
- Rancho Viejo encourages energy conservation through solar orientation. Currently "70% of the homes in the first two villages have an energy-efficient orientation…and future homes in Rancho Viejo will be constructed to the U.S. Department of Energy's 'Build America' energy standards" (Porter, et al., 2005).
- Water management through incorporating groundwater recharge, reuse of treated effluent, harvesting surface-water runoff, and the use of domestic cisterns with each house
- Housing that promotes a diversity of income levels; 15% of the homes are required to be affordable housing (City of Tuscan, et al., 2004, p.18).
- Diverse housing types.

In terms of policy, Rancho Viejo has been recognized as unique for its innovative collaborative process. The process began with consultation between the planner, developer and County; most importantly, there was intensive public consultation throughout the process (Porter, et al., 2005). Priorities of all parties were reflected in the resulting plans for the community.

ANALYSIS

Overall, the normative goals of the Rancho Viejo development follow the goals of smart growth. Rancho Viejo is working to be innovative, although at this point they are not. The community is not sustainable, nor does it provide an alternative to sprawl. Numerous objectives have yet to be fulfilled and have not been considered successful:

- Despite discouraging sprawl vocally, the community has a projected density of 3.5 UPA and 50% open space; factors which undoubtedly increase the city's footprint and arguably encourage sprawl (Porter, et al., 2005)
- A lack of existing employment centres, village centres and transit nodes
- A lack of walkability due to the low density and far distances.

There are aspects of the Rancho Viejo Village developments which are innovative, namely the collaborative process used throughout the project, the conservation techniques as they relate to water (40% reduction in water use), land and energy, and the inclusion of affordable housing (Porter, et al., 2005). The innovations found in Rancho Viejo and the principals behind its development can be implemented outside of New Mexico and are relevant to future developments elsewhere in the world.

STAPLETON, COLORADO

Jeff McLaren and Justin Rebello

RATIONALE

Stapleton, located in Denver, Colorado is an award winning, master planned community which has been under construction since 2001. The concept of sustainability provides the framework and grounding for all subsequent planning policy and design in Stapleton. The resulting development has a comprehensive and mixed-used design with integrated neighbourhoods based on New Urbanist principles.

CONTEXT

Stapleton is located on a former airport site, approximately 10 kilometres east of downtown Denver, Colorado. Stapleton is a mixed-use community that encompasses 4,700 acres and when complete (~20 years), will accommodate 30,000 residents, 35,000 employees, 10,000 owned homes, 4,000 rental units, 10 million square feet of office, research and development, and industrial space, and 3 million square feet of retail space (Stapleton Development Corporation, 1995).

The Stapleton Development Plan or 'Green Book' highlights Stapleton's key principle; "Implementing a more sustainable pattern of development that supports economic and community needs, but consumes fewer

natural resources and creates fewer impacts on the natural environment" (Stapleton Development Corporation, 1995).

INNOVATION

Stapleton has a number of objectives which reflect innovation and sustainability:

- Economically
  - To become a regional centre for job creation in diverse fields with an emphasis on new technologies and emerging industries. Four neighbourhood centres will accommodate and integrate 35,000 employees (over 1 job per resident) into the community (Forest City Stapleton, Inc., 2005). Approximately 54% of the developable land, will be allocated to employment use (Figure 4.6).
- Socially, providing broad access to social, cultural, and economic opportunities to all segments of the community
  - Public spaces and centres designed for vibrant social activity
  - Public and specialty schools
  - Affordable Housing Policy ensuring a percentage of homes being built has to be 'Income Qualified Homes'. Further these Income Qualified Homes are only allowed to be sold to income qualifying persons. Also, a portion of apartments being built are designated for "households with incomes at 60% of Denver's gross median household income" and

specifically for seniors (Forest City Stapleton, Inc., 2005).
  - The Stapleton Workforce and Business Opportunity Committee "coordinates and advocates for activities and efforts to advance participation by women and minority owned businesses and further job opportunities for residents of the greater Stapleton area" (Forest City Stapleton, Inc., 2005).
  - The Small Business Development Initiative was developed to provide technical assistance such as "project management, scheduling, estimating, cost analysis, and business development" to minority construction contractors (Forest City Stapleton, Inc., 2005).
- Environmentally, reducing consumption of natural resources and impacts on the natural environment
  - Future transit connectivity and nodes
  - 30% open space and parks with pathways for connectivity
  - Walkable, pedestrian-oriented neighbourhood streets
  - Encouraging energy efficiency through proper lighting, solar orientation to maximize southern exposure. Homes must comply to minimal Built Green Colorado standards and starting in 2005, Energy Star standards.
  - 100% of storm water accommodated by park and open space system
  - Water management in regards to landscaping (ie: xerascaping)
  - Intensive recycling of construction materials

Residential development encourages diversity and density with an average density of ~5 UPA and with a variety of residential lot sizes, numerous housing types and tenure opportunities.

Figure 4.6 Stapleton Commercial Centres
Source: Forest City Stapleton Inc., 2005

ANALYSIS

Overall, most objectives outlined by the community have, or are well on their way to being met. Economically, the community has found great success as a regional employment centre with a wide variety of industries and jobs being located within the community. Success is exemplified in the fact that office and retail

space is almost fully-leased and newly proposed space is in high demand.

If there is one component of sustainability in which Stapleton is extremely innovative and successful in its implementation, it is the area of social equity initiatives. The implementations have displayed that drastic changes are not necessary in order to achieve sustainability. Residential homes have "achieved energy savings of between 20-60% over industry standards"; while commercial buildings "achieved an average 25% greater energy efficiency than industry standards. 75% of all eligible for recycling program participate in recycling program (Forest City Stapleton, Inc., 2005).

Stapleton has implemented and met many of the innovative sustainable initiatives outlined in the Stapleton Development Plan and Stapleton Sustainability Master Plan to create a very desirable and livable community. While much progress has been made on these fronts, let us hope that the future developments in Stapleton do not alleviate from the original vision of Stapleton and continue to adhere to these same principles.

POUNDBURY, ENGLAND

Nicole McLellan and Rose-Mary Damiani

RATIONALE

The Poundbury development has aimed to create a compact urban village in a human scale. Design includes key elements of traditional town planning such as mixed land use, mixed tenure neighbourhoods, diverse open spaces, minimal car dependency and self-sufficiency for residential needs (in terms of employment, shopping, recreation and community activities).

CONTEXT

Growth pressures within the city of Dorchester, in Southwest England, required additional land, land which was eventually purchased from The Duchy of Cornwall on the condition that certain requirements were met. The original master plan draft (1988) was completed in 1988 but was in opposition to Price Charles' personal vision for the future development of the suburban landscape. Rather than sell the land directly to the city, The Duchy opted to retain the land to oversee the development of the new community (Thompson-Fawcett, 1998, p.180). The Prince commissioned Leon Krier to develop the ultimate master plan for the village of Poundbury.

The Prince argued that architecture and design ought to return to the criteria and standards of the past; that traditional cities provided an advanced quality of life with their mixed-use, enjoyable spaces and non-traffic dominated landscapes. Architecture and planning ought to respect the historical context of a site, especially in terms of scale and materials. The Prince also strongly encouraged public consultation.

Krier sought to design polynodal cities comprised of autonomous urban quarters; self-sufficient urban quarters which are multi-functional in nature, providing for daily functions in close proximity to where people live. Both Krier's vision and The Prince of Wales' ten principles of (Traditional) Design were incorporated into the Master Plan (1989) (Thompson-Fawcett, 1998, p.176).

Poundbury comprises a 160 hectare greenfield site (Neal, 2003, p.240). This development will ultimately provide for 5,000 residents and 2,000 jobs (Cowan, 2003, p.39).

INNOVATION

Poundbury was divided into four quarters, approximately 40 hectares each (Thompson-Fawcett, 1998, p.180). The 40 hectare quarters facilitate a walkable environment in which destinations are within at least a 10-minute walk. The plans for each quarter integrate 500-800 residential units of varying types; offices, shops and light industry (Neal, 2003, p.241). Dense, mixed use developments, with commercial and residential units are incorporated throughout

Poundbury. The plan allocates for a density of 16 UPA and 20% of the site for commercial use (Cowan, 2003).

Initial form and street patterns were produced by first determining the location of squares, parks, buildings and lanes and then fitting the roads around these elements (Thompson-Fawcett, 1998). This method of design resulted in many irregular and winding streets but reinforced the important relationship of spaces and buildings in creating a comfortable, attractive human-scaled environment. Roads are designed so buildings are flush with the street which enhances the streetscape. These irregular roads limit the speed of vehicles by restricting sightlines and reinforcing the use of streets by pedestrians (Figure 4.7). Also assisting to keep traffic speeds low are raised surfaces in public squares and the lack of long straight stretches of roadway (Cruickshank, 1991). Parking was allocated to courtyards within the individual urban blocks and regulations were relaxed, resulting in fewer parking spaces.

Another innovation is the continuous and unified architectural theme throughout the community based on local traditional architectural styles, providing a sense of place. Building developments are regulated by the Poundbury Building Code. The code provides for architectural style and detailing that corresponds to the historic developments throughout Dorset. The land is not sold by the Duchy if building designs and construction meets approval in compliance with the design code (Cowan, 2003). In addition, restrictive covenants are placed on properties to regulate conditions for maintenance and architectural alteration.

Residential units range in type, size and price throughout Poundbury. Apartments, row houses and single-family detached homes are offered within the development site. Multi-family housing is located nearer the central square to provide for an urban vitality, while larger detached houses are located along the periphery of the quarter. Buildings in Poundbury are designed with the human-scale in mind so they are flush with the road or sidewalk and no buildings can surpass three floors in height. 20% of the residential units are required to be designated as affordable housing. Affordable housing will be dispersed throughout the plan to avoid segregation (Cruickshank, 1991, p.11).

ANALYSIS

In terms of design and the original objectives, Poundbury has been a success. The development is a compact, pedestrian-friendly mixed-use neighbourhood. The density is double that of the previously developed suburban extensions surrounding the city (Cowan, 2003). Although, some criticisms remain:

Strict policies that maintain aesthetic standards do provide a range of options to a builder; however the number of unconventional restrictions has caused alarm. For example, all houses are required by design code to have at least one chimney because of the related symbolism of 'hearth and home', whether or not it is operational. This raises questions of function vs. form and authenticity (Thompson-Fawcett, 1998).

Arguments have also been made that such strict design principles can have social implications by facilitating conformity throughout the community (Thompson-Fawcett, 1998). These restrictions provide an indirect social control of psyche and demeanour as people choose the Poundbury standard and lifestyle created by the Duchy of Cornwall. A lack of diversity or ability to customize can also result in a socially homogeneous, exclusive community.

These criticisms aside, the development is considered successful. The success of the scheme is based on the structure, form and scale of the urban design, the prioritization of pedestrians before vehicles and the ability to deliver mixed use and tenures in relative high density. The architectural style of the development does not appear to be an essential element in the success of the development but rather an issue of contention. Although, despite contention, it provides for a strong sense of place.

Implementation of the plan required considerable pressure to convince builders and developers of the project potential however Poundbury provides proof that a well-planned higher density development can be successful in the market place. Poundbury demonstrates that the integration of a vision, land ownership and strong development control can provide for a new form of suburban development.

Figure 4.7 Reduced Sight Lines for Traffic Calming
Source: http://www.poundbury.info

SUMMERLIN, LAS VEGAS

Titania Lam and Angie Lucas

RATIONALE

Summerlin is a Master Planned Community "located along the western rim of the Las Vegas valley" in Nevada (Las Vegas Properties, 2005). This particular community was chosen as a case study as it shows some innovative design features and planning policies that could be implemented into new communities elsewhere. The community claims to be the best selling master planned community for the last 10 years (Robinson, 2005). Summerlin also won the 2003 Urban Land Institute award for best new community in the United States.

CONTEXT

The northern half of the community of Summerlin is located within the Las Vegas city boundaries whereas the southern half is positioned in the unincorporated area of Clark County. Summerlin covers an area of 22,500 acres; construction started in 1990 and is due to be completed in 2020. The Community is bounded on its western edge by the Red Rock National Conservation Area, which the developers helped establish through a land exchange with the Bureau of Land Management in Las Vegas in order to protect the area's natural landscape, wildlife and habitat.

The Community wished to encourage the mix of land uses including commercial and residential with different housing styles, prices and densities. One of the objectives of a master planned community is to create a particular type of environment where residents feel a sense of place and are able to reside there for a long period of time without feeling the need to move out of the community in order to find more amenities or housing choices. Creating an environment, in which its residents can live, work and play without having to travel far outside the community fosters a sense of pride and creates a space for frequent interaction between neighbours.

Presently, over 30,000 homes have been built in 17 Summerlin 'villages'. Once completed Summerlin will have 30 villages, each with a separate and distinct character with over 64,000 homes for some 200,000 people. It has and continues to be built in 5 year time frames over 25 years. Thus far, two age restricted communities have been built and there are 3 new villages in the development stage, including the Town Centre.

The Summerlin Town Center is a 1,300 acre area that will house over one million square feet of commercial and retail space and is being designed as a smart growth urban village, which will significantly increase the density of Summerlin with high rise housing as a significant portion of the residential development (Summerlin, n.d.). Current employment in the area sits at 18,500.

INNOVATION

One of the community's most distinctive innovations is the type and number of amenities available to the residents of each village and neighbourhood. The close location of schools, parks, shopping centres and retail services allows the community to be almost self-sufficient, reducing the need for numerous commuting trips outside of the community.

The preservation of the environment is another strong theme found within the community, resulting in designs to help conserve energy, water resources and the natural habitat. For example, desert landscaping (xerascaping) is incorporated throughout the community with little lawn used in common areas other than in parks; lawn is prohibited in all front yards and "turf is restricted to 50% of the total area of rear and side yards" (Summerlin, n.d.). Since 2003, all new homes are built to meet Energy Star™ specifications. Also, Summerlin has implemented a new water conservation guideline for all new homes. The guidelines were developed in conjunction with the Southern Nevada Water Authority (SNWA) to incorporate Water Smart principles.

This theme of preservation is also represented through the large amount of open space. The development has set aside a third of the land for open space and incorporated environmentally sensitive land management strategies. With this open space there has been the provision of a large trail network. Currently there are also eight golf courses with varying degrees of difficulty. It is important to note that the

developers were the drivers in creating a Conservation Area on the edge of the development (Figure 4.8).

Summerlin imposes strict controls on minor detail elements, be it streetlamps pointing downward to reduce glare, unobtrusive signs, big-box store concrete engineered to look like sandstone and house color palette harmonizing with the desert landscape. These restrictions are meant to encourage a sense of place. Las Vegas has allowed the developer to define their own standards for building setbacks, density and height.

Figure 4.8 Summerlin Conservation Area
Source: Summerlin n.d.

ANALYSIS

Innovations that are noteworthy within this community are the environmental measures in terms of landscaping and setting environmental standards in home construction, and aesthetic measures to create a sense of place within the different communities. Environmental standards have resulted in a 30%

reduction for energy and water consumption, saving residents $10 million in energy costs per year and keeping 140lbs of greenhouses gases out of the air.

In contrast to these innovations lie a number of critical issues:

- A lack of public transportation choices; there is a shuttle bus and public bus service but the frequency may not be as accommodating as it could be for those wishing to commute to employment areas such as the downtown
- There is some rental housing but no real low income housing available. The prices have risen fairly steadily especially in the last five years which has put this community's housing out of the reach of much of the low income population in and around Las Vegas
- There is a density of 2.5 UPA, and one-third of the land is reserved for open space, encouraging sprawl and discouraging walkability and social interactions
- Housing type is dominated by the single-family home
- Communities appear to be segregated by demographics (eg: seniors) or income, a statement that is reflected in the high number of golf courses and private schools in the area

Despite the fact this community exhibits some innovative ideas and designs, it is doubtful that it reflects the ideology of Smart Growth. The development does not provide enough diversity in housing type, and style in order to ensure residents

have the option to stay within the community over the long term as their housing needs change.

ORENCO STATION, PORTLAND

Ryan Kalmacoff, Lesley Kalmakoff, Jonathan Lea and Kathryn Tonelli

RATIONALE

Orenco Station was chosen as a case study as it is a comprehensive, sustainable, development incorporating a range of innovations. Many characteristics have worked together to make the Orenco Station development an award winning community. The new-urbanist development has attempted to create a mixed use neighbourhood less reliant on the personal automobile with a lively mix of employment, housing, commercial and recreational choices.

CONTEXT

Orenco Station is located just outside of Portland, Oregon and is nearing completion. Originally designated as a commercial and industrial area, the site was rezoned in the early 1990's in order to acquire funding and secure an extension of Portland's MAX Light Rail transit line to the Town of Hillsboro. Redesignating the parcel of land to accommodate mixed-used compact development set the stage for the

construction of Orenco Station to begin in 1997 (O'Neill, 2000). The 190-acre site is now nearing build-out.

Six primary characteristics define the Station Community Planning Area (City of Hillsboro, 2003a);

- Streets, buildings, and public areas that are pedestrian oriented but do not exclude the automobile.
- Housing and jobs concentrated in centers to encourage residents to live near transit stations
- Open spaces such as parks and plazas and other community amenities and services throughout development
- Link pedestrian, bike, transit, van/auto pool, through a connected multi-modal circulation system
- Circulation system strives to provides access to light rail transit station while overcoming both physical and psychological barriers
- Automobile intensive land uses are located in areas where the use will not negatively affect transit oriented uses and have an existing road system capable of supporting the use

INNOVATION

The principles and objectives outlined by the community are facilitated by a number of innovations. The policies and standards work to promote transit-supportive and pedestrian sensitive mixed-use developments near light rail stations (City of Hillsboro, 2003a). Transit oriented design is achieved through

established street design requirements which foster compact community design, the provision of parks within walking distance of resident's homes, and strong system of interconnected pathways allowing residents to safely walk to various destinations throughout the development.

In order to achieve the desired densities and associated increased light rail ridership minimum density requirements were set. This density policy calls for a gradient of residential density targets at varying distances from light-rail transit stops (City of Hillsboro, 2003b). Also, all first-year residents were provided with free light-rail pass for one year to encourage ridership.

The creation of mixed-use town centers was designed to bring together a mix and range of residential options with a variety of local employment and commercial uses to create and maintain a self-reliant neighbourhood (Figure 4.9).

ANALYSIS

The nature of this mixed-use design strategy has resulted in a vibrant urban area that increases social interaction, reduces the need for the personal automobile and promotes 24 hour activity and therefore security (Podobnik, 2002). Transit-oriented development and incentives have been well recognized and resulted in high levels of ridership (Benfield, et al., 2001). There have also been numerous employment opportunities in the high-tech profession located nearby, so much so that the area has become known

as the 'Silicon Forest'. These innovations, though not drastic, have helped to make the Orenco Station development a success.

Figure 4.9 Orenco Station Mixed Use Town Centre
Source: Fletcher, 2002

EAST CLAYTON, SURREY

Ryan Kalmacoff, Lesley Kalmakoff, Jonathan Lea, and Kathryn Tonelli

RATIONALE

The project is designed as a demonstration of sustainable development principles and performance standards (CMHC, 2001). This is especially notable in the environmental measures in concerns to water management.

CONTEXT

East Clayton is based in Surrey, BC whose proximity to sensitive waterways and productive agricultural land led to the need for a storm water management system that mimicked natural, pre-development infiltration rates. The development showcases green infrastructure and environmental design on a 250-hectare site with a projected population of approximately 13,000 at build-out. Figure 4.10 is a land use plan for the East Clayton development.
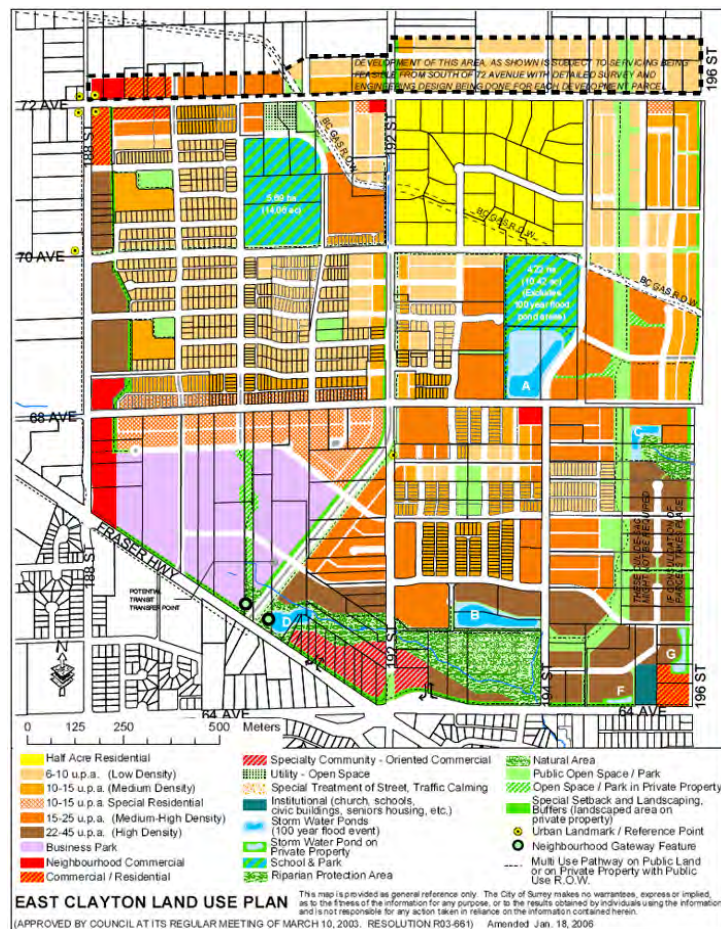
Figure 4.10 East Clayton Land Use Plan
Source: http://www.surrey.ca/NR/rdonlyres/E6F3730A-7B32-4109-98E4-564099BB8C8B/0/EastClaytonNCP.pdf

The community has 6 key objectives:

- Alternative transportation methods such as walking and public transit are encouraged for the health of the community.

- Increased densities allow for more vibrant streets providing residents with greater route choices and destinations and more opportunities for walking and cycling. Additionally, compact development is cheaper to service in the long run. Open space is preserved because living and working environments are intermingled. Close neighbours naturally create relationships of friendship and trust.

- Mixed-Use Centers mix commercial and residential uses create lively streetscapes and vital centers. The provision of jobs within the community reduces the need for travel to other areas of the city, reducing congestion and air pollution.

- Increased Social Interaction with open spaces and recreational opportunities which allow for unplanned as well as planned meetings of people on walks or partaking in sports. Open spaces provide the opportunity for personal-oriented needs such as relaxation or play areas for children. Sidewalk widths should be a minimum of 1.5 m to allow for comfortable use and passing.

- Mix of Housing variations in housing style, type, tenure, and cost creates a community that does not exclude certain socio-economic or ethno-

cultural groups. These criteria foster social well-being and create a more viable local economy (Fleissig and Jacobsen, 2002).

- Environmental Preservation of natural areas and habitats. Compact community planning has the benefits of reducing construction waste and energy use.

The land use and development concepts outlined are based on seven principles of sustainability: Increase density and conserve energy; provide different dwelling types; dwellings should present a friendly face to the street; car storage and services are located at the back of dwellings; provide an interconnected street network and public transit; provide narrow, shaded streets; preserve the natural environment and promote natural drainage systems.

INNOVATION

East Clayton's proximity to sensitive waterways (Serpentine, Nicolmekle and Fraser Rivers) and productive agricultural land led to the need for a storm water management system that mimicked natural, pre-development infiltration rates. East Clayton utilizes an innovative natural drainage system that eliminates downstream flooding and protects waterways from suspended solids and harmful runoff (Gilliard, 2003).

- Pervious surfaces and materials, such as driveways and back lanes, reduce the amount of runoff generated by the development, and reducing the infrastructure needed to handle storm water.

- Each property is equipped with on-site filtration devices. The devices are buried in the front yard of each property and allow precipitation to readily infiltrate into the ground.
- To further reduce runoff directed to Stormwater sewers, guidelines demand a system of grassy swales to accept runoff from impervious surfaces such as roadways. Elimination of the traditional curb and gutter system allows runoff to travel directly to grassy swales where up to 48mm/day (24mm/day in winter conditions) of runoff will be absorbed (ACT, 2003, p.22).
- Additionally, a naturalised wetland on the site provides habitat and retention/biofiltration capabilities. The wetland is designed to easily accept a 5-year storm with adjacent playing fields accepting overflow in the case of a 100-year storm event (ACT, 2003, p.22). Smaller neighbourhood parks are equipped with deep well infiltrators to convey peak flows to regional groundwater aquifers.

A mix of housing types and tenures provide each street with a unique appearance, enhancing the pedestrian experience. Additionally, "all dwellings present a friendly face to the street to promote social interaction" (Surrey, 2000, p.34). Placement of lanes and garages behind houses further enhances the streetscape and prevents building fronts from being obscured by garages. It is expected that the community commercial area will become one of the most important destinations for residents in the area.

The community is ordered around a fine-grained, modified grid street system that provides various routes to a number of destinations (ACT, 2003). The interconnected road network disperses traffic congestion while ensuring convenient routes for public transit. The design principles also call for street widths for local and collectors to range from 6m to 11.3m. Narrow streets reduce construction and maintenance costs, decrease the amount of runoff and create "a greener and friendlier environment" (ACT, 2003, p.11).

ANALYSIS

Environmentally, the neighbourhood succeeds in truly managing the sensitive water issues that affect the neighbourhood. Other areas have yet to prove successful and result in questioning of the development's sustainability:

- Transit to the neighbourhood is extremely limited and this is unlikely to change
- Currently, housing types do not differ dramatically as it is primarily single-family homes and town homes
- Due to consumer pressures, the community has relaxed a number of the street-frontages and garage requirements, allowing some houses to have front-facing garages.
- A commercial area is yet to be established.

PROSPECT, COLORADO

Brier Ferguson and Marilyn Groves

RATIONALE

Prospect was Colorado's first New Urbanist community. The developer bought the 80 acre tree farm from his family with a specific goal in mind – to build a distinctive project that would minimize the negative impacts on the land, or leave a light footprint. In 1996 Prospect won a Governor's Smart Growth Award for its innovative alternative to suburban sprawl.

CONTEXT

"Prospect is located on the southeast corner of Longmont, Colorado on U.S. Highway 287 and Pike Road, in Boulder County. It is a ten minute drive from Boulder, 30 minutes from downtown Denver, and about 45 minutes from the Denver International Airport" (Prospect, n.d.). Construction began in 1997 and is now in the third phase of development.

The development will eventually contain 585 units on 340 lots. "A town center is being built around a skating rink and will include shops, restaurants and offices all within a 5 minute walk of Prospect's homes" (Prospect, n.d.).

According to the Longmont Land Development Code, it has been designated PUD-MU = Mixed Use Planned

Unit Development Zoning District, which allows for housing diversity. The "broad range of options will allow residents to live, work and shop in the same neighborhood, and to walk from one activity to the others. It also means that when a resident's life circumstances change, with the arrival or departure of children to or from their household for instance, their housing type can change accordingly without the need to leave the community" (Prospect, n.d.).

The development was to feature the following elements from the concepts of New Urbanism (Lieber, 2001):

- Housing for all income levels
- Front porches
- Mixed use development
- Services and garages accessed from back alleys
- High density
- Narrow, tree-lined streets
- Shopping amenities within walking distance
- Emphasis on streetscape design for pedestrians

INNOVATION

Prospect offers a wide range of housing options within its boundaries. The developers are trying to reflect a mixed and different group or community of people by allowing personal expression with the houses. They believe that a community is a mixed bag of members, and the built form in which they live should also look mixed. They criticize other New Urbanist projects that look homogeneous, because they say that it creates a homogeneous community too (Lieber, 2001).

There are detached, single family houses as well as town and courtyard houses, apartments, live-work units, Elder cohousing, commercial retail office, and restaurant space. Accessory units above detached garages are encouraged, which can be utilized as guest or rental housing, or perhaps as office space. Rear garages and back alleys allow for carriage houses, home offices or granny flats above them (Stromberg, 2001).

One of Prospect's unique housing elements is their incorporation of an Elder cohousing option. It is envisioned as a self-managed group of 25-30 attached homes for adults 55 and better. The common facilities include a clubhouse for occasional shared meals, socializing and movies, health care and exercise, classes and art exhibits, health care rooms, also outdoor spaces for gardening and meditation. It is just a short walk from the Town Center where there is currently a growing selection of retail shops and services are offered (Prospect, n.d.).

Also, every individual home possesses its own unique architectural design and layout. Initial designs focused on nostalgic, old town styling as with most New Urbanist communities. More recently, the community has incorporated a more modern look that was "colourful, diverse and architecturally innovative" (Figure 4.11) (Stromberg, 2001).

The planned development is considered dense at 7.3 units per acre (Stromberg, 2001). Since the neighbourhood is constructed at such high densities, private yards are minimal. There are two existing and five more planned public park spaces.

The town centre is within a five minute walking distance from the whole development. In addition to the commercial offerings in the town centre, there are other commercial enterprises already spread through the development in the form of live/work units (Prospect, n.d.).

ANALYSIS

Prospect New Town seems to have been successful so far. It has offered an alternative, both in architecture and in urban design, to the suburbs that surround it. The community "employs many of the precepts of early 20th century American town planning, while addressing the dictates of early 21st century life" (Prospect, n.d.). The result of this collaboration is a uniquely livable combination of traditional and modern planning concepts, which are illustrated in an extensive range of architectural styles.

Criticisms lie in two areas:

- The high price for housing may not make this subdivision accessible to everybody, as the developers had originally planned.

- The community may be walkable within itself, but the only transportation connection outside the community is via automobiles.

Figure 4.11 Architectural Styles
Source: Prospect, n.d.

REFERENCES

Affordability and Choice Today (ACT). (2003). *The Headwaters Project: A Sustainable Community Development in Surrey, B.C.*

Benfield, F.K., Terris, J., and Vorsanger, N. (2001). *"Solving Sprawl: Models of Smart Growth in Communities Across America."* National Resources Defense Council. Retrieved Feb 1, 2005 from: http://www.nrdc.org/cities/smartgrowth/solve/orenco.asp

Canadian Mortgage and Housing Corporation (CMHC). (2001). *The Headwaters Project – East Clayton Neighbourhood Concept Plan.* In Research Highlights: 78.

City of Calgary. (2004, May). Land Use Planning & Policy. *Revised East McKenzie Area Structure Plan: Part 1*.

City of Hannover. (2004a). *Hannover Kronsberg handbook: Planning and realisation.* Retrieved Nov 5, 2005 from: http://www.sibart.org/pdf/handbook_big_en.pdf

City of Hannover. (2004b). *Vorwärts nach weiter-Hannover Kronsberg: From model settlement to standard practice.* Retrieved Nov 10, 2005 from: http://www.hannover.de/deutsch/doku/vorwaerts_nach_weiter.pdf

City of Hilsboro. (2003a). *Zoning Ordinance Volume II Section 136 - Station Community Planning Areas.* Retrieved Jan 28, 2005, from: http://www.ci.hillsboro.or.us/ Planning_Department/ZONE_ORD_VOL2/Volume%202%20Section%20136(I%20&%20II).pdf

City of Hillsboro. (2003b). *Zoning Ordinance Volume II Section 137 – Development Regulations for Station Community Planning areas.* Retrieved Jan 28, 2005, from: http://www.ci.hillsboro.or.us/Planning_Department/ZONE_ORD_VOL2/Volume%202%20Section%20137%20(III-XIV).pdf

City of Tuscan, Lincoln Institute of Land Policy, and Sonoran Institute. (2004). *Growing Smarter at the Edge.* Retrieved Nov 2, 2005 from: http://www.sonoran.org/programs/pdfs/growingsmarterreport.pdf

Cowan, R. (2003). *"New for Old."* Architect's Journal, 218 (1). July, 2003: 38-43.

Cruickshank, D. (1991). *"Village Vision."* Architect's Journal 194 (16) Oct, 1991: 10-11.

Demographia. (2000). *Calgary's McKenzie Towne: Suburb with a Neo-Traditional Facade.* Wendell Cox Consultancy. Retrieved Nov 8, 2005 from: http://www.demographia.com/db-mckenzietowne.htm

Der Kronsberg: Schnell in die City. (n.d.). Retrieved Nov 6, 2005 from: http://www.gp-papenburg.de/pw/Referenzen/aaa.shtml

Design Workshop. (2004). *Rancho Viejo: Rancho Viejo De Santa Fe, Inc.* Development Phases Map. Santa Fe, New Mexico.

Fleissig, W. & Jacobsen, V. (2002). *Smart Scorecard for Development Projects.* Retrieved Feb 1, 2005, from: http://www.cnv.org/cnu_reports/scorecard_exp.pdf

Forest City Stapleton, Inc. (2005). *Stapleton, feels different.* Retrieved November 8, 2005 from: http://www.stapletondenver.com/main.asp

Forest City Stapleton, Inc. (2005). *Stapleton Sustainability Master Plan.* Retrieved November 9, 2005 from: http://www.stapletondenver.com/pdf/misc/Stapleton_Sustainability_Plan.pdf

Gilliard, G. (2003). *Surrey Shifts Sustainability Status Quo with Neighbourhood Concept Plan.* In Plan: Spring 2003.

Hartl, J. (n.d.) *Anfahrt Hannover Kronsberg.* Retrieved Nov 10, 2005 from: http://www.oekosiedlungen.de/kronsberg/anfahrt.html

Holfeld, T. (1999). *In Pursuit of a Sustainable Suburb: A Case Study of McKenzie Towne.* University of Calgary, Faculty of Environmental Design Master's Degree Project.

Institute für Energie und Umweltforschung. (2003). *Hannover Kronsberg CO2 Audit, 1999-2001.* Retrieved Nov 10, 2005 from: http://www.hannover.de/deutsch/doku/co2praesent99-01eng.pdf

International Energy Agency. (n.d.). *Demonstration houses in Hannover-Kronsberg, Germany.* Retrieved Nov 5, 2005 from: http://www.iea-shc.org/task28/final_reps/Germany_Hannover-Kronsberg.pdf

Las Vegas Properties. (2005). *Summerlin*. Retrieved Nov 11, 2005 from: www.lasvegasproperties.com/summerlin.html

Lieber, R. (2001). *Is This Your Beautiful House?* [Electronic version]. Fast Company, 48, 124.

Neal, P. ed. (2003). *Urban Villages and the Making of Communities*. New York: Spon.

NM APA 2003 Awards. (2003). Retrieved Nov 2, 2005, from: http://www.villr.com/documents/NMAPA2003 Awards.pdf

O'Neill, D. (2000). *The Smart Growth Tool Kit: Community Profiles and Case Studies to Advance Smart Growth Practices*. Washington: ULI – The Urban Land Institute,. 106-110.

Perks, W. T. and Moors, A. (n.d.). *Sustainable Community Design: McKenzie Towne, Canada*. University of Manitoba. Retrieved Nov 12, 2005 from: http://www.umanitoba.ca/academic/faculties/architecture/la/sustainable/cases/mckenzie/mac001.htm

Podobnik, B. (2002). *"New Urbanism and the Generation of Social Capital: Evidence from Orenco Station".* National Civic Review; 91(3), 245-256.

Porter, J., Kolkmeyer, J. and Moore, C. (2005). Collaborative Community-building: The Santa Fe Community College District and Villages at Rancho Viejo. *Practicing Planner, American Planning Association, Winter 2004.* Retrieved Nov. 2, 2005, from: http://www.planning.org/affordablereader/pracplanner/casevol2no4.htm

Prospect. (n.d.) *Prospect New Town.* Retrieved November 13, 2005, from: http://www.prospectnewtown.com/

Robinson, J. (2005). *Great Places to Live*. Las Vegas Life. Retrieved Nov 1, 2005 from: www.lvlife.com/2004/04/feature1.html

Rumming, K. (n.d.). *Modell Kronsberg: Ecological Optimisation at Kronsberg.* Retrieved Nov 6, 2005 from: http://www.sibart.org/pdf/kronsberg.pdf

Santa Fe County Land Use Department (2005). *National Award for Smart Growth Achievement: 1005 Entry Package for Policies and Regulations*. Santa Fe, New Mexico.

Stapleton Development Corporation. (1995). *Stapleton Development Plan 1995.* Retrieved Nov 8, 2005 from: http://www.stapletoncorp.com/plan.htm

Stromberg, M. (2001). *Prospecting for Design Gold* [Electronic version]. Professional Builder, 66, 71-74

Summerlin. (n.d.). *Summerlin- Las Vegas' Premier Master Planned Community*. Retrieved Nov 11, 2005, from: http://summerlin.com/home.html

Surrey, City of. (2000). *East Clayton Neighbourhood Concept Plan.*

Thompson-Fawcett, M. (1998). "*Leon Krier and the Organic Revival Within Urban Policy and Practice.*" Planning Perspectives 13, 1998: 167-194.

CHAPTER 5

ANNEXATION POLICIES AND URBAN GROWTH MANAGEMENT IN CALGARY

Tim Creelman, ACP, MCIP

RATIONALE

WHY DOES THE CITY OF CALGARY MAINTAIN A LONG TERM SUPPLY OF LAND FOR GROWTH?

✓ It enables The City to comprehensively plan for new development necessitated by growth, facilitating the orderly and economic development of the City;
✓ It ensures new development is appropriately located and reduces the need for numerous, incremental annexations;
✓ It helps to ensure a healthy and competitive residential and industrial marketplace;
✓ It facilitates major servicing and transportation infrastructure planning and expenditures; and
✓ It provides a sense of long term stability in the Calgary region helping adjacent municipalities and landowners to plan with more certainty.

WHAT ARE THE BENEFITS OF ANNEXATION?

✓ A healthy and competitive residential marketplace helps achieve a measure of housing affordability;
✓ Annexation helps provide location and price choice in the housing marketplace. Housing consumers have traditionally preferred single-detached homes in new suburban communities where comparative affordability is achieved (i.e., the most house for the least personal cost);
✓ When compared to the growing regional country residential trend, Calgary's suburban residential development at 6 to 8 units per gross developable acre reflects an efficient use of the land base. Annexation helps ensure development does not leapfrog past contiguous urban form and extend throughout the countryside;
✓ Annexation facilitates a comparatively more efficient pattern of development and reduces the premature fragmentation and conversion of farmland;
✓ With annexation, all development must connect to urban sanitary and storm servicing; this helps mitigate any negative impact to the environment with respect to water quality;
✓ Annexation facilitates the efficient long-term planning and servicing of contiguous development, thus helping to avoid the duplication of municipal services and the fragmentation of services between municipalities;
✓ Annexation of areas within The City's growth corridors helps reduce "edge" constraints to contiguous urban growth that can escalate public

infrastructure costs (e.g., incompatible uses abutting border areas); and

✓ Annexation helps achieve fairness in property tax revenues and public expenditures by ensuring the costs of development and services enjoyed by residents, and revenues generated from development accrue to the same municipality.

ANNEXATION NOTICE

The Municipal Government Act in Section 116 (2) (b) requires, as part of a written notice of a proposed annexation, that the notice "set out the reasons for the proposed annexation". The following is an **overview** of the context and major reasons why The City of Calgary is pursuing annexation of the lands identified on the map of proposed annexation areas. Further and more detailed annexation justification will be provided as part of the report to be prepared describing the results of the annexation negotiation / mediation, and public consultation processes.

The annexation justification is based on three categories of land supply need: strategic interests, long term growth, and opportunity.

Provision for the strategic needs and interests of The City of Calgary

A number of strategic interests identified in The City of Calgary Municipal Development Plan and the Calgary Transportation Plan (GoPlan) are achieved through annexation:

- A long term land supply achieved through annexation facilitates an efficient growth management approach in conjunction with planned infrastructure extensions;
- Most housing growth will be accommodated within the north and south growth corridors closer to major employment centre locations;
- Improve the jobs/population balance to reduce travel distances and improve the efficiency of existing transportation infrastructure; and
- The major north growth areas within the annexation boundary include conceptually planned extensions of future LRT to provide modal choice over the long term.

Figure 5.1 shows The City of Calgary's history of annexation by decade. Currently, The City of Calgary is proposing annexation to meet both future residential and industrial / commercial needs in order to achieve a better **balance of housing and employment** by location (Figure 5.2). Annexation to the north will provide significant residential development in close proximity to existing and future employment centres; annexation to the east will provide for a renewed growth corridor of residential development adjacent to the major southeast industrial employment areas, and provide continuity of the land base for future long term servicing; annexation to the west will provide for the opportunity of long term employment land uses near existing residential.
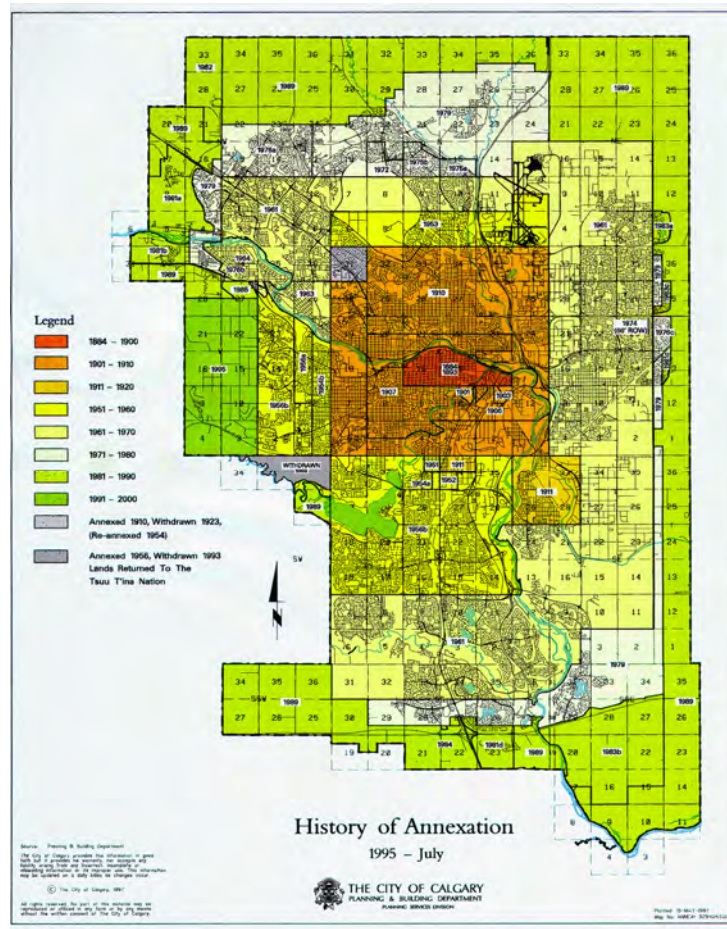
Figure 5.1 History of Annexation, Calgary
Source: City of Calgary, Planning & Building Department
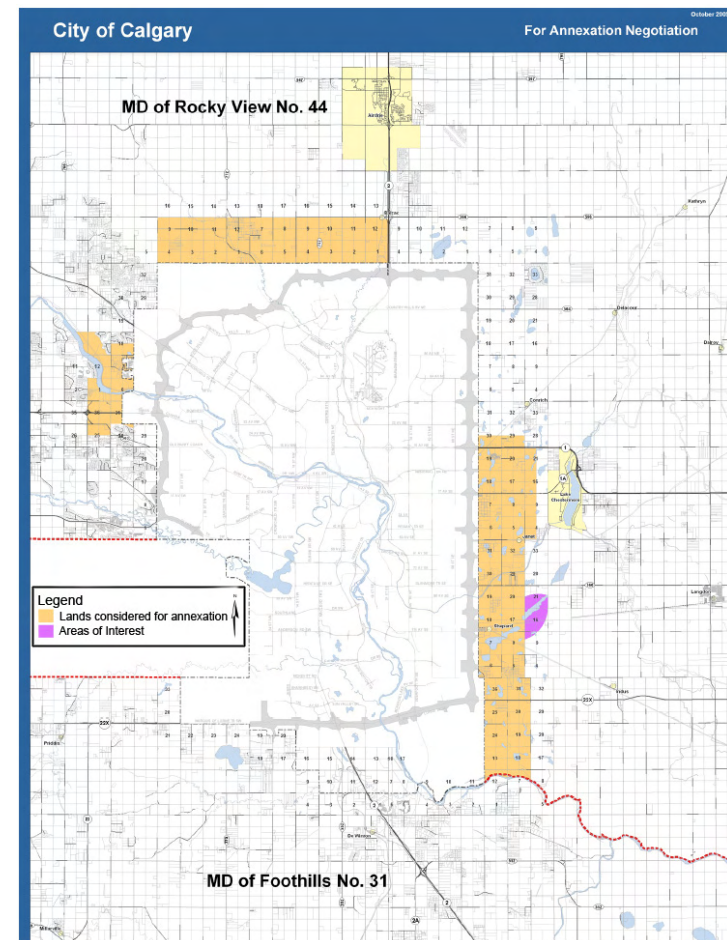
Figure 5.2 City of Calgary proposed annexation
Source:http://www.calgary.ca/DocGallery/BU/planning/pdf/annexation_negotiation_map.pdf

The annexation proposal recognizes the importance of providing for a **variety of growth corridors** in order to achieve competition and affordability in the marketplace. In the west, selected additional lands are identified to bolster the fast-depleting west and northwest sectors in an area increasingly fragmented by country residential development. In the north, annexation will provide for the traditional major growth corridor in this area identified in the MD of Rocky View / City of Calgary Intermunicipal Development Plan (IDP), and served by future LRT for modal choice. Moreover, additional selected lands in this direction will provide for a market alternative to the desirable northwest sector. In the east, annexation will re-establish the east sector as an attractive growth area providing for more affordable residential development.

The majority of lands proposed for annexation are unfragmented and can be more easily urbanized and serviced. The proposal avoids large areas of heavily fragmented country residential development and areas affected by long term sour gas reserves. In addition, the annexation proposal recognizes the importance of the southeast industrial sector (rail and truck serviced market distinct from the airport industrial area) and the need to continue to provide for a large industrial employment base.

Site-specific strategic interests are met through annexation. The annexation proposal provides for land adjacent to key City entranceways. In addition, it provides for increased City jurisdiction over water supply protection and environmental stewardship of the Bearspaw Reservoir and surrounding lands. The Shepard Wetland Complex is a key stormwater management requirement for the future development of the east sector.

Provision of an adequate land supply for long term growth

The City of Calgary Municipal Development Plan prescribes that Calgary's growth be accommodated, and that an adequate land supply be maintained to provide for The City's long-term growth needs. Policies 1-1A and 1-1B state:

> *"Continue to protect and manage Calgary's long-term growth requirements within the UniCity framework"*

> *"Endeavour to have within The City's jurisdiction at least a 30 year supply of developable lands for all uses, to allow for the comprehensive planning of new areas, and to encourage choice and competition in the marketplace"*

Calgary's significant rate of growth (approximately 1,400 acres of residential land and 250 - 300 acres of industrial land absorbed on average each year) necessitates a comprehensive annexation of lands to ensure that The City of Calgary can continue to accommodate the 16,000 (on average) people that come to the City each year. The proposed annexation boundary is designed to bring the needed additional years of land supply into the city for long-term growth, and within appropriate growth corridors. As development incrementally absorbs the planned and

serviced land inventories, annexation will help maintain a continuous supply or source of raw developable land for a range of future urban land uses.

Opportunity

A longer term land supply is being sought than was identified in the 2002 annexation notice in recognition of the increasing development pressures and fragmentation in border regions of the City. The City of Calgary is concerned about the constraints and impacts associated with a growing regional urban form, and requires longer term protection of established growth corridors.

The MD of Rocky View has indicated that it is experiencing similar pressures for development associated with a buoyant economy and is increasingly accommodating urban-intensity development in close proximity to Calgary. The MD has approved significant development potential through a number of area structure plans for both residential and industrial immediately abutting the City. As these areas develop, future annexation will be limited by:

- An increasing number of landowners and residents involved in the process;
- Increasingly fragmented border area lands which are difficult to urbanize;
- Challenges to agreeing on reasonable compensation for loss of developed lands; and

- Challenges to integrating development which has been built to different standards and levels of services.

Figure 5.3 shows The City of Calgary's annexation process in six phases from 2001-2004.
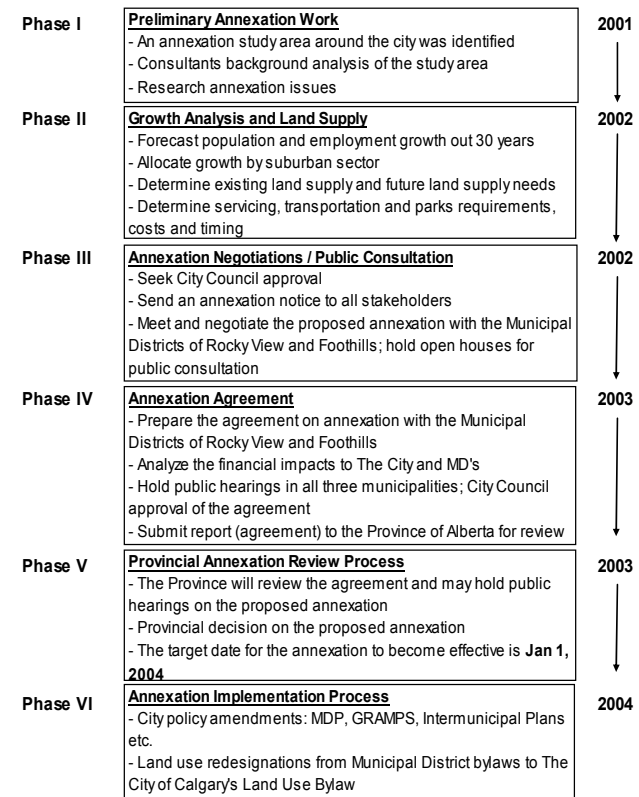
Figure 5.3 The City of Calgary's annexation process
Source: Tim Creelman presentation, 2005

The annexation process is becoming increasingly uncertain, time consuming and costly for both municipalities involved. The present legislation (MGA) enables annexation, but The City of Calgary cannot assume in the longer term that both provincial legislation and practice will remain the same. A longer term land supply will help provide more certainty for The City of Calgary, the MD of Rocky View and landowners.

CONCLUSION

This overview of the three categories of need (strategic interests, long term growth, and opportunity) forms the initial justification for the proposed annexation boundary to facilitate negotiations and mediation with the MD of Rocky View and for public consultation. Further and more detailed annexation justification will occur as part of the annexation negotiations and public consultation processes, providing the basis for The City of Calgary's annexation application to the Province of Alberta.

Tim Creelman, ACP, MCIP, is Senior Planner at The City of Calgary. He has extensive experience in land use planning & policy and is leading the planning, consultation and negotiation process related to the current annexation long-term policy.

CHAPTER 6

IMPLEMENTING TRANSIT ORIENTED DEVELOPMENT IN CALGARY

Glen Radway, ACP, MCIP

DEFINITION OF TRANSIT ORIENTED DEVELOPMENT

Transit Oriented Development (TOD) is a walkable, mixed-use form of development typically focused within a 600m radius of a Transit Station – a Light Rail Transit (LRT) station or Bus Rapid Transit (BRT) stop prior to the arrival of LRT. Higher density development is concentrated near the station to make transit convenient for more people and encourage ridership. This form of development utilizes existing infrastructure, optimizes use of the transit network and creates mobility options for transit riders and the local community. Successful TOD provides a mix of land uses and densities that create a convenient, interesting and vibrant community for local residents and visitors alike.

BENEFITS OF TOD

Transit Oriented Development seeks to implement a more sustainable approach to urban planning and land use. By optimizing the use of land around transit stations, the principles of Smart Growth are followed and a "Triple Bottom Line" approach can help Calgary achieve some of its environmental, economic and social objectives.

"Smart Growth" has become an increasingly important approach in current planning practice. It is a term to describe ways of developing more sustainable cities by supporting economic development initiatives, creating healthy environments and strengthening communities. Calgary City Council has endorsed "Advancing Smart Growth" as a key priority for The City of Calgary. Some of the leading Smart Growth principles that guide or promote TOD include the following:

- Create walkable neighbourhoods
- Foster distinctive, attractive communities with a strong sense of place
- Encourage transit use
- Provide a variety of transportation choices
- Mix land uses
- Strengthen and direct development toward existing communities
- Create a range of housing opportunities and choices.

POLICY BACKGROUND

The City of Calgary has adopted many policies that relate to transportation choices, transit use, quality of life and the urban fabric in general. The Calgary Plan (1998), the Calgary Transportation Plan (1995), and the Sustainable Suburbs Study (1995) contain important city-wide policy directions to encourage transit use, make optimal use of transit infrastructure, and improve the quality of the environment in communities.

While these policy documents create the basis for the implementation of TOD principles, *The City of Calgary TOD Policy Guidelines*:

- ✓ **reaffirm the importance** of LRT system and stations as city-wide assets and the need to optimize the use of this investment through supportive land use policies;
- ✓ establish broad, city-wide **policies and guidelines** for the future intensification and development of lands in the vicinity of Transit Stations;
- ✓ **create certainty** in Transit Station areas for local communities, landowners and developers by clarifying the City's objectives for land use and development around Stations;
- ✓ provide a **framework for evaluating** land use, development permit, and/or subdivision applications in Transit Station areas; and
- ✓ **direct policy development** of station area plans for new and existing Transit Station areas, and the preparation of, or amendments to, Area Redevelopment Plans and Area Structure Plans.

TRANSIT STATION PLANNING AREAS
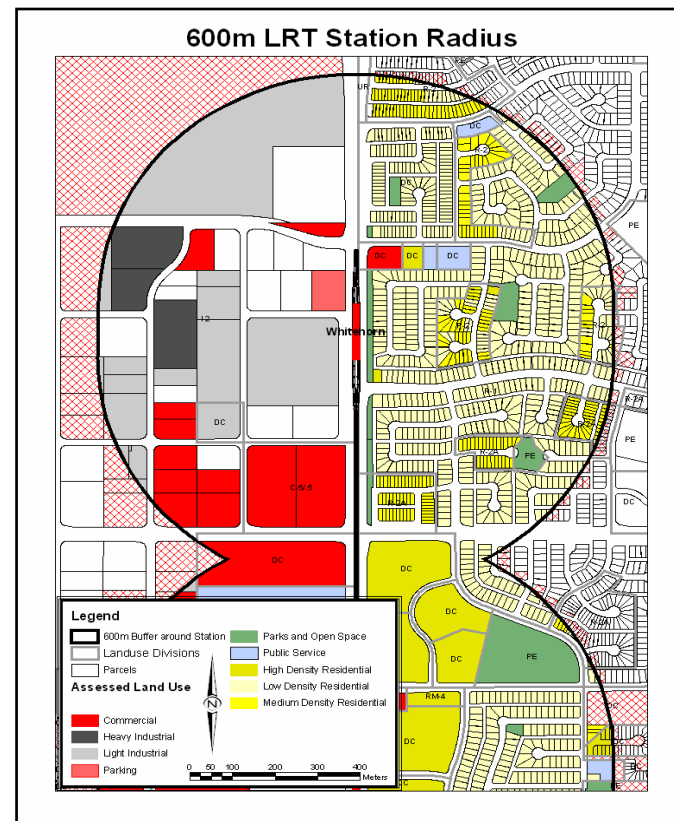
Figure 6.1 City of Calgary LRT Planning Area

The 600 m radius is an approximate distance that should be used to define a general planning area for a LRT station (Figure 6.1). General station areas should be identified for each existing and future LRT station, to indicate where development potential is available.

How a station planning area is determined:

- Identify a 600m radius circle centred upon the LRT platform. This includes major roadways, rights of way, adjacent rail rights of way, etc.
- Re-align the edges of the circle to logical property lines that define major roadways, environmental or topographical features, or edges of commercial/industrial districts.
- Identify these applicable lands on POSSE – the City's file management system – to notify planners of a parcel's proximity to an LRT station and the need to review any applications with regards to these TOD Policy Guidelines.
- At the station area plan stage, identification of appropriate lands to achieve TOD objectives can be accomplished through more detailed analysis, landowner and community consultation.

TRANSIT ORIENTED DEVELOPMENT POLICIES

Key TOD policies adopted by the City of Calgary are summarized in Box 6.1.

Box 6.1: Key transit oriented policies

1. Ensure transit-supportive land uses
2. Increase density around Transit Stations
3. Create pedestrian-oriented design
4. Make each station area a "place"
5. Manage parking, bus, and vehicular traffic
6. Plan in context with the local communities

The following sections discuss each of the six key policies with a reference to TOD guidelines that provide direction and potential options on how to achieve the policy objective. It is the intent that these guidelines will allow for a flexible and creative approach that achieves TOD in the wide variety of contexts that it will be applied.

Ensure Transit-Supportive Land Uses

Transit-supportive land uses encourage transit use and increased transportation network efficiency. As such, the pattern of land uses around LRT stations should be characterized by:

- high employee and/or residential densities
- promoting travel time outside of the am/pm peak periods
- attracting reverse-flow travel on roads and LRT
- encouraging extended hours of activity, throughout the day and week
- attracting pedestrian users / generates pedestrian traffic

Box 6.2: Primary transit-supportive land uses include:

• Employment uses, commercial office, research and development
• Light manufacturing
• High school and post-secondary institutions
• Residential – medium to high density

Uses that provide support services to primary transit-supportive uses and transit riders and/or offpeak ridership include, but are not limited to:

• Pedestrian-oriented street retail
• Shopping centre retail with strong pedestrian connections
• Child care facilities, fitness clubs, hotels, medical clinics
• Personal services, restaurants
• Entertainment, recreational and cultural facilities

Figure 6.2 Canyon Meadows Station in Calgary

A station area should allow for a mix of residential, employment and supporting retail and service uses. The mix of land uses may be horizontally or vertically integrated; that is, the mix of uses may be found within a particular building, or incorporated in multiple buildings throughout the planning area. This provides a variety of uses within a compact, walkable station area and creates a synergy between the varying types of development.

As the focus of TOD is the transit rider and pedestrian, it is important that auto-oriented development does not overwhelm the station area. Non-transit supportive land uses are oriented primarily to the automobile and not the pedestrian or transit user. These types of land uses:

• generate high levels of vehicle activity
• are oriented towards automobile use
• consume a large amount of land through low-density form
• require extensive surface parking areas
• create negative impacts for pedestrians such as isolation from building frontages, long windswept walks, and numerous vehicle crossings on sidewalks.

Uses that are typically considered as "non-transit supportive" are:

- Stand-alone auto-oriented uses and formats
- Low intensity industrial
- Low density commercial (big box retail)
- Low-density residential (single-detached on standard or large lots >40')

Non transit-supportive land uses should not be located in the immediate station area where there is high pedestrian activity and bus traffic. These uses may be considered towards the edge of a station planning area where higher intensity uses may not be feasible, or as part of a larger comprehensive transit-supportive development. In all cases, key pedestrian and urban design elements discussed in this document should be employed.

Optimize Density around Each Station

- Density should be increased around Transit Stations while relating to the surrounding context and particular station type.
- Locate the highest density uses and building forms (e.g. apartments, office towers) as close as possible to the LRT station building.
- In new communities, densities should be established for a station planning area and not included as part of the gross community density targets of 6 to 8 units per acre.

Figure 6.3 High density residential development at Lions Park Station in Calgary

The highest densities in a TOD station area should occur on sites immediately adjacent to the station (see Figure 6.3). Consideration for impacts of height on shadowing and massing should be made in determining transitions as well. In addition, a minimum density may be established on parcels adjacent to the LRT station to ensure the desired intensity is achieved.

- Create transition between higher and lower intensity development by stepping down building heights and densities from the LRT station building.
- Ensure that building massing and shadowing impacts are minimized. Shadow studies may be required to ensure that new development does not create significant shadowing on existing communities.

- Use transit facilities, public spaces and roadways as organizing elements for placement of density, height and shadow.
- Create proper edge treatments such as compatible building scale, parking location, and landscaping between new development and existing communities to minimize impacts and ensure integration.

Provide Quality Pedestrian Connections

A convenient, comfortable pedestrian-oriented route has the following qualities. Routes are short, continuous and barrier-free, safe and designed for the local climate. Primary and secondary pedestrian routes should be identified in the TOD station area.

- Primary Pedestrian Routes– These routes run directly between the LRT platform and station site and major pedestrian destinations in the surrounding community. These routes will attract high pedestrian volumes, associated pedestrian oriented services and act as the major connections to the station. Primary routes would typically include wider sidewalks and may include station access bridges, public easements, and regional pathways. In addition, buildings along these primary routes would be oriented to the street – buildings built to the street with minimal setbacks and direct building entrances oriented to, and connected from the sidewalk.
- Secondary Pedestrian Routes – These routes do not provide a direct link to the LRT station site but feed into the primary routes. These routes would

typically be at ground level and include standard sidewalks and private accesses to individual buildings.

Buildings should be grouped together to allow for easy pedestrian access and more compact urban form. Further, integrated **public systems are** essential to ensure an efficient station area. Elements of the public systems should include:

- Primary and secondary pedestrian routes
- Bicycle routes
- Roads
- Sidewalks
- Regional pathways and local walkways (both public and private)
- Pedestrian/cycle overpasses and underpasses
- Public open space
- Transit stations
- Bus stops.

Development should be integrated with all elements of the public system in order to create pedestrian comfort and an effective network for all travel modes within the station area. As TOD is focused on pedestrian comfort, the ground floor should contain uses that are appealing to pedestrians, such as retail, personal service, restaurants, outdoor cafes, and residences. A particular emphasis needs to be placed on **human scaled architecture.** Buildings should be designed to ensure that pedestrian comfort is of primary importance in station areas. Architectural variety (windows, variety of building materials, projections) should be used on

the lower storeys of a building in a TOD station area in order to provide visual interest to the pedestrian. Buildings higher than 4 to 5 storeys should step back higher floors in order to maintain the more human scale along the sidewalk and reduce shadow impacts on the public street.

Make Each Station Area a "Place"

Each station area should be developed as a unique environment, transforming a utilitarian transit node into a community gateway and a vibrant mixed-use hub of activity (Figure 6.4). The following strategies are recommended:

Emphasize important buildings
- Public or high profile buildings (i.e. LRT station, large commercial, prominent residential) should be highly visible landmarks within the TOD area.
- These buildings should have distinctive design features that can be easily identified and be located on high exposure sites, at the terminus of a sight line or view

Street and block layout
- New streets and walkways should be incorporated into the existing local road pattern
- Streets should have sidewalks on both sides of the road that can accommodate high-volume pedestrian activity
- Where possible, street and building configuration should be designed to create vistas, or to terminate views with a landmark feature, building, or public space

Use open space creatively
- Public and private open space should be developed to complement LRT stations. This would emphasize the station as a public place, provide a comfortable and interesting waiting/drop-off area, and give the community a gathering point.

Create a focus for the local community
- Development in the station area should provide a destination for both transit users and local residents
- Elements should include local gathering places, shopping, services and transit connections.

Figure 6.4 Brentwood Station in Calgary

Manage Parking, Bus, and Vehicular Traffic

Transit Oriented Development, through its transit-supportive uses, increased density and pedestrian design provides mobility options and reduces automobile trips through increased transit ridership and potential for decreased vehicle ownership. As such, the reduction of standard parking requirements should be strongly considered in TOD station areas. Parking relaxations should be considered when a site "earns" further locational/parking management benefits such as:

- Shared parking where different uses require parking at different times of the day
- Proximity to Park n' Ride sites which could be considered for accommodating parking during off-peak hours
- On-street parking within TOD station areas as part of the parking supply for a development.

A cash-in-lieu policy for parking in TOD areas should be considered as part of a parking management strategy for a station area

Place parking in appropriate locations
Parking areas should be designed appropriately in order to maintain the pedestrian comfort in the TOD station area.

- Major parking areas should be accessed from collector and arterial roads around the station areas, without impacting existing communities or the pedestrian environment closest to the station.

Direct and convenient pedestrian connections should lead from these parking areas to primary destinations such as the Transit Station, major office areas, high-density residential, etc.

- Along Primary Pedestrian Routes that lead to Transit Stations, parking lots should be located to the rear or side of the building.
- Parking lots should be designed and located to minimize the number of vehicle crossings over Primary Pedestrian Routes.

Figure 6.5 Implementing TOD in Bridgeland – Riverside Station

Develop parking forms that complement the pedestrian nature of the area

- Surface parking should be broken into smaller cells through landscaping and walkways
- Lighting in surface parking areas should be directed within the site
- Surface parking areas should accommodate safe, direct pedestrian traffic through the provision of landscaped walkways to and from, as well as through the site.
- Parking structures should have active street-level facades, including commercial uses and/or building articulation and glazing.

Encourage Transportation Demand Management strategies

Other strategies may assist in reducing the need for on-site parking in TOD areas:

- Encouraging local shuttle service for employment centres or shopping centres
- Facilitating community car-sharing and car-pooling by providing preferential parking spots for car-share/car-pool vehicles
- Promoting Transportation Demand Management (TDM) initiatives such as flex-time hours, telework, bike/walk to work programs, etc.
- Work with businesses to encourage transit ridership programs for employees

Integrate design for transit circulation and drop-off zones

- Park n' Ride sites will be accommodated in station areas in accordance with approved Council policy.

Parking facilities should be located and designed following the guidelines for parking provided above.

- Bus access to station areas should be a primary consideration in the design of the station and local roadways. This provides a more comfortable transition between modes of public transportation. Where possible, bus drop-off areas should be from local roadways with quick and direct access to the station platform.
- Kiss & Ride drop-off sites, where motorists can drop off or wait for a transit passenger, should be provided where feasible.

Plan in Context with Local Communities

Transit Oriented Development should benefit the local community (see Figure 6.5). Through consultation with local communities, TOD should provide a wide range of supporting benefits for local communities, including increased uses and services, a variety of housing, increased transportation options, and a more walkable environment and community amenities. Local communities can provide valuable local knowledge on services and amenities needed by the community, housing forms, key pedestrian destinations, current pedestrian habits, parking management concerns etc. Local landowners and communities should participate in station area plan planning processes. All communities within the catchment area of the LRT station should provide input into station area planning processes. This principle applies especially to the creation of station area plans, as other types of planning applications (i.e. Development Permit, Land

Use Amendment, etc.) have established circulation processes.

Figure 6.6 TOD opportunities in The Bridges, Calgary

FURTHER READING

City of Calgary (2004) *Transit Oriented Development Best Practices Handbook*. City of Calgary Land Use Planning & Policy: Calgary, January 2004.

City of Calgary (2004) *Transit Oriented Development Policy Guidelines*. City of Calgary Land Use Planning & Policy: Calgary, December 2004.

Glen Radway, ACP, MCIP, is a Senior Planner at The City of Calgary and the lead author of the Transit Oriented Development Policy in The City of Calgary.

CHAPTER 7

RETHINKING THE CANADIAN SUBURBS – A SHIFT IN THE DESIGN OF SUBURBAN RESIDENTIAL COMMUNITIES IN CALGARY

Bela Syal, MCIP

"Good plans shape good decisions. That's why good planning helps to make elusive dreams come true."

- Lester Robert Bittel

Over the past decade and more explicitly over the past five years, Calgary suburban communities have seen a 'shift' in their design and form towards creation of more sustainable communities, and increasingly achieving principles of smart growth. A combination of current market forces and regulatory policies is presenting an environment to facilitate this 'shift'. I call it a 'Shift' because suburban communities will not see a radical transformation happening overnight, but a slow metamorphosis, which is supported by the market, accepted by the consumer, and made possible by regulatory policies. Based on a calculated assessment of the market, one would believe that these 'shifts' are here to stay and have the potential to become more pronounced over time.

Given the environment, planners, developers and other stakeholders involved in shaping the suburban communities have the opportunity to take on the challenge and create visionary policies and plans which achieve more sustainable and culturally rich suburbs. Suburban communities all over North America carry the baggage of being branded as beige, devoid of a sense of place, contributing towards urban sprawl and unhealthy lifestyles. Yet, Calgary's growth statistics indicate that over 100% of the growth in Calgary is occurring in the suburban communities, accounting for both new growth as well as the declining population of older neighborhoods despite infill redevelopment. The new buyer has consistently gravitated towards suburban living for a number of reasons. The 'burbs' are here to stay!

In the next part of the article, I will talk about some of the shifts we are seeing in Calgary's suburban communities. The observations are based on Brown and Associates' experience with design of suburbs over the past two decades.

'SHIFTS' WE ARE SEEING

Increased density resulting in a more compact development – Calgary suburbs today are achieving densities in the order of 7 units per acre or higher compared to densities of 5-6 units per acre only a decade ago. Narrower lots and an increase in the

percentage of alternate housing types other than single family have become the norm for residential communities. The trend to a higher density and intensification of residential land uses is expected to continue. The biggest constraint in achieving higher density at this time appears to be the transportation capacity of the adjacent road network.

Increased mix of housing types and shift away from homogeneous suburbs dominated by single family residential – Calgary suburbs are seeing an increased percentage of alternate housing types such as street townhouses, semidetached units and other forms of multifamily housing. The newer communities are proposing multifamily residential in the order of 40-50% compared to only 20-30% a decade ago.

Emergence of a stronger community core – The increase in density and percentage of multifamily residential offers an opportunity to create a critical mass within the community core area (see Figure 7.1). The emergence of a stronger core reflects shades of the trend 'New Suburbanism', a term coined on the west coast to describe the current changes to the suburbs. Although the character and treatment of the core area is more reflective of the individual designers and developers involved, opportunities present themselves to create a more urban area with a sense of place which acts as a nucleus or 'downtown' for the community.
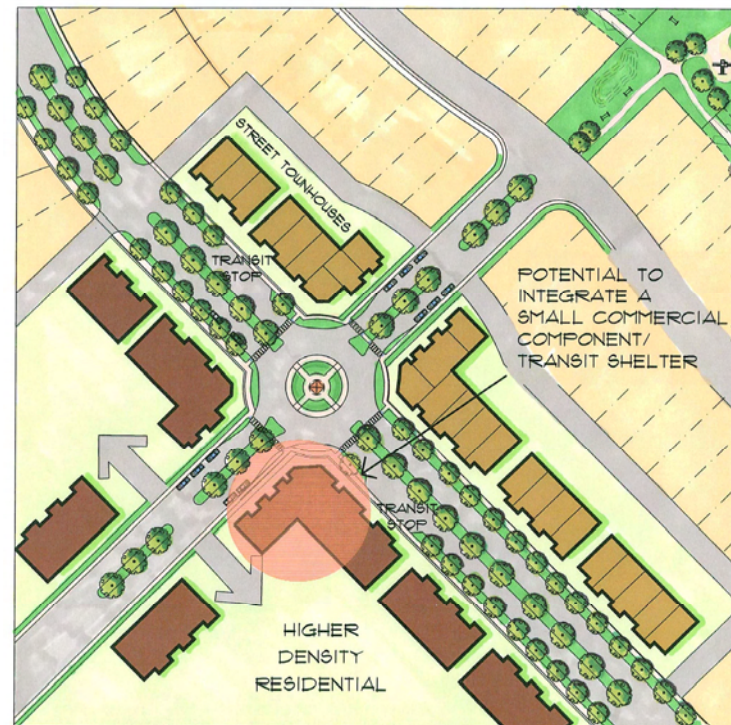
Figure 7.1 Higher density housing and a transit stop constitute important ingredients of a strong transit node.

Increased awareness towards creation of sustainable communities – The last few years have seen an immense increase in awareness for creating sustainable communities. Fiscal, social and environmental sustainability have come to the forefront of planning considerations. The creation of cost-effective, energy-efficient and low impact development is becoming a key objective for the design of

communities. Efficient site design, naturalized low impact stormwater management, harnessing rainwater and green construction are some of the initiatives currently under consideration in the design of new communities (See Figure 7.2).

Figure 7.2 Sustainable initiatives include naturalized engineered wetlands, which also become and amenity feature for the community.

Stronger transit nodes – Increased transit ridership is a key component of sustainable design. The City of Calgary, similar to other municipalities, is strengthening policies relative to 'Transit Oriented Development' or TOD as well as transit supportive development around neighborhood nodes. The intent is to locate higher density residential close to transit stops in order to encourage ridership. While desired, the provision of heated shelters at transit nodes continues to remain a

challenge for the City in terms of the capital cost and ongoing maintenance.

Creation of healthier communities – The increased awareness of healthier lifestyles is influencing the design of newer communities in terms of creating more walkable communities with less reliance on the car. The long standing dependence, and Calgarians' love affair with the 'car', is a much larger issue which is rooted much deeper in the social being of our society. The design of suburbs is only one factor, of many, which could help dampen this behavior.

CONTRIBUTING FACTORS TO THE 'SHIFTS'

Why are we seeing these 'shifts' and what are the contributing factors?

In terms of **market forces**, the following appear to be the major contributing factors:

- Eroding affordability due to higher land prices, and increased infrastructure, labour and raw material costs are resulting in the need to achieve higher density and consequently a greater percentage of multifamily residential units. Multifamily is fast replacing single family as entry level housing due to reasons of affordability.
- Changing demographics which have resulted in a rise in non-traditional families such as single parents, seniors or couples with no children, have increased the demand for housing types other than the traditional single detached dwelling.

- With inflating commute time to and from work, suburbanites are realizing the benefits of a more compact City.
- A growing awareness of a need to adopt healthier lifestyles is resulting in emphasis on walkability and active recreational opportunities in new communities.

In terms of the **regulatory framework**, the recognition of urban sprawl and the need to create more sustainable suburban communities, is increasingly influencing the City's policies for suburban communities.

In conclusion, the current environment, where regulatory goals appear synchronized with the market forces, offers a better opportunity than ever to rethink our suburban communities. The consumer seems ready for changes albeit not wholesale changes. Planners, developers, and other stakeholders involved in shaping the suburbs need to take advantage of this opportunity by playing a more visionary role. This innovative approach is reflected in two recent plans for suburban communities in Calgary, 'Mahogany' for Hopewell Residential Communities and 'The Villages of Walden' for Genstar Developments Ltd (See figures 7.3 and 7.4). They have been designed by Bella Syal with Brown and Associates Planning Group.

Bela Syal is a partner with Brown and Associates Planning Group, a private consulting company involved in the planning and design of Calgary suburbs over the past two decades.

Figure 7.3 Mahogany Concept Plan
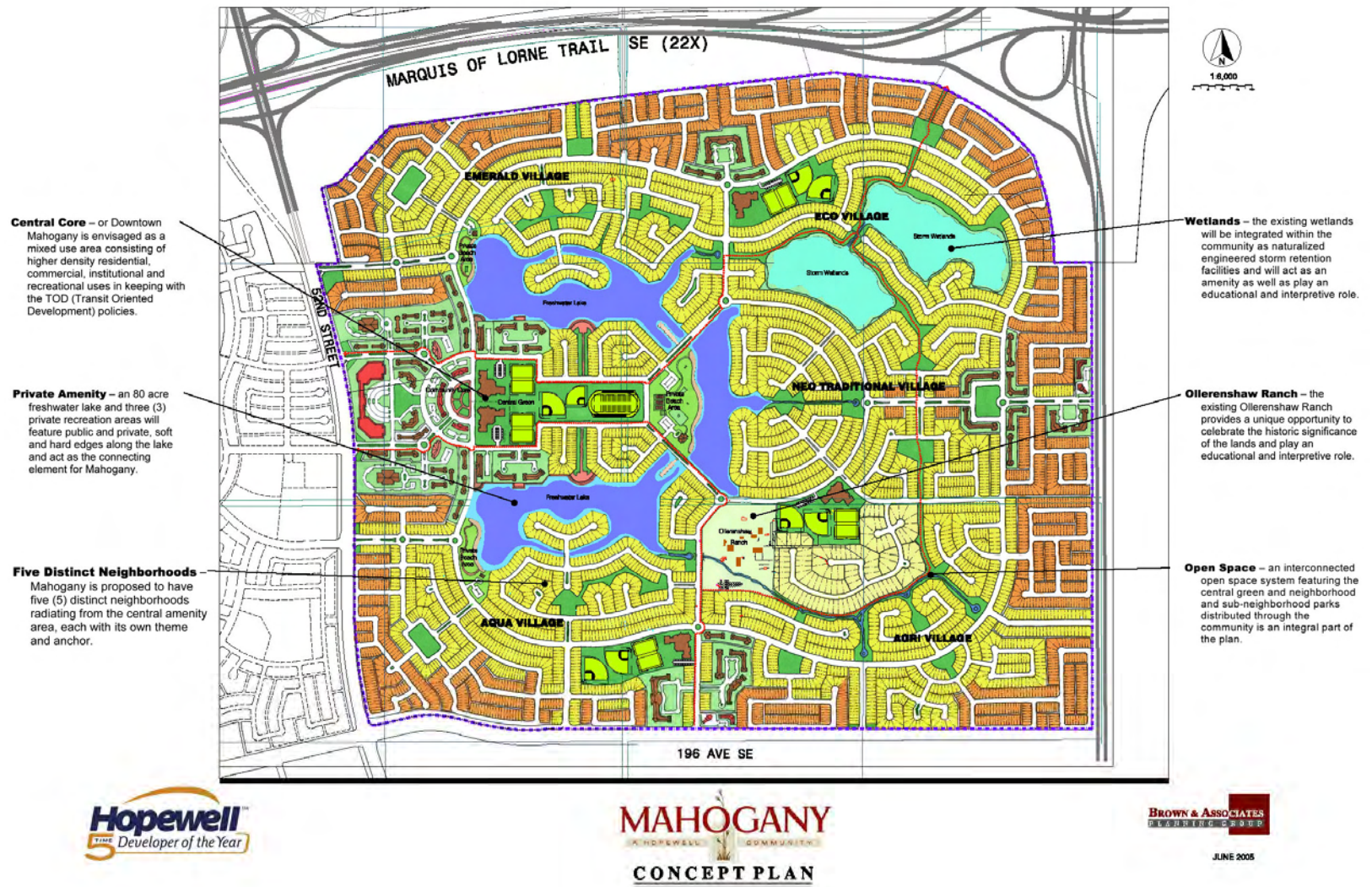
Figure 7.4 The Villages of Walden
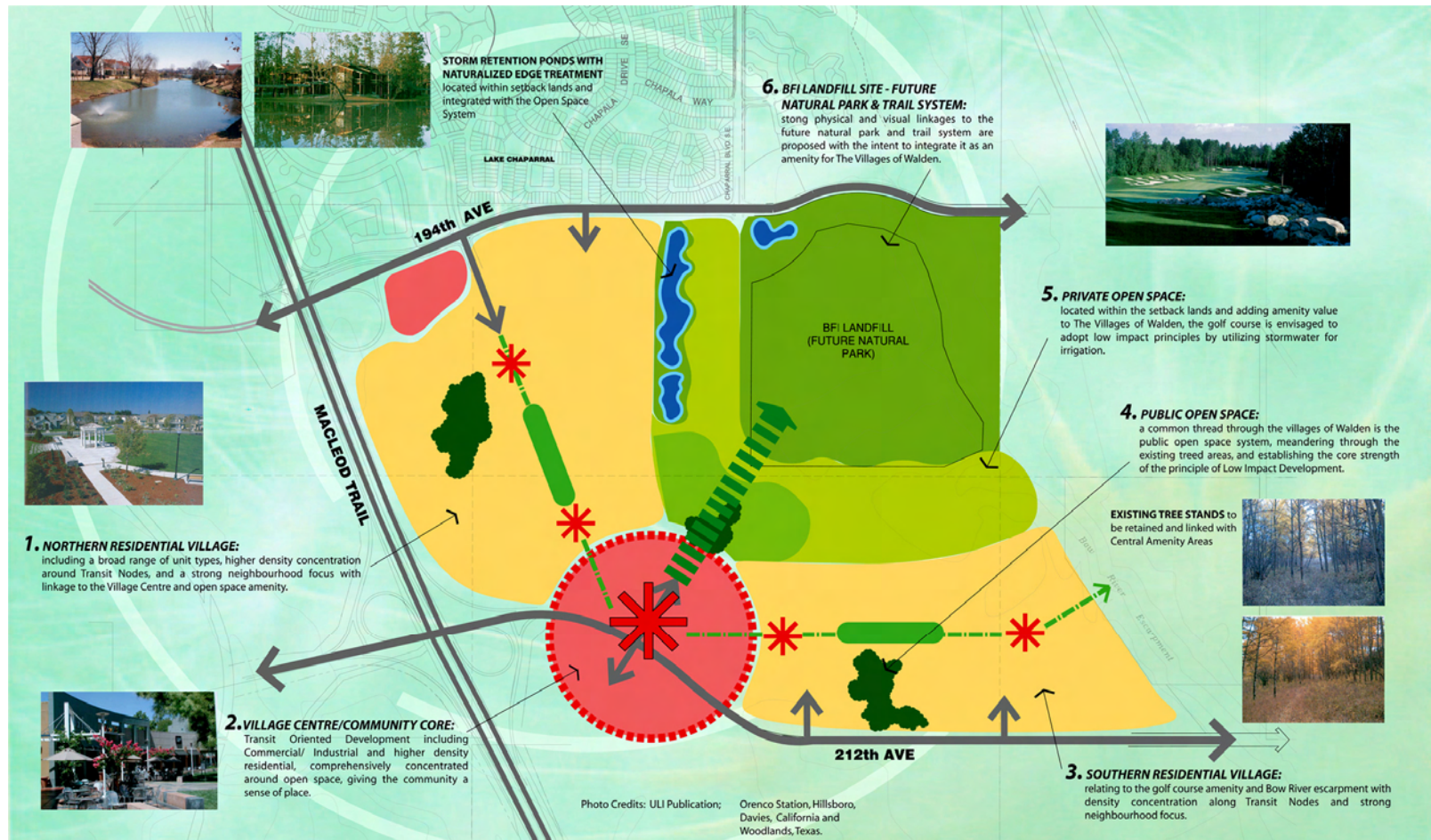
CHAPTER 8

COPPERFIELD: DEVELOPMENT OF DESIGN GUIDELINES

Brad Wright, Doug Campbell, Robert Ollerenshaw

INTRODUCTION

Hopewell Residential Communities decided to take an innovative approach in the development of the architectural design guidelines for their new community of undertook a current review of various architectural guidelines, trends in housing product and design, recent community design, market demographics and trends, publications, and held discussions with various homebuilders. This information was assessed and evaluated to assist the design team in developing appropriate design guidelines and approval process that would address the goals and requirements of the developer, builder and potential homeowner. These design guidelines have assisted in creating a community that is both diverse and harmonious, with homes that are affordable and appealing to the homeowner for this community (Figure 8.1).

Figure 8.1 Copperfield community streetscape

BACKGROUND

As part of their research, the design team toured many communities and housing products, consulted with builders, designers, architects, marketing and sales representatives to assess what design approach would be appropriate for the Copperfield community. Through research and interviews, the design team obtained the following information that provided the foundation on which to build the design guidelines for this community.

- Most homeowners prefer a covered porch or verandah for the front entry and maintenance-free materials for exterior cladding. Covered entries and verandahs provide a comfortable transition between the private realm of house and the public realm of streets, sidewalks, and squares.
- The design team received strong support for targeting the starter and first time move-up market for this community.
- Avoid confusing the homeowner with too many architectural styles especially in starter and first time move-up markets. Strong support was received for considering three generic architectural styles.
- Consumers are looking for value. Affordability is the key consideration in the starter home market.
- Homebuyers within these market segments do not have the time or budget to design custom homes. Find ways to bridge the gap.
- Develop authentic design elements and detailing that are appropriate for each architectural style.

- Received strong support for utilizing appropriate design elements for roof design, window and door configurations, front entry features (such as covered portico or porch) as well as exterior cladding materials and colours.
- Consider 9 foot ceiling heights for the main level.
- Minimum width of 21' is required for two single garage doors while a minimum width of 18' is required for double garage doors.
- Traditional builder homes are designed to please the market instead of aspiring to good design. They usually add little to the streetscape or the community.
- The architectural design guidelines should be easy to comprehend and understand.

GOALS OF DESIGN GUIDELINES

From their research and analysis, the design team created a comprehensive set of design guidelines that are based on well-established principles of good design thereby creating well-designed homes with good proportioning and broad choice for home buyers. The guidelines were developed to give Copperfield a cohesive, unified character and provide a win-win-win situation for all stakeholders: the developer, the builder and ultimately the homeowner. The design guidelines for Copperfield have been structured to address the following goals.

- Develop a process that would integrate land planning and architecture, while addressing the goals and objectives of the developer, builder and homeowner.

- Develop a range of architectural styles with a timeless appeal appropriate for the Copperfield development.
- Develop a process that would embrace the business realities of home construction by balancing quality, square footage and price.
- Develop a process that would integrate the essential components of the development (home design, building construction and marketing).
- Develop an Architectural Coordinates Design System incorporating grid line proportioning of building elements and appropriate building forms for each style thereby creating pleasing streetscapes or "street music".
- Develop a logical and easily understood process to communicate the design guidelines to builders and homeowners.
- Develop guidelines that address the needs and aspirations of the targeted market in housing design.
- Develop a process that is efficient and time effective in terms of architectural compliance and approval.
- Develop guidelines that support the sales and marketing strategy for Copperfield.
- Develop appropriate guidelines that respond to our climate, history, context and physical needs of homeowners, while adding value to the community.
- Produce guidelines that allow for flexibility to adjust with market trends.

COPPERFIELD ARCHITECTURAL STYLES

From the information obtained from their research and analysis, the design team developed three acceptable architectural styles for Copperfield…Heritage, Classical, and Urban. These styles are drawn from many of Calgary's vibrant and charming communities such as Hillhurst, Sunnyside, Scarboro and Elbow Park. Each of these styles has its own distinctive character and charm, but they complement one another to form a harmonious community.

The **Heritage** style draws on a fine tradition of North American building styles dating back to the early 20th century, particularly the Craftsman style which evolved from the Arts and Crafts movement in England and is characterized by it's attention to wood detailing (see Figure 8.2). Architects Gustav Stickley and Charles and Henry Greene promoted the Craftsman style. Much of their work was given extensive coverage in various magazines of their time and therefore became quite popular throughout North America. Pattern books appeared offering plans for Craftsman homes, some including pre-cut packages of lumber and detailing to be assembled by local labour.

Main identifying features of the Heritage style include:
- Broad, sheltering roof profile with deep overhangs;
- Front facing gables and dormers with false beams or brackets;
- Deep and spacious porches (either full or partial width) with roof supported by tapered or square columns. Columns or pedestals were frequently

extended to ground level without a break at porch level;

- Banded windows with divided panes on the upper sash;
- Entry door was usually centered between porch columns or below front gables on entry porticoes;
- Rustic materials such as beveled siding, wood shingles and brick were utilized.

Figure 8.2 Heritage House

Heritage Colours

- Based on deep earth tones such as rich umbers, greens, and ochres.
- Colour is used on trim, gables, specific accents and details.

The **Classical** style is derived from the early sources of western architecture and pays homage to the great architects of Greece and Rome. It has been utilized and modified continually over the centuries and continues to be popular today. This style is characterized by symmetrical forms and refined details providing an expression of confidence and dignity (see Figure 3).

Main identifying features of the Classical style include:

- Low-sloped roofs with moderate gable and eave overhang;
- Symmetrical front gables;
- Full symmetrical porches or porticoes;
- Tall double-hung windows divided into six or nine panes per sash. Usually individual units and often with shutters;
- Shadow board to accent roof gable end;
- Refined materials and detailing.

Figure 8.3 Classical House

that is characterized by clean, elegant lines and simple detailing. The **Urban** style builds on the work of the great 20th century architects that sought to create homes that reflected the forward-looking spirit of our age.

Main identifying features of the Urban style include:
- Steeply-pitched roof profile with minimal eave overhangs;
- Front-facing gables;
- Recessed entries by cutting into the house form;
- Square or rectangular windows that are individual or grouped in creative patterns;
- Simple cladding materials such as narrow lapped siding;
- Plain round or square columns with clean details;
- Projecting upper floors and bays to form sheltered porches.

Urban Colours
- Urban colours are bolder with a distinctive edge.
- Bold, fresh colour is used to highlight features.

Classical Colours
- Neutral base colours were used to suit the more conservative and formal style.
- Detail is emphasized through strong contrast of neutral shades.
- Doors and shutters are typically painted dark in colour, while door and window trims are white.

Many of Calgary's inner city communities are witnessing the emergence of a new contemporary style

ARCHITECTURAL COORDINATES DESIGN SYSTEM

Copperfield has been designed as a community incorporating the best of established Calgary neighborhoods, but also with an eye to the future. The design team developed the **Architectural Coordinates Design System** as an innovative new approach to streetscape design (Figures 8.4,8.5,8.6). This approach is comprised of a well researched and approved set of building forms and architectural components (the Architectural Coordinates) that delineate the basic elements of the home—front facade, massing, porches and porticos appropriate to each style. Using it creatively, the builders can provide the homeowner with a variety of home designs in all three architectural styles, while maintaining a high level of quality and effective cost control. The system has built-in flexibility so that new market trends can be accommodated without compromise to the architectural vision of the community.

A key part of the Design System is the design according to a common grid system. All front elevations are divided into equal bays by gridlines. All of the building elements (Architectural Coordinates) such as windows and doors are positioned by these gridlines, either centered on the lines or centered between them. This common system ensures that homes are well-proportioned, and establish an attractive, consistent rhythm and architectural vocabulary throughout the community.

This approach was achieved by implementing the following strategies.
- Produce homes that are varied in appearance but unified by common design elements.
- Development of three generic architectural styles (Heritage, Classical, Urban) with appropriate design components and exterior materials associated with each style.

Figure 8.4 Classical Style

- Develop the Architectural Coordinates Design System based upon proportioned design modules for each house type, building form and incorporating various design components from a selection of appropriate details, similar to the approach utilized in early pattern books or home catalogues. This design system allows for numerous alternatives with respect to house design and street elevations.
- Development of selection process based on design coordinates with respect to roof and gable design, door and window configurations, front entry or porch options, skirting options as well as the selection of exterior cladding materials and colours.
- Develop a palette of approved colours for siding, door trim and roofing materials.

- Create a consistent architectural vocabulary throughout the community.
- Develop a practical and time effective process for architectural compliance and approval.
- Develop a process where potential homeowners could engage actively in the design of their own homes through their selected homebuilder.
- Assist homeowners in making better choices while offering a variety of elevation options. Illustrate how each house type will look in various configurations of selected design coordinates.
- Provide housing that caters to starter and first time move-up market with a range of innovative product.

Figure 8.5 Heritage Style

Figure 8.6 A mix of styles creating "street music"

The hallmarks of the Architectural Coordinates Design System are choice for buyers, architectural consistency and uniform quality for homeowners throughout the community of Copperfield.

Robert Ollerenshaw is Principal of Section XXIII Architectural & Interior Design; Brad Wright is Senior Manager, Urban Design & Architecture with Hopewell Residential Communities Inc.; Doug Campbell is an Architect & Consultant of Hopewell Residential Communities Inc.

Figure 8.7 The Architectural Coordinates Design System in Copperfield creates diverse streetscapes and "street music".

CHAPTER 9

URBAN DESIGN AND COMPUTER VISUALIZATION: APPLICATIONS IN COMMUNITY PLANNING

Richard M. Levy, PhD, MCIP

INTRODUCTION

The use of CAD (Computer Aided Design) GIS (Geographic Information Systems) and Virtual Reality (VR) have been used by both city planners and developers to develop proposals, to examine current building regulations, to solicit public reactions, to market space, to promote tourism and to provide public information. This development is part of a larger trend that has transformed many design professions. Advancement in computing technology, lower costs for hardware and software and the proliferation of technical skills have contributed to a growing awareness of the potential usefulness of advanced visualization technology in architectural and urban design.

A computer based approach to urban planning allows examination of issues critical in the design of cities. Scale, density, public access, open space, zoning, viewscapes, sun and shade are some of the design issues that can be addressed in an interactive CAD environment. It is not uncommon in the planning of large scale architectural projects to use CAD and GIS throughout the design cycle to develop concepts, to produce renderings, animations and the final working drawings. In the last decade many cities have embarked on the creation of fully detailed computer models of their downtown business districts, where a completely interactive world has been created that enable communities to visualize debate of the issues critical to the design of their cities.

URBAN PLANNING AND COMPUTER GENERATED IMAGES (CGI) – DECISION MAKING AND VISUAL PERCEPTION

Having an accurate image of a proposed development can empower a local community group by focusing energy on areas of common concern. Though there is no guarantee that computer visualization will reduce the time spent in community consultation, it is hoped that this process will lead to a more equitable land use policy. The premise is that greater clarity of graphic information will reduce potential misunderstandings. Traditionally, a challenging exercise at community planning sessions is to arrive at a common understanding of the three dimensional qualities of a space only from the plans and elevations (Forester, 1989; Novitski 1998). The participants of these review sessions must project in their minds' eye a 3D form created from 2D drawings. Photographic views of the site can simply add another layer of complexity by

requiring the participant to superimpose an image of the proposed building into the photographic view. To complicate matters, architects on behalf of their clients use artistic rendering to show their projects in a favorable light. Atmospheric effects, the addition of attractive landscaping and tree plantings, the selection of a dramatic viewpoints and perspective projections that can never be visualized by the human eye are all part of the practice of creating an artistic rendering. Furthermore, selecting alternative views of the project for different times of the day and year is very difficult within the static medium of a drawing. Testing whether a proposed design will block a key view of the street or shade a neighbor's back yard requires the preparation of a new drawing. Under these circumstances, members of the community are compelled to accept the professional judgment of architects and planners. One overriding argument for selecting a digital approach may be to answer the questions: "What will I see from my backyard" and "Can residents from the first floor of the proposed development see into my bedroom windows?" By creating a computer model, the answer to these questions can be demonstrated prior to construction of the project.

COMPUTER AIDED DESIGN AND THE PLANNERS EDUCATION

Students in the Planning Program at the University of Calgary have been using computer modeling to create proposals for new communities. In a project completed in the spring of 2005 students using SketchUp and 3DStudioVIZ developed a concept for the town centre

located in the rapidly growing area of southeast Calgary (Figures 9.1, 9.2).
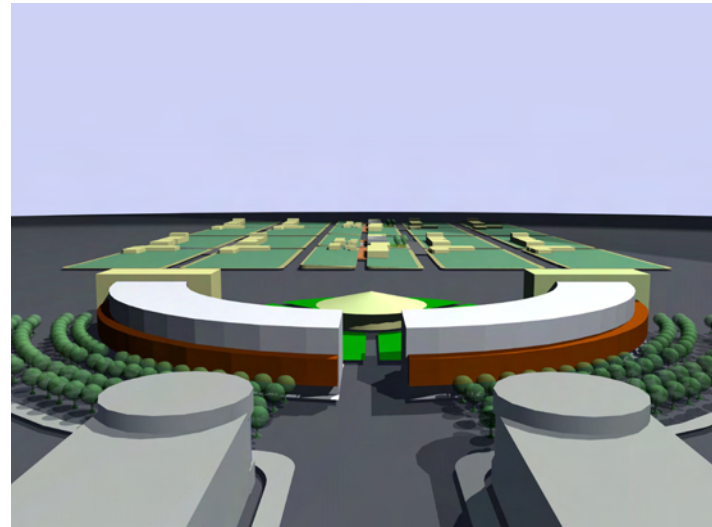
Figure 9.1 Student Design Proposal for SE Calgary, Mahogany Community: Alberto Monje, EVDS Program, 2005

Using these applications to create simple massing studies provides students with an effective tool for concept design development. Beginning with 2D master plans, students can convert these simple plans into 3D massing studies. The process begins by modeling blocks and streets and adding simple 3D forms to represent residential and commercial structures. Finally, street trees, cars and parks can be added to provide scale to the urban streetscape design. By utilizing computer aided design technology, students can create animations that offer the experience of flying over and walking through their

proposed plans. In the design of a community centre, students could use these tools to evaluate the experience of a pedestrian walking from the LRT station, through the neighborhood shopping centre on their way home from work. Using this approach students gain important insights into the design of their projects which can be used to inform their designs. Sun and shade studies, view shed analyses can help the students understand the complexity of developing their urban design. As a design tool, the reliance on computer modeling can help students make adjustments to their designs quickly, allowing them to test and evaluate alternative design proposals. Ultimately, renderings, animations and 3Dworlds can be used to present their concepts to design professionals and faculty for criticism and comments.

VIRTUAL REALITY AND NEW HORIZONS

Many members of our community, mostly under the age of 25, access virtual reality technology on a daily basis by playing games on PC's or game consoles in their homes or college dormitories. These real-life worlds placed in the past, present or the future, contain talking characters with personalities, playing out fantasy against characters with artificial intelligent. For many games today it is possible to access other game players through an Internet connection, making possible real life play against actual competitors.
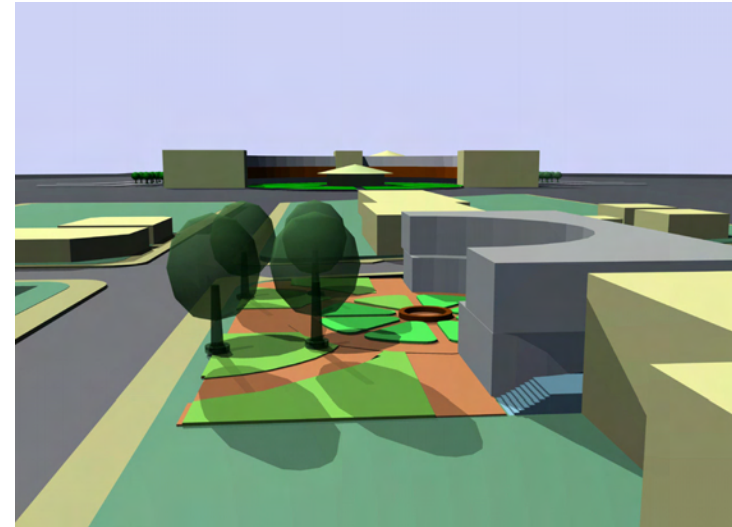
Figure 9.2 Student Design Proposal for SE Calgary,
Mahogany Community Centre, Alberto Monje, EVDS Program, 2005

For the planner, VR technology offers the possibility of testing alternative designs and scenarios in a community context. For over a decade at the University of California, Los Angeles, the Urban Simulation Team has been working with the City of the Los Angles on applying this technology to issues of urban design, transportation planning and pedestrian access (http://www.ust.ucla.edu/~bill/./UST.html). One notable example on how virtual reality is changing the shape of planning comes from the Los Angeles model. The preliminary designs for the new UCLA hospital by architect I.M Pei were loaded into the LA Model two years before construction began. This allowed the medical staff, administrators and others involved in the project to virtually "walk through" every inch of the

medical center. According to the Director of the Lab, Prof William Jepson, "This helped everyone clearly understand all that was being planned,"…"From there, they could make the appropriate decisions. This included identifying and remedying problems which otherwise might not even have been noticed until it was too late." The success of their work has encouraged other communities and researchers to develop virtual models to be employed in the review of development proposals and master plans (Liggest, Jepson, 1993). At the University of Calgary, the Schumberger Virtual Reality CAVE is being used by Dr. Richard M. Levy to present 3D worlds of historic and architectural interest. In these worlds visitors can explore a reconstructed Temple site in Phimai, Thailand (www.phimai.ca) a hospital room, or an historic building form Calgary's downtown. In these environments, it is possible to walkthrough these virtual landscapes and interact with objects in the scenes. In a residential building doors can open and furniture can be moved. In a commercial building, revolving doors, escalators and elevators can be made to operate just as in the real world. In an urban environment, it is possible to simulate auto traffic and have the user test various driving conditions as they navigate through these virtual cities.

BUILDING 3D WORLDS

Ultimately, it is the exploration of urban space that makes` this technology interesting to planners. Where a 3D model has not been built, it is possible to build a world from a 2D set of layers. This required data can be found in most corporate GIS or CAD systems used to manage a city's infrastructure. The process of building a 3D model is straightforward. Foot-prints of buildings are extruded into a simple massing element. Terrain can be created from existing topographical data usually in the form of a point or contour layers. Roads and sidewalks can be built from existing planimetric data. Finally detail such as trees and lightpoles can be mapped to their location found in the CAD and GIS data.   With catalogues of models available at reasonable costs, cars, trucks, buses, people and street furniture can be dropped into a 3D model. Where no base model exists of a community, it is possible to construct a model from air photos. Using Silvereye, software from GeoTango (www.Geotango.com), it is possible to construct models from air photos. These models can be augmented by taking digital images from sidewalk level and from additional detail gained from traditional surveying and laser scanning.

For detailed models of existing buildings and structures, laser scanning offers the planner a tool for acquiring detailed 3D models of both the interior and exterior of buildings. Using a laser which sends off pulses which are reflected back to receiver, a set of point data or "Point Clouds" are created. Accurate to a few mm, these point clouds can be used to describe the surface of buildings, bridges and streets. In cities like Ferrara, Italy entire city blocks are being scanned to create an accurate base line model to be used in planning the future of the city. At the University of Calgary, laser scanning has been used to create archival digital models of historic buildings for teaching research and preservation. For example, the author has used laser scanning to create a virtual 3D base model of the Central United Church in Calgary, where

renovation plans can be viewed and tested in the CAVE at the Schlumberger I-Centre, the University of Calgary (Figure 9.3).

Figure 9.3 View of the CAVE, Schlumberger I-Centre, University of Calgary

CONCLUSIONS

Many areas of planning can potentially benefit from VR technology in the application to specific planning problems. The most obvious application is in urban design review. Establishing the requirement of a 3D CAD model as part of the submission requirement for a development permit, planning departments can review proposed designs from any vantage point prior to construction. Understanding the value of historic resources, context, and scale can be accomplished easily within an interactive 3D model. As a tool for marketing, real time 3D models can also serve to promote a community as an attractive place for development. For tourism development, an interactive version available from the Internet can help the visitor plan their visit. And for those involved in EMS, having a 3D model can be critical in planning public events and developing video surveillance systems. In transportation planning, 3D models can be used to evaluate the ease of driving in a city street crowded with other vehicles and pedestrians.

Consensus building is difficult to achieve when there is a lack of commitment to public participatory planning process. Ultimately, the use of VR must be integrated into the planning process if it is to have value to the planners and the public. Like drawings and models, 3D interactive models can be used as part of a design charette, providing context and the viewing of alternative designs by a committee or a community. As part of an interactive website, members of the public can be solicited for their input on major commissions, master plans or a major project. In an age where we must provide greater access and transparency to the planning process, web delivered worlds maybe one means to reach out to the public. The use of CAD modeling in planning can help communities understanding the role of density, building mass and architectural character in creating urban space. A digital model was useful as an instructional tool. By providing the community with an environment for testing solutions, it was possible to evaluate a number of alternative designs. The impact of massing on views, sun and shade could be determined with some certainty. By limiting the number of changes in each successive design it was possible for the community to

consider the visual impact of potential changes in zoning against their vision for the neighborhood.

REFERENCES

Forester J., 1989, Planning in the Face of Power, University of California Press

Liggett R., Jepson W. H., 1993, An Integrated Environment for Urban Simulation, Third International Conference on Computers in Urban Planning and Urban Management, 565-583.

Novitski B. J., 1998, An Architectural Awakening, Computer Graphics World, 21,
6:22, 40.

RESOURCES

For software for building 3D urban models see:
www.geotango.com
http://www.multigen.com
http://gis.esri.com/library/userconf/proc03/p0347.pdf

For example of 3D worlds see:
http://www.ust.ucla.edu/~bill/./UST.html
www.phimai.ca
https://webdisk.ucalgary.ca/~rmlevy/public_html/Central_United/CMO/CentralInt.htm
https://webdisk.ucalgary.ca/~rmlevy/public_html/Central_United/CMO/CentralExt.htm

Richard M. Levy, PhD, MCIP, is a Professor of Planning and Program Coordinator for the Planning Program and the Director of Computing, for the Faculty of Environmental Design at the University of Calgary.

CHAPTER 10

PLANNING NEW COMMUNITIES IN CALGARY: MAHOGANY

Sasha Tsenkova, PhD, MCIP, MIUA

CONTEXT

During the 1950s, the movement of people away from urban centres led to the evolution of the suburban residential neighbourhood, and ultimately to strip commercial and office development. Continuing demand for lower density housing resulted in consumption of large tracts of land at the expense of the environment and the increasing economic and social costs. In recent years, there have been concerted efforts in North America to deal with the urban sprawl that resulted from unchecked development and laissez-faire attitudes. The challenge of the 1990s, and in the future, is to accommodate growth through development that is marketable and economically feasible; development that is guided by the principles of 'smart growth'; development that creates a sense of community and identity through effective planning and design solutions.

Figure 10.1 Calgary is one of the most dynamic cities in Canada[1]

OBJECTIVES

The overall objective of the *Community Planning Project* is to introduce students to land use planning and development issues in the suburban context.

Specific objectives are:

➢ To provide a step-by-step introduction to the community planning process and essential planning policies;
➢ To provide an opportunity to apply community planning and design approaches to the

---

[1] Photos in the chapter by Sasha Tsenkova.

development of a concept land use plan of a suburban community;

➢ To enhance learning through a framework for efficient collaboration among student teams dealing with sector specific issues – housing, employment, transportation, community facilities, infrastructure.

LEARNING BY DOING: THE COMMUNITY PLANNING PROJECT

The City of Calgary has plans for the development of 2,280 hectares (5,635 acres) of land located south of 22X and west of Deerfoot Trail SE. The area is expected to have a Town Centre with a regional health facility, office and retail uses providing 5,500 non-retail jobs. The Southeast Planning Area is further divided into five residential communities and is expected to serve as a primary growth corridor for the southeast sector of the city. Based on anticipated densities and patterns of suburban development, the projected population of this area is expected to exceed 90,000 people. Community 'B' – Mahogany -- is in the first stages of the development process. It will be bordered to the north by Highway 22X, to the east by the Alberta East Freeway (which is also the eastern city limit), to the south by 196th Avenue SE, and to the west by 52nd Street SE. The total area of Mahogany is 1108 acres. Within 15-20 years this community is expected to become the home of 24,000 people.

APPROACH AND METHODOLOGY

The development of a new community is one of the greatest challenges planners face today. In this context, student teams explored the opportunities and alternative scenarios for the planning and development of Mahogany. They analyzed the impact of demographic, economic, social, and spatial trends in suburban Calgary. In addition, their research evaluated the effect of legal, institutional and policy planning frameworks on the future pattern of development.

The analytical framework of *Mahogany Community Plan* builds upon the concepts of comprehensive community planning. It brings together planning policies and design recommendations for important aspects of the community—housing, retail and employment, transit, schools, community facilities, and open spaces. Students are encouraged to apply the principles of sustainable development and smart growth in the evaluation of good practices and the development of alternative planning solutions.

Figure 10.2 Student field visit to Mahogany with Robert Ollerenshaw, 2005

Figure 10.3 Student field visit to Copperfield with Brad Wright and Paul Taylor, 2005

The students were divided into two teams with specific objectives related to the preparation of:

➢ SWOT analysis
➢ Goals, objectives and planning policies
➢ Land Use Concept Plan
➢ Neighbourhood Plan.

Each team explored different aspects of the community planning process delegating specific tasks to thematic groups dealing with important issues such as housing, retail and employment uses, community facilities, planning policies, transport and infrastructure.

The teams applied a variety of qualitative and quantitative methods of planning research and data analysis. Information was collected through literature review, analysis of city planning documents and policies, key-person interviews and focus group meetings. The recommendations of the teams were brought together in the conceptual *Land Use Plan for Mahogany* exploring two principal alternatives. A selection of posters in this chapter highlights the most important ideas developed by the student design teams (Figures 10.6-10.11).

A variety of teaching techniques were used to introduce the students to the basics of community planning—lectures, seminar presentations, lab sessions, project work, design charrette and field visits. Figure 10.4 maps out the approach and key milestones.
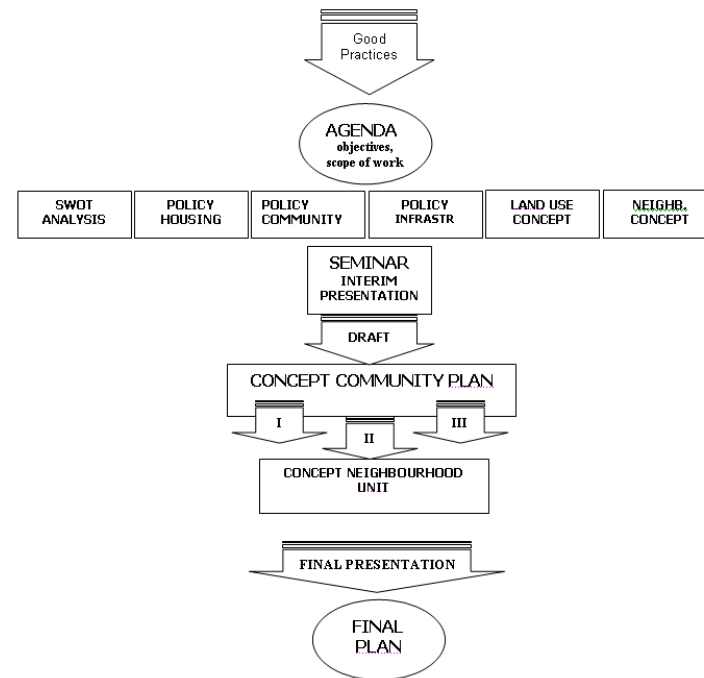
Figure 10.4 Learning by Doing: The Approach

Milestones:

Interim presentations of key research findings; information sharing – November 30, 2005

Land Use Concept Plan and Neighbourhood Plan – December 7, 2005

Figure 10.5 Presentation to students by a panel of planning professionals at EVDS, 2005

The research was carried out by a group of first year planning students from November 1st to December 10th 2006 under the supervision of Professor Tsenkova.

LEARNING OUTCOMES

The final outcome of this learning process is presented in the following chapter, *Mahogany Community Plan*. The *Community Plan* provides guidelines and planning policy recommendations for the development of Mahogany. Students explore real-life problems and policy outcomes in a simple, practical manner. The Policy section identifies a range of planning policies that will affect employment, housing, and transportation land use patterns. It highlights the importance of

environmentally sensitive intervention and the importance of creating unique community identity. The Land Use section reviews major factors affecting the suburban housing market and provides specific recommendations for housing and density targets in different neighbourhoods to encourage diversity and social interaction. Further, the analysis explores the possibilities for the development of schools, open spaces, community facilities and transit services advocating the benefits for joint use scenario. The Neighbourhood Concept section draws on lessons learned from good practices in planning and policy innovation to articulate a vision for a distinct community and design principles.

Figure 10.6 EVDS Community Planning Studio 2005, Good Wood
Consulting: Community Vision & Villages

Figure 10.7 EVDS Community Planning Studio 2005, Good Wood
Consulting: Urban Design & Village Nodes
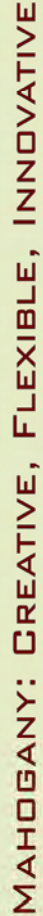
Figure 10.8 EVDS Community Planning Studio 2005, Good Wood
Consulting: Commercial Core & Diverse Housing

Figure 10.9 EVDS Community Planning Studio 2005, S.A.U.S.:
Land Use Concept Plan

Figure 10.10 EVDS Community Planning Studio 2005, S.A.U.S.: Open Spaces

Figure 10.11 EVDS Community Planning Studio 2005, S.A.U.S.: Neighbourhood Concept Plan

CHAPTER 11

MAHOGANY COMMUNITY PLAN

*Rose-Mary Damiani, Kiran Dhillon, Brier Ferguson,
Marcelo Figueira, David James, Alexander Krause,
Titania Lam, Angie Lucas, Jeff McLaren, Sara Jane O'Neill,
Arif Sayani*

PART I: COMMUNITY CONTEXT

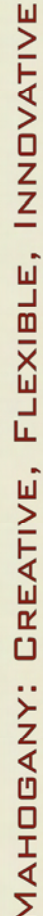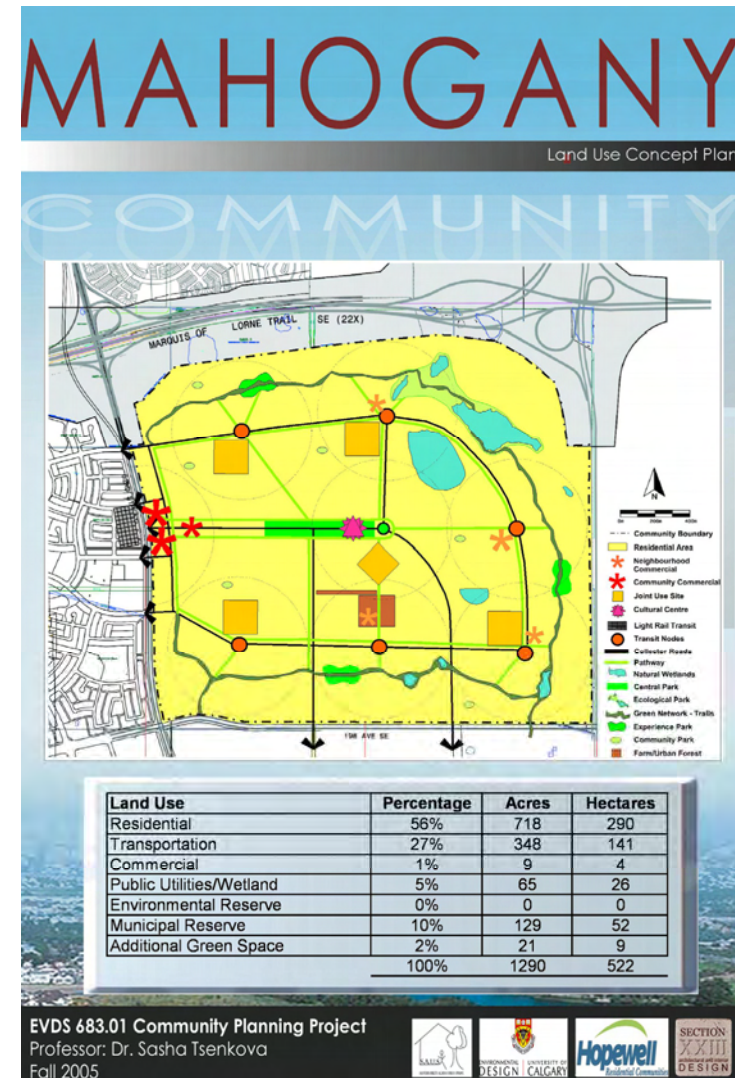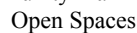### 1 INTRODUCTION

1.1 Location

The community of Mahogany is located in the South-Southeast section of Calgary and is part of the Southeast Planning Area (see Figure 11.1). The Southeast Planning Area comprises the lands bordered to the north by the Transportation and Utility Corridor (TUC), on the west by Deerfoot Trail S.E., on the east by the City Limits, and on the south by the Bow River (City of Calgary, 2004a). The community of Mahogany will be situated in the Northeast section of this area on presently undeveloped land. The community will be bordered by 52nd street to the west and by 196th Avenue to the south.

Our team saw the location of Mahogany as a possible weakness in that it was at a considerable distance from the downtown core and that it was also a 15 – 20 minute drive to the nearest LRT station. However, this issue would be mitigated by the introduction of the Rapid Bus System and

therefore our team decided that the future proposed LRT station would be seen and designed for as a strength to the overall community. We would also encourage the development of commercial and retail businesses at the LRT node to promote more employment opportunities and act as link to the proposed SE employment centre situated to the southwest of the community.

1.2 Topography

The land area is relatively flat with few natural characteristics or amenities. The total area of Mahogany is 1290 acres. There are a number of wetlands in the community; the two largest are situated in the northeast quadrant of the site and three other significant ones in the southeast. Wetlands are defined as those areas that are "seasonally or permanently flooded by shallow water as well as lands where the water table is close to the surface; in either case the presence of abundant water has caused the formation of wetland soils and has favoured the dominance of water tolerant plants" (City of Calgary, 2004a).

We have decided the lack of natural characteristics and amenities is a weakness for the community. However, the development of constructed features and amenities and the enhancement of the natural wetlands will provide the community with a significant identity that is not naturally apparent at this time.

1.3 Environmental and Natural Considerations

The site has been under intense cultivation for cereal crops and cattle, thus little of the native vegetation remains. The cultivation and cattle have also impacted the other wetlands within Mahogany such that they are not as significant as those in the northeast corner due to invasion of non-native species (Planning New Communities in Calgary –

Mahogany, 2005). The two wetlands in the northeast corner of Mahogany are considered environmentally significant. There is an area of mature growth trees around the Ollerenshaw Ranch which has a significant history and personal attachment for the ranch owner.

Our team decided that the two wetland areas in the northeast will be conserved and function both as part of the community's storm water management system and as a natural recreation area for the community. The mature trees will be preserved on the property and act as an added amenity to the area.

1.4 Land Ownership and Land Uses

The land is owned by Hopewell Residential Communities and the Ollerenshaw Ranch, although Danube Farming Ltd. also owns a small section in the southwest area of the community (Planning New Communities in Calgary – Mahogany, 2005). Development within Mahogany is broadly governed by the City of Calgary Municipal Development Plan (Calgary Plan) as well as the Southeast Planning Area Regional Policy Plan (City of Calgary, 2004a).

Our team sees the developer, Hopewell Residential Communities, and the ranch owner, Rob Ollerenshaw, as a strength for the community due to their desire for Mahogany to be an exciting new community
 (www.hopewellcommunities.com).

The communities to the west, southwest and south of Mahogany in the Southeast Planning area are at present still undeveloped. Copperfield and Mackenzie Town, which are to the north and northwest of Mahogany respectively, are already developed. The Southeast Town Centre, which is to be a major employment center, is set to be developed just to the south of Mahogany. The Town Center will contain a

regional health centre, large scale commercial areas, a regional employment centre, public space, and residential areas (Planning New Communities in Calgary – Mahogany, 2005).

The team saw the proposed Southeast Town Centre as a strength for both employment opportunities for the residents of Mahogany and to provide some urban type facilities. However, it was decided that further commercial and retail opportunities would be included in Mahogany to help establish a mixed use node at the LRT station and provide further employment for the residents.

1.5 Transportation

Mahogany will be part of the regional transportation network of Southern Alberta and the local transportation network of the Southeast Planning Area. Above grade interchanges will be provided along 52nd Street S.E. as well as along 196th Avenue. At grade access points into Mahogany consists of four points along 52nd street that match those into the Auburn Bay community, as well as three points along 196th Avenue. An LRT station is planned for the Auburn community along 52nd Street. The future Alberta East Freeway lies to the east of the site but there will be no access to this from the community (Planning New Communities in Calgary – Mahogany, 2005).

Our team sees the close access to major transportation routes as a strength to allow easy access to the communities of Auburn Bay, community D and the future Southeast Town Centre. These access points will also allow for less traffic congestion and provide a feeling of strong connectivity to the surrounding area.

1.6 Municipal Services

In accordance with the Southeast Planning Area Regional Policy Plan, Mahogany will be serviced with the rest of the Southeast Planning Area (Planning New Communities in Calgary – Mahogany, 2005). Water will be provided through mains running along Deerfoot Trail S.E. and sanitary sewer will be provided by the new Pine Creek Treatment Plant in the southwest community (City of Calgary, 2004a).

The large wetland complex in the northeast section of Mahogany will become the major storm water retention area for the community. This area of the wetlands will be managed in an environmentally compatible manner and storm water will drain into the municipal system in the northeast of the community, near this wetland.
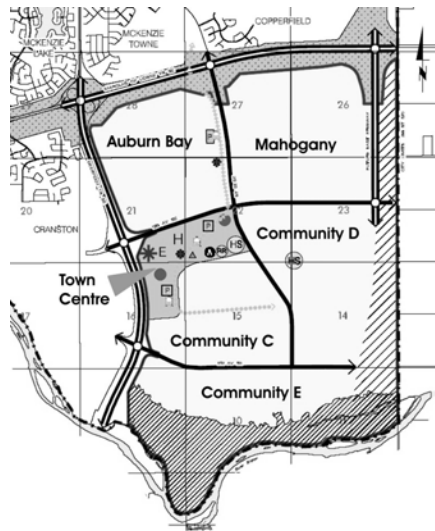
Figure 11.1 Map of the Southeast Planning Area
Source: City of Calgary (2004a) "Southeast Planning Area Regional Policy Plan"

2 COMMUNITY VISION

Mahogany is a community about putting creative, innovative, and flexible ideas into action, for the present and the future.

Mahogany is a community consisting of five unique and flexible villages. Pioneer in the Northwest is planned as the first village. It has a focus on higher density development particularly within the Transit Oriented Development (TOD) area. The greatest attraction to this village is Tod Lake and Mahogany peninsula. This will be complemented by a European inspired Main street retail promenade and public boardwalk that runs along Tod Lake.

EcoHaven is in the Northeast of Mahogany. This village will be focused around a large wetland complex and major park. It will also feature a slightly more progressive density level and will be home to innovative environmental pilot projects such as the possible use of solar panels, LEED standard building practices, and a recycling and compost program.

Green Shire village, situated in the southeast quadrant, has numerous recreational opportunities with wetlands, parks, and greenways. It will feature more traditional suburban housing types consisting predominantly of single-detached homes with old-English Tudor and Elizabethan style architecture.

The smallest yet most culturally significant village is that of Homestead. This will be a lower density village featuring a ranch and 'rural' theme. The focus will be around the community and recreation centre and farmer's market located at the Ollerenshaw ranch site. This is envisioned as a vibrant and popular place for the residents of Mahogany and a common hub for the diverse villages. The architecture will further emphasize the rural and ranching theme.

The village in the Southwest quadrant of Mahogany is Metrowood. Metrowood is a sister village to Pioneer and as such will be higher density and feature lakeside amenities. The architecture in Metrowood will be modern and metropolitan with a transition from larger country homes near Homestead to the more dense and urban TOD area.
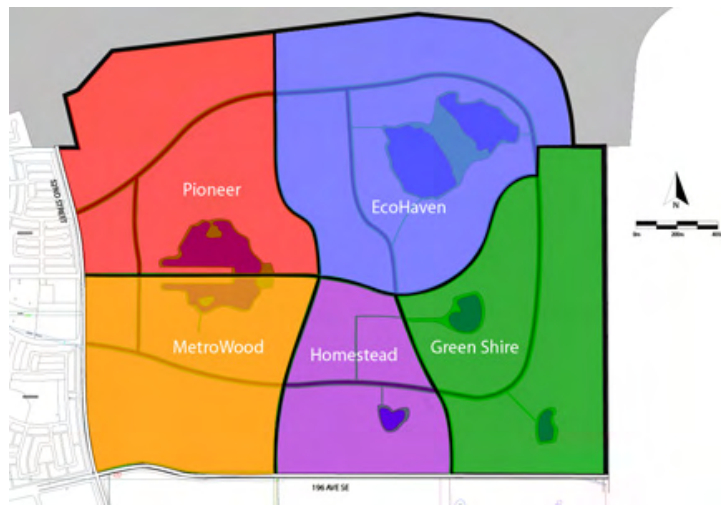
Figure 11.2 Villages in Mahogany

PART II PLANNING POLICIES

1 COMMUNITY PLANNING POLICIES

The policies for Mahogany community are divided into seven general areas. Each area has specific goals that guide the formulation of objectives and policies summarized in the in the matrix (Table 11.1).

Table 11.1 Policy Matrix

Policy Goals and Objectives	
Urban Design	
Goal: To apply a range of features to the urban fabric that will set the framework to develop sense of place in the community and create vibrant spaces and facilities.	
Objectives	
Community Identity	To ensure quality design throughout the community that will enhance the sense of place and unique identity of Mahogany.
Physical Form	To apply design practices that encourage community residents and workers to support the facilities and services located within Mahogany by creating convenient and unique places. Recognizing that the community will grow, evolve and change, the urban design practices should be flexible to allow future upgrades and enhancements.
Village Nodes	
Goal: To create vibrant, unique village nodes that are the focus of village activities and public and private uses.	
Objectives	
Joint Use Sites	To enable residents to combine daily trips by locating joint use sites, such as schools and community centres, within the area of the village node.

Transit-Oriented Development	To create an accessible, vibrant transit-oriented node within each village that provides a variety of commercial and institutional use of a local nature that encourage transit-supportive land uses within a 400 metre radius of the village node.
Ollerenshaw Ranch Site	To develop a village node around the existing Ollerenshaw ranch site.

Commercial Core

Goal: To create a distinct, transit-oriented community node around the future LRT station that integrates retail, non-retail, office, institutional and residential development which provide a variety of goods and services to meet the physical, recreational and entertainment needs of local residents and workers.

Objectives

Transit-Oriented Development	Provide a higher density, walkable, mixed-use area within 600 metres of the future LRT station in order to optimize the use of transit infrastructure.
Local Employment	To provide employment opportunities in retail, services, commercial, and institutional services within the community node.
Parking Standards	To create pedestrian movement within the community node through alternative parking standards.
Urban Design	To create an active and vibrant streetscape within the community node through urban design standards.

Housing

Goal: To provide a range of market-acceptable housing types of various price ranges and styles that will create a diverse community while respecting individualities but allowing community integration.

Objectives

Mixed Housing	To provide 40% of the units as multi-family and/or townhouses as alternatives to the traditional single-detached dwellings.
Affordable Housing	A total of 5% of the housing units shall be in accordance to the City's definition of

	Affordable Housing.
Density	To facilitate sustainable initiatives and create a vibrant environment, Mahogany will achieve density levels of at least 8 UPA gross, which is equivalent to 15 UPA net.

Infrastructure

Goal: To provide infrastructure that meets the requirements of the community of Mahogany in a timely and coordinated manner.

Objectives

Phasing of Development	To phase and coordinate the development of the community such that the provision and extension of infrastructure minimizes costs whilst ensuring that all necessary infrastructure is in place as development phasing proceeds.
Physical Infrastructure	To ensure the provision of all physical infrastructure required by the residents and businesses of the community of Mahogany.

Transportation

Goal: To create a transport network that provides a range of choices of travel modes and that enables easy access to the village and community nodes, to the Town Centre and other communities in the South East, and to destinations throughout the city of Calgary.

Objectives

Road Network	To provide integrated linkages within the community, to the Town Centre and other communities in the Southeast Planning Area, and to the City of Calgary's road network.
Pedestrians	To encourage pedestrian traffic, facilities used by pedestrians such sidewalks and pathways will be provided to link residences with village nodes, commercial nodes and transit stops.
Cyclists and Rollerbladers	To encourage the use of healthy and environmentally friendly alternate forms of transportation such as bicycling and rollerblading, facilities used by cyclists and rollerbladers will be designed to improve safety, usability and convenience.

Public Transit	To enable the use of public transit, both for internal trips and for commuters, by way of a transit system featuring accessible and convenient stops, regular service, and links to major destinations and mass transit systems in the South East, including the LRT and the South East Town Centre.
Environment	
Goal: To ensure the long-term protection and enhancement of the natural environment through education and good practices, while also allowing residents to create a sense of place and enjoy their community.	
Objectives	
Open Spaces	Create a network of open spaces throughout the community that link villages to amenities, open spaces, and the commercial centre, while also providing residents with a variety of passive and active recreational opportunities.
Water Quality and Conservation	Maintain the quality of the wetlands and watershed through natural water filtration systems and stringent conservation methods.
Waste Reduction and Management	Reduce the amount of solid waste produced within the community by approximately 50% from the 2005 household average and promote healthy lifestyle options that will reduce the production of waste.
Air Quality	Provide residents with alternative modes of travel to reduce automobile use and air pollution.
Energy Conservation	Develop residential and commercial buildings to reduce energy consumption, with particular emphasis on innovative energy conservation methods in the EcoHaven Village.
Land Stewardship	Encourage residents to take on a stewardship role for the environmental amenities within the community of Mahogany to promote environmental sustainability.

2 URBAN DESIGN

Community design details are essential in creating spaces and facilities within Mahogany that will enable quality experiences for local residents and workers. Integration of the sites and spaces in the community will impact the type and intensity of uses. The urban design of Mahogany will ensure a quality living environment with a consistent and identifiable image, while offering variety and choice to future residents. The design policies intend to maintain the integrity of the community and its amenities.

The goal is to apply a range of features to the urban fabric that will set the framework to develop sense of place in the community and create vibrant spaces and facilities.

2.1 Community Identity

To ensure quality design throughout the community that will enhance the sense of place and unique identity of Mahogany.

2.1.1 Policies

(1) Design guidelines shall be developed to emphasize unique thematic village concepts for each village. The guidelines shall ensure that there are unifying elements in the design of the villages' built structures, open spaces and streetscape. The village design guidelines shall translate the overarching community values as well as promote good practice in design.

(2) Urban design shall comprise a set of features according to the village-specific design guidelines, using the concept of uniqueness, in developing

paths, edges, landmarks and districts that will define the community.

(3) To encourage the development of a sense of place and urban vitality, specific design guidelines shall be applied to the core TOD in the community.

2.2 Physical Form

To apply design practices that encourage community residents and workers to support the facilities and services located within Mahogany by creating convenient and unique places. Recognizing that the community will grow, evolve and change, the urban design practices should be flexible to allow future upgrades and enhancements.

2.2.1 Policies

(1) The local residential roadways shall be designed according to the modified grid pattern to promote more pedestrian-friendly design.

(2) Pathways shall be designed to provide the shortest access possible for pedestrians to amenities.

(3) The design of all developments shall support an attractive, interesting pedestrian environment

i. Encourage minimal front setbacks on developments according to street classifications to define the streets.
ii. Ample landscaping shall be provided alongside pedestrian walkways.

3 VILLAGE NODES

The unique residential villages of Mahogany have a population of 5,000-6,000 people. The goal in Mahogany is to create vibrant, unique village nodes that are the focus of village activities and public and private uses (City of Calgary, 1995, p.21).

3.1 Joint Use Sites

To enable residents to combine daily trips by locating joint use sites, such as schools and community centres, within the area of the village node.

3.1.1 Policies

(1) All school sites shall be located in a village node.

i. Schools shall be located to allow maximum number of students to walk safely to the school site.
ii. All school sites shall be designated as flex sites that can be adapted to non-conventional school building sizes and grade distributions over time.

(2) Two community centres shall be built in Mahogany.

i. Each community centre shall be integrated with a joint use site.
ii. A community centre shall be located in the first phase of Mahogany to ensure the timely provision and support of community services and activities.
iii. All efforts shall be made to combine parking facilities, open spaces and recreational

facilities of school sites and other village land uses (i.e. daycare facilities) in order to maximize the utility of the site.

(3) Provide local community recycling.

   i.   Community recycling bins shall be provided in the village nodes and a weekly collector service will be provided to collect materials from the bins. Recycling bins shall also be provided along the sidewalks with the standard garbage bins.

   ii.   Community composting sites shall be provided within each neighborhood.

3.2 Transit-Oriented Development

To create an accessible, vibrant transit-oriented node within each village that provides a variety of commercial and institutional uses of a local nature that encourage transit-supportive land uses within a 400 metre radius of the village node (The City of Calgary, 2004a, p.7).

3.2.1 Policies

(1) Concentrate density around the village transportation node and community amenities.

   i.   The density surrounding the village node shall be within 12 to 18 UPA.

   ii.   Encourage the development of senior's housing in the village nodes.

(2) Commercial development, such as local retail, non-retail and institutional uses that will provide goods and services to meet the daily needs of residents shall be located within the village node areas.

   i.   There shall be at least 65,000 square feet of area used for commercial and/or institutional uses within each village node.

   ii.   Local commercial development is encouraged to locate in mixed-use buildings.

   iii.   Institutional uses, such as places of worship, shall be sited within the village nodes.

3.3 Ollerenshaw Ranch Site

To develop a village node around the existing Ollerenshaw ranch site.

3.3.1 Policies

(1) The existing structures on the ranch site shall be preserved and incorporated to accommodate commercial or institutional uses.

(2) Encourage the location of a farmer's market at the Ollerenshaw ranch site and other related retail or services.

4 COMMERCIAL CORE

The community of Mahogany is adjacent to the Southeast Centre that is expected to provide 2,500 to 3,000 jobs in its first phase in office and retail-related employment (The City of Calgary, 2004b). The proximity of the employment centre and the estimated population of 27,000 in Mahogany can stimulate the creation of retail and non-retail employment within Mahogany itself.

The goal in Mahogany is to create a distinct, transit-oriented community node around the future LRT station that integrates retail, non-retail, office, institutional and residential development which provide a variety of goods and services to meet the physical, recreational and entertainment needs of local residents and workers.

4.1 Transit-Oriented Development

Provide a higher density, walkable, mixed-use area within 600 metres of the future LRT station in order to optimize the use of transit infrastructure.

4.1.1 Policies

(1) Provide transit-supportive uses within 600 metres of the future LRT station. Create a mixed use community node that shall include retail, non-retail and office commercial, institutional and residential uses (The City of Calgary, 2004a, p.7).

    i. Freestanding commercial buildings that provide services of a more regional nature are encouraged to locate near 52nd Street SE.

    ii. There shall be at least 215,000 square feet of commercial area incorporated in the Mahogany's commercial core.

    iii. Mixed-use developments shall be encouraged within the transit planning area.

(2) Provide for higher density residential development within the transit planning area to support transit services, and a vibrant station area.

    i. Residential density within the commercial community core shall be within 22 to 28 UPA.

    ii. Mixed-use buildings shall have Direct Control land use designation to provide flexibility in design and composition.

    iii. The maximum height of any mixed-use buildings shall be 15 metres at the eaves line.

(3) All mixed-use buildings within the core transit planning area shall incorporate commercial or institutional uses at grade level as the minimum amount of allowable commercial use to create a "high street" feeling. This shall be in the form of retail or service commercial, office, institutional or live/work units.

4.2 Local Employment

To provide employment opportunities in retail, services, commercial, and institutional services within the community node.

4.2.1 Policies

(1) Encourage commercial developments in close proximity to housing options within the commercial core.

(2) All residential units within the community node shall have the potential to be used as live/work units.

4.3 Parking Standards

To create pedestrian movement within the community node through alternative parking standards (Planning New Communities in Calgary – Mahogany, 2005, p.13).

4.3.1 Policies

(1) Reduce the required Bylawed parking stalls required for each land use in the community node.

i. Shared parking credits shall be considered when two or more land uses in the same building, on the same site or an adjacent site have different operational hours (i.e. Church and gallery) to reduce the amount of parking for individual uses (City of Calgary, 2001, p.98).

ii. Reduce the required Bylawed parking stalls in the community node in consideration of street parking supply and shared parking credits (The City of Calgary, 2004a, p.27).

(2) Encourage parking facilities that do not negatively affect the quality or continuity of retail shopping frontages and pedestrian flow.

i. Mixed-use developments shall supply underground parking facilities at least for all residential units.

ii. Parking for commercial facilities shall be made less prominent to the extent possible through the use of 'hidden' facilities such as rear, underground and rooftop parking areas.

4.4 Urban Design

To create an active and vibrant streetscape within the community node through urban design standards.

4.4.1 Policies

(1) Mixed-use buildings shall incorporate commercial uses at grade level. All street level commercial and institutional units shall provide direct access from the street.

(2) Reduce front setback requirements for developments in the community core to encourage buildings to be set flush with the pedestrian walkway.

(3) Encourage the use of arcades or canopies at the street-level of mixed-use developments.

(4) Within the community node, sidewalk widths should be a minimum of 2 metres.

5 HOUSING

Mahogany will encourage social heterogeneity and support responsible compact growth through its housing composition. Mahogany is envisioned to incorporate a wide variety of housing types to ensure choice for future residents and heterogeneity throughout the built and social fabric of the community.

A mix of tenure and housing types is essential to realizing Mahogany's social goals. The City of Calgary's Affordable Housing Guidelines provide direction for the integration of a diverse housing mix that will be available for a range of household incomes. Mahogany will become home to people of varying ages, life stages, cultures and economic and social backgrounds.

The goal is to provide a range of market acceptable housing types of various price ranges and styles that will create a

diverse community while respecting individual choice and promoting social inclusion and community integration.

5.1 Housing Types

To provide 40% of the units as multi-family and/or townhouses as alternatives to the traditional single-detached dwellings.

5.1.1 Policies

(1) The following housing types are recommended:

Apartments	5%
Rowhouse/Townhouse	35%
Small Single-Detached	18%
Medium Single Detached	19%
Large Single Detached	20%
Very Large Single Detached	3%

(2) Provide a mix of housing types in every village.

(3) The location of Rowhouses/Townhouses is encouraged within village nodes and in proximity to community amenities, parks and open spaces.

(4) Provide for various forms of tenure through a variety of accommodation types, including apartments, townhouses, live/work units, basement units and studio suites.

5.2 Affordable Housing

A total of 5% of housing units shall be in accordance to the City's definition of Affordable Housing (City of Calgary, 2002, 18).

5.2.1 Policies

(1) The affordable rental units shall be city-owned and will serve the following population groups:

  i.   Low income citizens
  ii. Senior citizens
  iii. Citizens with disabilities

(2) Encourage the locating of the affordable rental units within the commercial core and/or village nodes.

(3) Urban Design and Land Use tools shall encourage the integration of social housing with other housing types.

5.3 Density

To facilitate sustainable initiatives and create a vibrant environment, Mahogany will achieve density levels of at least 8 UPA gross, which is equivalent to 15 UPA net.

5.3.1 Policies

(1) Density will vary within each village according to the village specific features and characteristics defined in the Village Design Guidelines. In consideration of such variations, each village shall achieve densities in the following ranges:

Village	UPA
Pioneer	16 - 20
Metrowood	16 - 20
EcoHaven	13 - 15
Homestead	10 - 13
Greenshire	13 - 15

i. Site specific conditions will determine the exact density of each village.

ii. The principle of flexibility should be applied to accommodate changes to the proposed density levels in favour of further increased densities.

6 INFRASTRUCTURE

To provide connection points to Mahogany (and other areas in the Southeast) for municipal infrastructure including drinking water, storm and sanitary sewage, there is a transportation and utility corridor to the north of Mahogany in the alignment of Marquis of Lorne Trail (City of Calgary, 2004a, Part 2, 24). The existing wetlands in the north-east of the Mahogany site will be integrated into the stormwater management system to help reduce the flows of stormwater leaving the community of Mahogany as well as to preserve those wetlands for the future benefit and enjoyment of Mahogany residents.

Mahogany will be unique amongst communities in Calgary and indeed in Canada in general in that a system for geothermal heating and cooling will be installed as neighbourhoods are constructed. In light of continuously rising costs of most forms of heating (natural gas, fuel oil, propane, wood, and electricity) and cooling, developers in Mahogany will be required to provide geothermal heating and cooling to all buildings as neighbourhoods are constructed. The total cost of installing a geothermal system

prior to construction is substantially less than doing so at a later date and one avoids incurring the cost of installing another heating system. This will enable residents and businesses in Mahogany to enjoy long term savings in heating and cooling as well as helping to maintain a cleaner environment through the savings in emissions that geothermal systems afford.

The goal of the Mahogany infrastructure policy is to provide infrastructure that meets the requirements of the community of Mahogany in a timely and coordinated manner.

6.1 Phasing of Development

To phase and coordinate the development of the community such that the provision and extension of infrastructure minimizes costs whilst ensuring that all necessary infrastructure is in place as development phasing proceeds.

6.1.1 Policies

(1) Phasing of the development shall commence in the northwest quadrant (the Pioneer Village) to link into major regional infrastructure networks and proceed across the rest of the development in a manner to be determined in consultation by the developer(s) and the City of Calgary.

(2) Dredging of the man-made lake shall be carried out in the first phase of the development.

(3) Integration of the wetlands 5 and 6 in the northeast quadrant into the stormwater management system shall be carried out in the first phase of the development.

(4) Spoils from the dredging of the artificial lake and other excavations shall be employed in the creation of a berm that shall follow the general perimeter on the north and east sides of the community to act as a sound buffer between the community and the Marquis of Lorne Trail to the north and the East Freeway to the east.

(5) To create a greater sense of community and identity:

    i. development of the transit planning area shall commence as early as practicable; and

    ii. creation of village nodes shall commence as early as practicable.

6.2 Technical Infrastructure

To ensure the provision of all physical infrastructure required by the residents and businesses of the community of Mahogany.

6.2.1 Policies

(1) Municipal utilities shall be provided by the City of Calgary or, through a mutual agreement, by the developer to the satisfaction of the City of Calgary (Planning New Communities in Calgary – Mahogany, 2005, 1.7(2.1), 40).

(2) Wetlands 5 and 6 in the northeast quadrant shall be integrated in an ecologically-sensitive manner into the storm water management system (see Fig.3).

(3) Shallow utilities shall be provided by the developer in accordance with City of Calgary standards (Planning New Communities in Calgary – Mahogany, 2005, 1.7(2.2), 40).

(4) To enable long term heating and cooling cost savings, geothermal heating and cooling shall be provided by the developer for all buildings in the villages of Pioneer and EcoHaven.

(5) The developer may decide whether to employ the district or standalone installations of geothermal heating and cooling on a case-by-case basis as dictated by the efficiency and timing of installation.

(6) To promote transit use, standalone bus shelters at bus stops shall include provisions for their heating as dictated by weather conditions.

(7) Utility rights-of-way and easements shall be provided to accommodate utilities as determined necessary (City of Calgary, 2004b, 10.1.2(1)(c),40).

7 TRANSPORTATION

The City of Calgary's transportation plan envisages the establishment of a Light Rail Transit (LRT) line to the southeast that will generally follow the alignment of the future 52 Avenue SE. It also incorporates the construction of a provincial freeway located immediately to the east of the community of Mahogany. The freeway, along with the Marquis of Lorne Trail, the extended 52 Avenue SE, and the nearby Dearfoot Trail, will provide the community of Mahogany with road links to other parts of the city of Calgary.

The goal of the Mahogany transportation policy is to create a transport network that provides a range of choices of travel modes and that enables easy access to the village and community nodes, to the Town Centre and other communities in the South East, and to destinations throughout the city of Calgary.

7.1 Road Network

To provide integrated linkages within the community, to the Town Centre and other communities in the Southeast Planning Area, and to the City of Calgary's road network.

7.1.1 Policies

(1) Key entranceway roads to Mahogany are to line up with those of existing communities to save on construction costs and to allow better coordination of traffic flows.

(2) Key entranceway roads to Mahogany shall be designed to reflect the character of the community in accordance with 7.1.2 (2) of the Southeast Planning Area Regional Policy Plan.

(3) The primary entranceway road to the community from 52 Avenue SE in the community's core shall consist of four lanes, of which the outermost lane in each direction is to be shared between on-street parking and traffic, as circumstances dictate.

(4) Internal primary collector roads shall be placed so as to facilitate the flow of traffic, in particular that of bus traffic in order to achieve the goal of enabling modal choice.

(5) To simultaneously moderate traffic speeds, increase safety and improve overall traffic flow, the use of roundabouts shall be required at the intersection of:

i. primary collector roads with other primary collector roads;
ii. primary collector roads with collector roads;
iii. collector roads with other collector roads.

(6) Roundabouts or mini-roundabouts may be employed at any other intersections where it is deemed to be beneficial and practicable to do so. The choice of the radius of the roundabouts shall be chosen so as to optimize the ease of turning of first fire engines and secondly buses.

(7) The layout of residential and collector roads shall be designed to facilitate pedestrian access to village and transit nodes.

(8) The layout of the road network shall be designed to respect the Ollerenshaw Ranch site and existing wetlands (City of Calgary, 2004b, 9.9.2(2)(a)(i), 35).

7.2 Pedestrians

To encourage pedestrian traffic, facilities used by pedestrians such sidewalks and pathways will be provided to link residences with village nodes, commercial nodes and transit stops.

7.2.1 Policies

(1) Facilities used by pedestrians such as sidewalks and pathways shall be designed to provide connections to village nodes, commercial nodes and transit stops.

(2) Pedestrian crossing facilities shall be placed where pathways cross primary collector roads and such crossing points shall afford the pedestrian a high level of visibility.

(3) Sidewalks shall be constructed along at least one side of all roadways with the exception of roadways

that include a pathway within their alignment.

(4) Sidewalks shall be placed so as to afford pedestrians a high degree of comfort and safety.

7.3 Cyclists and Rollerbladers

To encourage the use of healthy and environmentally friendly alternate forms of transportation such as bicycling and rollerblading, facilities used by cyclists and rollerbladers will be designed to improve safety, usability and convenience.

7.3.1 Policies

(1) All bicycle locking facilities shall be placed in highly visible locations and shall be of sufficient quality and design to allow for the locking of all bicycles, including but not limited to commuter/utilitarian bicycles that may be fitted with fenders, lights and racks.

(2) Facilities intended for all-day bicycle storage, such as those located at major transit nodes, shall provide for the protection of the bicycles stored there from the rain and other adverse weather.

(3) Bicycle locking facilities shall be installed in all village nodes and in the core commercial node.

(4) All multi-unit residential buildings lacking individual-unit garages shall provide a covered and secured facility for the stowage of residents' bicycles.

(5) Bicycle lanes shall be provided on all primary collector roadways and shall be designed according to best practises.

7.4 Public Transit

To enable the use of public transit, both for internal trips and for commuters, through a transit system featuring accessible and convenient stops, regular service, and links to major destinations including the LRT and the South East Town Centre.

7.4.1 Policies

(1) Bus stops shall be placed such that no residence is more than 400m from a bus stop.

(2) Where possible, bus stops should be placed in close proximity to retail spaces.

(3) The establishment of a day-time community shuttle bus system, to be funded by local businesses, which will enable local journeys to be completed with ease, is encouraged.

(4) The core area of the Mahogany community that is adjacent to the future LRT station shall be a transit planning area with an emphasis on transit-oriented design.

(5) The City of Calgary shall expedite efforts to establish the South East LRT line.

(6) The City of Calgary shall establish a rapid bus system and shall maintain it until such time as the South East LRT line is in place to the South East Planning Area.

8 ENVIRONMENT

The environmental status of Mahogany was assessed in a Biophysical Impact Assessment and Wetland Evaluation Report conducted by EnviroConsult Inc. in 2004 (Planning New Communities in Calgary – Mahogany, 2005).

The area does not have an Environmental Reserve but several wetlands were identified as environmentally significant (Figure 11.3). Wetlands 5 and 6 have a relatively healthy composition of native grasslands and are utilized by several wildlife species. Wetlands 4 and 3 are identified as moderately significant with a diverse mix of vegetation and wildlife. Wetlands 7, 8, and 9 are classified as fairly significant because they are small and infested with non-native vegetation that resulted from cultivation processes in the past (City of Calgary, 2004a). Wetland 10 is not within the site area.

The goal of the Environmental policies of Mahogany is to ensure the long-term protection and enhancement of the natural environment through education and good practices, while also allowing residents to create a sense of place and enjoy their community.

Objectives and policies are based on the Healthy Environment framework set out in the Calgary Plan (City of Calgary, 1998, pg 19-31), the Southeast Planning Area Regional Policy Plan (City of Calgary, 2004a), as well as the Sustainable Suburbs Plan (City of Calgary, 1995).
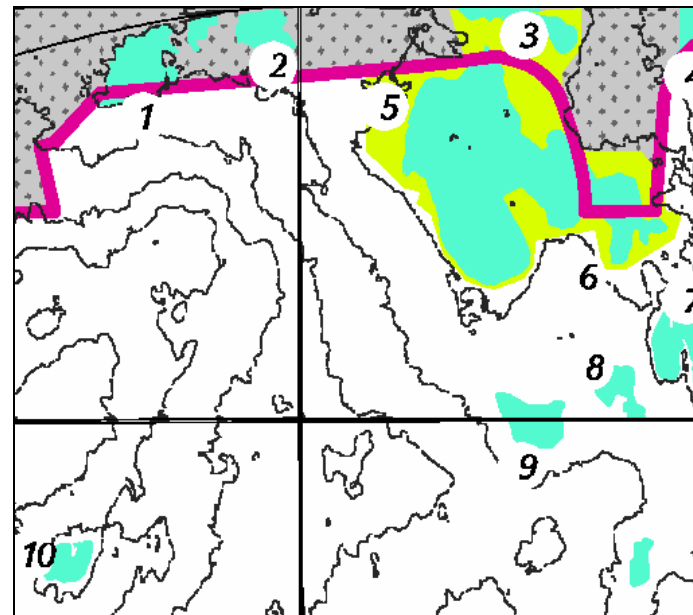
Figure 11.3: Wetlands and surrounding vegetation identified in a preliminary Environmental Assessment of the Southeast Planning Area (City of Calgary, 2004a).

8.1 Open Spaces

Create a network of open spaces throughout the community that link villages to amenities, open spaces, and the commercial centre, while also providing residents with a variety of passive and active recreational opportunities.

8.1.1 Policies

(1) Require that ten percent of the gross developable area of lands to be subdivided be dedicated for the purpose of providing municipal reserve (MR).

i. 56% of the Municipal Reserve is to be dedicated to School Reserve

ii. 5% of the Municipal Reserve is to be dedicated to Community Centres

iii. 39% of the Municipal Reserve is to be dedicated to Open Space

(2) Prioritize the location and allocation of the Municipal Reserve:

i. Each village shall contain parks ranging in size from 1 to 2 acres, with at least one park being at 2 acres and at least 2 parks per village.

ii. Village parks shall be located such that the majority of residents are within 400m of at least one park area.

iii. There shall be at least one major community park, minimum of 4 acres in size that can be accessed by pathways or greenways from each village, and is located in the central region of the community at the east tip of the lake amenity.

iv. A 40 acre lake shall be developed surrounding the central region of the community adjacent to the commercial core, using land designated for the Municipal Reserve.

v. The lake shall be fully accessible to all residents through the designation of an open space or park area along the northern shore that is a minimum of 3 acres in size.

vi. Pathways and greenways shall buffer the edge of the lake with the exception of that part of the edge of the lake immediately adjacent to the commercial core, which shall have a boardwalk instead.

(3) A minimum of 5% of gross developable land, above the Municipal Reserve, shall be allocated to open spaces, for the purposes of additional park space and greenways.

(4) Designate 5% of gross developable land for public utility, to be used to conserve the wetland complex in the Northeast corner of the Mahogany community.

(5) Encourage the design of all open spaces to:

i. Allow for multiple functions and uses for all residents, including but not limited to, dog parks, children's playgrounds, picnic or gathering areas, and outdoor sport activities,

ii. Include permeable landscaping,

iii. Use native vegetation species and drought tolerant species to reduce water consumption.

(6) Developments abutting open spaces and parks shall employ strategies to mitigate the potential adverse impacts that may be caused during the construction phase and throughout the lifetime of the development.

(7) The open space located between wetlands 5 and 6 shall be maintained as a passive recreational space, and no development shall occur here.

8.2 Water Quality and Conservation

Maintain the quality of the wetlands and watershed through natural water filtration systems and stringent water conservation methods.

8.2.1 Policies

(1) A site specific storm water management plan shall be drafted before any development occurs.

(2) In compliance with the Wetland Conservation Plan (City of Calgary, 2004c), any impact on the wetlands within Mahogany must be mitigated such that there is no net loss of significant wetlands, and any disturbances to the wetlands will be mitigated through restoration, enhancement, and creation.

(3) Chemical pesticide use is not permitted on private or public property.

(4) All homes shall be designed with water retention and conservation methods, including, but not limited to, rain barrels, permeable landscaping, and natural water retention ponds.

8.3 Waste Reduction and Management

Reduce the amount of solid waste produced within the community by approximately 50% from the 2005 household average and promote healthy lifestyle options that will reduce the production of waste.

8.3.1   Policies

(1) As suggested in the Sustainable Suburbs study, encourage developers to equip construction sites with waste and recycle bins to reduce the waste produced during the construction phase; Encourage builders to use recycled materials when feasible.

(2) Provide a Community Recycling Depot in the Village Node located in the Homestead Village.

(3) Household recycling and composting bins shall be provided to every household.

(4) Encourage the adoption of programs to reduce household waste production, such as Tag-a-bag, whereby residents must pay for each bag of waste produced.

8.4 Air Quality

Provide residents with alternative modes of travel to reduce automobile use and air pollution.

8.4.1   Policies

(1) Integrate the open spaces in Mahogany by providing greenways between parks, villages, the commercial centre and other amenities to encourage walkability throughout the entire community and reduce the amount of automobile travel.

(2) Greenways shall parallel all primary collector roadways to provide residents with an efficient alternative mode of travel to the commercial centre and the LRT.

(3) Pathways shall contain a graveled or other permeable landscaping section for bikes and carriages as well as a trail-like area for walking.

(4) Air quality shall be monitored as it is affected by the wetlands in the area, the sour gas patches in the south east, and the emissions from automobile traffic.

8.5 Energy Conservation

Develop residential and commercial buildings to reduce energy consumption, with particular emphasis on innovative energy conservation methods in the EcoHaven Village.

8.5.1   Policies

(1)   All homes shall be built to R-2000 standards.

(2)   As part of a potential pilot project for innovative energy conservation in the Ecohaven Village, the following is encouraged:

i.   Residential buildings built to LEED Silver Standards,
ii.   As suggested in the Sustainable Suburbs study, the design of mud-rooms or vestibules to reduce heat loss when entering and exiting a building or house,
iii.   Use of energy saving appliances,
iv.   Use of air barriers and vapour retarders,
v.   Creation of open areas for natural heating from sunlight,
vi.   Use of radiant floor heating as opposed to air heating systems,
vii.   Minimized surface exterior,
viii.   Landscaping for natural cooling of buildings,
ix.   Use of trees for shading in the summer months and wind barriers in the winter months.

8.6 Land Stewardship

Encourage residents to take on a stewardship role for the environmental amenities within the community of Mahogany to promote environmental sustainability.

8.6.1   Policies

(1)   Encourage the creation of a Community Association to oversee the management of the public parks and green spaces within the community.

(2)   Provide educational opportunities for residents to learn good environmental practices for maintenance of private green spaces.

(3)   Provide educational opportunities for residents regarding energy and water conservation and waste reduction within their homes and in the community as a whole.

(4)   A school or community centre shall be located near the wetland system to provide residents with practical education regarding water conservation.

(5)   Preserve the tree stand located at the Ollenrenshaw Ranch to promote awareness of Community Heritage.

(6)   Encourage the development of landscaping guidelines to promote:

i.   Xeriscaping methods to reduce water consumption per household
ii.   Efficient watering of private yards
iii.   Use of native vegetation in home gardens and yards
iv.   Use of edible landscaping to enhance the community's association with the Farmer's Market.

PART III: LAND USE CONCEPT

1 PLANNING AREA: LAND ALLOCATION

Mahogany encompasses a total land area of 1290 acres and is projected to accommodate over approximately 27, 000 people over the next 15-20 years. The land use concept plan is predicated on the guiding principles and assumptions derived from The City of Calgary Municipal Development Plan (The Calgary Plan), City of Calgary demographic projections, and the Mahogany Community Plan policy framework developed by Good Wood Consulting. Table 11.2 is a summary of the projected land use allocation for the community of Mahogany.

Table 11.2 Overall Land Use Allocation

Total Land (acres)		1290
	Public Utilities (5%)	64.5
	Municipal Reserve (10%)	129
	Schools	72
	Community Centre	2
	Recreation Centre	4
	Open Space	51
	Transportation (27%)	348.3
Net Developable Land (acres)		748.2
	Housing	682
	Commercial (20 ft sq/person)	12.4
	Open Space	53.8
Remaining Land		0

2 OPEN SPACE AND GREENWAY/PATHWAY SYSTEM

2.1 Key Assumptions and Guiding Principles:

- Preservation of the Northeast Wetland Complex (5 and 6) (64.5 acres) designated from the 5% public utility lot.
- Establishment of joint-use schools/community centre sites to maximize available open space acres from the 10% allocated municipal reserve.
- Calculation of the acreage required for joint-use schools/community centre sites (16 acres for Public joint elementary/junior; 12 acres for Catholic joint elementary/junior; 2 acres for community centre; 4 acres for community recreation centre) was provided by Planning New Communities in Calgary – Mahogany (2005). Table 11.3 provides a breakdown of school land requirements for Mahogany community.

Table 11.3 School Land Requirements

School Type	Number of Schools Required	Land per School (acres/ha)	Total Land (acres/ha)
Elementary/Junior High (CBE)	3	16/6.5	48/19.4
Elementary/Junior (CCSB)	2	12/4.9	24/9.7
		Total Acres/Hectares	72/29
		% of Municipal Reserve	56%

- The municipal reserve site allocated for the Green Shire community will be designated a swing site for present open space development and potential future school development.
- Surplus land from the municipal reserve (51 acres) is to be allocated towards the development of a 40 acre man-

made lake and surrounding parks and pathway system in the central-west area of Mahogany (see Figure 11.4).

Figure 11.4 Infrastructure, Open Space, and Greenway Networks

- From the remaining designated open space acreage (64.8), parks and greenways were established around and adjacent to compatible recreational and environmental features (i.e., Wetlands 7, 8, 9, Ollerenshaw Ranch tree stand) and within or adjacent to higher density and multi-use areas (e.g., LRT TOD, village nodes) to maximize potential use and non-motorized mobility.
- Establishment of a complete and integrated open space and greenway/pathway system to maximize coverage area (approximately <400 m of all residents) and connect to all relevant community amenities (i.e., LRT TOD, village nodes, schools/community centres), adjacent communities, and Southeast employment centre.

- Greenway/pathway system established parallel to the primary road network system to take advantage of its integrated coverage area, right of ways, and available land resulting from the required road setback allowance (6.5 m per side).

3 RETAIL, VILLAGE NODES, AND AMENITIES

3.1 Retail: Key Assumptions and Guiding Principles

- Establishment of retail/commercial core within 600 metres of the future Southeast LRT station to facilitate mixed-use transit-oriented development.
- Establishment of retail/commercial corridors along primary transportation routes within the LRT TOD (i.e., 52nd Street SE and Mahogany Mile) to maximize potential use.
- Establishment of retail/commercial corridor along central part of Tod Lake to take advantage of scenic vistas and integrated mixed uses (e.g., recreation).
- Establishment of retail/commercial development within village nodes to facilitate transit-oriented development.
- Land allocation calculations for retail/commercial are based on:
  - o 20 square feet per person using the maximum projected population (27,000) (City of Calgary, 2005b).
  - o 0.40 floor area ratio used to maximize retail/commercial density and reduce surface parking area, thereby facilitating a more pedestrian-friendly environment (Planning New Communities, 2005).

3.2 Village Nodes: Key Assumptions and Guiding Principles

- Village nodes are designed to include a variety of mixed-uses (i.e., higher density housing, retail/commercial,

school/community centres, open space and parks) to facilitate transit-oriented development.

- Village nodes are located in central areas approximately within 400 metres of all housing and along and/or near primary collector roads/pathways to facilitate transportation mobility and transit-oriented development.
- Using an average of 2.6 persons per household, an overall population of 27,000 was accommodated with a range from 3,601 to 6,804 in each village[1].
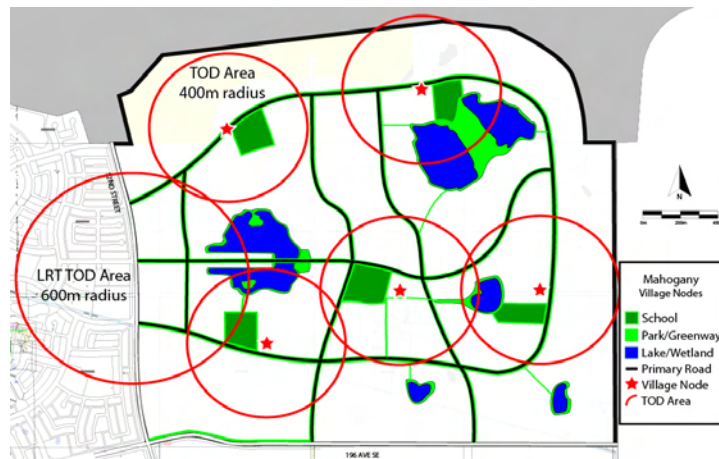

Figure 11.5 Village Nodes and Community Amenities

---

[1] An average of 2.6 persons per household was utilized as it was deemed an appropriate normative compromise between the two projected trends of inner city (2.65) and suburban (2.9) household sizes over the next 20 years as outlined in the City of Calgary Socio-Economic Outlook (2005) and Sustainable Suburbs Study (1995).

4 HOUSING

Key Assumptions and Guiding Principles:

- A 60/40 split between single-detached dwellings and multi-family dwellings was utilized for housing type allocation (see Table 11.4) on the assumptions of:
  - o an aging population that is increasingly purchasing multi-dwelling living (e.g., townhouses, rowhouses) (City of Calgary, 2005a; Calgary Real Estate Board, 2005).
  - o the current overall trend of an increased popularity in multi-dwelling living at the expense of single-detached dwellings (Calgary Real Estate Board, 2005).
  - o to provide a wide selection of housing choice to accommodate the type of housing needed at the various stages of life.
  - o to achieve density goals of the current suburban norm (6-8 upa gross) and exceed the density goals (7 upa gross) outlined by the City of Calgary
  - o Sustainable Suburbs Study (1995).

- Housing density goals were calculated on the assumption that higher housing densities facilitate transit-oriented developments (i.e., LRT TOD, village nodes).
  - o Subsequently, housing typologies conducive to higher densities (e.g., multi-family dwellings) are located primarily within the LRT TOD (and to a lesser extent village nodes) and lower density housing (i.e., single-detached) located predominantly further from these areas.

Table 11.4 Housing Breakdown and Residential Densities in Mahogany

Housing Type	% of Total Land	Units	Unit Space (acres)	Total Space (acres)	Net Density (upa)
Apartments	5%	522	0.017	9	58.0
Multifamily units	35%	3657	0.038	139	26.3
Small Single Family	18%	1881	0.056	105	17.8
Medium Single Family	19%	1985	0.068	135	14.7
Large Single Family	20%	2130	0.116	247	8.6
Very L. Single Family	3%	330	0.143	47	7.0
			Total Space	682	
			Gross Density (upa)	8.1	
			Net Density (upa)	15.4	
			% Gross Area	52%	

- Affordable housing is to be located predominantly within the transit-oriented developments to facilitate transportation mobility for the respective occupants.
- A predominate number of multi-family dwellings (i.e., rowhomes and townhomes) are located along Tod Lake to maximize potential market value.

4.2 Housing Type Breakdown by Village

- The village housing-type breakdown and density levels (Table 11.5) are based on policy guidelines as well as village theme considerations.

Table 11.5 Mahogany Villages Housing Targets

Pioneer Village Housing Targets

Housing Type	% of Total Stock	Units	Unit Space (acres)	Total Space (acres)
Apartments	48%	250	0.017	4.3
Rowhouses/Townhouses	27%	970	0.038	36.9
Small Single Family	24%	450	0.056	25.2
Medium Single Family	23%	447	0.068	30.4
Large Single Family	21%	450	0.116	52.2
Very Large Family	15%	50	0.143	7.2
Units		2617	Res. Space	156.2
Population		6804	Total Space	279.9
			Net UPA	16.8

Metrowood Village Housing Targets

Housing Type	% of Total Stock	Units	Unit Space (acres)	Total Space (acres)
Apartments	38%	200	0.017	3.4
Rowhouses/Townhouses	27%	970	0.038	36.9
Small Single Family	20%	375	0.056	21.0
Medium Single Family	22%	430	0.068	29.2
Large Single Family	19%	400	0.116	46.4
Very Large Family	15%	50	0.143	7.2
Units		2425	Res. Space	144.1
Population		6305	Total Space	251.5
			Net UPA	16.8

Eco Haven Village Housing Targets

Housing Type	% of Total Stock	Units	Unit Space (acres)	Total Space (acres)
Apartments	7%	37	0.017	0.63
Rowhouses/Townhouses	22%	817	0.038	31
Small Single Family	23%	424	0.056	24
Medium Single Family	23%	448	0.068	30
Large Single Family	23%	480	0.116	56
Very Large Family	24%	80	0.143	11
Units		2286	Res. Space	152.6
Population		5944	Total Space	378.9
			Net UPA	14.9

Greenshire Village Housing Targets

Housing Type	% of Total Stock	Units	Unit Space (acres)	Total Space (acres)
Apartments	4%	20	0.017	0.34
Rowhouses/Townhouses	16%	600	0.038	22.8
Small Single Family	18%	332	0.056	18.6
Medium Single Family	18%	360	0.068	24.5
Large Single Family	19%	400	0.116	46.4
Very Large Family	24%	80	0.143	11.4
Units		1792	Res. Space	124.0
Population		4659	Total Space	208.3
			Net UPA	14.5

Homestead Village Housing Targets

Housing Type	% of Total Stock	Units	Unit Space (acres)	Total Space (acres)
Apartments	3%	15	0.017	0.26
Rowhouses/Townhouses	8%	300	0.038	11.4
Small Single Family	16%	300	0.056	16.8
Medium Single Family	15%	300	0.068	20.4
Large Single Family	19%	400	0.116	46.4
Very Large Family	21%	70	0.143	11.4
Units		1385	Res. Space	106.7
Population		3601	Total Space	171.4
			Net UPA	13.0
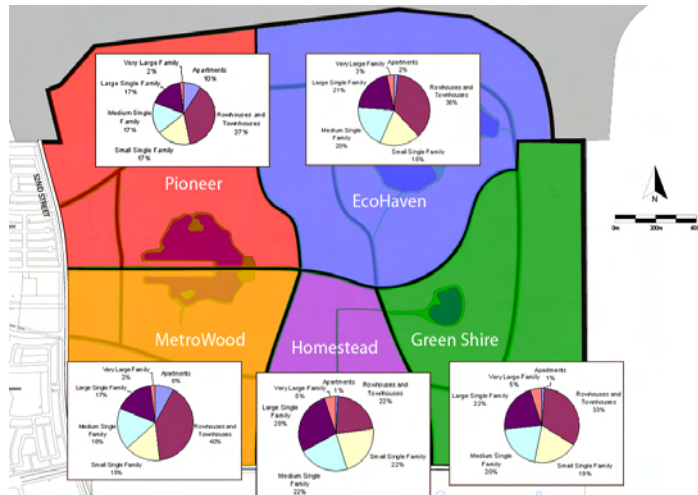
Figure 11.6 Housing Breakdown by Village

PART IV: NEIGHBOURHOOD DESIGN

1 NEIGHBOURHOOD DESIGN FOR PIONEER VILLAGE

Pioneer Village is the first neighbourhood that will be developed within Mahogany. It is the stepping-stone for the Mahogany design and incorporates a fusion of retail, mixed-use, and residential living. It is a place where residents can escape whether it be shopping on the TOD boardwalk, enjoying a pint by the lake, bike riding through the linked neighbourhood paths or simply spending a quiet evening at home. It is a flexible village that provides its residents with a variety of shopping and leisure activities at their doorstep. Entering into Mahogany is an experience of its own. A large wooden peaked roof gateway welcomes residents to the main street promenade of Mahogany mile. Outlined below is the vision for the neighbourhood design.

Figure 11.7 Overall Land Use Concept Map for Mahogany

Figure 11.8 Pioneer Neighbourhood Design Concept

2 DESIGN PRINCIPLES

- The land use in the neighbourhood will have a fusion of rowhouses, live/work, affordable multifamily and retail (Policy 4.1.1(2)).
- Radial street layout, with retail as its main focal point and anchor, will encourage higher density mixed use development to frame the main streetscape.
- There will be one small urban park located in the centre surrounded by mixed use buildings.

2.1 Location of Commercial Nodes

- Along the boardwalk restaurants with patios and live music are envisioned.
- Along Mahogany Mile there is a strip of commercial on the lower level and affordable housing in the lofts/apartments on the top level (Policy 5.2.1 (2))
- This main strip will be wide enough to accommodate parking on both sides and to allow for pedestrian flow. The commercial area will also provide underground and rooftop parking (Policy 4.3.1 (2) ii).
- The Commercial zone along the lake will be a boardwalk of shops, restaurants, and pubs creating an active and vibrant streetscape (Policy 8.1.1 (2) vi).
- All of the commercial area will have cobbled streets, well lit and heated walkways especially where there are outdoor patios
- There will be an amphitheatre at the end of the retail on the north side in the park. This encourages community activities (ie. Shakespeare by the lake in the summer or Christmas carolling during the winter.)
- There will be three lanes approximately 140m apart on one side of the retail that link to the lakeside boardwalk to more shops and restaurants.

Commercial mixed use main street
Source: http://www.fhwa.dot.gov/planning/tpea04/tlu.htm

2.2 Live-Work Units

- Located at the neighbourhood node intersection as well as in the mixed use TOD area
- Provides the potential for retail or commercial growth at the neighbourhood node intersection and TOD/mixed use area as market demand allows
- These sites are to be flexible enough to allow for commercial space as the market demands (Policy 4.1.1 (3)).

Live-work and townhome units with courtyards in behind
Source:http://www.narmourwright.com/projects/html/morganton_mixed_u
se_community.htm

2.3 Design of Diverse Housing Types

Single Family Homes

- A modified grid street network and a mix of small, medium & large single-family homes will be encouraged (Policy 5.1.1 (2)).
- Houses will have drive through garages or back alleys as detailed design permits.
- The single-family homes will attempt to incorporate front porches.

Small singe family home with front porch
Source: http://www.birchwoodproperties.ca/current_projects/70/

Townhomes/Rowhomes

- The townhomes located along the lake are intended to maximize the number of units located along the amenity
- Other townhomes are located along the major collector roads and transit routes and around the neighbourhood node. (Policy 5.3.1 (2)).

Multi-Family

- Higher priced condos are located along the lake.
- The remaining multi-family units will be affordable housing distributed in the TOD mixed use area (Policy 5.2).

Multifamily condominium development on the lake
Source: http://www.lakeridgecondos.com/

2.4 Incorporation of Schools and Open Spaces

- The elementary school and the community centre are located next to the neighbourhood node (Policy 3.1.1(1)).
- The site is linked to the lake and boardwalk by a green pathway (Policy 8.1.1(2)vi).
- The architectural style of the site is to be reminiscent of a Pioneer town lifestyle
- The two parks located by the lake are intended to be a destination amenity for the entire neighbourhood

Lake with boardwalk
Source:http://www.wallowamountainproperties.com/pages/indv_homes/2989.htm

- Natural pathways linking the villages to neighbouring villages, parks, schools and commercial area are lined with trees and benches creating a greater sense of community (Policy 2.2.1(1)).
- The lake is surrounded by a public pathway/boardwalk that connects parks, retail, TOD, condominiums.
- Park number 6 located in the mixed-use housing will contain a children's playground and have a gazebo as a central gathering place.

REFERENCES

Calgary Real Estate Board. (2005). Residential Statistics. Retrieved December 4, 2005,   from http://www.creb.com/media/stats_pdfs-graphs/res-stats-pdfs/2005/res-stats-2005-oct.pdf.

City of Calgary. (1995). Sustainable Suburbs Study: Creating More Fiscally, Socially and Environmentally Sustainable Communities. City of Calgary Planning & Building Department.

City of Calgary. (1998). The Calgary Plan: Municipal Development Plan. Calgary, AB: The City of Calgary Planning, Development & Assessment.

City of Calgary. (2001). CFB West Master Plan. Calgary, AB: The City of Calgary Planning & Transportation Policy Business Unit.

City of Calgary. (2002). Corporate Affordable Housing Strategy. Calgary, AB: The City of Calgary.

City of Calgary. (2004a). Southeast Planning Area Regional Policy Plan. City of Calgary Land Use Planning & Policy Division Planning, Development & Assessment Department.

City of Calgary. (2004b). Auburn Bay Community Plan. Calgary, AB: The City of Calgary Planning, Development & Assessment.

City of Calgary. (2004c). Wetland Conservation Plan. Calgary, AB: The City of Calgary.

City of Calgary. (2005). Calgary and Region: Socio-Economic Outlook 2005-2010. Retrieved November 28, 2005, from the City of Calgary Web site: http://www.calgary.ca/docgallery/bu/corporate_strategy_and_economics/socio_economic_outlook_2005-2010_cover_toc.pdf

Planning New Communities in Calgary – Mahogany. (2005). Ed. Sasha Tsenkova. Calgary AB: Faculty of Environmental Design.

The City of Calgary. (2004a). Transit Oriented Development Policy Guidelines. Calgary, AB: The City of Calgary Land Use Planning & Policies.

The City of Calgary. (2004b). Southeast Centre Area Structure Plan. Calgary, AB: The City of Calgary.

(www.hopewellcommunities.com) Accessed on 21st November, 2005.